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on Applied Innovation:

«PROBLEMS and PERSPECTIVES
of INNOVATIVE ENTREPRENEURSHIP in GREECE
within the INTERNATIONAL ENVIRONMENT».

	<p>Innovation and Entrepreneurship Unit <i>Technological Educational Institute of Epirus</i></p> <hr/> <p>http://innovation-conference-epirus.blogspot.gr/</p>
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ΥΠΟΥΡΓΕΙΟ ΠΑΙΔΕΙΑΣ ΚΑΙ ΘΡΗΣΚΕΥΜΑΤΩΝ

ΕΙΔΙΚΗ ΥΠΗΡΕΣΙΑ ΔΙΑΧΕΙΡΙΣΗΣ

Με τη συγχρηματοδότηση της Ελλάδας και της Ευρωπαϊκής Ένωσης



Arta, Greece. 2013

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Arta, 13 & 14 September 2013

Preface

On 13 and 14 September 2013 was held in Arta, at the headquarters of TEI of Epirus, in the hall of the central library, the First International Conference on Applied Innovation entitled «problems and perspectives of innovative entrepreneurship in Greece within the international environment». The conference was organized by the «Innovation and Entrepreneurship Unit» and the «Innovation Office» of the Technological Educational Institute of Epirus, with the main objective of linking education with production through innovative entrepreneurship. This overall objective specializes in sub-objectives (e.g. health, tourism, etc.) and has long term effects. Among them is organizing the second International Conference of applied innovation after two years (16 and 17 October 2015), building on the results of this first Conference.

The general orientation of the Conference was the applied innovation. The contributions brought experiences from the international arena, and made references to the private and public sectors, the main sections focused on entrepreneurship, finance, management, tourism, health, technology, and invested theoretically on empirical knowledge. The character of the papers was interdisciplinary, detailed on problems, combined the empirical and scientific knowledge by the means of the solutions proposed by combining science and production. It remains to determine the duration and effectiveness over time. This depends on the value of the work of this Conference but also on the work that will show in the future the Innovation and Entrepreneurship Unit of TEI of Epirus and similar institutions. This conference, finally, was not held simply to add to the long list of conferences, but in order to try to change status quo, namely to innovate substantially and effectively.

The first form of innovation, in addition on the procedure, which offered was in the pattern of being conducted. It was performed with the assistance of the program «anymeeting» on line, where 1/3 of the participants presented their contributions from various parts of Greece and abroad. In this manner, it will be held the 2nd International Conference, in which there will be greater involvement of business, utilizing the basic experience of the conference just ended. The business innovation is a key driver of economic growth and can only be achieved with the cooperation of the business with the scientific world in an international environment and rapidly changeable competitive (economic, technological, and social) conditions.

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PART A

Entrepreneurship

Entrepreneurship Environments as living systems: an autopoietic approach

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Abstract

Entrepreneurship Environments (EEs) can be considered as living systems, since they are dynamic systems, characterized by distinctiveness, autonomy, self-regulation and self-production. The hardest one to be addressed is self-production, meaning that the system is organized in a way that its constituent components collectively produce and maintain its organization. This is closely related to the concept of autopoiesis, which refers to a closed system capable of creating and maintaining itself. The behaviour of an autopoietic system controls its inner processes that guide the form of its structure, which, in turn, is the basis of its behaviour in order to smoothly absorb the perturbations of the external context.

The overriding idea of this paper is the use of autopoietic theory to provide a new perspective of innovation within EEs, since it is capable of ensuring the operational closure and the self-referentiality, which are criteria that unequivocally define viable and successful EEs.

Keywords: Entrepreneurship Environments, living systems, autopoiesis.

1. Introduction

In the emerging market economies the sustained economic growth based on the use of innovation has come forward as the major objective of government policy. A major obstacle to innovation seems to be the insufficient communication and collaboration between the scientific community and industry. The absence of closer links between science and industry is a significant shortcoming since, in modern economies, the linear model of innovation has become ineffective and interaction between innovation stakeholders is a key to success. Fostering technology transfer from universities to companies would facilitate the collaboration between the scientific community and business operators (e.g. Vasilyev, 2012). In that sense, we conjecture that significant improvements can be obtained by defining entrepreneurship environments using a theoretical framework able to address the complexity of such dynamic contexts.

Entrepreneurship environments are human (producers, vendors, customers) activity spaces populated with multiple computer systems and networks of different types, which are able to store, manage and exchange data. Each entrepreneurship environment constitutes a significant driving force of economic growth, job creation and productivity enhancement. These environments are studied in terms of their processes of innovation, interaction and competitiveness, and thus, plethora of mechanisms has been developed in order to adjust them to factors, such as agglomeration, division of labor and specialization. These environments are often characterized by transformation and unpredictability and in order to be innovative, strict distinctions must be drawn between being “disruptive” or “continuous”, “radical” or “incremental”, “adaptable” to various contexts or “impervious” to external perturbations.

The overriding idea is that autopoietic theory has the potential to clarify those distinctions and provide a coherent framework for the study of entrepreneurship environments. It refers to the idea that some systems arise through a circular process in which they self-produce their own components.

In this paper, we argue that viewing Entrepreneurship Environments (EEs) as living systems and autopoiesis as a metaphor for planning management strategies in EEs,

offers a viable perspective for addressing the complexity of changes occurring in such dynamic contexts. In this perspective, in section 2, the key dimensions that characterize the EEs are briefly presented. In section 3, gives an overview of the concept of autopoiesis, while in section 4, the analogy between autopoietic systems and EEs is presented. Finally, section 5 concludes the paper.

2. Entrepreneurship Environments (EEs) as living systems

Sustainable EEs are complex dynamic systems bound together by links comprised of personal networks, economic relationships, and implicit and explicit knowledge exchanges. As such, they appear to be on the borderline of living systems, whose systemic characteristics include a trend to return to equilibrium and to be resistant to evolutionary change.

To facilitate the creation of new EEs' ventures and to activate entrepreneurship, whose first step is creating entrepreneurial environments in which prospective entrepreneurs raise their vision of new venture creation and make a decision to realize this vision (e.g. Lee, 2010), one must take into account the following key dimensions in order to offer optimum Entrepreneurship Environments (EEs) (e.g. Gibb, 2002; Martin and Sunley, 2003; Nousala, 2006; Hall and Nousala, 2007).

- To survive in competitive environments, EEs must assemble, deploy, preserve and replicate knowledge to environmental demands.
- To be sustainable, EEs must align certain kinds of dynamic interactions among those facilitated by geographic proximity.
- To be effective, EEs must identify the factors that may contribute significantly to their total success, such as access to new ideas, to specialized services and to highly skilled and specialized staff.
- There is also required a remarkable integration of the various layers both at the regulatory and the structural level of EEs, that is, to identify the components that are connected by functional links.

- Being autonomous, as another prerequisite, in the context of EEs, does not mean independent or isolated but that their resources (tangible or intangible) must be sufficient to reproduce themselves, as far as possible.
- To be self-identifiable, EEs must recognize the endogenous and exogenous barriers to be addressed, such as entrepreneurship personality dimensions on one hand and global crisis on the other, in order to properly and on time correspond with possible solutions.
- To be innovative, EEs must abrogate the linear fashion of planning their activities and adopting the cyclic paths of nature, that is, establish unbroken network of connected components with no start or stop, in order to be adaptable to continuously changing contexts.
- To be diagnostic, EEs must interact synergistically with homogeneous dynamic entities able to sustain themselves as economic dynamos, by consciously design or direct the right processes.
- To be recuperable, EEs must appropriately manage their implicit knowledge, represented in, for example, undocumented routines, jargons and tacit relationships among human resources.
- To be controllable, EEs must recursively conduct feedback mechanisms maintaining the stability of information flow between the observer (the market) and their existence as a unity, in order to avoid disintegration.
- To be updated, EEs must observe changes in the behavior of competitors' reactions and act properly by formatting a hypothesis or plan of action.
- To be statutory, EEs must obey to government policies and procedures and to institutional ecology, in order to be able to measure and evaluate the predefined indexes of their success.

Thus, living with, dealing with and manipulating uncertainty and complexity of EEs requires a need to move away from the conventional focus of traditional EEs' creation and maintenance to a broader concept based upon an understanding of EEs as wholes which can be self-organized and in total harmony with different contexts.

3. Biological theory of EEs

This paper benefits from a “biological” paradigm based on Maturana and Varela’s autopoietic definition (e.g. Maturana and Varela, 1980). Viewing Entrepreneurship Environments (EEs) as living systems and autopoiesis as a metaphor for planning management strategies in EEs offers a viable perspective for addressing the complexity of changes occurring in such dynamic contexts.

Autopoiesis is a concept, derived from biology, which describes the spontaneous, self-organizing, holistic nature of living systems. It denotes a minimal set of properties that are necessary and sufficient to differentiate systems considered to be living from those that are not. Autopoiesis, from Greek αυτο- (auto-) meaning self, and ποίησις (poiesis) meaning creation, production refers to a closed system capable of creating itself (e.g. Maturana and Varela, 1980).

In order to recognize a system as an autopoietic one, six criteria are necessary and sufficient (e.g. von Krogh and Roos, 1995): (1) the system must be identifiably bounded, that is the constituent components of the system must be clearly distinguished from the rest of the context; (2) the system in question must be comprised of a set of parts comprising an identifiable whole; (3) the system must be mechanistic, in the sense that the constituent components of the system must dynamically interact to control or transform one another and thus generating properties to these components; (4) the system must provide a specific behavior which is observed not by the system itself but by external observers who may have different viewpoints.

An autopoietic system is an autonomous and self-maintaining unity which contains component-producing processes. The components, through their interaction, generate recursively the same network of processes which produced them. An autopoietic system is operationally closed and structurally state determined with no apparent inputs and outputs (e.g. Parent, 1996).

Another essential consideration for autopoietic systems is that can share environments of limited resources with other entities also using the same resources and thus they are able to survive in competitive and variable contexts.

4. Autopoietic EEs

Autopoiesis is the act of maintaining constant a living system's organization (e.g. Parboteeah et al., 2010). This theory has been applied to a variety of fields including entrepreneurship, where has been used as a useful epistemological basis especially for knowledge management in organizations and for regulating the autonomic regulation of organization processes (e.g. Hall and Nousala, 2010; Velentzas and Broni, 2011). Having explored the main aspects of autopoietic insights into the entrepreneurial field, the living model of EEs can be presented as in Figure 1, where the processes and relations among their constituent components are disambiguated.

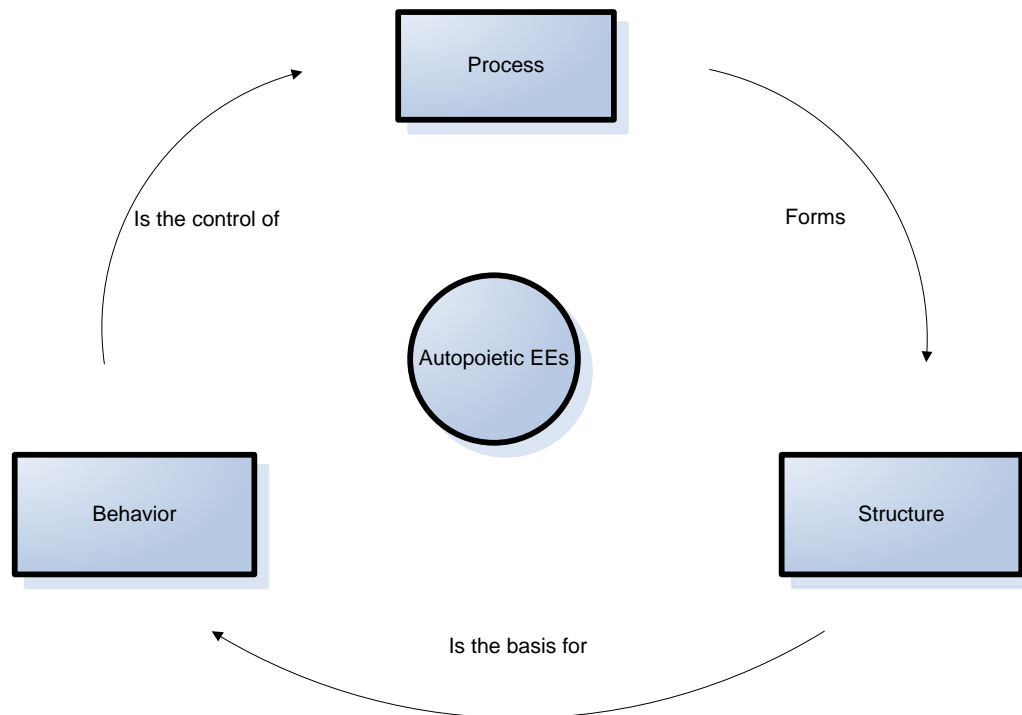


Figure 1. A living model of EEs

Based on the main characteristics of the autopoietic systems, that is, self-referentiality (systems try to shape themselves in their own image), circularity (change in one constituent component of the system is coupled with changes elsewhere because of connections), and autonomy (the system does not mean to be independent or isolated but it can function by itself), autopoietic EEs exhibit a specific behavior which is

observed not by the system but by an external observer. This behavior, in turn, controls the processes involved within EEs, from which the structure of the system is formed and which is the basis for exhibiting the specific behavior. Process, structure and behavior of the autopoietic EEs are interrelated through the main operations of every living system, where its components are discrete, self-producing, constantly evolving and able to specify its own boundaries.

The analogy between autopoietic systems and EEs arises from defining a similarity between the key system characteristics:

- (1) Autopoietic systems have self-defined boundaries; EEs must be self-delimited in order to become a composite unit.
- (2) Autopoietic systems are self-produced; EEs must be autonomous in the sense of standalone.
- (3) Autopoietic systems are organizationally closed; EEs must withstand the pressure of perturbations from the external environment.
- (4) Autopoietic systems are homeostatic; EEs must have the ability of maintaining their internal equilibrium by adjusting their processes.
- (5) Autopoietic systems are development oriented; EEs must be goal-driven.
- (6) Autopoietic systems are defined as centrally controlled, predictable and efficient; EEs must have all these characteristics in order to be successful and innovative.

From the above considerations, it is evident that EEs goals meet the criteria for a complex system to be considered autopoietic. Thus, the properties of autopoiesis may be embodied in the structure, behavior and processes within EEs, in order to be successfully organized.

Special emphasis must be given to the boundary of EEs, which is considered to be intangible. The boundary between system and environment separates the two sides (the inside and the outside) of the same form, marks the unity of the form and is for this reason to exist only as an instruction to cross it (whether from inside to outside form or from outside to inside) (e.g. Luhmann, 1992).

5. Conclusion

Although today's EEs are characterized by transformation, emergence, unpredictability and strong emphasis on human and knowledge resources, there is a lack of a unifying framework for explaining a spectrum of EEs phenomena. We argue that if EEs can be simulated to autopoietic systems, it is possible to ease the task of understanding the guidance and control mechanisms that govern the operation of EEs, since the concept of control is of fundamental importance, as it is required during the formation and the evolution of EEs.

We consider that next generation EEs need an epistemology which is radically different from those that have guided entrepreneurial thinking and that autopoietic theory, with due adaptations, can furnish such an epistemology by providing its key points applied to EEs settings, as important challenges facing EEs, exist not only as the result of the external pressures, but also as a consequence of internal developments.

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Performance and Managerial Skills on a Global Scale in Albania: “The Public Vs the Private Sector- Who Wins?”

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Abstract

This paper research overview of the leader behavior literature highlighted the fact that there are inconsistent relationships between the behaviors that leaders engage in and the effects of these behaviors on member attitudes, behavior, and group effectiveness. While these inconsistent observations can be frustrating they underscore two very important facts. The behaviors are important as witnessed by their occasionally significant relationship with follower attitudes and behavior. Second, the observation that these behaviors do not always produce significant and positive effects suggests that something else is transpiring such that in one situation the particular leader behavior produces significant effects and in another situation that behavior is relatively unimportant. The question that these observations raise is.

What effects do situational differences produce in the leader-follower relationship? Many decades ago Ralph S (1948) stated that “the qualities characteristics, and skills required in a leader are determined to a large extent by the demands of the situation in which he [she] is to function as a leader” chapter 8 provides an understanding of situational differences in the leadership process. If team members know for example, exactly what needs to be done, when, who and why, it is unlikely that initiating structure will prove to be needed or be effective if use. In contrast, when team members are operating under conditions of high levels of uncertainty-not knowing what, when or how to execute the task-a leader who is capable of initiating some structure will make a meaningful contribution.

In this paper we are focus in leader role and in the influences of rationality behavior. The simple theme of this paper is might well be “different strokes for different folks” and/or “different strokes for the same folks at different points in time”. Put more

directly, as conditions change, so do the leadership needs that are created and the leader behaviors that will prove effective. We are trying to analyze the effects of using different hypotheses in some definitions of leadership theories, the implementation of effects of leader behavior in organizations.

Key words: Influence of leader, values, ideals, aspirations, emotions, rational theories.

Hypotheses and rationale influences theory

Hypotheses about the use and effectiveness of each tactic for influencing target task commitment are presented next, along with a rationale for each of ^{fourth} hypotheses, that in this paper research are in our focus study and in based on our preliminary model and on prior research. Formal hypotheses were not made for ratings of a manager's overall effectiveness because this criterion can be affected by many things besides a manager's use of influence tactics. Rational persuasion involves the use of logical arguments and factual information to convince a target that the agent's request or proposal is feasible and consistent with shared objectives (Eagly & Chaiken 1984). This is a flexible tactic that can be used for influence attempts in any direction. Nevertheless, rational persuasion is likely to be used more in an upward direction than in other directions, because in an upward direction a manager is limited by a weaker power base and role expectations that discourage the use of some tactics (see discussion of other hypotheses).

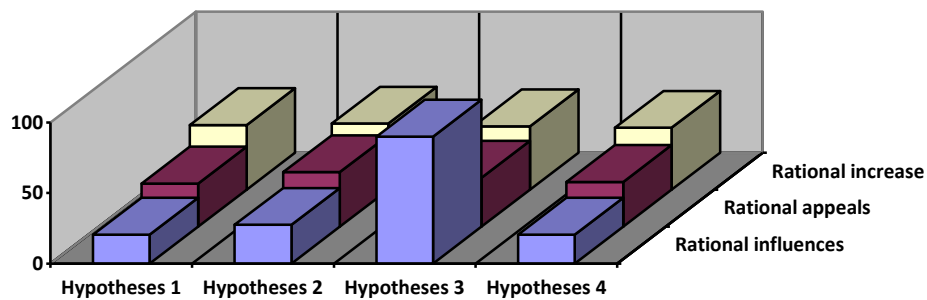
1. Introduction

Inspirational appeals use the target's values, ideals, aspirations, and emotions as a basis for gaining commitment to a request or proposal (Yukl 1990). Inspirational appeals appear feasible for influence attempts made in any direction, but this tactic is especially appropriate for gaining the commitment of someone to work on a new task or project. Influence attempts and involving task assignments occur most often in a downward direction and least often in an upward direction (Erez1986, Kipnis1980, Yukl & Falbe, 1990)

Thus managers have more opportunity to use inspirational appeals with subordinates than with peers or superiors. In the only prior study to examine directional differences for inspirational appeals, (Yukl and Falbe (1990) found that inspirational appeals were used more in downward influence attempts than in lateral or upward influence attempts.

2. Literature Review and Hypotheses

Agents reported greater use of this tactic in upward influence attempts, but directional differences were not found for targets. Results for the consequences of using rational persuasion have been inconsistent also. In the questionnaire study by Kipnis and Sshmidt (1988) managers who received the highest performance ratings had a profile in which rational persuasion was the dominant tactic for upward influence attempts. However rational persuasion was not related to successful upward influence in the questionnaire study by Mowday (1978). Likewise tactics involving aspects of rational persuasion were not related to outcome success in the four critical incident studies described.



Tab. 1. The cycle of rationality developments of hypotheses

Source: Mowday theory concepts 1978

Hypothesis 1a. Rational persuasion is used more in an upward direction than in a downward or lateral direction.

Hypothesis 1b. Rational persuasion increases task commitment in all three directions.

When people gain a sense of ownership of a project, strategy, or change after participating in planning how to implement it, they are likely to be more committed to making the project, strategy or change successful (Yukl 1989). This influence tactic can be used in any direction, but it appears especially appropriate in the situation in which an agent has the authority to plan a task or project but relies on the target to help implement the plans. Because authority to assign work and make changes in work procedures is mostly downward a manager probably has more opportunity to use consultation to influence subordinates than to influence peers or superiors (Yukl & Falbe, 1990).

2.1 The variety of hypotheses and limited results.

Only one study examined directional differences in frequency of use for consultation (Yukl & Fable, 1990) and results were mixed. Agents reported greater use of consultation in a downward direction, but directional differences were not significant for target reports. Evidence on the likely effectiveness of consultation as an influence tactic is limited and inconsistent. Locke (1982) found that a consultation tactic (using the target as a platform to present ideas) was likely to be effective in upward incidents reported by targets, but the results were not significant for upward incidents reported by agents in that study Locke (1988).

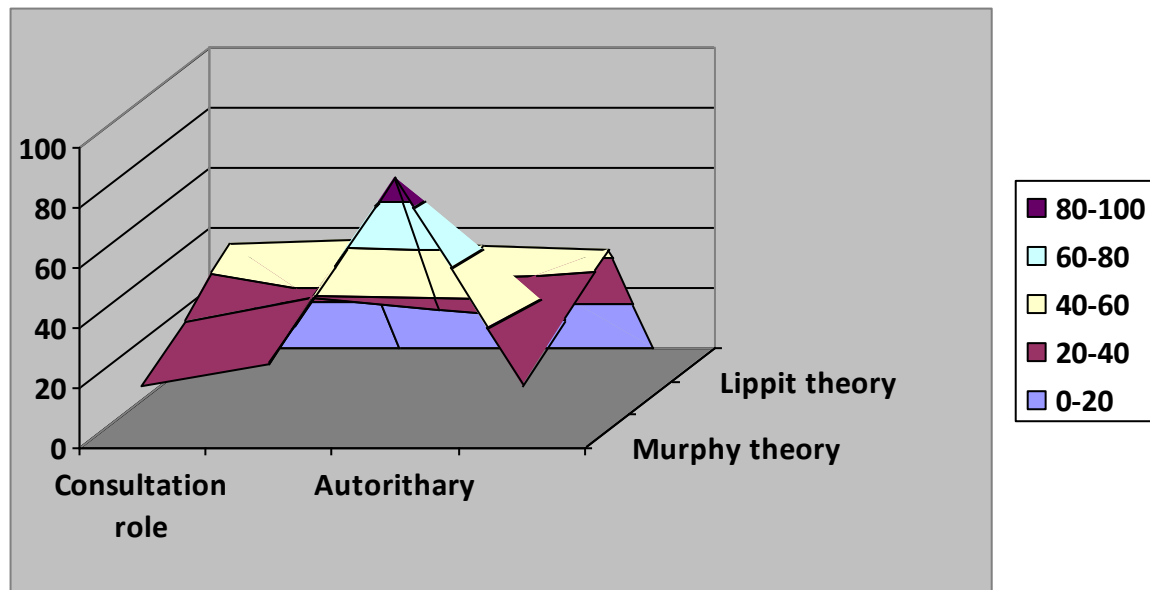
2.2.1 The significant indicators of this paper research study.

In the study by Vroom (1988) of downward incidents reported by agents, results for consultation tactics (listening, soliciting ideas) were not significant. Indirect evidence comes from research on leadership, which finds that consultation with individual subordinates is effective for increasing decision acceptance in some situations but not in others (Vroom & Jetton, 1988) *Hypothesis2a*. Inspirational appeals are used more in a downward direction than in a lateral or upward direction. *Hypothesis2b*. Inspirational appeals increase task commitment in all three directions.

3. Leadership and situational differences impacts.

This paper research addresses the situation in the leadership process. The evolving leadership model from the earlier theories we suggests that the situation in part

defines the leadership process and that it influences the leader and the interact role of leader with the leader's attempts to influence his or her followers. The importance of the situation has already been alluded to on numerous occasions through the first several theories. Murphy (1941), for example noted that situations in which people find themselves create needs, and it is the nature of these needs that defines the type of leadership that best serves the group.



Tab. 2. The different defines of leadership theories
 Source: IJERM Journal Nr 3, year 2012

Accordingly, Murphy theory and findings, saw leadership is a working relationship-one in which different contexts create one unique set of group needs, and a group's emerging leader is that individual who is capable of making meaningful contributions to the group. We are focus in "Hypothesis 3a and 3b to overview in indicate of their effects. These hypotheses, helps us created the leaders modeling according Webber theory. *Hypothesis3a*. Consultation is used more in a downward direction that in a lateral or upward direction.

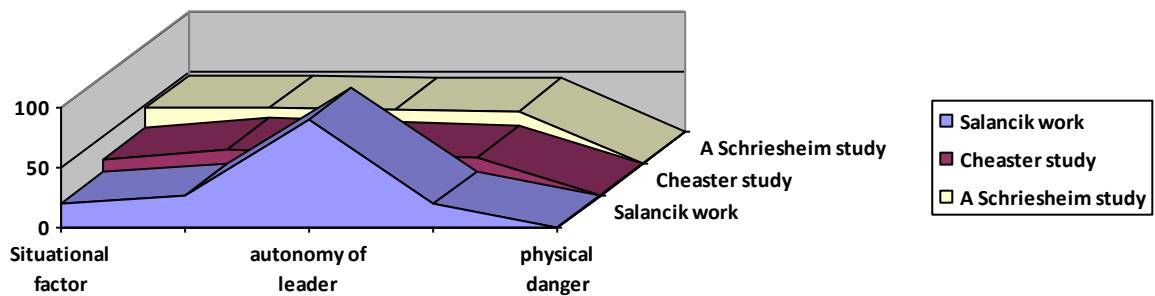
Hypothesis3b. Consultation increases task commitment in all three directions. Three keys questions that will be addressed are:

- Does the situation in which the leader and follower are embedded make a difference?
- What leader behavior works and when?

- What is the process through which the situation produces its effects

3.2 Strategic leadership models and critical leadership situations

In Salancik and Pfeffer's (1977) strategic contingencies model of leadership, the leader is a person who brings scarce resources to assist a group of individuals in overcoming a critical problem that they face. As the problems facing a group change, their leader may also change because of his or her access to critical and scarce resources. Thus, Salancik and Pfeffer's work also serves to highlight the importance of the situation in defining leadership and the leadership process. Tab 2 shows the influences of situational leadership theory.



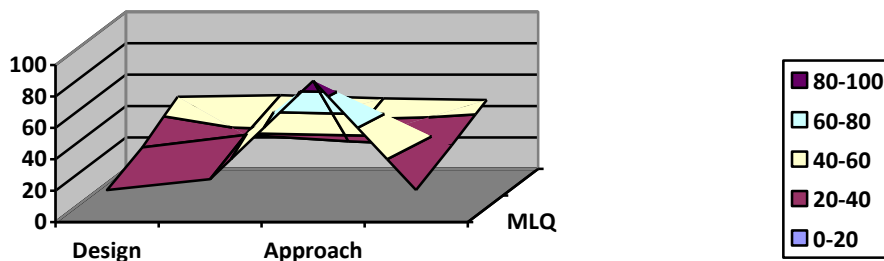
Tab. 3. Influences of situational propositions of leadership context with different authors theories.

Source: Leadership process, year 2008, USA

Influenced by Stogidill's (1948, 1974) reviews of the leader behaviors literature and the emerging recognition of the importance of the leadership context, Steven Kerr, Charles Murphy and Ralph Stogidill (1974), advanced a number of situational propositions linking leader of structure and consideration to a leader effectiveness. They note that accumulated evidence suggests that leader effectiveness is not always associated with those who behave in highly considerate and structuring manner. Among some of the situational factors that influence the effectiveness of leader consideration and initiating structure behavior are, for example, time urgency, amount of physical danger presence of external stress, degree of autonomy, degree of job, scope, importance, and meaningfulness of work.

2. Methodology and Research Goal

Design – The Multifactor Leadership Questionnaire (MLQ) was distributed to employees of a public security organization in Albania, asking them to evaluate their supervisor's style of leadership. Employees were also asked to report their perceptions of organizational politics using the scale developed by the leaders in Albania Region. In addition, supervisors provided objective evaluations of the levels of their employees' in-role performance and OCB. The intra-structure of the leadership variable was examined by exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) with structural equation modeling. Two alternative models were examined: first, a model of mediation and second, a direct model with no mediation.



Findings – The research resulted in mixed findings that only partially support the mediating effect of organizational politics on the relationship between leadership, in-role performance and OCB. A direct relationship between leadership and performance (in-role and OCB) was also found.

This study empirically examines the impact of debt management policies on borrowing costs incurred by state governments when issuing debt in the municipal bond market. Based on positive political theory and the benefit principle of taxation, it is proposed that states that adhere to best practice debt management policies transmit signals to the credit ratings, investment community and taxpayers that the government should meet its obligations in a timely manner, resulting in lower debt costs.¹The donors concurred with this assessment. IDA, starting with the 1998 CAS, considered governance and institution building as one of the central planks of its intervention and

¹ Donors and government investments, IDA

identified the need to adopt and implement reforms to build an accountable and transparent state as the most important challenge facing the Government of Albania.

Hypothesis4a. Ingratiation is used more in a downward and lateral direction than in an upward direction.

Hypothesis4b. Ingratiation has a stronger positive effect on task commitment in a downward and lateral direction than in an upward direction.

Robert House (1971) contends that leader effectiveness is most appropriately examined in terms of the leader's impact upon the performance of his or her followers. In the first reading in this chapter, House and Terence Mitchell (1974) assert that a leader's behavior will be motivational and subsequently have an impact upon the attitudes and performance behavior of the follower to the extent that it makes the satisfaction of a subordinate's needs contingent upon his or her performance.

3.1 Foreign experiences of organizational behavior

The vast majority of the contemporary scholarship directed toward leaders and the leadership process has been conducted in North America and Western Europe. Observing the volume of theory and research that has emerged around the concept of leadership over the past several decades Meindl A and his colleagues to suggest that "we may have developed a highly romanticized, heroic view of leadership. Leaders have come to occupy center stage in organizational life. We use leaders in our attempts to make sense of organizational behavior. They are seen as the key to organizational success and profitability they are credited for organizational competitiveness, and they are the focus of blame in the face of organizational failure.

A driving question in this stream of inquiry asks whether or not the effectiveness of leadership (leader behavior) is culture-specific.

This larger-than-life role ascribed to leaders and the Western romanticized affair with successful leaders raises questions as to how representative our understanding of leadership is across other cultures. That is, do leadership theory and research results generalize from one culture to the next? Research into culture has generally addressed two questions. First there has been an interest in whether or not there are significant

leadership differences across cultures. Thus, it might be asked whether culture gives rise to leadership differences. The second questions treats culture, as a key contextual variable.

3.2 Hofstede theory and five value dimensions of cultural differences in leader identification.

Geert and Hofstede's (1993, 1980) work provides a useful framework for the identification and classification of cultural differences. Hofstede's work spans 18 years, involving more than 150000 people and cutting across 60 countries. He identified five value dimensions that can be employed to explain differences in leadership (leader traits and behaviors) that might cut across cultures. These value frameworks consist of:

- **Individualism-collectivism**

Individualism as a mental set in which people see themselves first as individuals and believe their own interests and values take priority (Canada, Great Britain, and the United States).

Collectivism reflects the feeling that the group or society should receive priority (Hong Kong, Greece, Japan and Mexico).

The self-assessment appearing at the end of this chapter opener provides you with the opportunity to profile yourself in terms of your individualistic /collectivistic values (general guiding principles for behaviors).

- **Power Distance**

Power distance reflects the extent to which members of a social system accept the notion that members have different levels of power.

High power distance suggests that leaders make decisions simply because they are the leader (France, Japan, Spain and Mexico).

Low power distance suggests that social system members do not automatically acknowledge the power of a hierarchy (Germany, Israel, Ireland, and the United States).

- **Uncertainty Avoidance**

Low uncertainty avoidance is reflected by people who accept the unknown and tolerate risk and unconventional behavior (Australia, Canada, and the United States).

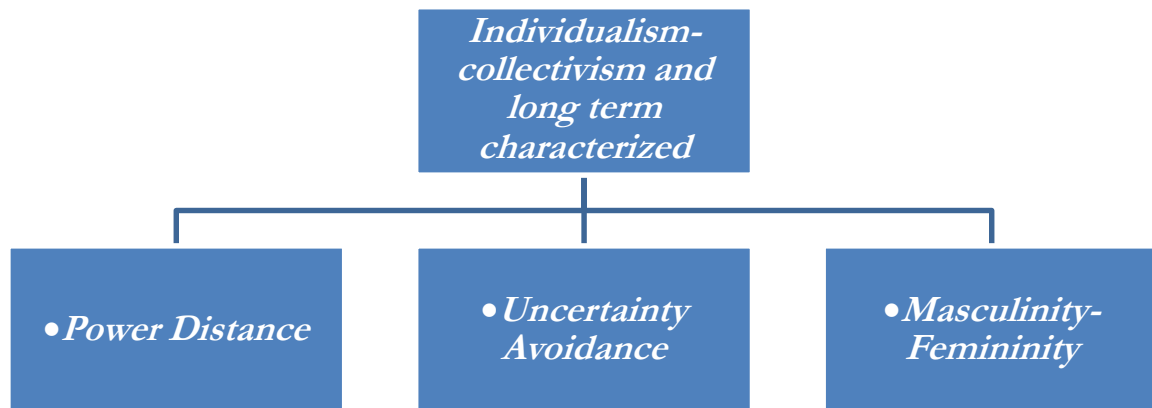
High uncertainty avoidance is characterized by people who want predictable and certain futures (Argentina, Israel, Japan and Italy).

- **Masculinity-Femininity**

Masculinity refers to an emphasis that gets placed on assertiveness and the acquisition of money and material objects, coupled with a de-emphasis on caring for others (Italy and Japan).

Femininity places an emphasis upon personal relationships, a concern for others and a high quality of life (Denmark and Sweden).

- **Time orientation**



Tab. 4. Long term characterized and short term perspectives.

Source: Dumi A, MJSS, Nr 3 2012

Long-term orientation is characterized by a long-range perspective coupled with a concern for thrift and weak expectations for quick returns on investments (Pacific Rim countries).

Short-term orientation is characterized by a long-range perspective coupled with a concern for thrift and weak expectations for quick returns on investments (Pacific Rim countries).

3.4 The strategic planning of e-learning in Albania

E-Learning is gaining significant interest in distance education, including university and other. It also get a special importance in terms of exchanges of experiences between different institutions within and outside the country. Despite the distance

people already have the opportunity to learn from others, or used in any other time and place that they are. These advantages are powered by technological developments, developments that require a generation as qualified to be adopted in time with the rapid technologic evolutions. The advantages of using e-learning are related to the degree of qualification of the generation which live in an era of rapid technological change. Despite the rapid technological development in many countries there are benefits from the use of e-learning or there are benefits that are not at levels as it's required.

4. SWOT Analysis and E-learning considerations

E-learning will be consider as one of the new business that requires the implementation of a modern infrastructure for the needs of customers .In determination of the needs customers there is always a question, which is necessary by enterprises in the e-learning to identify the application, create and determine its size. Above it is explained that the concept of e-learning is very broad, there is only about distance learning, but we have included this concept, different meanings, referring to the electronics companies in all markets. We identify the opportunities and threats, strengths and weaknesses, and their impact on the choice of strategic alternatives are summarized SWOT analysis below (*tab 5*).

4.1 The strategic alternatives of this study

In the SWOT analysis by powers, weaknesses, opportunities and threats for the study of internal and external context were identified four strategies are:

- strategy of market entry and growth
- strategy strategic alliances
- strategy of the outsourcing of some services.
- strategy and alliances of "outsourcing" of some services

Internal factors	Strengths	Weaknesses
The external factors	1. qualified human resources. 2. Internal logistics	1.Experiences 2. Provision of necessary financial funds. 3. Marketing
Opportunity:	Strategies:	Strategies:
1. The increase of Internet users market 2. The increase of sustained prosperity 3.Fulfillments of legal and political vacuum 4. Demographic structure (domination by young people)	1.The entry strategy and market growth	2.The strategy of strategic alliances. (To provide the necessary funds and organization of marketing campaigns for the presentation of products and services to be offered on the market)
Threats: 1. The rapid technological changes 2.Adaptation with the new technological changes	3.Outsourcing strategy (some services)	4. Strategy and strategic alliances of "outsourcing" (Some services)

Tab 5: SWOT analysis by powers, weaknesses, opportunities and threats for the study of internal and external context were identified four strategies

4.2 The choice of strategic alternatives

The strategies described above were the results of the SWOT analysis. But among the strategies mentioned above as the best strategy taking into account the environmental opportunities and threats external and internal potential and highlighted during the analysis it is estimated: The entry strategy and market growth. Normally the choice of alternatives can not be considered easy, because if he makes reference to the SWOT

analysis, note that for each alternative is found threats and weaknesses. But in choosing this alternative strategy is thought achievement of the mission, the external environment and is adapted activity cycle of e-learning, in which they have considered the business cycle of preparing to enter the business of e-learning, and thinking about market growth.

Another reason for the choice of entry and growth strategy in the market compared to others strategies, which calls for the alliance without getting into a market is not an easy process. Once that others can look to slice alliances entered into a new and unfamiliar business. While outsourcing observed is more acceptable and more accessible, such as through outsourcing organization creates the possibility of using the services, which can not perform better than others or could not be performed

Findings of this paper research

The first reading in this paper was written by Hofstede. In this reading Hofstede discusses differences in management as they exist around the globe. His writings provide us with insight into cross-cultural leadership differences as they relate to his value profile. In the second reading in this paper Peter W. and his colleagues John P, Hibino, Jin Lee, and A Bautista (1977) look at commonalities and differences in effective leadership processes across a set of Western and Asian countries. Dorfman A find that three leader behaviors (supportive, contingent reward and charismatic) appear across different cultural settings, while three behaviors (directive, participative and contingent punishment) appears to be culturally specific in terms of their linkage with leader effectiveness.

Conclusions and Recommendations

The effects of contingent punishment are unique in that this behavior has a desirable effect in only one of the Western countries (the United States) and in neither of the two Asian countries studied. Leaders who demonstrate supportive kindness and concern for followers are valued and effective in each of the countries studied. Leaders contingent behavior is highly effective in the more collectivism Asian cultures-as it often is in Western countries. The readings in this and the preceding chapter sensitize us to the contextual factors with which leaders need to contend. Specifically Hofstede (1993) and Dorfman (1997) alert us to the fact that not all followers will have the

some belief and value orientation. These differences clearly have leader and leadership implications. Our earlier reading by Murphy (1941) suggested that leadership function of an interaction between the leader, the situation and the follower. In this paper we will focus on the follower in the leadership process. We will want to carry into those readings and understanding of the individual differences that are produced by cultures and differential belief/value systems.

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Exploring the entrepreneurial intentions and attitudes of business students

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Abstract

This paper reports on the primary findings of a research regarding the entrepreneurial intentions of the business students of a provincial TEI (Technological Educational Institute) and the factors that influence their purpose to create their own firm. The questionnaire survey revealed that the most important motivation for students was to implement their own ideas, while the heavy workload, the probability of failure and losing their money, and the bureaucracy are the most eminent barriers to start their firm. Despite the economic crisis, students feel rather able to overcome the various barriers to their business venture. Thus, they claimed to be rather interested to start a firm in a field related to their degree. The TEI seems to have played a rather significant role to this relatively high entrepreneurial inclination, especially in terms of organizing conferences/workshops on entrepreneurship and administrating the internship.

Keywords: entrepreneurial intentions, business students, questionnaire survey, motivations, barriers, Technological Educational Institute.

1. Introduction

There is a growing interest around the world for the role of entrepreneurship in addressing a series of important societal issues concerning growth, societal progress through innovation, employment generation and social empowerment (World Economic Forum, 2009). This can be attributed to the fact that the number of jobs offered in the traditional public sector is decreasing in almost every country (Apergis et al, 2011). Moreover, working for established, mostly large (e.g. multinational) enterprises, is not as appealing as it used to be in the past, since little job security or reward of loyalty is currently offered (Schwarz, 2009; Lüthje and Franke, 2003). Last, but not least, the unemployment rates among young people, including the graduates of tertiary education, especially in Southern Europe, have soared. In Greece, particularly, in 2013 (May) the unemployment rate has reached 27.6% for the whole population, while this rate is even higher for women (31.5%) and young people between 25 and 34 years old (37.7%) (EL.STAT., 2013).

Thus, it is no surprising that policy makers in Europe and the USA steadily provide incentives, especially to young and educated people to undertake innovative entrepreneurship initiatives in order to achieve higher levels of economic growth and innovation for their societies. Their beliefs are supported by empirical research that emphasizes the high positive relationship between entrepreneurial activity and economic outcomes (van Praag et al, 2007).

There is almost a consensus among policy makers and academics that a strong positive correlation exists between entrepreneurship education programs, and students' intentions to create their own business (Storey and Greene 2010). Indeed, there is a strong belief that entrepreneurship education is an efficient and cost-effective way of increasing the number and quality of entrepreneurs in the economy (Matlay, 2006). This can be explained by the fact that a higher educational background enables the entrepreneur to adopt faster and more effectively new technologies, to exploit the most advanced business models and research tools, and thus to establish and develop more innovative enterprises (Sowmya et al, 2010). However, several researches emphasize that data on entrepreneurship education collected at the local or regional level and based on measures of programs should be

used with caution when international comparisons are made (OECD 2009; NCGE 2010).

There are only a few published studies regarding the entrepreneurial intentions of tertiary education students in Greece. Apergis et al (2011) analyzed the entrepreneurial intents of the students of a Greek University with an Economics and Business curriculum. Using a panel cointegration and panel causality methodological approach they revealed that the major motivational factors impacting on individual's inclination toward entrepreneurship are the willingness and attitude of someone to take risks (intrinsic factor) and "prior experience in leadership" (socio-demographic-related factor). The most important barrier, reported by students, to create their own business was "missing available time", which is attributed to the heavy workload of entrepreneurs.

Papayannakis et al. (2008) reported on the outcomes of the entrepreneurship education introduced in the engineering curricula of the National Technical University of Athens (NTUA) after 2003. They concluded that the entrepreneurship education fostered by engineering curricula should include economic and managerial courses, in order to provide engineers with the necessary knowledge and skills to create, develop and manage a business. Chletsos (2008) investigated the entrepreneurial attitudes of University students of economic discipline and he found that they are positively inclined to create their own business because of the higher expected income and social status. However, the need of significant capital for their venture, the unstable economic environment and the fierce competition make them skeptical to entrepreneurship.

The above mentioned studies focused on the entrepreneurship education of Greek universities located on Athens (country's capital) and Ioannina (capital of Epirus region). However, there is no published evidence on the entrepreneurship education of the TEIs and especially of those located away from the big metropolitan centers. In order to fill this gap, the aim of this paper is to explore the entrepreneurial intentions of business students of a provincial TEI, as well as, the factors that influence them.

In this light, our paper proceeds as follows: In the next section we briefly discuss the theories that have been identified in the literature that explain factors influencing entrepreneurial intention and barriers to entrepreneurship. Moreover, the institution of Units of Innovation and Entrepreneurship of the Greek Universities and TEIs is briefly described. Next, we describe the methodology employed and analyze the

empirical data derived from the questionnaire survey. Our work ends with our conclusions, recommendations and limitations that we see in our examination.

2. Literature Review

2.1. Theories on factors influencing entrepreneurial intention

Various theories have been utilized to identify the factors that impact on entrepreneurial intention and each of these focuses on different factors and attributes. The Theory of Planned Behaviour (TPB) (Ajzen, 1987; Ajzen, 1991) has been widely employed (Shook et al, 2008; Solesvik, 2013; Zellweger et al, 2011; Krueger et al., 2000; Engle et al., 2010) to study entrepreneurial intent. The TPB hypothesizes that behavioural intentions are determined by three key antecedents: (1) attitudes toward the behaviour, (2) subjective norms and (3) perceived behavioural control. Attitudes toward performing the behavior, refers to perceptions of the personal desirability of performing the behavior. Subjective norms are related to normative beliefs, such as family expectations, when considering performing a certain act. Perceived behavioural control pertains individuals' control beliefs relating to the action being monitored.

The EAO (Entrepreneurial Attitudes Orientation) model is also employed by several studies (Harris et al, 2012; Gibson et al, 2011). Developed by Robinson et al. (1991) it provides a composite score based on four attitude subscales: achievement in business; innovation in business; perceived personal control of business outcomes; and perceived self-esteem in business. Shapero's et al (1982) Entrepreneur Event Model is another intentional model based on the perception of the desirability and feasibility to act upon opportunities, assuming that people with high levels of desire to become entrepreneurs may finally not do so because of the barriers they may face. There is empirical support of this model by studies such as of Krueger (1993) and Krueger et al (1994).

Moreover, other socio-demographic factors such as the family previous employment, entrepreneurial background, gender, educational level, academic discipline and nationality have been found to influence entrepreneurial intentions among students (Matthews et al, 1995; Arasteh et al, 2012; Carsrud et al 2011; Hessels et al., 2008; Rafailidis 2006, Rafailidis et al., 2009; Karanassios et al., 2010; Pazarskis et al.,

2009). Hence, it can be argued that, despite the lack of convergence in prior research results, students inclination to business ventures is affected by a combination of psychological traits and specific socio-demographic (including educational) factors.

2.2. The Units of Innovation and Entrepreneurship

Prior research has revealed that entrepreneurial skills can be learned (Robinson et al., 1991; Mitra and Matlay, 2004; Kuratko, 2005), which explains the increase in the number of entrepreneurship programs at universities (Apergis et al, 2011; Papayiannakis et al, 2008). The Greek Ministry of Education supports the innovative entrepreneurial activities mainly through the Operational Programme "Education and Lifelong Learning" (NSRF 2007-2013). Under this Programme operate the Units of Innovation and Entrepreneurship (UoIE) of all the Universities and TEIs (Technological Education Institutes, the second pillar of tertiary education in Greece). For example, the UoIE of the TEI of Epirus aims to develop activities that cultivate the spirit of entrepreneurship in students and enhance their potential employment prospects (UoIE-TEIEP, 2013). The UoIE supports the educational program of the TEI Departments with entrepreneurial courses and specific actions such as:

- a series of classes and seminars that focus on entrepreneurship,
- provision of support and consulting services for the creation of new businesses, and
- the development of new methods of motivation and information for potential businessmen.

The expected benefits for students from this programme include:

- reduction of business risk if they intend to create their own business,
- acquisition of knowledge and skills that are considered important in the market,
- creation of remarkable CV, which is the first thing that potential partners and financiers see,
- meeting with other people who have the same ambitions and interests, and
- improvement of their curriculum with courses of entrepreneurship.

3. Approach

3.1. Method

Based on a literature review a draft questionnaire, consisting of six sections, was initially developed in order to fulfil the aim and objectives of this study. The participants' entrepreneurial inclination was explored by four statements (Chletsos, 2008; Wang et al 2004; Taatila et al, 2012; Sandhu et al, 2011; Solesvik, 2013; Schwarz et al, 2009; Solesvik et al, 2012; Segal et al, 2005).

Four factors were selected in order to investigate the antecedents to entrepreneurship intentions, specifically:

- the motivations that would urge business students to start their own business (Apergis et al, 2011; Chen et al, 2011; Hytti et al, 2010; Chletsos, 2008; Solesvik, 2013),
- the barriers that would hinder students from creating their own business (Apergis et al, 2011; Chen et al, 2011; Khyari et al, 2011; Chletsos, 2008; Sandhu et al, 2011; Schwarz et al, 2009; Khayri et al, 2011),
- students' self-efficacy to overcome the perceived barriers in implementing their entrepreneurial intentions (Harris et al, 2012; Zellweger et al 2011; Sowmya et al 2010; Solesvik et al, 2012; Shook et al, 2008; Segal et al, 2005), and
- TEI's contribution to preparing students to create their own business (Sowmya et al 2010; Schwarz et al, 2009)

A five point Likert Scale was used for the first five sections, where respondents were asked to report their level of agreement or disagreement with the statement from strongly disagree (1) to strongly agree (5). Moreover, the last section of the questionnaire included the socio-demographic characteristics of participants (Apergis et al, 2011; Gibson et al, 2011; Harris et al, 2012; Milman et al, 2010; Wang et al 2004; Teixeira, 2008).

Next, the draft questionnaire was further discussed with 10 students and two professors of the TEI of Epirus in order to select the most important and relevant items for each construct, in an effort to end up to a comprehensive, but as short as possible questionnaire. Finally, the questionnaire was pretested by 15 students in order to detect and eliminate weaknesses in functionality and comprehensibility.

3.2. Sample

A convenience sample of 129 business students from three departments of the TEI of Epirus was used. The questionnaire was distributed in the classrooms at the end of the lecture and it took 5 to 8 minutes for students to complete it. The sample consists of around 40% of male and 60% of female students (Table 1). More than half of the participants attend the third or higher year of studies. 60% the students report that they have family entrepreneurial, which is mostly related to other relatives, while for a quarter of them the parents have their own business.

4. Results

The analysis reveals that the motivation for which students would mostly wish to become entrepreneurs is to implement their own ideas, as almost 60% of them strongly agree (Table 2). Three motives follow, namely the opportunity to create something innovative, the control of their work and the potentiality to do what they really enjoy. The other motives included in the list were rated with almost the same level of agreement, while none of the mean value of the statements was less than 3.58, indicating that the majority of the respondents would wish to become entrepreneurs for the motivations selected in this survey. For most of the statements the variance of answers was relatively low, except for “the achievement of higher social status” and “the control of hours and conditions of the work”, which may be attributed, inter alia, to the current economic downturn that resulted to significant changes in the real and perceived outcomes of entrepreneurship.

The barriers that would mostly discourage business students from establishing their business are the heavy workload, the probability of failure and losing their money, and the bureaucracy instatingandoperatingabusiness (Table 3). The financial crisis seems to play an important role for the first two barriers as around 60% of the respondents agree that the economic environment is unstable and it does not favour entrepreneurship. Although, the Greek governments continuously change the legal and administrative framework to reduce the bureaucracy of public services, the entrepreneurs often complain that this burden has not diminished. The initial capital needed to create a business and the uncertainty of monthly income are also considered to be important barriers to become entrepreneur. However, it is rather encouraging that students seem not to be significantly deterred to start their firm by factors such as

risk aversion, lack of required knowledge, fear of competitiveness, lack of appropriate consultants and services to trust, and shortage of innovative ideas about what business to create. This can be explained, amongst others, by the long and tradition in Greece in small and medium enterprises (SMEs). This sector is the biggest among the Europe countries, as in 2012 very small companies accounted for 96.6% of the whole population, contributing to 57.1% of total employment (E.C., 2013).

Despite the great economic crisis, business students declare that, to certain extent, they are optimistic and able to overcome the above mentioned barriers to create their own business (Table 4). Even though, most businesses face a great difficulty with the illiquidity of money in the market, students rated a mean of 3.28 for their ability to find the necessary funds to start their business, while 45% agreed on that statement. All the other self-efficacy selected items scored a mean between 3.54 and 3.87 and it is worth mentioning that the percent of participants that disagreed (rather and mostly) with these statements ranged from 9.2% to 17.5%, while over 60% stated that they feel capable of starting their own firm, seeing the gaps in the market for new products and services and offering products - services that fulfil customer needs.

The analysis revealed a relatively strong entrepreneurial inclination of students in terms of their interest to start a firm in a field related to their degree, with almost 70% of them agreeing with this statement (Table 5). However, not surprisingly their interest to start a firm in a field not related to their degree is rather low, as 40% of them are strongly or rather not interested, but on the contrary 35% are strongly or rather interested. Significant variance is also observed in students' intents to start a firm within five years of their graduation; however, around 50% are positively inclined to do so, unlike 30% who would not wish to become entrepreneurs. For almost 45% of the students starting their own business is the most preferred choice of professional occupation, however, one third of them neither agreed nor disagreed. From the above analysis, it is worth noting that students' expressed entrepreneurial inclination varies according to the different selected statements, and although they declare to be rather interested to start a firm in a field related to their degree, they are less prone to state that starting their own business is the most preferred choice of professional occupation. The last point can be attributed to the increasing significance of barriers in entrepreneurship, as the economic environment in Greece is still rather unstable and thus, students feel that there is a high probability their business venture to fail and lose their money.

As mentioned above, one of the key objectives of this study was to examine the TEI's contribution to preparing students to create their own business. Business students evaluate, in general, rather positively the role of TEI, and especially in terms of organizing conferences and/or workshops on entrepreneurship and administrating the half-year duration compulsory internship, with around 50% strongly agreeing with these statements (Table 6). The courses on entrepreneurship included in the curricula and the innovative ideas accruing from the whole teaching process are also rather appreciated by more than 55% of the participants. Thus, business students tend to agree that the TEI encourages them to create their own business and that it generally provides them with what they need (in terms of knowledge) to start a business.

5. Conclusions, Recommendations and Limitations

The aim of this paper was to explore the entrepreneurial intentions of business students of a provincial TEI, as well as the potential factors that impact on them. The analysis revealed that, although they declare to be rather interested to start a firm in a field related to their degree, they are less prone to state that starting their own business is the most preferred choice of professional occupation. This is probably due to the increasing significance of barriers in entrepreneurship as the economic environment in Greece is still rather unstable and thus, students feel that there is a high probability their business venture to fail and lose their money.

The most important motives to become entrepreneurs are to implement their own ideas, the opportunity to create something innovative, the control of their work and the potentiality to do what they really enjoy. However, business students are rather sceptical to start their own firm as barriers such as the heavy workload, the probability of failure and losing their money and the bureaucracy in starting and operating a business may discourage them. Despite their concerns on the barriers, it is encouraging that students feel capable of starting their own firm, seeing the gaps in the market for new products and services and offering products - services that fulfil customer needs.

From the above it can be concluded that business students are relatively rather positive to their business venture. Their concerns are quite rational, thus, it is important to support the youth entrepreneurship by providing incentives, such as easy and low cost access to investment funding, by organizing conferences/workshops in

order to inform them about the latest market developments and the competitive advantages of their region, and by reducing the burden of bureaucracy.

Moreover, business students evaluate, in general, rather positively the role of TEI, and especially in terms of organizing conferences and/or workshops on entrepreneurship and administrating the half-year duration compulsory internship, with around 50% strongly agreeing with these statements. Thus, it is important for the Greek government and the local authorities to further support operational programmes that promote youth entrepreneurship through the tertiary education.

The findings of our study are subject to a number of limitations, which are often common to similar studies. Exploring entrepreneurial intentions of business students through a questionnaire survey, we can not be sure that those who now claimed to be willing to become entrepreneurs, they will finally act so in the future. Moreover, we should be cautious to generalize the findings of this survey, as the sample of students originates from a single TEI.

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TABLES

Table 1. Demographic characteristics of respondents

	Frequencies	Percent
<i>Gender</i>		
Male	50	38,78%
Female	79	61,24%
<i>Year of Studies</i>		
1 st	27	20,93%
2 nd	37	25,68%
3 rd	40	31,01%
4 th	21	16,28%
5th and more	4	3,10%
<i>Family entrepreneurial background</i>		
Yes	79	60,31%
No	52	39,69%
<i>Entrepreneurial background - Parents</i>		
Yes	32	24,81%
No	97	75,19%
<i>Entrepreneurial background - Other Relatives</i>		
Yes	75	58,14%
No	54	41,86%

Table 2. Motivations to start a business

	1	2	3	4	5	Mean	St. Dev.
Earn more money than as an employee	0.8%	7.4%	32.8%	38.5%	20.5%	3.70	0.91
More secure employment than as an employee	2.5%	13.6%	30.5%	30.5%	22.9%	3.58	1.07
Highersocialstatus	7.4%	9.1%	26.4%	26.4%	30.6%	3.64	1.22
Willprovemyvalue	5.0%	4.1%	17.4%	43.8%	29.8%	3.89	1.04
Control of my work	1.7%	7.6%	11.8%	36.1%	42.9%	4.11	1.00
DowhatIenjoy	3.3%	2.5%	19.7%	27.9%	46.7%	4.12	1.03
Implementmyideas	1.7%	1.7%	10.8%	27.5%	58.3%	4.39	0.87
Control hours and conditions of my work	4.8%	9.7%	18.5%	29.8%	37.1%	3.85	1.17
Able to create something innovative	0.9%	4.3%	12.9%	42.2%	39.7%	4.16	0.87

Table 3. Barriers to start a business

	1	2	3	4	5	Mean	St. Dev.
It requires a large amount of capital	7.5%	6.7%	17.5%	29.2%	39.2%	3.86	1.23
I have work too many hours	3.2%	1.6%	11.3%	32.3%	51.6%	4.27	0.96
I am risk averse	17.6%	16.8%	28.0%	18.4%	19.2%	3.05	1.36
There is chance of failure and losing money	2.5%	3.3%	14.1%	24.8%	55.4%	4.27	.99
I do not have the required knowledge	15.6%	13.9%	33.6%	22.1%	14.8%	3.07	1.26
I fear of the competitiveness	28.4%	11.0%	20.5%	25.2%	15.0%	2.87	1.45
There is bureaucracy in starting and operating a business	1.7%	6.7%	15.8%	28.3%	47.5%	4.13	1.02
The economic environment is unstable and it does not favour entrepreneurship	3.3%	5.8%	32.5%	25.0%	33.3%	3.79	1.08
My personal life will be limited	10.9%	10.9%	31.9%	25.2%	21.0%	3.34	1.24
I do not have innovative ideas about what business to create	23.8%	25.4%	21.3%	15.6%	13.9%	2.70	1.36
There is lack of appropriate consultants and services to trust	12.4%	15.7%	29.8%	28.9%	13.2%	3.15	1.21
I will not have a fixed monthly income	7.0%	8.8%	21.1%	27.2%	36.0%	3.76	1.23

Table 4. Entrepreneurial self-efficacy

	1	2	3	4	5	Mean	St. Dev.
I feel capable of starting my own firm	5.0%	12.5%	18.3%	32.5%	31.7%	3.73	1.18
I am confident that the launching of my own firm will be a success	0.9%	10.2%	38.0%	33.3%	17.6%	3.56	0.93
I have the entrepreneurial skills to start my own firm	1.7%	14.2%	31.7%	33.3%	19.2%	3.54	1.01
I can see the gaps in the market for new products and services	2.5%	9.1%	27.3%	39.7%	21.5%	3.69	0.99
I can react quickly to unexpected changes or failures	1.7%	12.2%	29.6%	33.0%	23.5%	3.64	1.03
I can offer products - services that fulfil customer needs	0.8%	8.4%	22.7%	39.5%	28.6%	3.87	0.96
I can find the necessary funds to start my business	9.3%	11.9%	33.9%	31.4%	13.6%	3.28	1.13

Table 5. Entrepreneurial inclination

	1	2	3	4	5	Mean	St. Dev.
I am interested to start a firm in a field related to my degree	7.0%	7.0%	16.4%	28.1%	41.4%	3.90	1.22
I am interested to start a firm in a field not related to my degree	24.0%	16.0%	24.8%	19.2%	16.0%	2.87	1.40
I intend to start a firm within five years of graduation	14.3%	15.2%	21.4%	27.7%	21.4%	3.27	1.34
Starting my own business is the most preferred choice of professional occupation	8.3%	11.7%	34.2%	26.7%	19.2%	3.37	1.17

Table 6. TEI's contribution to preparing students to create their own business

	1	2	3	4	5	Mean	St. Dev.
Encourages me to create my own business	13.0%	14.6%	26.0%	27.6%	18.7%	3.24	1.28
Provide students with innovative ideas to start a new business	6.5%	11.3%	28.2%	25.0%	29.0%	3.59	1.20
Offers courses on entrepreneurship	5.5%	9.4%	18.0%	38.3%	28.9%	3.76	1.13
Organizes conferences or workshops on entrepreneurship	1.6%	10.4%	12.8%	26.4%	48.8%	4.10	1.08
Offers the internship	5.1%	5.9%	17.8%	22.9%	48.3%	4.03	1.17
Generally provides me with what I need to start a business	11.6%	11.6%	28.1%	28.9%	19.8%	3.34	1.25



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The Knowledge stock of Greek R&D active manufacturing firms: Based on published financial accounts for the period 2001-2010²

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Abstract

In this paper we are concerned with methodologically approximating Greek R&D active firms' knowledge base. It is the first systematic effort to record and measure with high accuracy the knowledge stock of firms that report R&D expenditures at an annual basis, for a ten year period. In this line, a careful assessment of the available information has been required since there is a structural change in the financial standards literature. Based on the Schumpeterian premises of the importance of firm size and technological opportunities, some basic key findings on the anatomy of the distribution of Greek R&D firms' knowledge base with respect to firm size and technological opportunities are presented.

1. Introduction

² This research is implemented through the Operational Program "Education and Lifelong Learning" and is co – financed by the European Union (European Social Fund) and Greek national funds.

Despite the fact that the degree of knowledge production is commonly approximated with the intensity of R&D activities, defined as the ratio of R&D expenditures to firm's annual sales, the most informative way of measuring such a production is to employ the firm's knowledge capital which encompasses a dynamic scope of knowledge production contrary to the static one provided by R&D intensity (Dierickx and Cool, 1989; Goto and Suzuki, 1989, Kumbhakar et al 2012). However, the availability of data for R&D expenditures on a yearly basis and for a significant time period is often an insurmountable barrier. This paper presents the methodological approximation of the knowledge base of Greek manufacturing firms that have been engaged in R&D activities during 2001-2010. More specifically, and based on firms' annual published financial accounts, it was possible to construct their knowledge stock for the period 2001-2010.

The next section is devoted in presenting the handling of information from the financial accounts, along with the adopted methodology for the construction of the GRD firms' knowledge stock. In section 3, the particularities and specificities of handling information of Greek published financial accounts is presented, while section 4 presents some basic findings regarding the knowledge intensity of Greek R&D active firms as they have been dictated by Schumpeterian patterns of innovation. Section 5 concludes the paper.

2. The construction of Greek R&D Manufacturing firms' knowledge capital

In order to get a grasp of a firm's knowledge base one has to approximate it, since it is not possible to have an accurate measure containing all the elements which comprise the firm's knowledge base. What one can do, however, is to exploit the firm's investments in the creation and/or acquisition of knowledge assets and construct its knowledge stock for a certain period of time. Towards this direction, and following the relevant literature, the most prominent way for the calculation of a firm's knowledge stock (Hall et al. 2010) is the perpetual method³:

$$K_{it} = (1 - \delta) K_{i,t-1} + R_{it} \quad (1)$$

³ In order to assist the reader in understanding both the methodological approach, but also the handling of information derived from annual financial published accounts, Table 1 in the Appendix section lists all the variables employed in this endeavor along with a short definition.

where K_i is the knowledge stock of firm i at time t , R denotes annual investments in the creation and/or acquisition of knowledge assets⁴ at time t and δ is a suitably chosen (private) depreciation rate. Some issues need to be discussed at this point regarding the nature, or in other words, the decomposition of Greek firms' R&D expenditures as well as their initial level of knowledge capital stock.

First of all, and regarding the initial level of the Greek firms knowledge capital stock, the time period under examination is the decade 2001-2010. Within the sample of firms, quite many of them report R&D expenditures for the year $t_0 = 2001$. However, it is reasonable to assume that their R&D activities had been taking place before t_0 . In order to cope with this issue we follow Hall et al. (2010) and calculate the knowledge capital stock at t_0 as follows:

$$K_{it_0} = \frac{R_{it_0}}{\delta_{is} + g_{ij}} \quad (2)$$

where δ_{is} is the depreciation rate of the i th firm which depends on the four sectors s established by OECD⁵ and g_{ij} is the knowledge investments growth rate at the industry level j ⁶.

Turning now to the components of Greek firm's R&D expenditures, we need to discuss and elaborate a bit more on the process of their calculation. It is commonly known that published data for R&D expenditures of Greek firms do not exist in a systematic and organized manner. Therefore, and in order to gather such information, we have employed the annual published financial records of Greek firms for the period 2001-2010 identifying those who have reported expenditures of that sort. In the following paragraphs we will refer more elaborately to issues encountered during the management and construction of the annual R&D investments and thus, the Greek firms' knowledge stock during the period 2001-2010.

⁴ We follow the definition of R&D investments given by International Accounting Standards (IAS 38), where particular emphasis is given to the term 'intangible assets'. Therefore, we are interested in measuring the investments in knowledge creation and/or acquisition, as they are perceived and reported by Greek firms in their annual financial statements.

⁵ Hatzichronoglou (1997) defined four sectors based on their technological dynamism namely, (i) High-tech, (ii) Medium High-tech, (iii) Medium Low-Tech and (iv) Low-tech Sector. It should be noted that the depreciation rate varies from 12% to 8% and the more technologically advanced a sector is the more annual depreciation in its knowledge stock will suffer.

⁶ It is calculated as the cumulative average growth for the period 1990-2000 and data are taken from the OECD ANBERD database.

Essentially, annual R&D investments (R_{it}) are calculated employing two main components from the firms' published financial accounts, each one of them having different properties not only from an accountant's point of view but also from an economist's point of view. More specifically, the first source of identified R&D investments lies in the firm's published intangible assets. Within this category we have isolated those knowledge investments that the firm has capitalized, entailing not only expenditures on R&D but also on licenses, patents and other corresponding permissions. Finally, the third source of R&D investments comes from the Income Statement where the firm reports annual expenses on R&D that have not yet been capitalized. In the following sections, a condensed but informative description will be presented in order for the reader to understand the procedures that have taken place for the construction of the knowledge stock database of Greek firms.

3. Handling of the Greek firms' published annual accounts

As it has been previously stated, the period of interest for the construction of the Greek firms' knowledge base is between 2001 and 2010. During that time, however, a major change has occurred involving the Standards that Greek firms were obliged to follow for the publication of their annual accounts. In particular, in 2004, a bill was passed obliging those firms which either directly participate in the stock market or are part of a Group to publish their financial accounts following the International Accounting Standards (IAS). The rest of the firms had the option to continue publishing their annual financial accounts following the National Accounting Standards (NAS).

The main differences regarding R&D expenditures measurement and publishing are the following: (i) Firstly, the IAS dictate that Research should be separated from Development, which in NAS this is not necessarily the case; (ii) secondly, the method for the valuation of (intangible) assets differs between the two standards in that the IAS dictate that the valuation of assets is done at their 'current price' taken the last day of the financial year, whereas the NAS dictate that the valuation of assets is done by selecting the lowest value between current and purchase price. One can see that the IAS tend to be less strict than NAS, and this had an impact on our R&D expenditures measurement; (iii) thirdly, the IAS are by philosophy less detailed than NAS and therefore, crucial information needed in order to calculate

annual R&D investments and thus, Greek firms' knowledge stock had to be estimated⁷.

Shifting the attention towards the approach adopted in order, firstly, to calculate the annual R&D investments and based on that apply (1) and construct the knowledge stock of Greek firms in our sample. As previously stated, R&D investments at the firm level were not readily available by some institution at National and/or European level. Therefore, after the identification of the firms that report investments in the creation and/or acquisition of new knowledge in their annual financial accounts for the time period under examination, we had to further process the values reported, since depending on whether they were reported as assets or expenses they had to be treated differently. More specifically, for the expenditures reported as assets we were provided with the book values for the cumulative (i) R&D investments (CR_t), (ii) depreciation (CRd_t) and (iii) net value ($CRNV_t$), and also cumulative (i) investments in various forms of industrial property rights such as licenses and patents ($CIPR_t$), along with their corresponding depreciation ($CIPRd_t$) and net value ($CIPRNV_t$) for the year t or else

$$CRNV_t = CR_t - CRd_t \quad (3)$$

$$CIPRNV_t = CIPR_t - CIPRd_t \quad (4)$$

It becomes obvious from (3) and (4) that in their current form these values are not suitable for the calculation of annual firm R&D investments. Hence, these two categories that belong to firm intangible assets had to be treated the same way. In order to calculate the annual investments in knowledge creation and/or acquisition for the year t from the category of assets we applied the following

$$RD_t = CR_t - CR_{t-1} \quad (5)$$

and

$$IPR_t = CIPR_t - CIPR_{t-1} \quad (6)$$

The third category is reported in the Profit and Loss account and entails annual R&D expenses (ARD) reported by the firm that are not yet capitalized. Hence, there is no particular handling of these expenditures, just adding them to the other two components of the annual R&D investments (R_{it}). In sum, R_{it} is calculated as follows

⁷ These differences were made clear after several discussions with Professional and Academic Accountants.

$$R_{it} = RD_{it} + IPR_{it} + ARD_{it}, \quad R_{it} \geq 0 \quad (7).$$

The above formula is applied in the entire sample of Greek firms. In the following paragraphs some issues will be further discussed involving frequently encountered problems during the calculation of R_{it} .

3.1 Management of financial statements that continuously followed NAS

Essentially, the entire sample can be divided into two main categories, namely (i) those firms that publish their annual financial accounts continuously following the National Accounting Standards (NAS) and (ii) those firms that at one point within the time period studied made the transition to IAS. Regarding the first category, the main and most frequent problem is when for some reason the firm decides to depreciate the cumulative expenditures on either of the two categories of the intangible assets described above.

In more detail, from (7) one can see that the annual investments in knowledge assets cannot be less than zero. Therefore, the outcome of the difference in (5) and (6) should be non negative. Such a constraint is posed because in the process of constructing the firm's knowledge stock, the flows which fuel the augmentation of the firm's knowledge base cannot possibly be negative. From a theoretical perspective, knowledge base formation is fueled by knowledge flows which in turn, may entail augmenting, complementing, substituting, decaying or even destructing elements of knowledge. In any of the above cases it could never be argued that a knowledge flow could be subtracted from the firm's existing knowledge capital. At this point, it should be noted, that the treatment within the two components of intangible assets i.e. RD_t and IPR_t is somewhat different, for reasons concerning the realistic assumptions described above. More specifically, regarding firms' R&D investments, the knowledge flows can in no case be negative, in the case of investments in Industrial property rights a negative knowledge flow could imply not a decrease in knowledge but a decrease in the economic exploitation of it. However, this assumption can only hold if the outcome of (7) remains non negative. If not, then the handling of such cases is described below.

When the cumulative expenditures were depreciated, for instance at time $t+1$ they are replaced with the cumulative expenditures of the previous year t so as to minimize the knowledge flow and equate it with zero or in other words $CR_{t+1}^* = CR_t$

and thus, $RD_{t+1}^* = 0$, i.e. the knowledge flow for the year $t+1=0$. However, if the cumulative investments of the firm increase at a later year, for instance at $t+2$, then the annual knowledge flows are calculated based on the original values, that is $CR_{t+2} - CR_{t+1} = RD_{t+2}^*$, and then, the difference is added in the replaced value of the year which had suffered the depreciation or in other words, $(CR_{t+1}^* + RD_{t+2}^*) - CR_{t+1}^* = RD_{t+2}^*$.

3.2 Management of financial statements that switched at some point to IAS

As it was previously stated, a significant number of firms in our sample have made the transition at some point within the time framework under investigation from NAS to IAS. This transition has impacted our measurement for several reasons that have been mentioned above. In order to handle the measurement problems created by the transition, some rules had to be followed so as to have a unifying, to the extent possible, adjustment procedure given the occurring structural break.

First of all, it should be mentioned that the NAS had distinct codes in which expenditures were reported not only for R&D but also for IPR, whereas in IAS the category of “Intangible assets” is more aggregated and many other expenditures are also reported. In addition, the bill passed in 2004 dictated that when the firms made the transition, they were advised to publish their financial statements following both standards in order for their investors to get acquainted with the differences. Furthermore, the period 2004-2006 had been characterized as a transitional period in which the IAS and NAS had quite many similarities. For investments in knowledge assets during this period extra information was provided and, more specifically, we were provided with cumulative (i) expenditures in intangible assets, (ii) depreciation and (iii) net value. It should be mentioned at this point, that normally when publishing financial statements following the IAS and with respect to assets, firms only report the net value of its assets.

Based on the above facts a two step-procedure was set up in order, firstly, to estimate the cumulative expenditures on knowledge assets for the period 2007-2010, and, secondly, to adjust these expenditures to the equivalents when they were published following the NAS. More specifically, the cumulative Net Value is calculated as $CNV_t = CE_t - Cd_t$, where CE_t is the cumulative expenditure in intangible assets at year t and Cd_t is the cumulative depreciation. In order to estimate the cumulative expenditures for the period 2007-2010 we first calculated the average

growth rate of the cumulative depreciation for the period 2004-2006. Then we applied the following formula:

$$Cd_t = Cd_{t-1} (1 + \phi_{t_0, t-1}) \quad (8)$$

where ϕ is the average growth rate of the cumulative depreciation of Intangible Assets investments for the period 2004 (t_0) until the last available year $t-1$. Having estimated the cumulative depreciations for all years we calculate the cumulative annual expenditures in intangible assets as $CE_t = CNV_t + Cd_t$. What remained was to adjust the cumulative investments in intangible assets to the corresponding values of the categories following NAS. For that purpose, we used the base year 2004 where firms published their annual financial statements following both standards. More specifically we estimated the following:

$$CE_{t_{NAS}} = \left(\frac{CR_{2004} + CIPR_{2004}}{CE_{2004}} \right) CE_t \quad (9)$$

where $CE_{t_{NAS}}$ are the adjusted cumulative expenditures in intangible assets expressed in NAS values and at year t , CE_t are the cumulative expenditures expressed in IAS values, CE_{2004} are the are the cumulative expenditures expressed in IAS values for the year 2004 and $CR_{2004} + CIPR_{2004}$ is the sum of cumulative expenditures on R&D and IPR for the year 2004 expressed in NAS values. Last but not least, we should mention the case where a firm published R&D expenditures in its Income Statement and after the transition to IAS. Again we use the reference year and we estimate the following:

$$IARD_{t_{NAS}} = \left(\frac{ARD_{2004}}{IARD_{2004}} \right) IARD_t \quad (10)$$

where $IARD_t$, are the reported expenses expressed in IAS values at year t , $IARD_{2004}$ are the reported expenses expressed in IAS values at year 2004, $IARD_{t_{NAS}}$ are the estimated expenses in R&D expressed in NAS values at year t , and ARD_{2004} are the annual expenses reported and expressed in NAS values.

After having completed all the adjustment procedures we apply (7) somewhat differentiated and specifically:

$$R_{it} = E_{it} + IARD_{it}, \quad R_{it} \geq 0 \quad (11)$$

where E_{it} is the equivalent knowledge flow from the category of intangible assets expressed in NAS values and $IARD_{it}$ are the annual expenses expressed also in NAS values.

4. Greek R&D manufacturing firms' knowledge intensity

In this section the interest is shifted in presenting detailed characteristics of the constructed knowledge stock as they have emerged from the survey of the Greek R&D manufacturing firms. More specifically, the mapping of the knowledge intensity is attempted, which is defined *as the degree of involvement of knowledge in business activities either through its integration directly into GRD firms' outputs or indirectly through their inputs*. In order to explore the extent of the of knowledge intensity two indices are employed: the ratio of knowledge capital per employee ($KNEMPL$) and the ratio of knowledge capital to GRD firms' total assets ($KNASS$). Specifically the indices are defined as:

$$KNEMPL = \frac{\text{Knowledge Capital}}{\text{Total Number of Employees}} \quad (12)$$

and

$$KNASS = \frac{\text{Knowledge Capital}}{\text{Total Assets}} \quad (13)$$

In figures 1 and 2 the basic descriptive statistics of the two indices are presented respectively, both for the total sample of GRD firms as well as for the three⁸ technological sectors (High-tech, Medium-tech and Low-tech). Even though the relevant differences *among* the three technological sectors are expected and follow the findings of the relevant literature, *within* each technological sector one can observe great discrepancies. On the other hand, it should be noted that these asymmetries follow the distributional specificities of R&D expenditures identified by Cohen and Klepper (1992; 1996). Given that the distribution of R&D expenditures is the one that essentially underlies the distribution of Knowledge Capital, the abovementioned knowledge capital asymmetries could be reasonably interpreted based on the findings of Cohen and Klepper (1996).

⁸ For analytical purposes the medium-high tech sector and the medium-low tech sector have been merged into one medium tech sector.

However, it is worth mentioning that the higher values, in average terms, of both KNEMPL and KNASS indices that correspond in the High-tech sector. More specifically, the average value of the KNEMPL index in the High-tech industries is approximately eight times higher than the corresponding value in the low-tech industries and approximately three times higher than the Medium-tech sector. The discrepancies in the KNASS index are lower. In particular, the average value of the index in the case of GRD high-tech firms is about two times higher than the corresponding value of the GRD medium-tech firms and three times higher than the corresponding value of low-tech firms. The differential sectoral values of KNEMPL and KNASS indices could easily be interpreted from the corresponding differential values in terms of employment-capital intensity indices of the three technological sectors examined.

Table 2 presents the basic descriptive statistics of the joint distribution of KNEMPL and KNASS indices, in relation to GRD firms' size. A complete picture of the distribution of both these indices as they were approximated by kernel densities estimates is presented in figures 3 and 4 respectively. KNEMPL and KNASS indices are differentiated in terms of size and technological sector, which provides a strong hint for the existence of a severe underlying heterogeneity with respect to Greek manufacturing firms' R&D activities. It could be argued that the existence of heterogeneity is to be expected, since the field research covers the entire Greek manufacturing. However, it should be taken into consideration in subsequent analyses employing the particular dataset. According to the Schumpeterian hypotheses, large firms should exhibit greater average values compared to smaller firms. In this particular case though, this hypothesis does not seem to be confirmed. On the contrary, on average terms, small firms present greater value of the KNEMPL index, however, with great variation existing among them.

Focusing on the KNASS index, it is worth mentioning that medium sized firms exhibit slightly greater average values, again with great variation existing among them, while the existing differences between size classes are evidently smaller than the corresponding KNEMPL index. It should be noted that, in every case, significant heterogeneity exists with respect to KNEMPL and KNASS indices within each size class, which raises questions as to the core of Schumpeterian hypothesis, as well as with respect to the rather arbitrary boundaries that differentiate small, medium

and large GRD firms. Regarding the higher average values of the KNEMPL index that refer to large firms, it should be mentioned that according to Cohen and Klepper (1996), and while the absolute values of their R&D expenditures which are the principal input of the constructed Knowledge Capital are clearly greater than the corresponding of medium and small firms, the scale or in other words the size of large firms eventually leads to smaller analogies of any knowledge measure relative to firm size. In other words, it is about an R&D idiosyncrasy that Cohen and Klepper (1996) have identified.

5. Conclusions

In this paper the methodological approach that required particular handling of the information provided in order to construct the Greek R&D active firms' knowledge stock has been presented. More specifically, in order to develop a knowledge stock time series for the Greek R&D active firms, additional knowledge inputs haven been taken under consideration besides annual R&D investments. Therefore, the developed knowledge stock covers a wider portion of firms' knowledge base than depicting solely their R&D stock.

The firms' knowledge intensity profile has been sketched with respect to traditional characteristics of firm size and technological opportunities. An interesting finding of this first basic anatomy of Greek R&D active firms, which concerns the R&D investments distribution that have been recorded in the relevant literature for greater and more developed national contexts also apply in the case of Greek R&D firms. These idiosyncrasies are depicted in the knowledge intensity indices of these firms.

At this point it is worth mentioning that, at least for the National context, no previous attempt for the recording and measuring the Greek firms' knowledge base has been made. In any case however, the construction of a database for the Greek R&D active knowledge stock firms may be of particular use not only for academic and research purposed but mostly for policy design and implementation purposes.

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Appendix

Table 1. Variables definition employed in the construction of the Greek R&D firms’ knowledge stock

Symbol	Description
K_{it}	The knowledge stock of firm i at time t
δ	A suitably chosen (private) depreciation rate ranging from 12% to 8%
R_{it}	Annual investments in the creation and/or acquisition of knowledge assets
g_{ij}	knowledge (R&D) investments growth rate at the industry level
NAS	National Accounting Standards
IAS	International Accounting Standards
CR_t	Book values of Cumulative expenditures on R&D following NAS at year t

CRd_t	Book values of Cumulative depreciation of R&D investments following NAS at year t
$CRNV_t$	Book values of Cumulative Net Value of R&D investments following NAS at year t
$CIPR_t$	Book values of Cumulative expenditures on Industrial Property Rights following NAS at year t
$CIPRd_t$	Book values of Cumulative depreciation of Industrial Property Right investments following NAS at year t
$CIPRNV_t$	Book values of Cumulative Net Value of Industrial Property Right investments following NAS at year t
RD_t	Annual flow of R&D investments following NAS
IPR_t	Annual flow of Industrial Property Right investments following NAS
ARD	Annual <i>expenses</i> of R&D following NAS
CE_t	Book values of Cumulative expenditures on Intangible Assets following IAS at year t
Cd_t	Book values of Cumulative depreciation of Intangible Assets investments following IAS at year t
CNV_t	Book values of Cumulative Net Value of Intangible Assets investments following IAS at year t
φ	average growth rate of cumulative depreciation of Intangible Assets investments for the period 2004 (t_0) until the last available year $t-1$
$IARD_t$	Annual expenses reported following IAS and adjusted to NAS values.
E_{it}	Equivalent knowledge flow from the category of intangible assets expressed in NAS values

Table 2. Basic Descriptive statistics of the KNEMPL and KNASS variables

KNEMPL			
	Average	Min	Max
Small	34.697	34	986.105
Medium	16.473	15	192.999
Large	21.980	152	358.442
KNASS			
Small	7,84%	0,02%	77,50%
Medium	9,18%	0,01%	83,98%
Large	8,07%	0,10%	76,98%

Figure 1. Knowledge Capital per employee: Distribution based on technological opportunities

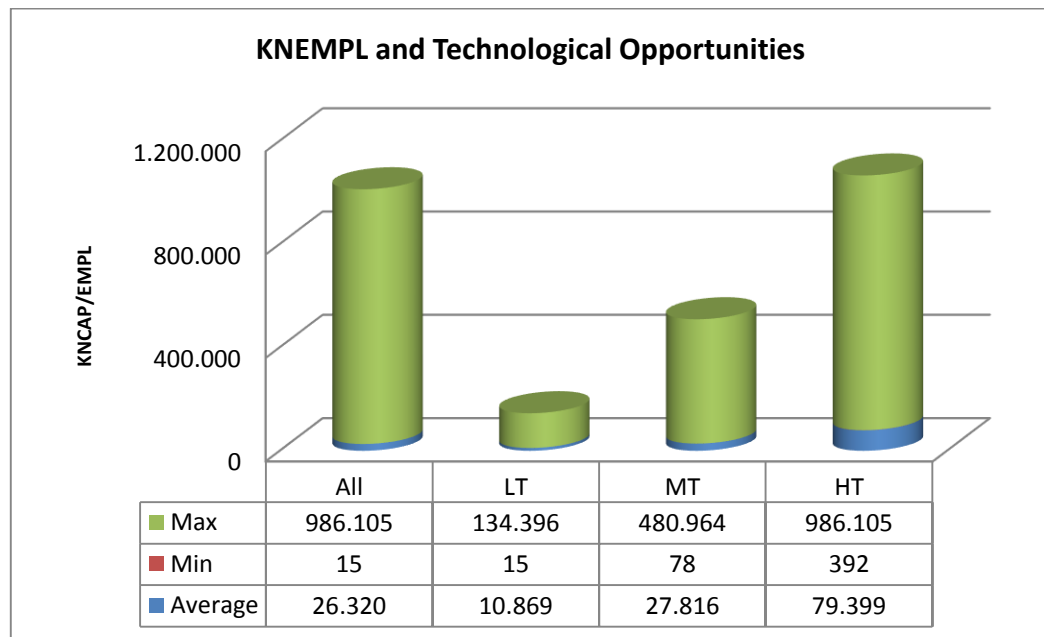


Figure 2. Knowledge Capital as a percentage of Greek R&D active firms' Total Assets

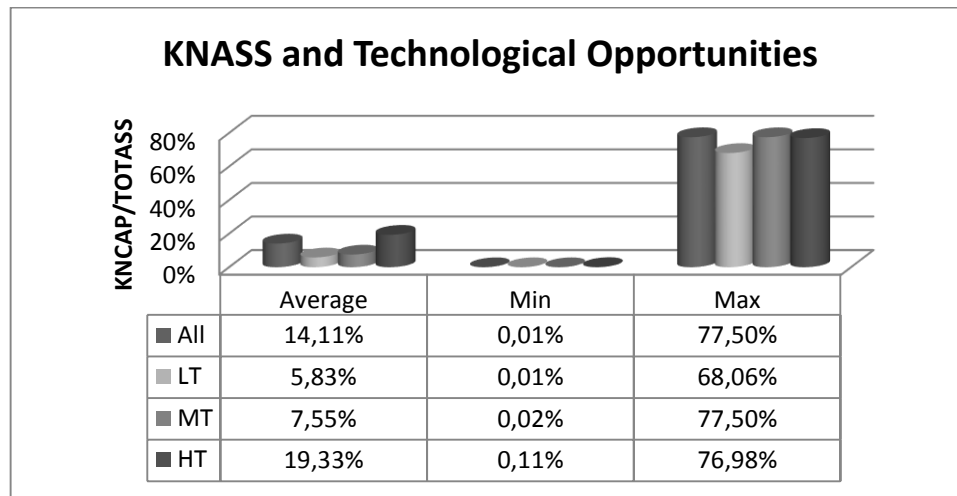


Figure 3. Kernel density estimates of KNEMPL variable

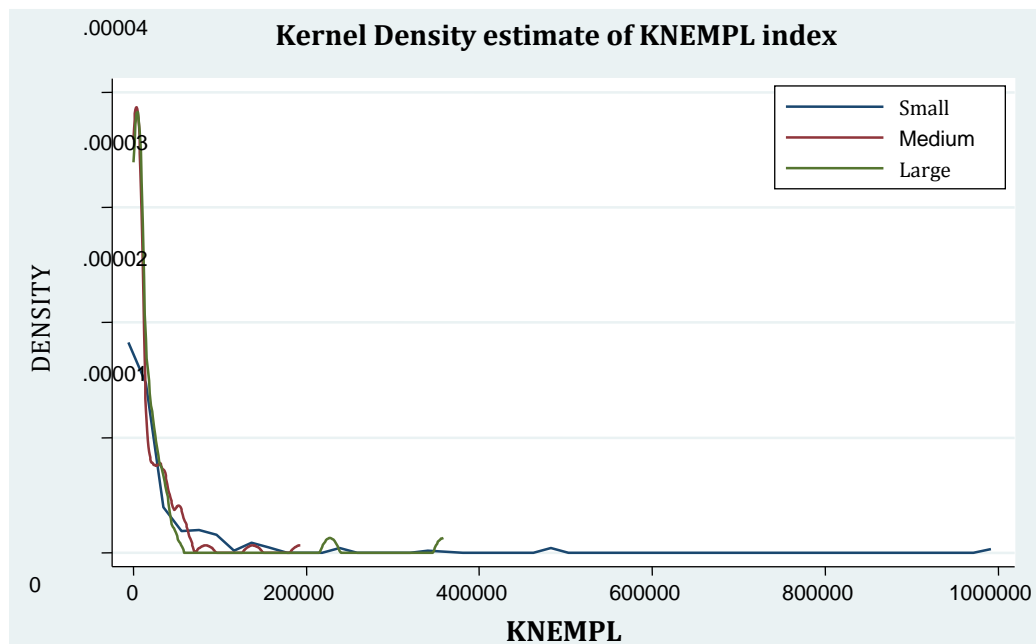
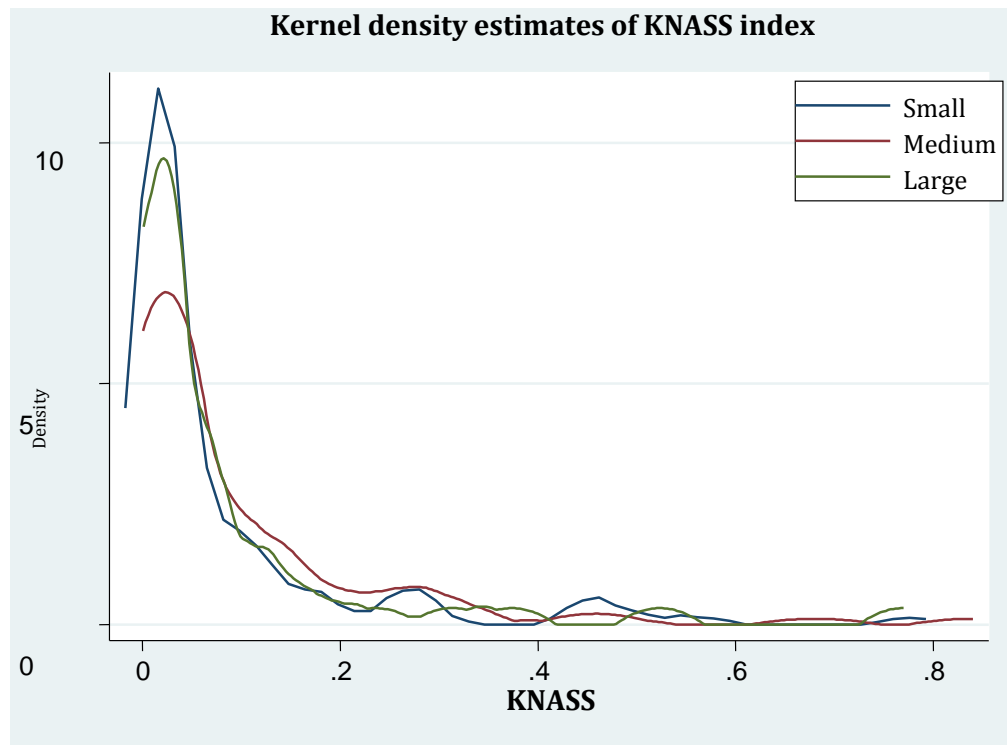


Figure 4. Kernel density estimates of KNASS index



PART B

Innovation

Can lifelong learning promote innovation within the SMEs environment?

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Abstract

The aim of this study was to investigate whether lifelong learning can promote innovation in the SMEs environment, as innovation is considered to be the major driving force for gaining competitive advantage. For this reason, a specific questionnaire was distributed to 87 employees and managers of SMEs in the prefecture of Thessaloniki. The level of their agreement and disagreement concerning the impact of lifelong learning on the creation of innovative ideas was measured. Results revealed that the establishment of a lifelong learning culture with focus on positive attitude towards lifelong learning and involvement in lifelong learning activities can have a strong impact on human resource development and thus, they can lead to a fertile environment where the responsibility for self-managed learning can enhance inspiration, creativity and innovative ideas within the environment of the SMEs.

Keywords: Lifelong learning, Human resource development, Innovation, Lifelong learning culture, SMEs environment.

1. Introduction

Due to economic crisis, more emphasis than that of previous years put on innovation as a means of gaining a competitive advantage. Besides the financial support through a large number of different funding projects of European Commission, it seems that many enterprises, especially the Small and Medium-sized Enterprises (SMEs), in Europe, including Greece, have not succeeded in defending the consequences from the economic crisis. Thus, the financial support is not a panacea. On the contrary, what indeed count are the human resources of each enterprise. Inevitably, the most

important thing is the knowledge of its employees, while the effective management of knowledge is considered to be essential for the pursuit of competitive advantage (Train, Egbu and Hinks, 2006).

In addition, management has to be innovation-oriented and therefore, it should appear some of characteristics such as: to have serious concentration on innovative activities; to be based on an appropriate organizational model with technological, commercial and organizational dimensions; to develop many-faceted communication and cooperation among employees and stakeholders; to enhance the development of an entrepreneurial and innovative culture (Georganta, 2003).

Therefore, in the SMEs environment human resource development and lifelong learning emerge as issues of great value.

2. An Attempt of Identifying Innovation and Lifelong Learning

2.1. The innovation issue

According to Amidon (2002), innovation is not characterized as a function of the technology flow or the flow of materials transformed into products and services, but instead, it is mentioned as the learning process through which knowledge is exchanged and it is becoming effective as old and new ideas are applied.

“Innovation is at the heart of change” (OECD, 2005) and it is the main driver for economic development (Schumpeter, 1934). The “creative destruction”, the label given to innovation by Schumpeter, verifies that innovation is a dynamic process closely connected to the technological changes. In addition, it can be referred to the introduction of new products (product innovation), new methods of production, (process innovation), opening of new markets or development of new sources of supply and even creation of new markets structures in an industry (market innovation), and implementation of new organizational methods in the business, workplace organization or external relations (organizational innovation).

According to the industrial organization theory (Tirole, 1995), innovation deals with the competitive positioning of each enterprise and thus, the enterprise innovates either to defend its existing position or to seek new competitive advantage.

Another important issue that innovation is linked to is knowledge. The nature of knowledge, how it is accumulated and disseminated and how it flows among those

who are prone to creativity and innovation is of great value. The importance of the value of knowledge and its management points to the way of how and for how long people learn and thus, the issue of lifelong learning emerges.

2.1. The lifelong learning issue

Lifelong learning covers all learning activities throughout life and its results are improvement of knowledge, know-how, skills, competences and qualifications for personal, social and professional reasons (Cedefop, 2008).

A comprehensive view of lifelong learning covers all learning activities the purpose of which is the improvement of knowledge and skills. Through this view lifelong learning includes four main features (OECD, 2004). The first one refers to all types of learning both formal and informal and the connection of demands and supplies of learning opportunities (system view). The second is the emphasis put on the learner, whose demands and needs are firstly taken under consideration (learner's centrality). The third feature is concentrated on the capacity to learn, and the self-directed learning (motivation to learn). The last one is the objectives of education and its changeable priorities (multiple objectives of education policy).

Later, lifelong learning was connected to the national qualifications systems and how these can promote lifelong learning in terms of quantity, quality, efficiency and equal learning opportunities (OECD, 2007).

Learning opportunities lead to learning experiences. If these learning experiences are organized and provided for employees within a specific period of time to bring about the possibility of performance improvement or personal growth, the issue of human resource development emerge (Nadler and Nadler, 1989). Also, human resource development is related to the fostering of a long term and work-related learning capacity at all levels, individual, group and organizational (Watkins, 1989).

3. Research Problem, Aim and Research Questions

3.1. Research Problem and Research Aim of the Study

As every research study begins with the recognition of a real problem and develops through the attempt of providing possible solutions to real problems, the present

research study refers to the lack in innovative ideas mainly among the employees of SMEs, even though innovation is considered, firstly, as the main solution to gaining competitive advantage and sustainable development and secondly, as the main defensive mechanism towards the economic crisis and the threat of the non-survival among a large number of SMEs. In addition, the low participation of the employees of SMEs in vocational training and other learning activities gave a boost for the present research. Due to the non-existence of any research with focus on the connection of lifelong learning and human resource development and mainly on innovation, the present research aimed to investigate whether lifelong learning can promote innovation in the SMEs environment.

3.2. Main Questions Leading the Research Study

The main research questions that conduct the research study were the following:

- Can lifelong learning influence the creation of innovative ideas in the SMEs environment?
- Can involvement in lifelong learning activities have an impact on human resource development? And thus,
Does it conclude to the enhancement of inspiration and creativity?
- Are learning and innovation connected?

4. Description and Methodology of the Study

4.1. Description of the Research

The present research study was based on the attitudes of employees and managers of SMEs towards: the meaning and the aims of lifelong learning; the connection of lifelong learning to innovative ideas; the connection of lifelong learning to creativity; the connection of lifelong learning to the enhancement of motivation for learning; the responsibility for professional development and vocational training and the provision of learning activities and their financial support.

4.2. Research Methodology

This research was a pilot study. A quantitative approach was chosen and thus, a specific questionnaire was designed based on the literature review and the researcher's interest. A five-point scale of Likert type was used, where 1 represents strong disagreement and 5 strong agreement. The reliability and the validity of the questionnaire were verified (Giossi, 2012a; Giossi, 2012b; Giossi, 2013).

5. Research Results

5.1. Description of the Research Sample

The research sample was a total of 87 employees, managers and employers of different SMEs in Northern Greece. 39 (44.8%) were working at branches of their companies, while (55.2%) were working in their main establishment. Other main characteristics of the sample concerning age distribution, educational level and kind of activity are depicted at the following Table 1, Table 2 and Table 3 respectively.

Table 1. Sample description: Age distribution

Age group	Number of participants	Percentage (%)
18-29	32	36.8%
30-39	19	21.8%
40-49	18	20.7%
50-59	16	18.4%
60-69	2	2.3%

Table 2. Sample description: Educational level

Educational level	Number of participants	Percentage (%)
Gymnasium diploma	1	1.1%
High school diploma	10	11.5%
IEK or other vocational faculty graduates	17	19.5%
Technological Educational Institutes	32	36.8%
University graduates	27	31.1%

Table 3. Sample description: Kind of activity

Kind of activity	Number of participants	Percentage (%)
Product-selling company	4	4.6%
Productive company	2	2.3%
Sale and production company	14	16.1%
Service provision company	67	77%

5.2. Main research findings

The research participants agreed that lifelong learning is learning related to work-based learning and learning until retirement. Also, they doubt whether it includes all

types of learning and thus, they tend to agree that lifelong learning includes non-formal and informal learning.

The majority of the research participants stated that the companies they belong to, even though they seem to have a positive attitude towards lifelong learning they are not willing to support financially their employees' involvement in lifelong learning activities.

The most important finding was that almost all of the research participants agreed that lifelong learning leads to innovative ideas.

The majority of the research participants agreed that lifelong learning reinforces motivation for learning, but some of them doubt whether it promotes employee's creativity.

It is interesting to notice that almost all of the managers of the research participants stated that they are responsible for their vocational training, while, on the contrary, the majority of the employees stated that they rely on their companies' suggestion for participating in learning activities.

6. Conclusions and discussion

As customers quite often are well-informed and have become more demanding than before, they seem not be fully satisfied after the solution of their problems and their needs' satisfaction through service and product offering. Instead, they require their knowledge to be connected to an organization's ability to innovate (Amidon, 2002). This verifies that not only employers and employees but also customers are innovation-oriented and the effect of innovation is multi-dimensional.

On the contrary, whether employers, managers and employees of SMEs gain a deep understanding of the meaning of lifelong learning and recognize the value of it, they can easily find ways and policies that can promote innovation. Building a lifelong learning culture based on enhancement of motivation for learning, inspiration and creativity, creation of innovative ideas is possible. Taking under consideration the necessity of innovation in the SMEs environment, human resource development should be the main priority of each SME.

In terms of employees, those who are responsible for their professional development and especially for their vocational training and learning are prone to appear inspiration, creativity and innovative ideas as they are open-minded and focused on

better performance rather than simply on product sales and service provision. Therefore, emphasis put on the employees' vocational training and learning can raise the awareness of the interconnection of lifelong learning and innovation. Moreover, involvement in lifelong learning activities can enhance the desire for further learning and investigation of new things, which can be characterized as the basis on which innovative ideas can flourish.

Finally, correct educational policy connected to the development of a lifelong learning culture can promote innovation of any kind in the SMEs environment. Additionally, leadership based on creative problem solving, interpersonal skills and ability to disseminate knowledge, shaping and sharing a vision innovation-oriented where the engagement to self-directed learning is for granted (Giossi, 2011) would be effective.

7. Study Limitations

Among the main research limitations of the present study is the number of research participants, which even though it can be characterized quite satisfactory for a pilot study, a greater sample could have provided better information. Also, a qualitative approach in addition to the quantitative approach could have offered the opportunity for better interpretation and deeper analysis.

8. Suggestions for further research

Comparative research among the SMEs of different sectors of economy, different regional areas and different countries of similar or other status of economy would provide valuable information. Research based on qualitative methods besides the quantitative methods could be useful for a better analysis in depth. Also, further research with focus on the specification of other different aspects of human resource development and different approaches of lifelong learning would be useful for identifying the SMEs environment where innovation can flourish.

9. Utility of the research

This research study is useful as it presents a clear interpretation of the existing lack of innovation in the SMEs environment. In addition, it provides some considerations

about the linkage between learning and lifelong learning and innovation. Furthermore, there are some important suggestions to be taken under consideration. Among these suggestions the building of a lifelong learning culture in the environment of SMEs and the recognition of its impact on the creation of innovative ideas can persuade employers and managers to invest in creating the circumstances for make their employees feel free to innovate. The importance of innovation is evident through its participation in gaining competitive advantage and shaping sustainable development. Finally, this study makes clear that innovation is not a luxury but a necessity in the SMEs environment!

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Sustainable Product Design of Domestic Products

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Abstract

The food and drink sector of Greece has a very important role in the Greek economy, while constitute one from the more dynamic and rapid developing sectors of the Greek manufacturing industry generally. This sector represents a big part of Greek manufacturing industry and includes more than 1.300 enterprises. In particular, according to the national accounts, this sector has high potential for improvement provided that it can be reorganised soon. Greece offers important enterprising opportunities for creation of an added value in a lot of product categories as long as is increased internationally the interest for healthy diet products.

Sustainable product and packaging development is a prerequisite for increasing the profits of Greek economy by satisfying simultaneously the consumers' demands. The present paper introduces the sustainable development of domestic products according to environmental friendly design guidelines and advanced CAD systems.

Keywords: Sustainable Design, Domestic Products, Environmental friendly design,

CAD.

1. Introduction

Greece's food and drink sector is the most important domestic manufacturing sector, in terms of number of enterprises, number employed in the sector, turnover and value added. The sector consists of both small and large enterprises, employing about 130.000 people in 2010. The local food and drink industry is maintaining its strength, despite the crisis that has been testing the rest of the Greek industrial sector, and is, in fact, one of the main contributors to the country's GNP. Food processing in Greece represents one of the most dynamic sectors of the economy and offers a wide range of opportunities. This sector has always been the pile of the Greek economy and it is only in recent years that the sector has been modernized its production techniques to meet the demands of a modern and changing society and the demands of a huge influx of tourists. It is one of the most promising areas for investors to develop innovative products, to package items in world-class packaging, and to enter markets where appreciation of Greek products translates into high demand. (Demiris et al. 2002)

This sector has been influenced by the changing in consumer habits. The necessity for ready-to-eat products is increasing considerably, while Greeks, who traditionally spent many hours shopping and cooking, now have less time for such activities on a daily basis. The other considerable factor is tourism. With more than 12 million visitors each year, Greece must respond to a wide variety of tastes, conditions, and demands. Ferry boats transporting thousands of passengers per day, hotels/cafes/bars that cater thousands of people have become outlets for traditional and non-traditional food and beverage items. At the same time, the global interest for the traditional Greek diet, which is based on local raw materials, is rising. This makes the potential to exploit this sector an opportunity. For years, Greek products like fruits and vegetables, olives and olive oil, dairy products, and other traditional staples have been sent to western markets, mostly in bulk, in order to be repackaged by others. The trend now is increasing for these products to be processed and packaged in Greece, so that consumers world-wide know that they enjoy fine, high-quality products (<http://www.investingreece.gov.gr> ; Alexopoulos et al., 2011)

2. Sustainable design and design for sustainability

In 1987, the Brundtland Report, *Our Common Future*, introduced the concept of Sustainable Development as: the development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs (Azapagic et al., 2000). Sustainable development depends both on reducing environmental destruction and on improving the quality of life of the world's poor, in ways that will not deprive future generations of means to meet their own needs. The journey towards sustainable development requires that businesses, governments and individuals take actions, i.e., changing consumption and production behaviors, setting novel policies and changing practices. Businesses have to find innovative ways to be profitable and at the same time improve the environmental performance of production processes and products (Mcquaid, 2002). There are many tools and approaches to help producers rethink how to design and produce products to improve profits and competitiveness and to reduce environmental impacts at the same time. As a result, Eco-Design evolved to encompass broader issues such as the social component of sustainability and the need to develop new ways to meet consumer needs in a less resource intensive way (Efkolidis and Kyratsis, 2012). Design for Sustainability goes beyond the principles of "how to make a green product" - the concept now embraces how best to meet consumer needs – social, economic and environmental - on a systematic level. These three key elements of sustainability are also referred to as people, planet and profit. Product innovation is directly linked to sustainability. Both are oriented towards change and the future. Sustainability is concerned with the well-being of the future. Product innovation is concerned with creating new products and services that generate value only if they fit in this future. To be sustainable, product innovation must meet a number of challenges linked to people, planet and profit (Crul and Diehl, 2005).

3. Packaging and Branding

Packaging is necessary to protect food products from outside influences and damage, to contain the food, and to provide consumers with ingredient and nutritional information (Coles et al., 2003). Traceability, convenience and tamper indication are secondary functions of increasing importance. The goal of food packaging is to contain food in a cost-effective way that satisfies industry requirements and consumer desires, maintains food safety, and minimizes environmental impact (Marsh and Bugusu, 2007). Packaging, however, has given environmental concerns, and it has

been included on the political environmental agenda for decades, mainly due to the amount of waste coming from used packages. The environmental concerns from governments and customers have mainly focused on the packaging itself, not on the environmental impact from the food-packaging system. For example, life cycle assessments on the packaging will always indicate that a larger packaging is advantageous compared with a small packaging due to less packaging material per food unit (Williams et al., 2006).

The success of a product, service, business, organization, or even a city is based on being perceived as unique. Branding is creating that individual niche in the consumer's psyche and owning it. More than just marketing, branding is the entire effect that creates a memorable identity. Whether the distinction is a result of function, form, ease of use, price or prestige, the consumer believes that is offering something exceptional. Branding is a way of creating difference. It is highlighting what makes the product different to, and more desirable than, anyone else's. Effective branding elevates a product or organisation from being just one product amongst many identical products, to become something with a unique character and promise. It can create an emotional resonance in the minds of consumers who choose products and services using both emotional and pragmatic judgments. Moreover branding is adding value to the products. People are generally willing to pay more for a branded product than they are for something which is largely unbranded. And a brand can be extended through a whole range of offers too. Finally creating a connection with people is important for all organisations and a brand can embody attributes which consumers will feel drawn to (Chaneta, 2000). In other words, a brand is the image as seen from the outside. It's not simply how the logo is displayed, but rather the emotional and intellectual response the logo elicits from the target audience.

4. Case study

As a brand may be considered all these actions, direct or indirect, which aim at the emotional connection between a product and consumer. This is achieved by means of creating the concept brand (Nilsson and Ostrom, 2005). Creating the brand of the wine producer N. Gatzaras from Servia Kozani and developing two pairs of labels for local wines Athena and Erythros (red), the result is to capture and convey messages, feelings and values. These were promoted by the producer himself and its inspiration from the place and the product itself. With the aim of creating high quality wines, N.

Gatzaras has been dealing with viticulture and winemaking process for a number of years. He is producing high quality wine in limited quantities, and innovative farming methods, which are environmentally acceptable. The vineyards are located in the area of Servia Kozani, between the northwestern edges of the Pieria Mountains and the River of Aliakmonas. Close to the vineyard is located an artificial lake created in 1973 and the high bridge of Servia.

The altitude, the slope and its components, as well as the microclimate, are the main factors that determine the quality and the characteristics of each wine. The varieties Chardonnay, Cabernet Sauvignon, Merlot and Xinomavro operated by the producer, embody the quality and values promoted by the local place and its people. All the passion and work of N. Gatzaras has been transferred on the two wine labels: 'Athena' (a white wine Chardonnay, Protected Geographical Indication) and 'Erythros' (a red wine from combined varieties Cabernet Sauvignon, Merlot and Xinomavro, Protected Geographical Indication). A product or a company without a brand name can be seen as a faceless man. The brand is the emotional dynamics of the company or product to the consumer or customer. It definitely offers a sequence of thoughts, feelings, images, desires and experiences. The design goals of a brand creation are: the simplicity of the design, its integration with traditional values, the easy of memorizing, the flexibility of the symbol, the focus of the messages and its overall recognition by the users (Airey, 2010). The brand of N. Gatzara wines consists of a combination of elements that includes the origin of the wines, the particular identity of the regional grapes and the final sensation of flavors to consumers. The key points in the design of the symbol are: the mountainous landscape, the city of Servia, the lake of Polyphytos, the geometric curvature of the bridge and the raw material of the grapes that produce the wine (Figure 1).

Figure 1. Branding of N. Gatzaras



The final symbol is completed by the appropriate font selection, when used for the wine name and the place of origin. All of them are properly integrated. The selected fonts highlight the personality of the wines and are the link between tradition and modernism. The new integrated brand will accompany each new product that the enterprise will produce at national and international level

The packaging is probably the only kind of brand that consumers trust and bring inside their house. It is a hundred percent user experience because the user interacts directly with the product and its design (Ambrosse and Harris, 2009). The original idea for the design of the labels was the visual connection of the two different wines, in order to give a sense of family and the sequence between the products of N. Gatzaras. The wine presents itself using a female name in the first instance ('Athena') and a male name ('Erythros') in the second case. This is the reason that a pair of symbols was created. The key point of these figures is the formation of the Polyphytos Bridge. In the first case, the bridge is depicted as a female hand, while in the other case a masculine arm gives the feeling of protection. The general feeling of the created symbols gives the impression of primitive symbols use, together with the primordial instincts of people. Also, the morphology of images leads to a corkscrew and cork geometry around the bottle. The option of using the original sketches that give a sense of handwriting, reveals the local character of wines, as well as the pure love of the producer for the cultivation and care of the wines (Figure 2).

Figure 2. The pair of symbols used



The use of black as a general background emphasizes the authentic and rigorous personality of the wines, highlights the validity of the quality and inflames the senses as something mysterious and modern at the same time. The accompanying colors betray the identity of the wines and the visual story that the producer chooses to introduce to the consumer: the pair of wines ‘Athena’ and ‘Erythros’. The font selection plays a central role, as it focuses on the authenticity of taste, reflects the philosophy and finally stresses the personality of wines (Figure 3).

Figure 3. The front and back label ‘Athena’ and ‘Erythros’ wine



All the pieces of information required by the legislation were incorporated on both labels (quantity, grade, designation of origin, grape variety and brand). In addition, more information was added in order to help consumers to completely understand the product and enjoy its taste (instructions and accompanying text for the consumer). The ultimate goal of the brand design and the label design for the wines of N. Gatzaras were to reveal the high quality of the local products. The strategic plan was to stress both the national and international character of ‘Athena’ and ‘Erythros’. The wines can stand not only from the flavor point of view but from their appearance point of view as well (Figure 4). The cooperation between the taste provided by the producer, through the aesthetic of images and the symbols given by the designers are the perfect combination for the success of those products (Bramston, 2009).

Figure 4. The labeled bottles of Athena and Erythros



5. Discussion – Conclusions

Greek products and raw materials are gaining new fans not just among consumers in this country, but also in the global food industry. Local conditions, such as weather and soil, contribute to the production of high quality products that are in high demand internationally. Recent reports predicted food manufacturing and agriculture could support 970.000 jobs and generate around 42billion US\$ annually by 2020, accounting for the majority of the country's potential economic renaissance. Even when the country does export successfully, such as in olive oil, it often sells the products in bulk, allowing others to capture much of the value. Meanwhile, domestic demand has collapsed and suppliers and distributors face cash flow problems that leave the whole supply chain unbalanced. So there is a necessity for the Greek enterprises to highlight their products and services in a structured way and enhance their quality at the same time. One of the main tools to achieve a great deal of success is the professional creation of trademarks for the Greek products.

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The Marine Aquaculture Development in Greece as an Innovative Successful Story: Problems & Constrains.

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Abstract

Marine aquaculture in Greece is relative new industry based on the culture of Mediterranean aquatic species such as sea bass (*Dicentrarchus labrax*), sea bream (*Sparus aurata*) mussels (*Mytilus galloprovincialis*). In the early 80's the results of R&D applied to develop pilot semi-academic commercial farms into the Greek waters , that gradually moved to the industrial scale of today, giving annually approximately 80- 120.000 tons of Mediterranean finfish species and up to 25-35.000 tons of mussels. This evolution was successfully carried out with continuous adaptation of innovations on the production and the management process of the sector. The developmental stages of this effort, as well as the problems encountered in implementing the innovations are also discussed.

Keywords: Aquaculture, production, innovation, Greece.

Introduction

The aquaculture sector in Greece in the marine coastal waters has been introduced in early 80's as a high risk activity but also as a well promising "tailor made" sector for to the national coastal resources and the natural marine environment of the country. As Greece still remains a "hostile business environment" especially for new activities, even for the "well" known industries, several and unexpected problems were up-merged to the surface, on the trials to develop innovative projects. This development

is, mainly, due to the production of the Mediterranean mussels (*Mytilus galloprovincialis*) and the eurialine finfish species such as seabass (*Dicentrarchus labrax*), seabream (*Sparus aurata*). In both species the continuous inoculation of innovations on the production process from the early stages ('80s) led to the rapid expansion of the business development. The aim of the present work is to demonstrate the achievements of this effort showing the major milestones of this evolution.

2. Related Literature

Several works demonstrating the growth and the technological trends that lead to the development of the Mediterranean aquaculture from the research laboratories up to the industry level (Stefanis 1995a,b; Theodorou & Charalambakis, 2001; Theodorou, 2002; Theodorou et al., 2011). In the current study, an effort has been made to combine the results of these achievements for both species (mussels and fish) at a national level giving also the problems and the constraints.

3. Methodology and Data Collection

3.1. Methodology

As inefficient collecting systems are not a Greek phenomenon concerning fishery statistics in the European Union (EU) (The Economist 2008), we try to use combined data from several sources such as the national (Greek National Statistic Service; GNSS), international authorities (Commission of European Communities, 2009; FAO), together with data from the Producers Associations (FEAP/FGM) (Theodorou, 1995; FEAP 2013) and personal guided interviews for estimations by experts. Also cited (Theodorou 2002; Theodorou et al., 2011) and grey (Protopappas & Theodorou, 1995) literature has been taken into the account in order to cross check facts and figures related with the industry growth.

4. Research Results

In order to understand the stages of passing from R & D results up to the industrial level scale applications a distinction has been proposed by Stefanis (1995a) and

Theodorou (2002) for sea bass/bream and Mussels (Theodorou et al.2011). These phases are generalized and summarized as follows:

1. **R & D phase.** During this stage (1965- 1979) Mediterranean marine finfish culture was established in Italy and France in the early 1970s, quickly extended to Spain and U.K, and by 1980, was almost Mediterranean wide. Similar (from 1950 to 1977) the suspension mussel farming was established in Italy and France, and quickly expanded to Spain, United Kingdom, and Ireland and in 80's it had expanded over almost the entire Mediterranean (Danioux et al. 2000). Early efforts to cultivate mussels in Greece were carried out by using poles, and were restricted in a few sites, close to the country's biggest cities of Athens (Saronicos) and Salonica (Thermaikos).
2. **Pre-developmentphase.** During this period (1980-1990) in which the first pilot fish farms were established and research priorities focused on production problems (Stefanis 2013). At this stage in the shellfish sector (1985 to 1990) the first pilot longline floating farms were established, creating an opportunity form as expansion of the activity in Greece.
3. **Development phase.** During this period (1991 to 1994) the sea bass and sea bream production problems of fry production has been solved and the mass production could be easily achieved. For the mussel farming at this stage (that expanded from 1991 to 2000), research, public, and industrial priorities focused on production elevation that resulted in a rapid increase that soon reached current levels.
4. **Maturation phase** (1995 to present). In which profit margins of the Mediterranean farmed fish have been strongly compressed, and ex-farm prices have decreased. (Stephanis, 2000). New aquaculture strategies have been applied. These strategies include concentrating production around large companies, or groups of companies (with associated economies of scale lowering production costs) (Stephanis, 1995b; 2013), diversification into other farmed species (Pedini, 2000) and improving product quality (Harache & Paquette, 1996). Similar in the mussel sector (from 2001to present) new innovations have been introduced to make offshore systems reliable, while lowering production costs and achieve economies of scale (Theodorou et al. 2010a,b). The production also controlled by few large companies

and farmers cooperatives and producer organizations.

The rapid expansion of the marine farming in Greece due to the main technical innovations on the developmental phase (90's) is demonstrated in Figure 1. In 2008 the Greek production of sea bass/bream raised up to 140,000 tons which in the next four years balanced between 100,000-120,000 tons. In 2012 marine fish farming was the leader exporter sector of Greece with 500 mil. Euro export value representing the 85% of the production (FEAP 2013).

The rapid growth of sea bass/bream farming mainly occurred due to the overcome of the fish fry production in the hatcheries and introduction of new on-growing technologies (cages and feeding systems, extruded fish feeds), while in mussel farming using bigger vessels, 15–20m long, equipped with star wheels, loaders, mechanical French-type graders and packing machines.

This achievement has an effluence on the national trade balance of the country as the exports exceed the imports in terms of volume (figure 2).

Problems & constrains

As any new innovative activity there is a problem of legalization of the actions that has to be taken. Legal framework is usually old and has to be modernized and taken into the account the new opportunities for development. The basis of the licensing system for the cultivation of both species is described by Papoutsoglou (2000); (Theodorou, 2001) and with few modifications and upgrades is also in act up to today. As a company needs at least 2-3 years to get a license for the mainstream farmed species (mussels, sea bass/bream) it takes much more longer time if you need to try other “new” but well promising species such as i.e. clams, tuna. Furthermore, since in Greece it takes so much time to be approved the start up and expansion licenses, countries with other competitive advantages such as Turkey, doubled their production within a decade (Table 1) and compete the Greek products on the same market (FEAP 2013).

The major problem in Greece is the lack of spatial coastal planning and this generated confusion over the usage of the space from competitive activities such as the tourism and the urbanization of the coastal zones (Kochras et al. 2000, Zanou & Anagnostou; 2001; Zanou et al., 2005; Theodorou et al.2011; Konstantinou et al., 2012).

Discussion-Conclusions

The high risk of the primary stages of development has been balanced with the strong EU funding both in research and development of European interest's species as well on industrial farms that promote the mass production of marine aquaculture (Theodorou & Tzovenis, 2004) .

Today Greece is a world production leader of Mediterranean marine finfish species producing approximately the 30% of the world production of sea bass and the 50% of sea bream respectively (FEAP, 2013). The leading position of the country worldwide is a result of the human resource skills parallel development and the present state of the art local technology development. Marine farming in Greece has been created approximately 15500 jobs (12000 fish and 3500 mussels) mainly into the rural isolated areas while another 5000 extra jobs has been developed in supporting activities (Theodorou et al., 2011; Stephanis 2013). Technical know-how has been exported together with the Greek business ventures to the Arabic gulf countries, Spain, Turkey and others.

Despite these achievements of the sector, the legal framework and the country policy is far behind the expectations of the entrepreneurs and the researchers. Aquaculture as an innovative primary production sector must be positioned as a national priority as Greece has the competitive of the suitable environmental conditions and the morphological structure of the country's coastline. The public administration has to assist and promote the sector by using a collaboration consortium of the related Ministries (Agriculture & Rural Development, Environment, Marine, Development, Education) to promote the activity and support the leading position of the sector worldwide.

The visions of the industry (Stephanis 2013; FEAP 2013) and the academia (Theodorou et al., 2011; Blancheton, 2013; Lane 2013) for the future of the Mediterranean aquaculture, must be positioned as the current research targets to produce innovations that boost the competitive advantage of the country's leading activity.

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TABLES

Fig 1. The total annual production of Mediterranean aquaculture species (mussels and sea bass/sea bream) in Greece showing the results of the technical innovations on the marine farming process during the developmental phase (early 90's) resulting on a rapid growth up to date (Source: FEAP/FGM 2013; GNSS 2013; personal estimations).

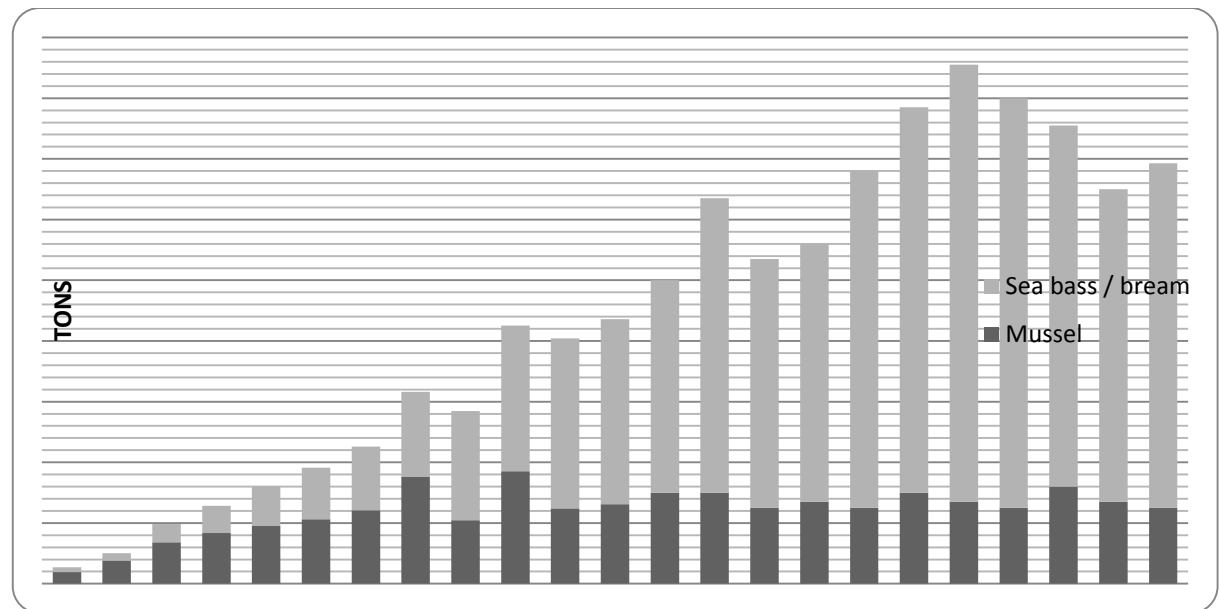


Fig 2. Trade balance of the main marine farmed products (mussels and sea bass/bream) in Greece (Source: FEAP/FGM 2013; GNSS 2013; personal estimations).

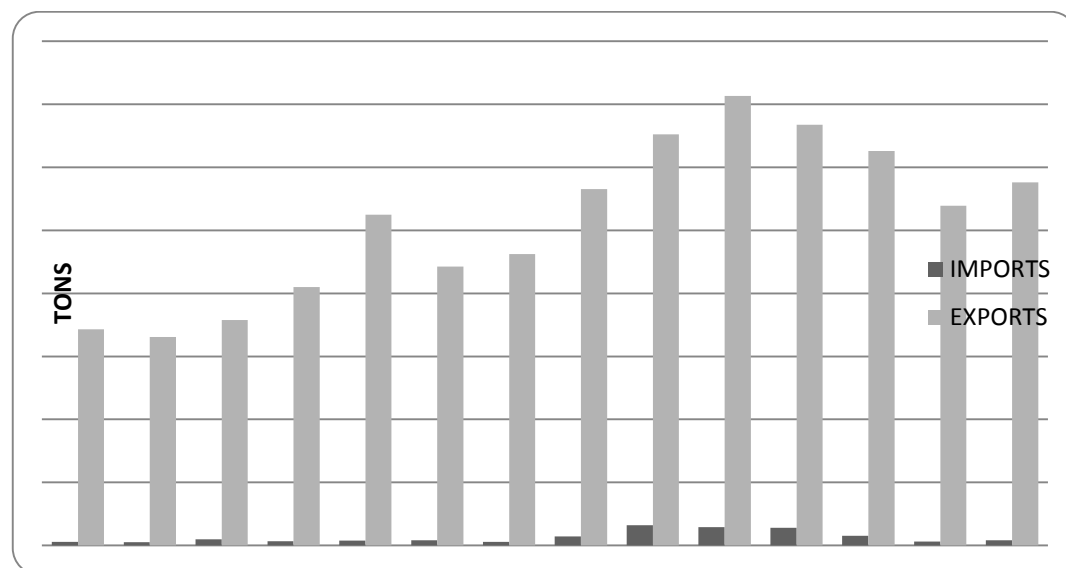


Table 1. The production evolution of sea bass and sea bream in Europe shows that the early competitive innovation advantage of the Greek marine fish farming surpassed by the Turkish industry which is doubled the farmed output within less than a decade (Source: FEAP 2013).

<i>Production Sea bass/bream (tons)</i>	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CROATIA	2,423	3,000	3,050	3,500	4,000	4,500	5,000	5,200	4,494	5,000
CYPRUS	1,628	2,054	2,048	2,468	2,144	2,352	3,275	4,036	4,565	4,217
FRANCE	4,800	5,600	6,200	7,785	6,156	5,604	4,852	4,156	4,500	3,600
GREECE	97,000	82,000	85,000	111,000	127,000	144,000	135,000	119,000	103,000	113,000
ITALY	18,600	18,750	18,600	18,200	19,700	19,400	19,400	19,400	18,400	15,900
PORTUGAL	2,835	2,919	3,049	3,207	3,135	2,704	1,827	1,247	1,680	1,500
SPAIN	16,971	17,734	21,069	29,150	32,800	33,770	37,530	32,855	31,300	33,700
TURKEY	37,717	47,362	64,924	66,871	75,400	83,670	71,554	72,796	78,000	90,000
Total	181,974	179,419	203,940	242,181	270,335	296,000	278,438	258,690	245,939	266,917

Low cost business planning techniques for innovative consumer products

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Abstract

This paper investigates simple mechanisms for early market sizing of an innovative product idea. The transition to a successful business pertains to the identification of a suitable market and the assessment of its size. Accurate market analysis requires detailed data which, usually, cannot be obtained with the limited resources available to the startup team. In our work, we investigate the introduction of an innovative disposable container for beverages (paper cup) with built-in temperature indicator. Based on novel, low-cost thermochromatic pigments and printers, the production of such product is both technically feasible and financially viable. However, the market size is elusive. By using freely available statistical data, in-the-field interviews and extrapolation techniques, we are able to identify the market size with a confidence margin narrow enough to substantiate the analysis. Our approach is effective, low cost and applicable to a variety of markets relating to consumer products. This work has been carried out by the authors in the context of a half-semester project in the class of “entrepreneurship and innovation”.

Keywords: Business planning, startup, market assessment.

1. Introduction

The transition from an innovative product idea to a successful business pertains to the identification of a suitable market and the assessment of its size. Accurate market assessment usually requires data gathering and analysis which in many cases cannot be obtained with the limited resources available to the “entrepreneurs to be”. Many startups fail to convince potential investors due to lack of convincing market data and and/or unfunded assumptions.

In our example, we investigate the introduction of a novel disposable container for

beverages (paper cup) with built-in temperature indication. Based on novel, low-cost thermochromatic pigments and printers, the production of such product is both technically feasible and financially viable even in small quantities.

However, the market size (in terms of number of pieces per year and geographic area) is elusive. By using freely available statistical data, in-the-field interviews and extrapolation techniques we are able to identify the market size with a confidence margin narrow enough to substantiate the analysis.

Our approach is effective, low cost and applicable to a variety of markets relating to consumer products. This work has been carried out by the authors in the context of a half-semester project in the class of “entrepreneurship and innovation”. In the course, 2 to 3 students form a team of (novice) entrepreneurs, adopt a novel idea (product or service) and present their business plan to a business Angel to attract seed financing. Section 2 presents the problem and the proposed method. Section 3 applies the method to an example startup. Section 4 draws the conclusion remarks.

2. Problem definition and proposed method

2.1. Problem statement

We consider the formulation of a startup company (Davila- Foster, 2004), not in the context of a high-aspiring, venture-capital (VC) backed venture, but in the context of a reasonably innovative idea that could provide a competitive advantage in the local or regional market.

We assume that the founding team is already formed, has established a baseline SWOT analysis and has concluded that the idea is competitive and implementable as a small business (Pazarskis 2013), Further, we assume that the business idea is scalable and expandable over a geographical area. Such businesses include (but not limited to) business-to-consumer (B2C) enterprises offering goods or services that require some kind of “locality” either in the form of sales points, or in the form of local presence, local competencies etc.

The proposed business may not meet immediately the growth criteria for VC investment, but could be candidate for (or more likely in need of) private investment from a business angel or bank loan.

In any case and prior to fund raising, the team has to estimate the initial capital to

achieve break-even and has to prove that the available market is enough to ensure return-of-investment (ROI), plus an attractive profit margin.

To achieve this, it is pivotal for the team to establish a solid estimation of the total-available-market (TAM) through a credible process. Accurate market analysis requires detailed data which, usually, cannot be obtained with the limited resources available to the startup team. Thus, other approaches to market analysis should be employed (Tselekidis et al, 2004), with the target of identifying TAM with reasonable accuracy.

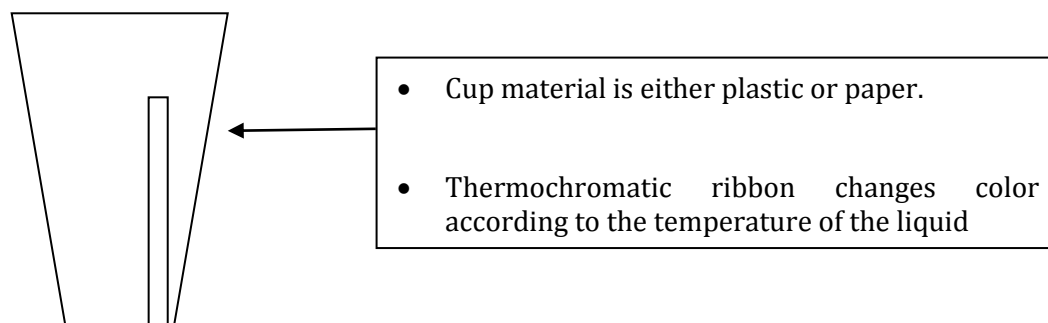
2.2. Proposed approach

In our approach, we exploit statistical data which are available over the internet and we associate those data with the target market estimation through a set of relation criteria and metrics (Neuman, 2010). The criteria are market depended and heuristic in general. The specific values of the conversion metrics are approximated by estimating consumer habits (Wood and Neal, 2007) and verified for the local market by interviewing local experts. Local market data are used as baseline for prediction of larger area market data through extrapolation. Our method is described in detail by example in the following section.

3. Example application

3.1. Case study

Our case study concerns company HARTIC, which will manufacture and sell beverage containers. HARTIC's novelty will be the introduction of a disposable beverage container (cup) with built-in temperature indication.



Potential color codes are:

- ☐ Cup is at room temperature
- ☒ Liquid too hot. Danger of lip burning.
- ☐ Liquid is hot. It can be consumed without danger.
- ☐ Liquid is cool.
- ☐ Liquid is cold.

Up to now, such temperature indicators have been integrated into reusable kitchenware (such as cups and spoons) and are sold as gifts, kitchen gadgets etc.



HARTIC will manufacture and sell disposable cups as replacement of the “standard” paper and plastic cups used for serving “carry out” beverages (coffee, tea, refreshment, juice etc.) HARTIC will buy (bulk) standard cups from international manufactures and will imprint the thermochromatic ribbon. Based on novel, low-cost thermochromatic pigments and printers, the production of such product is both technically feasible and financially viable even in relatively small quantities.



Target end-customers are businesses which offer carry-out beverages (such as coffee

shops, kiosks, food delivery etc.) The estimated additional production cost over a standard cup is less than 1cent for the final customer and can easily be justified by the additional level of security, quality, and sense of “commitment to customer satisfaction” offered by the respective business to their customers.

The HARTIC founding team was able to identify the production method and associated toolset, estimate the initial investment needed to start production (as well as the production cost per piece) and was able to gain insight on the selling price of “baseline” cups in the local market.

However, no data was available regarding the amount of disposable cups sold in any meaningful level (i.e. there were no data even at national (import) level). Further, HARTIC was not interested at this point for cups sold directly to consumers for home use (i.e. through supermarkets), but only for those supplied through the carry-out beverage market.

The immediate problem for the continuation of the business plan was the estimation of the TAM in relation to the geographical area (region) HARTIC needed to cover to attain a viable status (i.e. achieve break-even with considerable growth margin).

3.2. TAM estimation algorithm

In order to overcome the problem, we adopt the following procedure:

1. Select a geographical area (within the target region) for which market estimates can be extracted with available resources and means (questionnaires, interviews etc.)
2. Obtain demographic data for the said area and try to estimate TAM through heuristic conversion metrics.
3. Verify the TAM estimates obtained in (2) with the data collected through the local market research. Adjust values for the conversion metrics to match estimations with the researched data.
4. Obtain demographic data for the (larger) target region and adjust conversion metrics according to geographical or demographic known issues.
5. Estimate TAM for the target region (and deviation margins / confidence levels).

3.3. Case study TAM estimation

The HARTIC team selected the town of ARTA (region of Epirus – Greece), to apply the method described in section 3.2. Arta has a population of approximately 45.000 inhabitants. We needed a conversion metric to associate the demographic data (population) with the number of disposable cups consumed (monthly or annually) in the said area. Based on personal experience, we defined the number of beverages consumed (as carry-out) by the average adult in ARTA to be:

$$ACD= 0,9 \text{ – Average daily consumption of carry-out beverages per buyer } B^9 \quad (1)$$

$$B= 0,55 \text{ – Average number of potential buyers per inhabitant} \quad (2)$$

Thus, if P is the population, then the average monthly cup consumption, which is the TAM in our case study, will be:

$$TAM= 30*ACD*B*P \text{ – Average monthly cup consumption} \quad (3)$$

In our case, the TAM for the above ACD and B (unverified but reasonable) estimations, is 668.250 cups per month.

To verify our approach we conducted a survey among the cup suppliers in the area. There were 5 wholesalers, of which only one agreed to provide rough sales data. Wholesaler A has approximately 50 clients (shops) and sells 2400 cups per month on an average client. This yields monthly sales of 125.000 cups/month. Assuming that A is the average wholesaler (an arbitrary assumption), the TAM is estimated to 600.000 cups per month.

This value is within 10% from our estimation and the produced error is acceptable in our analysis. Nevertheless, the arbitrary assumption that the interviewed wholesaler has 20% of the TAM may impose significant error in our calculations.

We proceeded to interview a number of end customers (shops), which agreed to offer rough insight on their consumption data. Average cup consumptions ranged from a low 30 cups/day (900 cups/month) to a high 150 cups/day (4500 cups/month). From the interviews we estimated an average of 2.500 cups/month/shop, which is very close to the estimate provided by the wholesaler. The estimated TAM produced by this method is 625.000 cups/month. Shop owners indicated an average street (buying) price of 4 cents/cup. Further, shop owners' experience (customer recurrence), was in line with our estimation of ACD.

Based on the above, we adjusted B to B=0,5, which yielded a TAM estimation of

⁹ We refer to “buyers” as adult inhabitants of non-senior age. The number is relatively high due to the presence of adult students (local university).

607.500 cups per month. Targeting same street price (and 30% margin for the distribution channel), expected total market value (TMV) was estimated to 200.000EURs annually.

3.4. Market data extrapolation

The above TAM estimates, when analyzed in the business plan (Stutely, 2012), indicated that HARTIC would not be viable if it was to address only the specific market. Given the fact the profit margins are good for the indicated street price of the product, HARTIC should target a bigger market, thus a larger geographical region. The same method described in section 3.2 was used to identify a suitable market.

First, the region of Epirus (where the town of Arta belongs to) was investigated. Metrics ACD and B were adjusted to cater for deviations (demographic and other) between the case study (Arta) and the Epirus region (i.e. impact of tourism in the shores of Epirus). With a population of 336.000 inhabitants (plus a lot of tourists, which raise both ACD and B), TMV was estimated to 2.500.000EURs annually, still too low for viability.

Last, northern Greece was considered (Epirus, Macedonia, Thrace). With a population of approximately 3.000.000, TMV was estimated to 25.000.000EURs annually, which can sustain HARTIC's viability with very conservative market penetration scenarios and can achieve ROI within 3 years with modest estimations and considerable growth margin (Rafailidis et al, 2010). Thus, HARTIC is planned as a "regional" startup, covering from the beginning Northern Greece, with plan to expand to Greece and the Balkans.

4. Conclusion

From our experience described above, we conclude that when it comes to total available market estimation, low cost analysis based on own resources is feasible for specific markets/products, provided they are "interesting enough" to have some kind of statistical data published on the internet.

Conversion metrics, associating TAM to demographic or other available data can be instrumental to estimating TAM for large markets/regions. However, care should be taken during extrapolation steps to identify and compensate for any deforming factors. Our approach cannot substitute (nor intends to) standard market analysis techniques and higher statistical analysis methods. It indicates however, that a simple method, if

properly applied, could provide yardsticks for “go, no-go” decisions prior to committing to the creation of a startup.

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What are the necessary conceptual changes in physics for discovering the energy of the future

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Abstract

In this paper we outline the necessary conceptual changes, in fundamental university physics, so as to support the emerging invention of the energy of the future. We give also a short historic and epistemological review of the development of physics the last few centuries.

1. Introduction

The goal of the paper is to outline the successful perception of physical reality which will allow for a future, global, clean , safe and cheap energy. It is not the goal to introduce new quantitative equations or attempt a full and quantitative complete explanation of existing innovative inventions (of “free energy”). It is more conceptual and epistemological which is useful also to find your way among a great number of relevant inventions.

2. What is the energy of the future?

We define as energy of the future energy which is

1. Clean (from CO₂ emissions)
2. Fully Safe and not explosive or destructive.
3. Of not very expensive and complicated technology (smart).
4. Renewable
5. Able to support continuously increasing or unexpected demand of power.

What is the current situation with the so called “free energy”? Here are the facts This “free-energy” seems renewable, it is cheaper than oil, and it is clean. There is an increasing number of genuine inventors from the 20 to the 21st century. There is almost absolute inability of the University Physics to account for these inventions (“they should not release extra energy according to the university physics”) There many interpolation of fake inventions or frauds. There is failure sooner or later to

create high profile, large scale commercialized products of it. Some inventors or relevant business become the victim of neo-nazi terrorism.

2. The non-explanation explanations

Some attempted explanations of the “free-energy” devices are based on the “energy of the quantum vacuum”. It is known in elementary particle physics, that the energy is only in the average conserved. But here in the average it is not conserved, if accounted with the conventional physical reality concepts.

And even if it was conserved in the average, an explanation that this energy comes from the absolute quantum vacuum, that is from zero and nothingness , it is obviously a no-explanation.

What is not to trust in attempted explanations?

The previous “quantum vacuum” energy approaches and some other attempts with obscure twisting of existing concepts, have one common property: The try to explain the measured extra energy, without changing almost nothing in the rest of the conceptual system , equations and theories of physics. I believe that this is an indication that the explanation is neither too much correct, neither comprehensive enough to account for almost all such devices. It is an indication that the explanation should not be trusted.

3. The glorious story of “the atoms” in the science of physics

For at least half a century, chemist were writing H₂O and H₂SO₄ etc but they did not accept the existence of ...atoms. The theory of “phases” of matter (an extension of the 3 phases of solid, liquid and gaseous) was the theoretical University Status Quo. Much like the current theories of empty space-time and quantum vacuum.

Boltzmann had developed his statistical atomic theory of the gasses, but it was not an accepted theory. The existence of atoms was accepted after a small paper by A. Einstein in 1905, which explained the Brownian motion, by the existence of atoms. With that he took the Nobel prize! And the Brownian motion was an experiment known since 1820...So it is not the experimental facts that are missing but the correct attitude and perception about the physical reality.

Here we have obviously a phenomenon of “delay” in the evolution of physics.

What we observe with the story of the atomic theories, till the final acceptance of the existence of atoms, is that there was a delay of at least 50 years.

In this we do not include gifted individuals like I. Newton who in his private letters to his friends, he was claiming that he was absolutely sure that matter consists from atoms, already some centuries before 1905. Or the atomic theories of the ancient Greek philosophers Lefkipos and Democritous.

I think history is repeating with the “free-energy” devices, and I think that the main cause of such “delays” in the development in the science of physics are due to the complications of negative will towards evolution of the civilization.

4. The 20th century approach about physical reality.

The 20th century concept of physical reality was 9and in some extent still is) based on

1) There is no finer physical reality of free, permanent particles smaller than the proton, neutron, electron. (the majority of quantum particles are not permanent and quarks are not free). Thus anything beyond the known is a quantum-vacuum. (Already a logical error: what you cannot trace as particles experimentally is not a proof that they do not exist as material reality, given that you can trace it as a field with inertia and momentum).

2) Light is a particle (photon) and not a wave of a finer material reality. Nothing goes faster than photons

3) The quartet of classical atomic physics photon, neutron, electron, proton gives essentially all the known physical reality.

4) The physical reality is “one sheet” not “many-sheets” or layers or frequencies (the frequency here being the average of the spin of protons, electrons, neutrons).

Here we may observe that the current, quantum particle physics is a dead-end

It is looking in the wrong space-time scale (atomic particles) Either it should concentrate on classical laboratory scale experiments (the smart approach) , or to a radically smaller space-time reality of particles (10^{36} times smaller, the advanced approach) and the latter the current earthly technology does not permit it.

It is using very poor concepts, like wave-particle duality, light as photon-particle, nothing goes faster than light, empty-space-time, quantum vacuum etc.

The current quantum particle physics was designed to improve the nuclear weapons. Not to find new sources of clean, non-war-weapons ,energy. That is why it is also scientifically a dead end, as it is also morally a dead-end.

Seemingly success like the verification of Higgs mass-field in accelerators , or “negative-sign-dark-energy” between remote galaxies, are indicative of the

inappropriateness of the available concepts and may make an awakened physicist to laugh.

5. A 2nd level of atoms and layer material reality: A new perception of the physical reality.

It seems that a very comprehensive perception of the physical reality, is that the tree of creation of matter, from 3 permanent free particles (proton, neutron, electron) is repeated at a finer space-time scale and frequency (frequency here is that of the spin of the particles).

In other words we repeat this creation at a space-time scale 10^{36} time smaller (about the comparison of a proton to the size of a star), and we substitute the quantum vacuum with a finer material reality created by micro-protons, micro-neutrons, and micro-electrons.

This is an instance of a leveled concept of atomicity of matter, and can be repeated more than twice that we suggest here.

As in the classical 1st story of the atoms it was the Brownian motion that was the proof that atoms exist, similarly the well known Shroendinger motion of particles like electrons etc, in the “vacuum” can be the proof of the existence of the 2nd micro-resolution reality atoms created by micro-electrons, micro-neutrons and micro-protons. Either we accept as proof or as it is well known we should have to abandon the principle of sufficient physical causes (as Von Neumann had remarked) for such random motions of electrons in the vacuum (where “nothing” waves them)

The approach of the future is expected to be the acceptance of :a 2nd frequency and micro-resolution material reality

So here is the anticipated evolution in the science of physics: Not a new cumbersome field of “empty-space-time” or quantum vacuum, that correct and unifies electromagnetism and gravitation, but this unification through the fluid dynamics of matter, of a finer material micro-resolution reality.

It is not a better field theory in the vacuum that we need, but to realize that we are dealing with a finer material reality, where the light is not a “particle” but a wave in the finer material reality, a non-linear wave, that in high frequencies it may behave as if a particle.

We do not accept energy, momentum and inertia as properties of field (the field as non-matter) in vacuum, but any energy, momentum and inertia are properties of

matter and not of vacuum or field in vacuum.

Let us try now to discuss from where comes the so called “free energy”

The devices or inventions of the so called “free-energy” are so numerous and of increasing number, that it would be a surprise that almost all of them would have the same explanation in all the details.

Therefore any general qualitative not fully quantitative perspective of the source of their energy, should follow very broad and general concepts.

Table 1: **Material reality of at least 2 layers-frequencies.**

1st frequency material reality (the average frequency of the spin)	Creating free- permanent triad (proton, neutron, electron) and of course for anti- matter anti-triad	Periodic System Yes. Known	Common wave Sound	Common materiality Solid objects, liquids, gases	Organic living configurations: Yes Known Biology
2nd frequency material reality (the average frequency of the spin)	Creating free- permanent triad of aetherons (maybe 10^{36} times smaller than those of 1st frequency) (micro- proton, micro- neutron, micro- electron) and of course for anti- matter anti-triad	Periodic System Yes. Known	Common wave Light	Common materiality Electromagnetic , Gravitational fields	Organic living configurations: Yes Unknown e.g. Human aetheric body.

So the suggested here general perspective is that, since there is not really quantum vacuum, or empty-space time, the source of this energy should be the various forms of energy of the 2nd frequency and resolution micro-physical reality, like e.g. heat, which is the at least one next step of physical reality after that of protons, neutrons and electrons. In other words energy much relevant to the energy content of this that we call “fields” like gravitation and electromagnetism. And the reason of course that we cannot account so far for this energy is that we do not perceive the fields as a 2nd micro-resolution physical reality. Now it may turn out that this heat of the 2nd micro-resolution material reality (or classical fields) may be supported by the infrared solar radiation. That would not be strange at all, and it would turn the so called “free-energy” to **indirect solar energy** stored in the 2nd micro-resolution reality (and also potential of the new universal attraction).

6. The current feasible attitude of the University Research

Repeat experiments of “free-energy” devices in University laboratories and validate the extraction of energy. No error, no deception. Do not yet attempt a full explanation to account for the appearing extra energy.

E.g. Tadahiko Mizuno (Hokkaido University) of excess heat at high voltage-electrolysis of water, published at the Japanese Journal of applied physics (see e.g. <http://www.lenr-canr.org/acrobat/MizunoThydrogenev.pdf>)

Some beliefs of modern physics that may turn out to be wrong.

- 1) The inertial mass of bodies (of constant amount of molecular matter) at low speed (non-relativistic) cannot be decreased below the inertia of the rest mass.
- 2) All matter starts with protons, neutrons, electrons. In other words, there are not smaller free permanent particles (Quantum particles are excluded as they are not permanent or free)
- 3) Nothing goes faster than photons
- 4) All macroscopic electromagnetic interactions are described with the linear equations of Maxwell.
- 5) All forces acting on laboratory macroscopic objects at low speed (non-relativistic) are of the next 5 types a) Inertial, b) by contact with other material bodies made from protons, neutrons, electrons, c) Newtonian gravitation forces d) Maxwell's electromagnetic forces e) no other type of forces.

What is more likely the case

- 1) It is possible under special conditions to have radical decrease of the inertia of the rest mass of a body in slow motion
- 2) Aether is a 2nd material reality made from permanent particles of positive negative and neutral charge, transcendently finer than protons-neutrons-electrons and the electromagnetic and gravitational field is aspects of the functions of aether.
- 3) To say than nothing goes faster than light in aether, is like saying than no airplane can go faster than the sound, in air.
- 4) The linear Maxwell equations of electromagnetism are correct only for a limited realm of experiments those discovered at the end of the 19th century, not all laboratory scale experiments that we now know. They need revision, and their correct version include parameters of gravitation too, and are non-linear.
- 5) Besides, inertial forces, classical electromagnetic forces and Newtonian and Einsteinian gravitational forces, and forces by contact of bodies, exist also a 5th type of macroscopic laboratory scale forces on bodies from the rest of the gravitational field that we do not know. (In underground physics, this unknown field is called anti-gravity or the classical gravity is called aether-statics and this field, aether-dynamic field of the neutral aether).

7. Epilogue

What is needed is an awakened attitude from the Scientifics of physics in the universities.

A systematic reproduction of the “free energy” devices in University laboratories Altruism and not private interests from the side of the inventors. Thorough critique of the existing theories of the classical fields of laboratory scale electromagnetism and Einstein’s gravitation.

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PART C

Management

The benefits of improving e-government services in Greece for openess and communication

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Abstract

E-government services include services to citizens, business, employees, employers and services between different government agencies and NGOs. Compared to other European Union states, Greece is lacking behind in terms of e-government services for its citizens. Currently, in Greece, there is a considerable absence of e-government services which are widely available in other countries. Good examples of the potential benefits of adopting e-government services include the national population census, the participation of citizens in voting and decisions for community and local government issues and online services for starting up a new company in Greece. Greece is notoriously difficult for setting up business and the process is lengthy and costly, requiring the approval of various government agencies. The purpose of the present work is to review the current status of e-services available in Greece and the potential benefits of improving and expanding these services.

Keywords: Communication, e-government, Greece, management, public sector

Introduction

During the last decade a variety of projects under the mantle of public sector modernization and administrative reform have been developed in order to achieve efficiency, effectiveness, value-for-money and quality in public service delivery.

National reform programs focus their attention on how to change government performance and build a result oriented and cost conscious public administration which provides high quality services and satisfies citizens' needs (OECD, 1997; EFQM, 1999).

Given the considerable attention to performance measurement in the literature, most public organizations in Greece should have established a performance management and measurement systems (PMS) and reap the benefits of its regular use. Instead, recent studies (Zeppou and Sotirakou, 2006; EP National Public Reform Program 2007-2013) reveal that:

- That many public organizations have not developed PMS and even fewer use these systems as an instrument for performance improvement;
- That a performance measurement industry emerged which made measurement efforts to fall short of expectations and public organizations are swamped with indicators;
- That excessive formalization and new layers of bureaucracy results in the wasting of the energy of public servants in form filling, red tape and a superficial paper chase; and
- That centralization and a top-down control is the outcome of the external imposition of performance indicators and of measurement systems in public sector organizations.

It is now obvious that in Greece there is a considerable absence of e-government services which are widely available in other countries. For example, Greece is notoriously difficult for setting up business, the process is lengthy and costly, requiring the approval of various government agencies.

The purpose of the present work is to review the current status of *e-services* available in Greece and the potential benefits of improving and expanding these services. The participation of citizens and other stakeholders in the process of decision making in public administration through E-Governance practices is explored.

E-government: The context

Electronic government (*e-government*) is an initiative aimed at reinventing how the government works, seeking to improve both how the government operates, as well as how it deliver services to the people.

It comprises alignment of IT infrastructures, processes and service content towards provision of high-quality and value-added e-services to citizens and enterprises (Gouscos *et. al*, 2001).

E-government growth policy and services (Table 1) can be briefly summed up as follows (Jeong, 2007):

- G2C (Government to Citizens);
- G2B (Government to Businesses);
- G2E (Government to Employees);
- G2G (Government to Governments)

Table 1: Examples of egovernment growth and examples of government relationship

Example of government relationship	<i>e-government</i> growth	
	<i>Stage I</i>	<i>Stage II</i>
G2C	Online information of government and its activities for citizens. Example: council meeting minutes online.	Services and forms online and databases to support online transactions for citizens. Example: online payment of taxes.
G2G	Online presence of information for other levels of government and its employees. Example: intranet with benefits information.	Services and forms online and databases to support online transaction for other levels and government and employees. Example: provide online training of human resources
G2B	Online presence of information for businesses about government. Example: online product review of office supplies.	Services and forms online and databases to support businesses transactions with government Example: make purchases of supplies online.

Source: (after Reddick, 2004)

Modernization through e-government has become over the last years a vital component of public sector reform internationally (Ciborra, 2005; Yang & Rho, 2007; Cordella, 2007; Gualmini, 2008; Liou, 2008).

Institutions across Europe have recognised the importance of developing of eGovernment and Information and Communication Technologies (ICTs) towards greater services' efficiency and effectiveness in the private and public sector (Archmann and Iglesias, 2010).

Especially in the public sector, the increasing use of ICTs such as websites and the development of digital policies provide great oportunites in minimizing bureacracy in the public sector, reducing administrative burdens and providing more efficient and business centered delivery of public services (Introna, Hayes and Petrakaki, 2010).

E-government practices in Greece

Greece has already signed in a global initiative towards 'open governance', known as *Open Government Partnership* and has introduced a number of initiatives over the last decade for communicating formal public administration decisions to the public.

Although Greek pulic administration is keen to promote ICTs, *egovernment* continuous to appear slow compared to the majority of the European public administrations. In 1999, for example, relative to the then 14 other EU members, Greek online capability was low, with Internet household penetration less than 14%, figure that increased only marginally between 2001 and 2005 (Hahamis, Iles and Healy, 2005; ClickZ Network, 2005).

At a national level, efforts have been made towards the development of *e-government*. *Taxisnet* (electronic tax services), *IKAnet* (a national insurance transaction facility); *Syzefxis* (the national public administration network), *Diavgeia* (uploading government and public institutions' decisions on the Internet), *Citizen Service Centers* (citizens can ask for information about and place requests for public services), *opengov* (open calls for recruitment of public administration officials and electronic deliberation for participatory rule making) and more recently *eprocurement.gov* (publisizing government contracts and open calls for bids and

tenders) are some of the examples of progress made over the last decade in an effort to modernize public administration and provide more efficient and accessible services to citizens in Greece.

Nevertheless, there is yet a long way for Greece to reach a satisfactory level of e-gov services. For example, *Citizens Services Centers* accept citizens' requests for a range of government services such as passports, birth certificates, driving license renewals, then make a request for them to be processed by the relevant government department and when the request has been processed, they pass it back to the citizen (e.g. a driving licence renewal). Under this practice, the processing of the services is still the responsibility of government departments and on-line transactions can not be carried out electronically thus documents are handled, faxed, hand-delivered or couriered among government departments, CSCs and citizens (Introna, Hayes and Petrakaki, 2010).

Even though internet connection availability and skills are directly related to the further development and success of eGovernment, the use of ICT for conducting transactions with public administration in Greece is much lower than the overwhelming majority of the European Union member states. For example, in 2009 less than 10% of individuals in Greece were using the internet regularly for interactions with the public authorities, compared to over 50% in Norway, Finland and Netherlands (Bulgaria, FYROM and Romania had similar low rates to Greece) (Eurostat, 2009).

There are several areas of e-gov services which require immediate attention. The confidence of the public to the Greek e-gov services is very low. For example, a low confidence and trust of citizens to the local e-gov services is usually reported. A survey was conducted in 2004 to 1000 citizens and to directors of local agencies and government bodies, regarding digital transactions in the Municipality of Trikala and the results showed that although more than 80% of citizens were interested in digital public services, only 10 percent of them had full confidence in Greek digital public services (Anthopoulos, 2005).

Another example of the need for improvement is the ongoing online services for starting up a new company in Greece. Greece is notoriously difficult for setting up business and the process is lengthy and costly, requiring the approval of various government agencies. A recent European Commission Benchmark Measurement in

2010 revealed that although the vast majority of the EU27 start - up portals offered a range of information on how to start a company (such as required documents, law, licences, etc) only in the case of Bulgaria and Greece a wide range of services were still essentially offline (European Commission, 2010) with only 16% eGovernment usage by individuals compared to 41% in EU27.

In conclusion

Compared to other European Union states, Greece is lacking behind in terms of e-government services for its citizens. Currently, in Greece, there is a considerable absence of e-government services which are widely available in other countries.

Good examples of the potential benefits of adopting e-government services include the national population census, the participation of citizens in voting and decisions for community and local government issues and online services for starting up a new business.

Today's public administration must be able to meet the challenges and requirements of the 21st century in an efficient and effective way. Public services have to be redesigned around the needs of citizens and businesses and governments should promote skills and easy access for every citizen and enterpenuer, encouranging the use of online services andd emphasising the benefits for the citizens and businesses in terms of comfort, time and cost saving and safety (Archman & Castillo, 2010).

To achieve this, organisational change, education training and development in HR management on the new technologies for public administration employees, more interactivity in transactions with the citizens and businesses, building trust and creating portals are some of the egovernment intiatives towards more effective information and online services provided to citizens and businesses in Greece such uch as mobile parking, m-transport, ticketing, voting, sending complaints and suggestions of poor road conditions, public transportation system disorders or text messaging on hospital appointments / cancelations (Hahamis, Iles and Healy, 2005; Karadimas and Papantoniou, 2008).

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The innovation management within companies: Which evolution, during 50 years, in Tunisian sustainable industrial companies?

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Abstract:

Globalization, deregulation, emergence of new countries-markets are the main characteristics of the actual economic environment. They led to shorter product life cycles, to faster technological changes, to new administrative and management orientations. These are some of the elements that contribute to the intensification of a competition based on innovation; Companies and especially those of emerging countries are obliged to supply more efforts for innovation. To ensure their competitiveness, they have to analyze and develop their innovation management.

Tunisia is one of the emerging countries integrated into the world economic system. For about fifty years, the Tunisian economy followed several waves of evolutions which changed gradually the management systems companies' especially industrial ones. This paper aims to describe how the innovation management has evolved in the Tunisian industrial companies for 50 years?

The management of innovation within companies: which evolution, during 50 years, in Tunisian sustainable industrial companies?

Globalization, deregulation, emergence of new countries-markets are the main characteristics of the actual economic environment. They led to shorter product life

cycles, to faster technological changes, to new administrative and management orientations. These are some of the elements that contribute to the intensification of a competition based on innovation; Companies and especially those of emerging countries are obliged to supply more efforts for innovation. Authors such as Collins & Porras (1994), Mignon (2001) and De Geus (1997) consider innovation as a condition for the firm's sustainability. Innovation must be considered as a transformation process deeply integrated into the economic system of the firm.

Innovation consists «in replacing an element or a process existing by another one or by adding to the global system an element or a process which did not appear there before» (Rigny, 1973). The study of innovation cannot be made theoretically; it must be integrated into a system which transforms it into a real economic advance. Drucker (1964) specified: «innovate consists in the design and the realization of something that in new: unknown and non-existent previously, with the aim of establishing new economic connections between former, known and existent elements giving them a new economic dimension”¹⁰. It is the link which transforms a set of elements among which each has a marginal efficiency, into an integrated system. The success of an innovation depends more on its degree of integration in the economic system than on its only absolute novelty or on its purely scientific character. The emerging countries are more than the other ones concerned with these new challenges related to innovation. They have to analyze and develop their management of the innovation in order to ensure their competitiveness. Indeed, some questions about the management of innovation remain unresolved in these countries such as: is there a real and active awareness about this necessary evolution? Which management approaches were adopted? What are the main results of the adopted changes?

Tunisia is one of the emerging countries integrated into the world economic system. For about fifty years, the Tunisian economy followed several waves of evolutions which changed gradually the management systems companies' especially industrial ones. This paper aims to describe how the innovation management has evolved in the Tunisian industrial companies for 50 years?

To answer this main interrogation, a descriptive qualitative research structured by directive interviews was made with the Tunisian industrial companies having more than fifty years of existence. This paper presents the findings of this research; it is

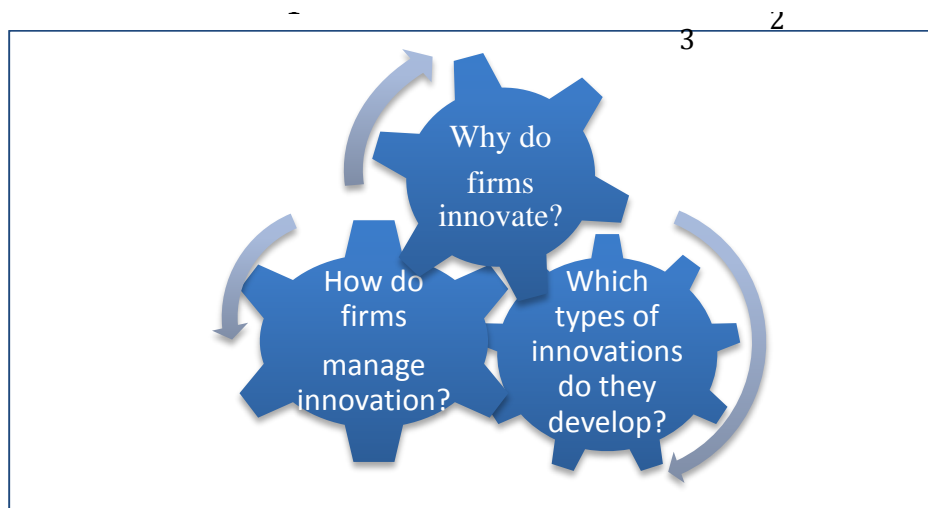
¹⁰ Traduction of the definition proposed by Drucker (1964)

divided in three parts: the first one presents a theoretical analysis that allows fixing the main axes of the analysis of the innovation management within companies. The second part specifies the followed methodology. And in the third and last part, the main results of this research will be presented and discussed.

1. Diagnosis of innovation within companies: framework analysis

To describe and analyze the innovation management in companies, three key questions must be answered: (1) what are the real companies' incentives for innovation?; (2) how do they manage the activities of innovation? And (3) what are the various types of innovations developed?

Fig 1: Analysis frame of innovation within companies



1.1. Innovation incentives

They can be classified into two main categories: economic and organic incentives and institutional and psychological ones. The first category concerns the incentive of search for profit, capital gain, competitive edge and for going concern. It also concerns the answer to the permanent increase of market needs in terms of quantity, quality and variety.

Being inspired by schumpeter's research, Rigny (1973), Eisenhower (1983), Bérard (1976) and Drucker (1986) tried to generalize this quest of profit to humans also; they consider that each one searches to maximize its satisfaction in terms of quantity, quality and variety. So he is on the search of means that allow him to counterbalance an imbalanced situation. It is this situation of imbalance that is the

source of search for new products, new combinations of production factors or new processes. As innovation incentive, Rigny (1973) proposes the concept of « unused potential of satisfaction ».

Broustail and Fréry (1993) propose three other incentives: the search for superiority then cut with pre-existing products or processes and finally technological improvements. Thus, the objective of preceding the competitors, downgrading their positions and ensuring superiority on them constitutes a strong incentive for innovation.

Some authors (Jolly; 1992, Durand; 1988, Morin; 1986, Price; 1996, Ribault, Martinet & Lebidois; 1991) insist on the fact that in an environment which is more and more turbulent, where the competitive rivalry is unpredictable and the technological revolutions too frequent, companies do not have another choice than permanently modernize their competitive edges. It is possible via essentially the mobilization of all their technological resources. Create and apply new knowledge would be the key to the economic success.

François Marc (1982) specifies that innovation would be, in many cases, an obligation for the company when it looks to ensure its survival or to protect its position on the market. Innovation could be then stimulated by a diminution in demand of products; in that case the company has to stimulate the failing demand by modifying the quality and the characteristics of its products or by diversifying them. Innovation could also be intended to save inputs.

The second category of the incentives concerns the institutional and psychological ones. The first category is related essentially to the citizenship and the social legitimacy of the company. To ensure its survival and contribute to the well-being of the society, the company, which became an important social unit replacing the traditional cells of the tribe and the village, has to adopt a responsible attitude based on the permanent search for solutions of new problems, solutions which consist in innovations. Find the means to adapt itself and to act on its environment require imagination, creativity and development of new products and processes which consist in innovation.

The psychological reasons concern the association between motivation and innovation mind. Indeed, the followers of the Human relations school specify that the self-fulfilment could not be obtained within an organization whose tasks are repetitive. Employee needs to feel as an active member of a developed and

evolutionary company, he needs to assert his capacities and update them. As soon as the tasks stop being repetitive and the changes made, innovation is present.

1.2. Innovation management within firms

Management policy implies 1) the carrying out of a preliminary and rigorous analysis that allows limiting the margins of the unpredictable, 2) the adoption a pragmatic attitude that allows restricting the risk of error, encouraging and enhancing experimentations and finally 3) the integration of all the actors in the company and those around it. The same approach must be adopted for the management of innovation: an information search, a company diagnosis, a strategic decision making and a choice of the techniques to be adopted.

Independently of its type or its degree, innovation can be the result either of fate such as several discoveries or of an effort of research and reflection of the company members. In the last case there is a systematization of innovation. The idea can emerge from either the staff due to an effort of creativity or Research and development or from the external persons to the company due to technology watch and business intelligence (Battini; 1991). These activities of questing for novelties, either they are sustained or not, require additional skills and competencies ; David Teece & Dosi and Alii (1988) grouped them in categories such as reliable demand, efficient distribution, competitive products, technological capacity, favorable brand image, etc...

Innovate depends on some management dimensions in particular:

- Technology watch

It is defined as being: "the art of detecting, collecting, analysing and storing all the environment signals which are useful to protect the present and the future of the company from the competition attacks" (Rouach, 1996). It consists of a continuous and steady supervision of variables and actors of the market and the technological progress of all domains. This supervision goes beyond the search of information to establish an effective management of them.

- Creativity

It is defined as being "the way in which the ideas are generated and used to create value for the company» (Kao, 1999). The creativity requires the creation, in the

company, of spaces of freedom to leave free course to the inspiration. It involves also expertise that is the scientific capacity of reasoning, the knowledge and the imagination (Amabile, 1998).

Various methods of creativity are used such as the brainstorming, the discovery matrix and the morphological analysis. Creativity is not the task of the department of Research and development only; it must concern the whole of the company.

- Research and Development

More than ever, Research and development have become one major asset for the companies; a department provided with all the necessary means and conveniences for innovation has been created within them. To ensure efficiency and effectiveness of R&D, companies must collaborate with university researchers (their main purpose is the development of knowledge) and industrial researchers (having the aim of exploring the new concepts of products and processes). This collaboration concerns most part of the industrial activities in order to insure also the relevance of the R&D actions in terms of feasibility and match with market needs. Cooperation must also be between universities, public laboratories and private ones.

- Protection and cooperation

Because of the risk of being dispossessed from innovation profits, the company has to resort to protection and cooperation. Protection concerns the registration of patents or copyrights. The cooperation concerns the establishment of agreements with the other companies concerning the production, the marketing or the activities of research and development.

1.3 Innovation typologies

The innovation intervenes at different levels: "the launch of a new product on the market, the introduction a new process of manufacturing or a model of organization into the company " (Miller, 1975). Thus, innovation is related to an idea or a process which is regarded as being novel by the members of a company or by the whole members of a society. In the literature (Maassaki; 1990, Eisenhower; 1983, Sabourin; 1997, Price; 1996, Bandt; 1982, Lebas; 1995), various typologies of innovation were proposed; some researchers lean on the degree of the innovation, the

others in its category and a third group distinguish innovations on their type.

Thus, Bareyre (1975) distinguishes on one side the technological innovations, which concern the tools, the techniques, the products, the processes, the equipment or manufacturing methods, and intangible innovations on the other side. The last ones concern commercial innovations (new distribution method, new display of a product, new application of a known product, new commercial system), administrative innovations (new administrative structure) and institutional ones (which are mostly proposed by public authorities, establishing new methods or systems such as new accounting system). We can add to this category the innovations which have a financial character such as the companies of venture capital...

Damanpour, Szabat, and Evan (1989), Jin. K., Namwoon Kim and Rajendra K. Srivastava (1989) distinguished the technological innovations and the administrative ones; first ones concern products, equipments and process of production and second ones concern the functioning and the administrative structure. So, the technological innovations consist in the adoption of a new idea related to a new product, a new service or the introduction of new elements either in the equipments or in the process of transformation of raw materials or information into products or services (Cummings; 1978, Kimberly & Evanisko; 1981, Knight; 1967, Damanpour & al 1989).

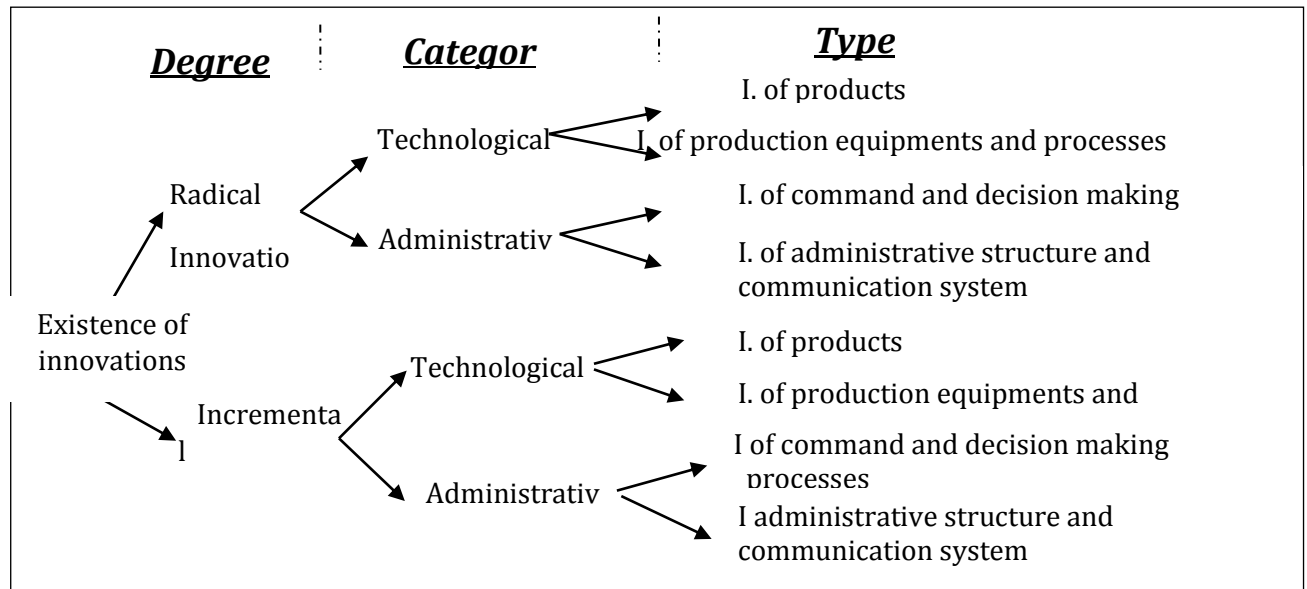
The administrative innovations concern the modifications and the changes operated in the social system of the company: the relations between the members of the organization, the structures, the rules, the roles, the procedures, the leadership, the decision-making, the internal and external circuits of communication (Cummings; 1978, Kimberly & Evanisko; 1981, Knight; 1967, Damanpour.& al; 1989).

About the degree of the innovation, Creton (1984), Shelton (2000), Dewar and Dutton (1986) propose a distinction between radical innovation and incremental one. This last one concerns modifications of the existing product, technology or process of production. The main characteristic of the incremental innovations lies in their little decisive effects taken separately but extremely important taken together. In contrast, the radical innovation is materialized by "a total and irreversible break in the processes» (Bellon; 1995). Its effect is stronger, more visible and arises in an intermittent way. This type of innovation which is not necessarily related to a technological upheaval causes deep changes at various levels of the company

enabling, thus, the creation of new values for the customer.

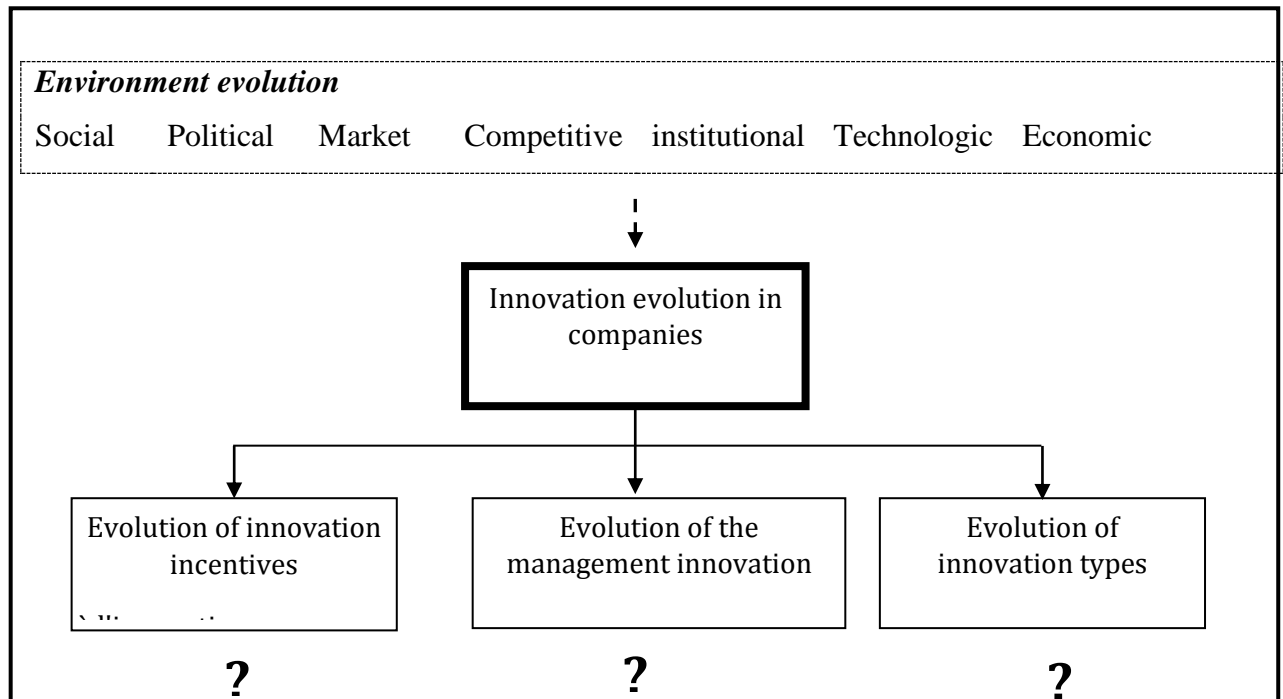
For this research, we propose a typology which combines the degree of the innovation with its category and its type. So, we distinguish:

Fig 2: Innovation typologies



1.4. Innovation evolution

Fig 3: Conceptual frame of the longitudinal diagnosis of the innovation in companies



Since the main objective of this research is to identify the evolution of the innovation management, under the influence of the environment, we tried to integrate all the elements into the analysis frame below:

Thus, we are going to study, according to the environmental changes, first the evolution of the innovation motivations, then the innovation management system implemented in Tunisian companies and finally the types of innovation they developed.

2.Diagnosis of the innovation evolution in Tunisia

This part presents at first the methodological elements of the study and then the main results.

2.1 Methodology

This research adopts a descriptive qualitative approach and is structured by directing interviews with members of Tunisian industrial companies of more than fifty years of existence. As we want to know how the innovation management evolved in these companies for 50 years, we interviewed the persons who have at least 20 years of seniority in the company. To enrich the analysis, documentary studies and available archives were also used.

2.1.1.The relevant population

As the objective of this work is to present a historical outline of the innovation management in Tunisia, we considered industrial companies having life duration of 50 years and more as relevant population. The choice of industrial companies is justified by the fact that they are subject to technological innovations (products, equipments and process of production) more than those of other sectors. As for the choice of 50 years of existence, it is justified by the fact that we could consider that this duration corresponds to the age of the economy of independent Tunisia.

The census of companies having known fifty years of existence is established according to the official list of the Tunisian companies by date of creation established

by the Agency of Promotion of the Industry and completed by those of the economic directory of Tunisia. The definitive list contains 80 industrial companies created before 1956.

Looking for *exhaustiveness*, it was decided to survey these 80 industrial companies. Field investigations showed that 11 companies stopped their activities what reduces the relevant population to 69 companies. All of them were contacted, nine has refused to participate in the study and 60 has accepted to collaborate; 87% of the relevant population was investigated. The structure of the studied companies according to creation date appears as follows:

Table 1: Structure of the studied companies

Creation date	Number and rate of companies	
Before 1900	3	5 %
Between 1900 and 1915	7	12 %
Between 1915 and 1925	2	3 %
Between 1925 and 1935	6	10 %
Between 1935 and 1945	14	23 %
Between 1945 and 1955	28	47 %

2.1.2. The study procedure

Gathering information was made by the administration of an interview guide to the appropriate person. The first contact was made either by visit or by telephone to make an appointment with the manager who has more than 20 years of seniority in the company. The first interview consisted of a presentation of the survey and the required information. In certain cases, the contacted person asked for a time extension in order to collect the required information in particular those concerning the periods during which, he was not in the company. The required information is collected during a second appointment which lasts on average of 1h 30. In some cases, the recourse to other persons in charge of the company was required to have more information.

2.1.3. measurement tool

Here is the structure of the interview guide used:

Table 2: Structure of the interview guide

Objectives:		Issues of interest:	Until 1960	The 60s	The 70s	The 80s	Since 1991
1. Why?	Identify the quantitative and qualitative evolutions of innovations:	Volume					
		Incentives			?		
2. How?	Analyze the evolution of innovation management according to:	Sources					
		Process					
		Structures					
		Sources of funding					
3. What ?	Identify the evolution of the types of innovation according to:	Degree: Radical vs incremental					
		Category: Technological vs administrative					
		Degree x Types					

2.1.4. Periods of analysis

The purpose of the study being the presentation of the evolution of the innovation during 50 years, it was considered convenient to divide this long period into various phases. According to a documentary study, these phases were fixed on the basis of the Tunisian economic context changes. So, 5 phases were identified¹¹:

¹¹ Appendix 1

Evolution of the Tunisian environment over time

- The period before 1960; concerns the years of colonization and recovery of the sovereignty of the country
- The period 1961-1970, marked by i) the control of the economic policy by the state and ii) the collectivism experience
- The period 1971-1980; marked by an attempt of re-establishment of the market economy, the government controlled price and private investments. A protectionism policy was established.
- The period 1981-1990; marked by an important socioeconomic crisis. At the end of this period, a beginning of settlement was observed

2.2.Results

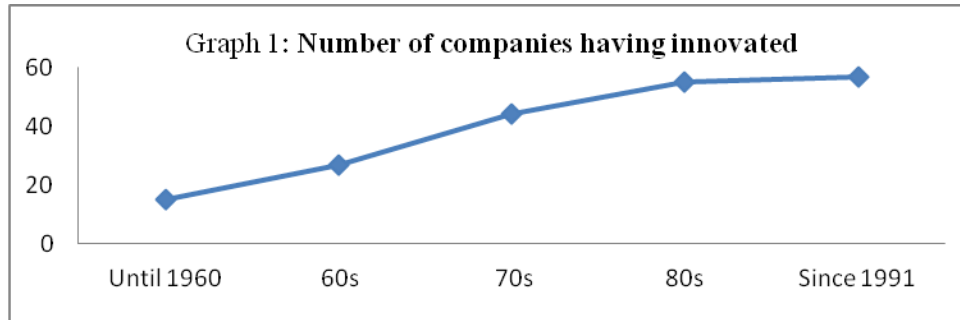
The findings concern three aspects: the quantitative and qualitative evolution of the innovation (number of companies having innovated and their incentives for it). The second aspect is related to the innovation management through the exploration of the sources of innovation, the adopted processes, the structures and the funding sources of innovations. The third aspect of the results concerns the types of innovations developed.

2.2.1.The quantitative and qualitative evolution of the innovation

As specified above, this paragraph has for ambition to redraw, through time, the evolution of the number of companies having innovated as well as the motivations of these innovations.

- The quantitative evolution of the innovation

The graph below reveals that the number of companies having innovated is in an evident progress; indeed from 15 companies, at the end of the 50s, the quarter of the studied companies, the number, since 1991, rises to 57 companies almost the totality of companies (cf. Appendix 2).



- The qualitative evolution of innovation

Five incentives for innovation were considered, they concern the reaction to the requirements of i) the follow-up of the technological evolution, ii) the organisational structure development, iii) the market, iv) the competitive context and v) the search for profit and increase in value.

Till the end of the 70s, the classification of these motivations didn't change: 1) the insurance of the requirements of the follow-up of the technological evolution, 2) the search for profit and increase in value 3) the insurance of the requirements of the competitive context, 4) the insurance of the requirements of the market and 5) the insurance of the requirements related to the organisational structure development.

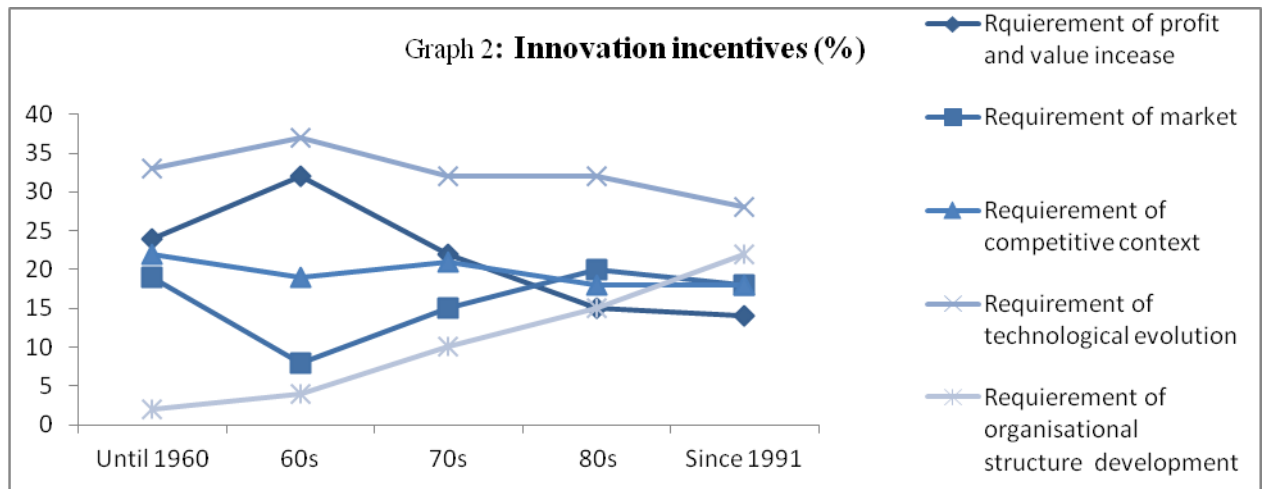
However, from the beginning of the 80s, this classification was deeply modified. So, except the follow-up of the technological evolution and the insurance of the competitive context requirements which remained the two main motivations for the innovation during all the periods, the intensity of the other incentives had strongly changed. Thus, the search for profit and increase in value, the most quoted motivation after the follow-up of the technological evolution, during the first three periods has gradually lost of its intensity. This result could be explained by the effects of the Tunisian economic crisis during the 80s and to the deep economic change (free trade) since the beginning of the 90s. The search for profit and increase in value is not any more one of the main concerns of the company: to survive these deep economic transformations and to ensure their sustainability seems to become much more important for companies.

In its opposite, the insurance of the requirements of the market, motivation not very influential till the beginning of the 80s, took more importance. This change could be due the changes in the economic policy. Indeed, until the end of the 80s, the economic context was characterized by protectionism: the consumers had no

possibility of neither varying their consumptions nor being too demanding, they were obliged to consume the existing products by choosing those who maximized their utility. Because the profits were, generally, easily generated, companies had no reasons for being concerned with the customer needs. Since the beginning of the 90s, the liberalization of the economy allowed the entrance of diversified products having best value for money.

Despite the evident change of the type and the intensity of competition, the insurance of the requirements of the competitive context kept its importance level during all the considered periods. Till the end of the 80s, the market was too restricted, the increasing its local market share was possible through diverting other companies' customers; adopting and reinforcing a competitive intelligence was necessary but not indispensable. The adoption of the free trade agreement had deeply changed the competitive environment which has to confront a foreign competitor whose products have better value for money. Companies studied have also to satisfy consumers becoming more and more exigent about the product specificities. These new environment requirements involve more efforts in the follow-up of the competition actions and the customers' needs. The innovation seems to be one of the means of confrontation and of outstrip of the competition.

The insurance of the requirements of the organizational structure development, the weak incentive during the first four periods despite bit betterment, constitutes one of the main incentives for innovation since 1991. The increase of the framing rate, the reinforcement of knowledge and competencies of staff, the proliferation of restructuring actions that were recommended by national and international institutions and the adoption of diverse national programs could explain, to a certain extent, the strength of this incitement for innovation. The change of the intensity of this motivation denotes the awareness by companies about the importance of the administrative aspects in their functioning and in the achievement of their objectives.



On another side, we notice that till the end of the 60s, the innovation incentives had three degrees of importance: i) a dominion of the incentive related to the follow-up of the technological evolution, ii) a practically equal important level for three incentives related to the requirements of the market, the competition and the search for profit and iii) an almost absence of the insurance of the requirements of organisational structure development as an incentive for innovation.

During the 60s, the innovation incentives had different degrees of importance with a clear dominion of those concerning the follow-up of the technological evolution and the search for profit. Since the 70s, except the motivation consisting of the follow-up of the technological evolution, all other incentives tend to present closer degrees of importance (cf. Appendix 3).

2.2.2. Analysis of the management of innovation within firms

This analysis concerns i) the sources of innovations, ii) the nature of the efforts supplied by the studied companies and iii) the existence of R&D units and their assigned tasks.

- Innovation sources

Two innovation sources were identified; it is i) internal sources who are the staff, the chief executive officer or the partners of the company and ii) external sources consisting of customers, competitors, trade fair participants, suppliers, offices, laboratories or specialized institutions such as the API, technical centers.

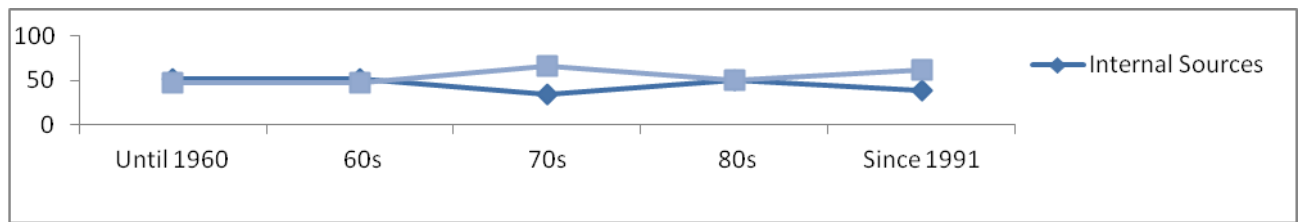
	Until 1960		60s		70s		80s		Since 1991	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Internal Sources	13	2%	19	2%	27	4%	50	0%	44	8%
External Sources	12	8%	18	8%	51	6%	50	0%	71	2%
Total of Answers	25	5%	37	5%	78	4%	100	2%	115	5%

Table 2: Innovation sources

The table above shows that till the end of the 60s, the innovations was introduced, at the same level, by internal and external sources. However, the tendency had clearly changed during the 70s as the external sources became the main instigators of innovations. This fact revealed a more important effort of collaboration with the suppliers and the customers. This change could be explained by the very important increase in the efforts of collaboration and the concretization of subcontracting relations with foreign companies¹². During the 80s, companies had relied on their internal sources more than on external ones for innovating but since the beginning of the 90s, these external sources especially trade fair participants and laboratories become again the main instigators of innovations. The opening up of the Tunisian economy and its insertion in the globalization process had strongly revitalized the inter-country exchanges in particular in technological aspect. These changes made companies well aware of their competitiveness and incited them to consult specialized offices and laboratories to maintain and reinforce their competitive position.

¹²At the beginning of this decade, it there was the promulgation of a law n° 72-38 of the 7/2/1972 which creates a particular status for industries partially or completely exporting and which strongly supported the relations of subcontracting between local companies and those foreign

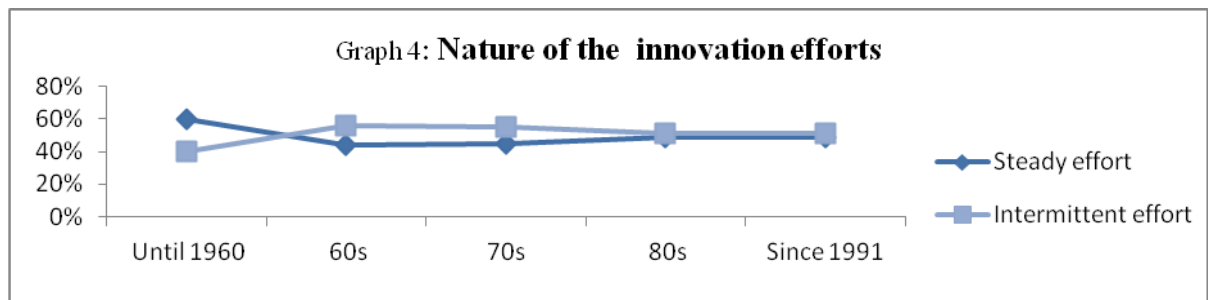
The evolution of the recourse to these sources is represented in the following graph:



Graph 3: Sources of innovation (in % of used sources)

- The innovation process

Till the end of the 50s, the innovations were, mainly, the result of a steady effort. However, from the beginning of the 60s and till the end of the 70s, more than the half of companies having operated the innovations declares that these ones were the result of intermittent efforts. From the beginning of the 80s, we find so many companies which support efforts in innovation that those who develop innovations only if is necessary or straightforwardly by chance (cf. Appendix 4).



- Units for innovation

The aim is to study the existence of units dedicated to the innovation, the objectives which they pursue and the reasons of not existence of such units.

1. Existence of an innovation unit

Despite a slight improvement, it seems that till the end of the 80s, the number of companies having a unit of R&D remained too low, hardly 13 % of the total number of companies and 15 % of those having developed innovations. From the beginning of the 90s, the situation has improved because 22 companies, 37 % of the considered companies, have a unit of R&D.

Table 3: **Existence of R&D units**

	Until 1960			60s			70s			80s			Since 1991		
	N	F1	F2	N	F1	F2	N	F1	F2	N	F1	F2	N	F1	F2
Companies having an R&D unit	3	5%	20%	3	5%	11%	4	7%	10%	8	13%	15%	22	37%	39%

N: Number; *F1*: Absolved frequency (with regard to the whole sample); *F2*: Relative frequency (with regard to companies having carried out an innovation)

2. The objectives of the R&D units

Various roles can be entrusted to an R&D unit, for this research, we retained those concerning the:

- Products Research: the test of the existing products and/or the conception of new ones;
- Market Research: the analysis of the consumer behavior;
- Technological Research: the conception, the update and the acquisition of technologies (equipments and material of production)
- Production process Research: the analysis, the conception and the reorganization of the production process;
- Administrative Research: the analysis of the administrative processes of the company.

Table 4: *Unit objectives*

	Until 1960	60s	70s	80s	Since 1991
	Number	Number	Number	Number	Number
Products Research	6	5	6	10	28
Technological Research	3	2	4	13	26
Production process Research	4	4	6	11	21
Market Research	2	2	2	1	9
Administrative Research	-	-	-	1	5
Total of the objectives entrusted to the units	15	13	18	36	89
Number of R&D units	3	3	4	8	22

Till the end of the 60s, the roles assigned to R&D units were limited, essentially, to the product research (the test of the existing products and/or the conception of new products) and to production process research (the analysis, the conception and the reorganization of the production process). The other objectives were neglected.

Although it was quoted by 2/3 of the companies having an R&D unit during the first three periods, the market research seems to be relatively neglected in particular from the beginning of the 80s. This finding may be explained by the fact that companies prefer to entrust this task to the commercial or marketing unit.

On another side the “Technological Research” gained in importance since the end of the 70s, this fact can be due to the awareness by companies about the necessity of modernizing the technological equipments. In fact, the government had encouraged the relations of collaboration and subcontracting tied with foreign partners who were exigent about the modernity of equipments. Furthermore several measures favoring the private industrial investment either by Tunisians or foreigners, such as tax incentives, grants and subsidies, were taken by the government. They intensively reinforce the installation and the update of the equipments of companies. The technological research in equipments became from the beginning of the 80s the main objective of the R&D.

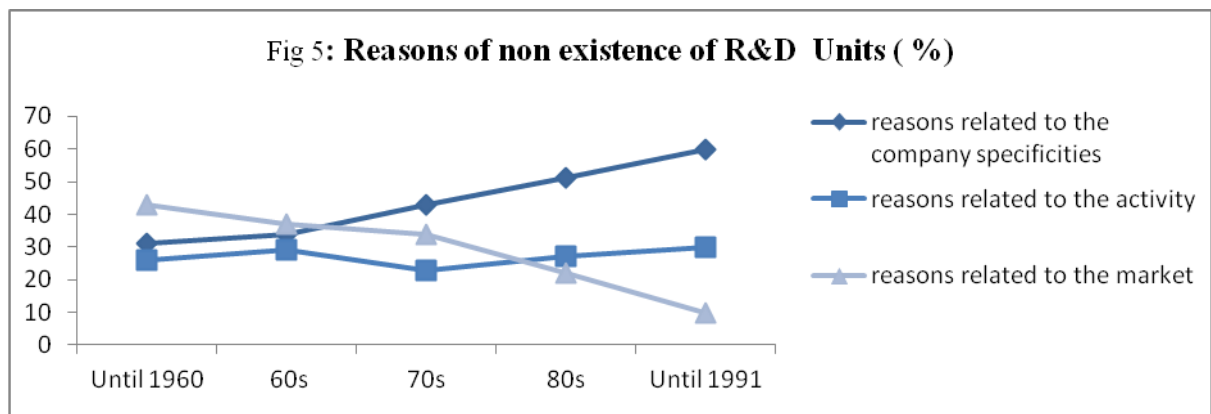
While being relatively neglected, the administrative researches have become a subject of R&D only from the beginning of the 80s. It is important to note that although the insurance of the requirements of the organisational structure development is one of two main incentives to the innovation during this period, only few R&D units dealt with this task.

3. The reasons for non existence of an R&D unit

Till the end of the 60s, the most reason for non existence of an R&D unit evoked by companies concern the characteristics of their markets (e.g. few competitors, weak competition) or an insufficient level of demand. From the beginning of the 70s, the main reason concerns the specificities of the companies themselves: low firm size, lack of financial resources required for an R&D unit. These reasons related to the company specificities get greater importance while those concerning the market are lesser evoked. This result shows that companies are aware of the importance or the

necessity of creating an R&D unit but they suffer from a lack of means and resources required to have such unit. Nevertheless, some companies justify the non existence of an R&D unit by the specificities of their products or activities which don't require efforts in R&D.

If during the first two periods, the reasons evoked by companies have almost the same importance, from the beginning of the 70s, we notice a decline of the importance of the reasons concerning the market for the benefit of the two other reasons in particular that concerning the company specificities (cf. Appendix 5)



- The financing of the innovation

Four funding sources of innovation are possible; it is about stockholders' equity, credits, partners and allies financing and state aids.

In all the periods, we notice that companies resort to the stockholders' equity more than to the external sources to finance innovations. However, their proportion tends to decrease because of the resort to state aids. Indeed, the state has planned various funds for encouraging and financing the acquisition of equipment and the promotion of research and innovation (such as the fund of promotion and control of the technology (FOPROMAT), the premium of investment in the R&D (PIRD) or the fund of the development of the industrial competitiveness (FODEC). The recourse to the debts remains the second source of financing innovations and its contribution remains practically stable over all the considered period.

Table 5 : *Funding sources*

		Until 1960		60s		70s		80s		Since 1991	
		N	F	N	F	N	F	N	F	N	F
<i>Internal sources</i>	stockholders' equity	14	64%	27	66%	41	59%	52	56%	54	49%
	Debts	7	32%	14	34%	23	33%	32	34%	40	37%
<i>External sources</i>	Partners, allies, parent company	1	4%	-	-	2	3%	5	5%	4	4%
	State aids	-	-	-	-	3	5%	5	5%	11	10%
Total :		22		41		69		94		109	

N : number

F : frequency

2.2.3. Analysis of the innovation typologies

The aim is to study the evolution the innovations classified according to their

i) degree, ii) category and finally iii) degree crossed to type.

- Innovations according to their degree: radical versus incremental innovations

Till the end of the 60s, the incremental innovations are slightly more developed than those radicals. However, at the beginning of the 70s the tendency changed, there is practically a balance between the two degrees of innovations with a very light advance for the radical ones. Since 1991, the trend is re-inverted: the incremental innovations become sharply privileged.

Table 6 : *Innovations by degree*

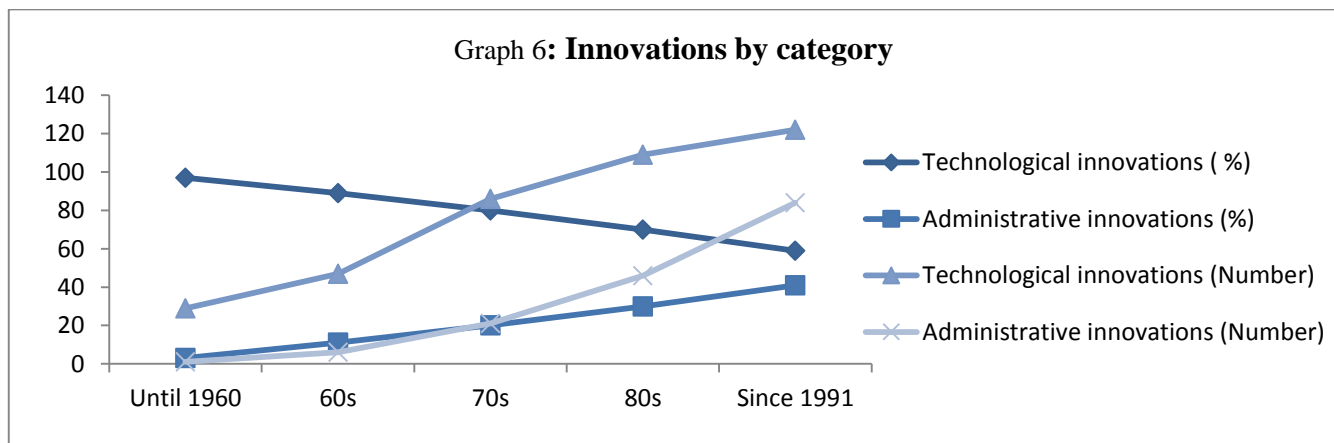
	Until 1960		60s		70s		80s		Since 1991	
	N	F	N	F	N	F	N	F	N	F
Radical innovations	13	43%	24	45%	56	52%	81	51%	89	43%
Incremental innovations	17	57%	29	55%	51	48%	77	49%	117	57%

F : frequency

N : number

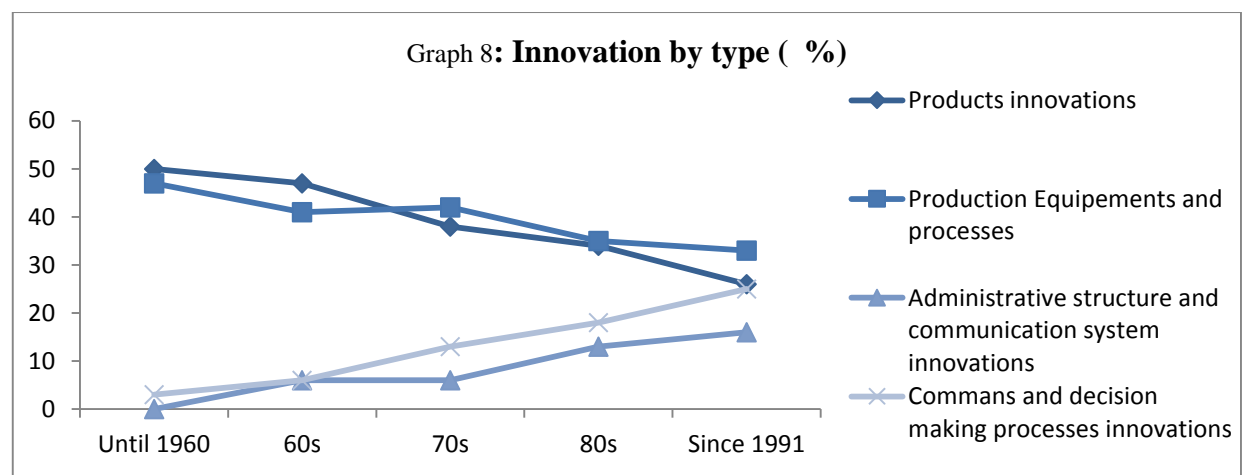
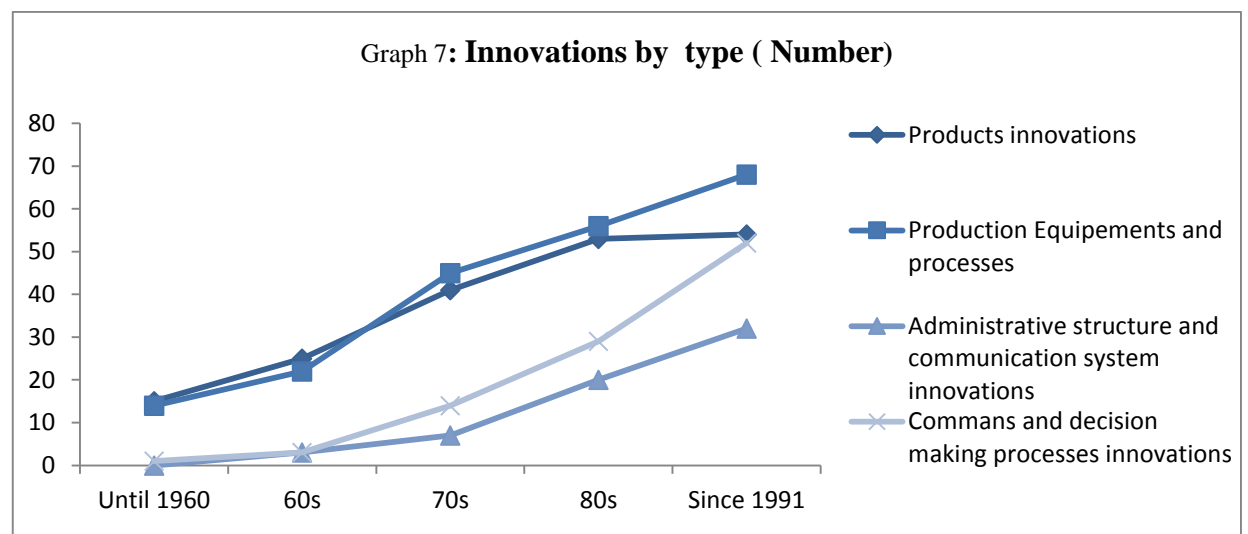
- Innovations according to their category: technological versus administrative innovations

During all the periods, the technological innovations are more current than those administrative. Although their number increases over time, their frequency is decreasing for the benefit of administrative innovations. The number and the frequency of the last ones have gradually become more and more important. At the end of the 50s, these administrative innovations represented hardly 3 % of the developed innovations but since 1991, they represent 41 % percentage of the innovations. This progress could be the result of the changes of the incentives for innovation; ensuring the requirements of organisational structure development is becoming one of the main incentives for innovations (cf. Appendix 6).



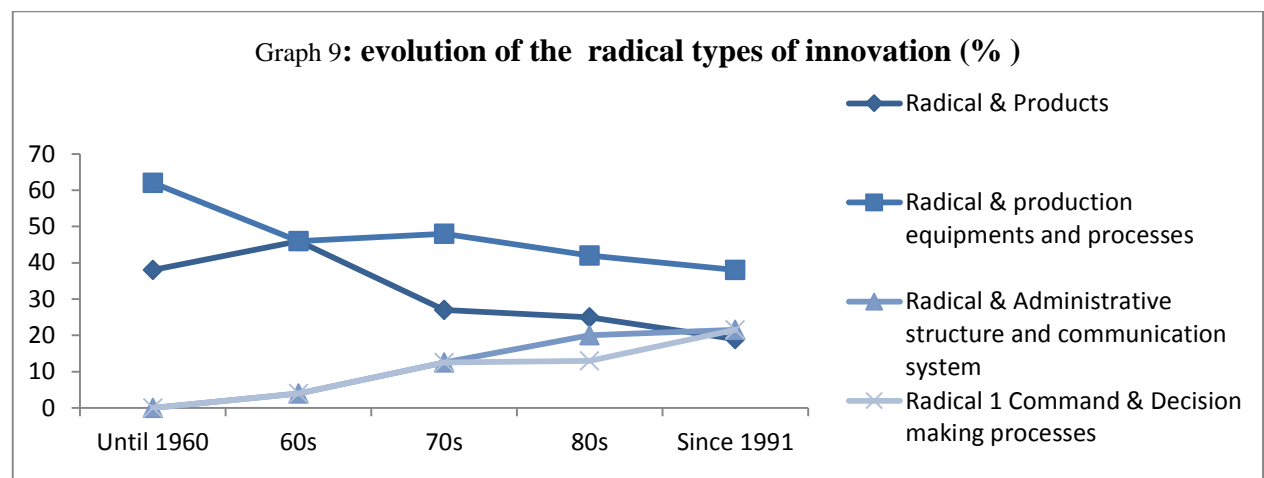
A more detailed analysis of the innovations shows that product innovations are the main type developed till the end of the 60s; during the other periods, they give way to those of equipments and process of production (cf. Appendix 7).

The administrative structure and communication system innovations, absent till the end of the 50s, took more and more importance during later periods while remaining less developed compared to the other types of innovations. We find the same tendency for the command and decision-making processes which have enough progressed to get closer to the level of the product innovations since 1991.

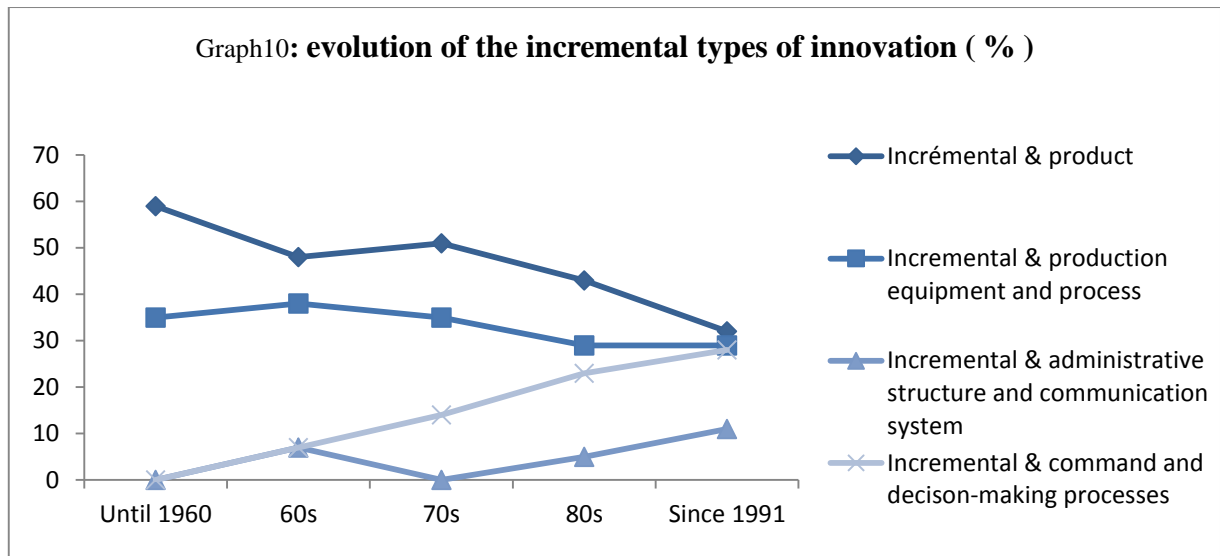


• Innovation Typology by crossing the degree of innovation and its type

Combining the type of innovation and its degree, we notice, for the radical innovations, that those concerning equipments and process of production tend to dominate all the others. They are followed by the product innovations then by those of administrative structure and communication system and finally the command and decision-making process innovations. Although the tendency is nearly the same for all the considered periods, the relative importance of the types of technological innovations is in decline in favour of the administrative types of innovations (cf. Appendix 8). These last ones were almost non-existent during the two first periods but since the beginning of the 70s, they have become more and more present.



Concerning the incremental innovations, there is a domination of the product innovations which are more developed than those concerning equipments and processes of production. The types of administrative innovations are in net progress, in particular, those concerning the command and decision-making processes (cf. Appendix 8).



Conclusion

This study aims to analyze the evolution of the innovation over a global period of more than 50 years in the Tunisian companies. It presents first the quantitative and qualitative evolution of the innovation and then an analysis of its management within firms. Analyses of the various typologies of innovations were presented in the last part of the paper.

The finding shows the development of the companies' efforts for innovation; indeed, the number of companies having innovated has greatly increased over time to cover almost all the companies concerned with the analysis.

Innovation is not any more motivated by the search for profits; it's the willingness to adapt the company to the technological evolution and to the deep changes of the supply and the demand. Since the commitment of the country to the process of globalization, the innovation seems to be motivated by the willingness to ensure the requirements of the organisational structure development.

During the whole period considered for the study, innovation was the result of either a supported effort or an intermittent one. Although the main sources of innovation were those external, the findings show an increase of the number of companies having an R&D unit (compared to the size of the population, this number remains small). These units have for main objectives the products and production process researches.

Although the evolution is not linear, the study shows that innovation remained more radical than incremental and more technological than administrative. However,

from the beginning of the 90s, the study shows a considerable increase of administrative innovations: administrative structure and communication system innovations and those concerning the command and decision-making processes. Since their insertion in the globalization process, sustainable Tunisian firms have given more importance to their administrative components.

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Appendix

Appendix 1 - The phases of evolution of the economico-entrepreneurial environment in Tunisia

Until 1960	60s	70s	80s	Since 1991
<p>Tunisian industry started essentially at the beginning of the last century with some industries such as the transformation of lead, the phosphate-enriched fertilizers or foodstuffs.</p> <p>The Second World War had led to a limitation of the imports which developed other industries such as building materials industry, metal industry or chemistry.</p> <p>After the independence, the Tunisian state took back the control of the</p>	<p>During the period 1961-1970, the government conceived, carried out, controlled and mainly financed the industrialization policy; the share of the public sector in the industrial investments was amount 84%. Moreover, the government intervened in the choice of the types of industries, their size, their localization, the volume of the investments, technologies and the volume of the investments.</p> <p>The activities and</p>	<p>The stop of the policy of collectivization founded a new social climate which resulted in a vertiginous growth of mass of the investments as well quantitative as qualitative aiming at improving the production, profitability and the employment.</p> <p>The “code of the investments” envisaging the granting of many financial advantages and tax advantages, the granting of monopoly of exploitation and marketing for one limited duration as</p>	<p>This period was marked by significant drops of the foreign exchange revenues generating a deficit of the balance of payments and a strong pressure on the equalization fund created to subsidize the food substances.</p> <p>The maintain of the same wages' level and the dissatisfaction with part of the population led to a true social crisis at the start of 1984. The industrial policy remained the same one as that of the previous period with certain changes more</p>	<p>Several reforms came out; they aimed to maintain a framework macroeconomic careful, to gradually liberalize the prices and to eliminate controls on the interior market, and to reduce the intervention of the public sector in the production of goods. The ultimate objective of these reforms being to allow the Tunisian companies to be competitive via a better control of the management tools, a cost-cutting and an improvement of the</p>

<p>sectors of the energy, the mines, the banking industry, the transport and the trade either by participations or by nationalization.</p> <p>The state became the main industrial investor and the private initiatives were not numerous; they mainly were the result of efforts of artisans or trades peoples converted in industrials.</p> <p>This first period was marked by the control by the state of many sectors but remainder in the liberal frame.</p>	<p>industrial space are, certainly, widened but the old and new production firms were concerned only by creating goods intended for local final consumption or for export. The last years of this decade were marked by the process of collectivism which was materialized by creation of offices holding the monopoly of the foreign trade and of cooperatives controlling all the wholesale and detail trade</p> <p>This process strongly accelerated in 1969 but alerted by the extent of the deficits of the public companies, the</p>	<p>well as a total or partial prohibition of the imports of the competing products had strongly encouraged private firms to invest in particular in the textile sector.</p> <p>Thanks to the various laws promulgated at the beginning of this decade a thousand of new industrial companies were created, the share of the private sector in the investments amount to 44% compared with 16% for the former period.</p> <p>This decade was marked by the return to the market economy and capitalism with however, maintenance of the state of</p>	<p>encouraging the creative investments of employment or producing capital equipment.</p> <p>Aiming the decentralization, the state launches new industries whose financing was the public capital mixed with Western and Eastern important foreign participations</p> <p>To attenuate this economic stagnation, a program of reform is adopted: the Plan of Structural adjustment (PAS), supported by the World Bank. It proposes to reinforce the opening of the Tunisian economy in the external world by</p>	<p>quality of the products. This period was marked by the accession of Tunisia with GATT in 1990 then with the WTO in 1995 inducing and finally the signature of the Association agreement with the European Union. Following this agreement, a programme of upgrade of Tunisian industry was started and funds for the development of competitiveness was envisaged. This program had the merit to develop a dynamic culture of the business.</p>
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	government decided to put an end to this experiment at the end of this period	a narrow control of the prices and private sector investments as well as protectionism outside.	increasing and diversifying exports and reducing the imports.	
<p><i>Sources</i> :Hafedh Sethom. L'industrie Tunisienne : bilan et perspectives. Revue Tunisienne de Géographie N°19, 1990. Christian Morrisson et Béchir Talbi. La croissance de l'entreprise tunisienne en longue période. Etudes du centre de développement, série « croissance à long terme ». Centre de développement de l'organisation de coopération et de développement économiques, 1999. Tijani Ghorbal, dossier présenté par l'API. Le courrier de l'industrie N° 100, Juin 2005. Pacha Raouf. Le Diagnostic de la stratégie d'industrialisation en Tunisie. Centre National d'Etudes Industrielles, Mai1979.</p>				

Appendix 2: Number of companies having innovated

	Until 1960		60s		70s		80s		Since 1991	
	N	F	E	F	E	F	E	F	E	F
Companies having innovated	15	25%	27	45%	44	74%	55	92%	57	95%

N: number

F:frequency

Appendix 3: Qualitative evolution of innovation (innovation incentives)

	Until 1960			60s			70s			80s			Since 1991		
	Nb	F	Rk	Nb	F	Rk	Nb	F	Rk	Nb	F	Rk	Nb	F	Rk
Requirements of follow-up of the technological evolution	15	33%	1	27	37%	1	40	32%	1	51	32%	1	53	28%	1
Requirements related to the organisational structure development	1	2%	5	3	4%	5	13	10%	5	23	15%	4	43	22%	2
Requirements of the market	9	19%	4	6	8%	4	19	15%	4	31	20%	2	35	18%	3
Requirements of the competitive context	10	22%	3	14	19%	3	26	21%	3	29	18%	3	34	18%	3
Search for profit and for increase in value	11	24%	2	24	32%	2	28	22%	2	23	15%	4	27	14%	5
Total of answers	46	25%	-	74	45%	-	126	74%	-	157	92%	-	192	95%	-

Nb: Number

F: Frequency

Rk: Ranking

Appendix 4: Innovations are the result of:

	Until 1960		60s		70s		80s		Since 1991	
	N	F	N	F	N	F	N	F	N	F
A steady effort	6	40%	15	56%	24	55%	28	51%	29	51%
An intermittent effort	9	60%	12	44%	20	45%	27	49%	28	49%
Total of companies having innovated	15	25%	27	45%	44	74%	55	92%	57	95%

N: Number

F: Frequency

- **Appendix 5** : The reasons for non existence of an R&D unit

	Until 1960		60s		70s		80s		Since 1991	
	N	F	N	F	N	F	N	F	N	F
Reasons related to the company specificities	34	31 %	36	34 %	43	43 %	41	51 %	35	60 %
Reasons related to the company's activity	28	26 %	30	29 %	24	23 %	22	27 %	17	30 %
Reasons related to the company's market	47	43 %	39	37 %	34	34 %	18	22 %	6	10 %
Answers	109	95 %	105	95 %	101	93 %	81	87 %	58	63 %

N: Number

F: Frequency

Appendix 6: Innovationclassification according to its category

	Until 1960		60s		70s		80s		Since 1991	
	N	F	N	F	N	F	N	F	N	F
Technological innovations	29	97%	47	89%	86	80%	109	70%	122	59%
Administrative innovations	0	3%	6	11%	21	20%	46	30%	84	41%
Total of innovations	29	25%	53	45%	107	74%	155	92%	206	95%

N: Number

F: Frequency

Appendix 7: Innovationclassification according to its Type

		Until 1960		60s		70s		80s		Since 1991	
		N	F	N	F	N	F	N	F	N	F
Technological innovations	Innovation of products	15	52%	25	47%	41	38%	53	34%	54	26%
	Innovation of production equipments and processes	14	48%	22	41%	45	42%	56	35%	68	33%
Administrative innovations	Innovation of administrative structure and communication system	-	-	3	6%	7	6%	20	13%	32	16%
	Innovation of command and decision making processes	-	-	3	6%	14	13%	29	18	52	25%
	Answers	29	25%	53	45%	107	74%	158	92%	206	95%

N: Number

F:Frequency

Appendix 8: Innovationclassification according to the Degree X Type

	Until 1960		60s		70s		80s		Since 1991	
	Radical	Incremental	Radical	Incremental	Radical	Incremental	Radical	Incremental	Radical	Incremental
Innovation of products	5 38%	10 59%	11 46%	14 48%	15 27%	26 51%	20 25%	33 43%	17 19%	37 32%
Innovation of production equipments and processes	8 62%	6 41%	11 46%	11 38%	27 48%	18 35%	34 42%	22 29%	34 38%	34 29%
Innovation of administrative structure and communication system	-	-	1 4%	2 7%	7 12,5%	-	16 20%	4 5%	19 21,5%	13 11%
Innovation of command and decision making processes	-	-	1 4%	2 7%	7 12,5%	7 14%	11 13%	18 23%	19 21,5%	33 28%
Answers	13	16	24	29	56	51	81	77	89	117

Description of Business Model for Innovative Agroforestry Consulting Co.

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Abstract

Agroforestry is the triple spatio/temporal combination of two/three distinct land uses and farming activities (crop cultivation, or/and forest tree growing, or/and domestic animal breeding). It is considered as a “greening” lever for rural development and the EU included Agroforestry in the forthcoming (2014-2020) CAP programming period. The major goals of present research are to build a Business Model and explore its major characteristics for an innovative Agroforestry Consulting Company (ACC) in Greece by using the Pillar/Blocks methodology. Intensified and greening primary production, sequence of harvests, additional income, prospects for entrepreneurship, and transfer of EU provisions to the farmers are the main Value Propositions of the ACC. Dedicated personal assistance and co-creation are the relationship types with its customers. Key partners are its local representatives, academic specialists, and stakeholders, and key suppliers are tubex manufacturers, software providers, and NGOs. Main revenue streams are usage fees, subscription fees, advertising and others.

Keywords: Pillars/Blocks methodology, Rural development, EU subsidies, Greece

1. Introduction

Innovation often stems from the realignment of current activity systems, towards a new direction, as to increase revenues and profits. Given their rather low cost for realignment, such refinement of old-used practices is of considerable importance,

especially these times of global economic change (Amit and Zott, 2010). Thus, the revitalization of old farming practices and their innovative placement into the social framework demanded for “green” economic development is considered essential by policy players. Such traditional practices in Greece and elsewhere are related to Agroforestry. The rural activity of combination of trees and agricultural crops or/and livestock grazing in the same land unit is known as *Agroforestry*. By definition, Agroforestry is a broad term as it encompasses a variety of combinations and components; in these respect, three major Agroforestry systems are inferred, i.e. *silvoarable* (concurrent cultivation of a crop in the understorey and forest trees in the upperstorey), *silvopastoral* (combination of forest trees and livestock), and *agrosilvopastoral* (triple combination for crop/livestock/lumber production).

The EU has started to recognize the benefits of Agroforestry and support its expansion via the “greening” Measure 222 of the Common Agricultural Policy (CAP) for next (2014-2020) programming period. However, modern Agroforestry, at least according to the lines of the CAP, demands high spatial and temporal organization of activities and markets, high levels of entrepreneurship on behalf of farmers and their supporters, and increased levels of promptness to invest on innovative projects. Thus, a significant ground for entrepreneurship is developed in Greece related to the implementation of the new-shaped Agroforestry. The shift in cultivation practices and the adoption of modern Agroforestry will be highly facilitated by the entry in the Greek agri-market of a consulting company (i.e. Agroforestry Consulting Company, ACC) dealing with this challenge. Recent research has shown that farmers welcome the entry of ACC into the agri-market, given the EU support of Agroforestry (Nasiakou, 2013). The objective of the present research is to set up and explore the major characteristics of a Business Model for an Agroforestry Consulting Co. in Greece.

2. Related Literature

Agroforestry projects may be found all over the globe reviling their multi-faceted importance (Zomer et al. 2009). For Greece, Agroforestry is considered as traditional rural activity, with significant sociocultural value (Ispikoudis and Sioliou, 2005) that is met with all its major types (i.e. silvopastoral, agrosilvopastoral, and silvoarable). Primitive silvopastoral forms are reported for the Neolithic period, when dense forests

opened to facilitate livestock grazing (Grove and Rackham, 2001). It is estimated that traditional Agroforestry systems of Greece cover 3 M Ha, or 23% of the whole country (Papanastasis et al., 2009). Sidiropoulou (2011) recorded 695 traditional silvoarable systems in northern Greece, expanded in an area more than 10 Ha each, occupying 54,620 Ha of the land. Despite its significant economic importance, Agroforestry was almost neglected after the domination of mechanization in 1960-70's that demanded the application of single (mono-) cultivations.

Nowadays, Agroforestry emerges as an important innovative professional perspective for rural EU economies. Innovation stems from its triple nature, i.e. the simultaneous-combined environmental (Shibu, 2009), social (Horlings and Marsden, 2011) and economic Streed (1999) benefits. Recession in global hardwood market, coupled with increasing environmental concern for massive deforestation generated commercial opportunities for farmers to enter, intensify or expand their Agroforestry systems and activities. Up to 2005, the EU considered land uses as having a strictly distinguished and determined identity, either agricultural, or forest (McAdam et al., 2009). Such considerations emphasized and gave impetus for clearing trees from agricultural lands. However, the benefits delivered by Agroforestry were strongly appreciated by EU institutional tools, like the CAP, which for the next programming period (2014-2020) subsidies the installation and maintenance of Agroforestry projects, thus giving impetus for a wider adoption.

Worldwide evidences have shown that Agroforestry is difficult to be adopted and implemented by the farmers, either due to the diversified nature of such projects (Jerneck and Olsson, 2013) or to internal factors explained by social-based behavioral theories (Feola and Binder, 2010). In order to help framers to decide upon new developments or new policy instruments that may help them make profit on their crops several B2B Agribusiness Advisory Firms are created. Firms like the *AFG Venture Group*¹³, the *Food & Agribusiness Research and Advisory (FAR)*¹⁴sector of the multinational *Rabobank* and the *Alliance for a Green Revolution in Africa (AGRA)*¹⁵, or the state-owned *Canadian Agroforestry Development Centre*¹⁶are seek to deliver integrated solutions on Agroforestry, transfer innovative research results and assist their customers to achieve their objectives.

¹³http://www.aseanfocus.com/about_afg.php

¹⁴https://www.rabobank.com/en/research/FAR/about_far.html

¹⁵<http://www.agra.org/>

¹⁶http://www.agr.gc.ca/index_e.php

Business modeling helps companies to organize resources, and activities and to bring their values to customer segments, and as a return to augment revenue streams. While the extensive and intensive use of business models is linked with the boom in *e-commerce* of the late 90's (Zott et al., 2010), their use is still expanding. In agri-business they met mostly in innovative aspects like in companies of bio-technology based agriculture (Bigliardi et al., 2005), eco-innovation (Huijben and Verbong, 2013), and organic-based agriculture (Chang et al., 2011). In traditional agricultural countries, like Greece, characterized from delays in adoption of new achievements, and rural economy built upon small-holder's capacity, the adoption of novel business modeling from agri-firms is by far not well grown. However, the need to organize activities and inflows/outflows, after a sustainable business modeling, is imperative as to ensure the durability and longevity of the business.

3. Methodology

Under such challenges that promote changes from monocultures to multicultures within a well-promised institutional environment for rural Greece, the generation of the Agroforestry Consulting Company (ACC), having as its major goal to advise farmers to deal with the new challenges posed by Agroforestry, emerges as necessity. To identify the ACC's Business Model the structural formation proposed by Osterwalder and Pigneur (2004), and Osterwalder et al. (2005) was followed (Fig. 1).

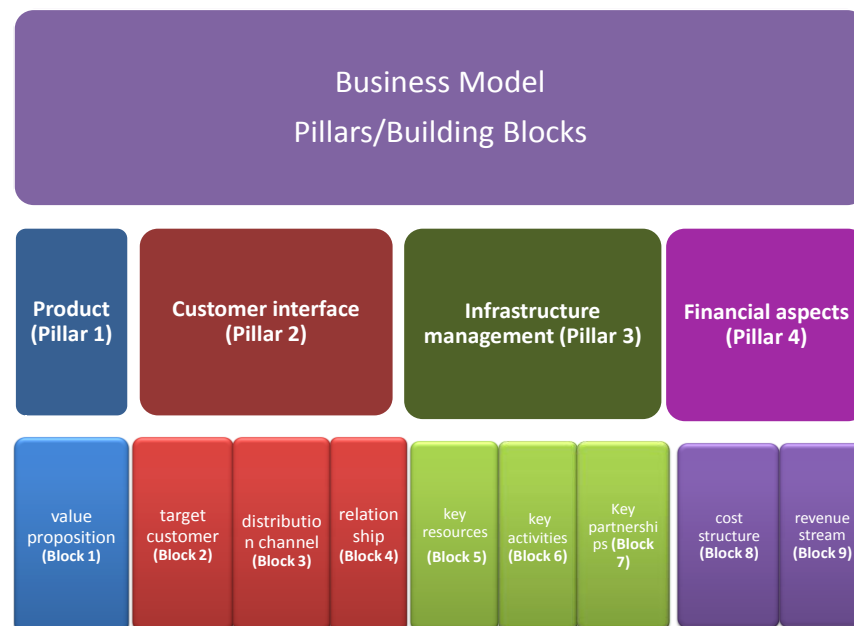


Figure 1. Business model pillars and building blocks (adapted from Osterwalder and Pigneur (2004, 2009))

This 9th-blocked model was associated with four (4) pillars for value and revenues creation. Block 1 (*value proposition*) was linked with a detailed view of the values (products and services) the ACC is expected to deliver to farmers (**Pillar 1, product**). Within Block 2 (*customer interface*) values' receptors (farmers) canalized in customer segments; Block 3 (*distribution channel*) explores the variety of the ACC's means for approaching farmers; Block 4 (*relationship*) outlines the links between farmer groups and the ACC (**Pillar 2, customer interface**). Block 5 (*value configuration*) explains the inherent environment (activities and resources) of value creation; Block 6 (*core competency*) describes the basic competences to run the business model for the ACC; Block 7 (*partner network*) portrays the necessary networks of agreements with other companies to facilitate the transfer of value to farmers (**Pillar 3, infrastructure management**). Finally, Block 8 (*cost structure*) gives details about the various costs produced by running the business model, and Block 9 (*revenue model*) gives the revenue flows for making money (**Pillar 4, financial aspects**). All relevant data needed to building blocks are obtained from official state's statistics.

4. Results and Discussion

4.1 Pillar 1: Product (Services)

4.1.1. Building Block 1: Value proposition

To build the Customer Value Proposition (CVP) the ACC must work on the exploration of farmer's characteristics (knowledge, abilities, deficiencies, expectations, means). Sequentially, a bundle of propositions, suggestions, and consultations is addressed to the farmer, and finally, in conjunction with the physical constraints (soil condition, watering, etc.), the selection of the best Agroforestry system/project that suits to the farmer is taking place. More specifically, the CVP may include improvements on (a) *farmers' income*: The economic performance of Agroforestry depends on many factors, like tree species, soil and climatic conditions, and tree cultivation. For example, the wood quality and production of walnut tree depends on whether it will be systematically irrigated or not. For un-irrigated cultivation of 100 walnut trees Ha⁻¹, the production of 1 m³ of lumber of first quality (3 m length/65 cm diameter of unbranched trunk) per tree will be achieved in 45 years after planting, while for irrigated trees this period is reduced to 35 years. (b) *farmers'*

life quality: Agroforestry projects increase the quality of environment since they contribute to the effective control of water's surface runoff and soil erosion, retention of soil biotic activities, and physical properties, increase of biodiversity, and farmer life quality. *(c) farmers' social status*: Agroforestry projects support a variety of rural development resources, so leading to more stable agri-business and rural communities, motivate farmers to move towards sustainable land use practices and thus securing rural professional activities, secure the livelihood of local people in terms of human health, infrastructures, alternative food provision, and mitigation of adverse environmental effects, improve the potential for job creation, improve public opinion regarding agricultural, livestock husbandry and forestry activities, create healthy environments, and improve landscape. *(d) other values*. The ACC will deliver values related to extensified, green agricultural production, sequence of harvests, additional income from by-products, entrepreneurship, and EU provisions. In addition, the ACC will help farmers to solve problems related to selection of the proper system/project, soil preparation practices, establishment practices/selection of spatial planting pattern, selection of suitable tubex tree shelter, tree species growth requirements (irrigation schedule, etc.), mitigate crop/tree/weed competitions, tree cultivation practices (schedules for pruning, hoeing, etc.), wood liquidation and processing, management of other tree products (fruits, foliage, etc.), and EU subsidies' acquisition.

4.2 Pillar 2: Customer interface

4.2.1. Building Block 2: Target customer (customer segments)

There are four target professional groups, i.e.

(a) farmers. It is the most important customer segment for ACC. Typical farmers, i.e. those of who have net annual income more than €3000 are 300,000 in number, while more than 2,000,000 other taxpayers are gaining additional income from farms. Agricultural farms of > 10 Ha in area are more than 92,000 in number (2007). Farm owners amounted to 860,150 (2007). The age class distribution of farmers (and stock breeders as well) is right-skewed with the 36.3% of the farm owners to be > 64 years old (312,470), some 20% allocated both to the age classes of 55-64, and 45-54, while < 35 years old are 59,000 (2007). Farmer income decreased from 2006 to 2011 by a cumulative rate of -22.6%, while the performances of the rural economies of EU-27

and Eurozone (EU-17) for the same period achieved income increases of 19% and 5% respectively¹⁷. EU through CAP provisions for the period before economic crisis 2007-2010, supported farmer income by allocating to 79.3% for *direct payments* (2.4 billion Euros for 2010), 5.4% for *market measures* (65 million Euros), and rural development (493 million Euros). Almost 55% of the farm owners received less than €1250 as total annual direct payment for 2010, or the 8.9% of the total direct payments for this year. Despite the low farmer income, Agriculture is the well-promised sector of Economy in Greece. Agriculture contribution to the GDP of Greece increased from 3.5% in 2009 to 4.1% in 2012, with improvements in balance of exports¹⁸, while Agriculture (together with Gaming and Fisheries) produced for 2010 an added value of 3.3% of the total added value, almost double in respect to 1.7% of the EU-27 (PASEGES 2012). It is estimated that the crop production contributes to 70.2% of the total agricultural goods for 2011, and agriculture contributes to 9.2% of the total employment rate for 2010, almost double in respect to 4.7% of the EU-27. Also, a survey conducted by the *Kapa Research Organization*¹⁹, showed that people intend to encourage successors to be farmers (69.9%), a finding that strongly indicates a dynamic future for the profession.

(b) *stock breeders*. Livestock husbandry is a traditional profession activity of the primary (and secondary) sector in Greece that contributes to 29.8% (or 2.8 billion Euros) of the total estimated agricultural goods (9.5 billion Euros) for 2011 (PASEGES 2012). Almost 380,000 families are directly employed with livestock husbandry, with 30,000 employed with livestock processing sector. The most common type of livestock husbandry is the extensified and semi-extensified that is applied in the extensive rangelands of Greece; almost 5.2 M Ha are rangelands, covering the 40% of the whole area of the country. Sheep and goats husbandry contributes to 7.4% (or 708.2 million Euros) of the total estimated agricultural goods, followed by cattle (2.7%, 258.5 million Euros); *milk* production (1.9 million tons) is third to the total produced agricultural goods with an estimated contribution of 12.9% (1.2 billion Euros).

¹⁷ Article of Christos Konstas in *Attiki Press* (Sunday, 8 April 2012) <http://www.attikipress.gr/4942/posoi-einai-oi-agrotes-sthn-ellada> (access 14 June 2013)

¹⁸Article of Mattheos Tsimitakis in *Kathimerini* (Saturday, 4 May 2013) http://news.kathimerini.gr/4dcgi/w_articles_economy_2_04/05/2013_519450 (access 14 June 2013)

¹⁹The survey conducted by questionnaires in a sample of 1417 mature individuals from all (13) regions of Greece. Details are found in <http://www.ntvserres.com/2013/05/22/page/2/> (access 14 June 2013)

(c) *private forest land owners*. The majority of Greek forests (6,532,000 Ha) owned by the state and expands to 12.9% of the total country area. A significant proportion belongs to local authorities, while a smaller portion is undivided shares, owned or monasteries. Specifically, the distribution of forest ownership is: a) public 65.5%, b) communal (OTA) 12.0%, c) 9.7% undivided shares, d) private 8.0%, e) monastic 4.4% f) charitable institutions 0.4%. Almost half of the forests produce low lumber quality, mainly shrublands, scrublands, etc. (3.15 M Ha or 48.4%), followed by oak forests (1.47 M Ha or 22.6%), and pine forests (0.57 M Ha, or 8.7%). Private forests cover 34.6% of the total forested land (6.5% of the total country area). Technical lumber is the most valuable product (HMRDF, 2009); however, its production is decreasing during the last decades. From 600-650 thousand m³ (early 90's) it decreased to 380-400 thousand m³ (end of 00's), while in 2009 it reached to 240 thousand m³ (HMRDF 2009, 2011).

(d) *other indirectly related*. It consists of investors who want to make profit on purchasing agricultural land and cultivate it. It is expected that this segment will steadily increase, since the profit margin is increasing due to economic crisis (devaluation of land price). Investment on agricultural land (a) have very good prospects for income generation, (b) are benefited by the international rise of agricultural land price, (c) are having high possibilities to diversify the investment portfolio, and (d) offer protection conferred against inflation²⁰.

4.2.2. Building Block 3: Distribution channel

To bring Value Proposition to its customers the ACC will use only its own, direct-type channels. However, after a period of two years needed for entry into the agri-Consulting market, the ACC foresees to establish a network of local representatives. Points of contacts included (a) the headquarters (management office) in the city of Larissa, and (b) the representatives' own stores (if they have). From Larissa several campaigns will be organized for value communication, and services' distribution and sales. Campaigns will run in five (5) phases: *Awareness*. Several promotion channels will be used; local media will publicize the idea of Agroforestry and its potentialities

²⁰Read more on: "*Seeding*" billion of funds on farmland on the planet, published 8th December 2012, <http://www.capital.gr/News.asp?id=1684371&ppg=1> (access 15 June 2013).

for farmers. *Evaluation.* The evaluation of Value Proposition could be achieved through farmers' participation in seminars and workshops. During these events farmers will be exposed to slideshows of several modern and tradition Agroforestry projects and then let to (a) evaluate Agroforestry, and (b) launch a virtual project by themselves (according to Liagre et al., 2005) will be applied. A re-evaluation test will be conducted by the end of the lifetime of the Agroforestry project, to obtain the overall satisfaction (or not) of the farmers and to realign relationships. *Purchase.* They could be achieved by signing bilateral contracts, where stated that the ACC will support farmer and his/her legal successors for the whole life-time of the project, by advising them in technical (soil preparation, etc.) and administrative issues (provision of EC subsidies, etc.). Payments will be determined on the basis of the (i) Agroforestry system, (ii) selected tree species, and (iii) reference area devoted to Agroforestry. The remuneration will be made in installments, with payment of 30% of the total amount to the signing of the contract. The remaining amount will be paid every 5 years until wood liquidation. Alternatively, a special term will be included for the payment to ACC according to an agreed percentage on sales at the end of the project. *Deliver.* The main focus is how the customers will obtain the ACC's services. This could be done by establishing a common agreed program of meetings (in the field, in the office) during all phases of the agreed project. *After sales.* Customers will obtain the ACC's post-purchased support through the maintenance of close relations after wood liquidation. At the end of the project the ACC will suggest, free of charge, alternatives to the farmers for new investments on how they effectively exploit their land.

4.2.3. Building Block 4: Relationship

The expected relationships that the ACC will develop with its customers will be *dedicated personal assistance*, described in signed contract. The relationship system will integrate social *e*-media (like Twitter, FaceBook, etc.) to track and exchange opinions and experiences about new techniques, products, services, legislation etc; thus facilitating ACC to improve its services. An *e*-newsletter will communicate news and achievements. A contact manager system will integrate emails, documents, telephone calls, and faxes. The ACC will also organize and supervise the establishment of a farmers' network to facilitate information flow and communication,

further strengthening dedicated relationships. It will also contribute to knowledge exchange between farmers and thus encourage solving each other's problems. Also, the ACC will be helped to better understand farmers' needs. The farmers' network will be integrated within organization intranet which integrates information provided by local representatives. Through establishing such *communities* (*sensu* Osterwalder and Pigneur, 2009) information will flow from all levels of organization. Farmers will be benefited from real-time information (e.g. EU subsidies, alternative cultivations, etc.), thus enhancing entrepreneurship, while the brand value of ACC will be further appreciated. A significant part of external costs will be allocated to dedicated personal assistance (i.e. costs allocated to keep dedicated farmers and local representatives). Additionally, *co-creation* will be promoted by the ACC. This could be achieved by let farmers to contribute to the acquired empirical knowledge. Effective transfer and assimilation of field experiences will largely help the staff of the ACC to develop new plans and Agroforestry projects. It is an added value for the ACC and the organization strongly invests on it.

4.3 Pillar 3: Infrastructure management

4.3.1 Building Block 5: Key Resources

Four types of resources are needed: Type 1. Physical resources. It refers to central building and warehouse purchases, and work office infrastructure (furniture, PC hardware, etc.). In addition, at the early years it is estimated that three (3) vehicles (van type) are needed for transferring the staff to the field. Type 2. Intellectual resources. Given its innovative character, and its strategy that will heavily lean on innovation, the ACC demands intellectual input from research achievements. It is not planned to establish a research department. However an agreement will be signed with academics, specialists on Agroforestry, for knowledge and information transfer and exchange between both parties. Filed data will be given, and research achievements will be transferred inside ACC. Type 3. Human resources. It is considered as the most valuable asset for ACC, since the organization is considered as a knowledge-producer machine. The scientific staff will consist of 4 agronomists (3 specialists for croplands, and 1 for irrigation), 4 foresters; 1 Arc-GIS specialists and 3 specialists for establishing and maintenance of forest tree lines and plantations, 2 animal production specialists for determining proper livestock management, 2

veterinarians for animal health care advices, 2 specialists on EU subsidies and national and international laws, and 1 economist, to search and suggest possible investment fields. Supporting staff will consist of clerks, accountant, and field-workers. Administration staff will consist of 1 CEO, 1 HR Manager, 1 PR/Marketing Manager, 1 Operations Manager, who will oversees, designs and controls service (value) generation, and 3 project managers, who will be responsible to track projects related to all three Agroforestry systems. They will be the reference persons of the ACC to the farmers, and they will transfer information from farmers to the ACC and *vice versa*. Type 4. Financial resources. Several financial resources and or guarantees, like stock options, cash, or credit (bank loan) will be needed to purchase building, vehicles, machineries, and infrastructure for workforce. Founders of the ACC will make use of possibilities for funding through the supporting provisions of initiatives related to entrepreneurship, like the Greek *Youth Entrepreneurship*²¹ or other similar EU tools. Funding is also provided by the 30% of the total contract volume, (pre-)paid before the establishment of the Agroforestry project. To secure the contracts ACC will offer a 2% financing of Agroforestry establishment, just to make sure that farmers will place orders with the ACC, rather than its rivals.

4.3.2 Building Block 6: Key Activities

Key activities are required to operate successfully and to offer Value Propositions to the farmers. These are related to

Activity 1. Value Generation. The ACC will be able to deliver Value Proposition to the farmers when all necessary equipment is purchased and key resources are used. For this purpose, it is necessary to secure of adequate funding, purchase of central building and the necessary infrastructure (for office/field work), hire of high skilled personnel, establish synergies with academics, specialists on Agroforestry, sign agreements with tubex tree shelter manufactures to allocate the right to exclusively promote tubex in Greece, and establish synergies with local representatives. Activity 2. Distribution Channels. They include local media, e-newsletter, seminars and workshops (*awareness*), evaluation test for pre-establishment and post-liquidation of woody capital (*evaluation*), contract construction and setting the network of local representatives (*purchase*), pre-establishment meetings (*deliver*), post-liquidation meetings (*after sale*). Activity 3. Customer Relationships. For *dedicated personal*

²¹ See for example, <http://www.neagenia.gr/frontoffice/popup.asp?cpage=agroles&cnode=31> (access 16 June 2013).

assistance specific internet platforms and domains will be set (social *e*-media interfaces), periodical e-newsletter will be launched. Same activities together with the regular farmers' meetings will be used for *co-creation*. Activity 4. Revenue Streams. Selling services by contract construction and provision of goods (e.g. tubex) are the main revenue streams.

4.3.3 Building Block 7: Key Partnerships

Key partners are of three types: 1. *Local representatives*. A network of local representatives is expected to grow and expand to the Greek country. These could be free lancers (agronomists, foresters, forest technicians, veterinarians) or private agri-companies. It is expected that there will be 1-2 local representatives in each prefecture. They will sign contracts for exclusive promotion and deliver of ACC's Value Proposition to the farmers. Specific meetings, seminars and workshops will be organized with academic specialists, to update their knowledge on Agroforestry. 2. *Academic specialists*. They will operate to provide ACC's specialists and local representatives with up-to-date knowledge on Agroforestry. 3. *Stakeholders*. Relationships will be developed with local stakeholders, like public administrative bodies and agents (authorities), agronomists and foresters from the public sector, specialists from Geotechnical Local Stations; thus establishing mutual confidence with authorities to facilitate transactions with the public services. Key suppliers included individual and organizations that will provide ACC with products and intellectual means (information, software) that facilitate the generation of its Value Proposition. They are 1. *Tubex tree shelter manufacturers*. The ACC foresees to be an exclusive representative for provision of Tubex tree shelter to the farmers. 2. *Software providers / web page and social media supporters*. The ACC will sign contracts with software providers, web page and social media designers. 3. *Scientific organizations and NGOs*. The ACC will be official member of national (GAN²²), European (EURAF²³), or International (WAC²⁴) scientific organizations that promotes Agroforestry. Also links will be established with active farmer organizations, like the

²²GAN, www.agroforestry.gr

²³EURAF, www.agroforestry.eu

²⁴WAC (ex ICRAF), <http://www.worldagroforestrycentre.org/>

Pan-Hellenic Union of Young Farmers²⁵.

4.4 Pillar 4: Financial Aspects

4.4.1 Building Block 8: Revenue Streams

Such streams for ACC the following are foreseen: 1. *Usage fees*. Revenue is produced by selling the right to use objects (physical products). ACC is planning to have for sale tubex tree shelters. They are specific semi-transparent plastic tubes, of 60 cm height and various diameters. Given their (semi)-transparency they permit photosynthesis to take place, help the plant to exploit humidity, and protect young plants against animals (insects, rodents, etc.) and physical hazards (e.g. winds). It also helps trees to develop a straight trunk thus leading in wood of high quality (technical lumber). The ACC will import tubex and supporting materials and ensure the selling rights by buying them from manufacturer. 2. *Subscription fees*. It is the main revenue stream for ACC. Farmers will sign long term contracts (usually 30-40 years, depending on the forest tree species) to obtain continuously the services of ACC. Such services are related to establishment, development, maintenance, and liquidation of standing tree capital. The 30% of the whole services will be paid to ACC at once in the starting time of the contract, and the rest will be allocated to equal timely shares, in the form of timely fees. A percentage on the lumber sales at the end of the project lifetime will be agreed with farmers. 3. *Advertising*. Advertising and promoting agrochemicals, like conventional (and green) fertilizers, soil sterilizers, pesticides, fungicides, agro-infrastructure (like for example, hoeing tools, etc.) during counseling with farmers a significant revenue stream will be generated. 4. *Others*. Other options include lending/rending/leasing and brokerage fees will be searched. If ACC establishes well in the Agri-market, then machinery and other equipments will be purchased and let for rending or leasing to the farmers. Also, brokerage fees may serve for additional revenue creation, by taking a percentage of the value of each sales transaction made between farmers and credit card merchants.

4.4.2 Building Block 9: Cost Structure

²⁵PENA, <http://www.neoiagrotes.gr/>

Several costs are generated in defining Key Resources, Key Activities, and Key Partnerships. The Business Model of the ACC is foreseen to be value-driven (not cost-driven); it is the high degree of personalized services provided to its customers that demands such type of models. However, structures established from, for example, outsourcing its activities to local representatives, implied a low-cost philosophy. Costs are distinguished in *important costs*, like a) for customer contacts, b) market research, c) public relations, d) salaries, e) rents, f) utilities, g) travelling costs, *expensive costs* related to key resources, like for a) purchasing central building and warehouse, b) buying the selling rights for tubex tree shelters, brand equity, and *expensive key activities*, for a) building customer relationship, b) promotion, c) outsourcing, d) building brand value, e) external (academic) counseling.

5. Conclusions

- The Customer Value Proposition of the ACC includes improvements on farmers' income, life quality, social status, and help to the farmers to deal with installation and maintenance issues and EU subsidies' acquisition, as well.
- Target groups for ACC are *farmers* who cultivate land, *stock breeders*, *private forest land owners*, and *other indirectly related professional*, like investors who want to make profit on acquiring agricultural land and cultivate it. To bring Value Proposition to its customers the ACC will use only its own, direct-type channels. The ACC also foresees to establish a network of local representatives. The expected customer relationships will be *dedicated personal assistance*, and in a lesser extent *co-creation*.
- Four types of resources are needed: *Physical* (tangible assets), *intellectual* (intellectual input from research achievements), *human* (scientific staff, supporting staff, administration staff), and *financial resources* (stock options, cash, credit (bank loan), state and EU supporting provisions).
- Key activities related to *value generation* are secure of adequate funding, purchase of the necessary infrastructure, hiring of high skilled personnel, establishment of synergies with academics and local representatives, and agreement with tubex tree shelter manufactures, *distribution channels* (in terms of *awareness*, *evaluation*, *purchase*, *deliver* and *after sale* relations), *customer relationships* (internet platforms and domains, *e-newsletter*, and regular meetings with the farmers, and

revenue streams (selling services, and provision of goods (e.g. tubex)).

- Key partners are local representatives, academic specialists, and stakeholders (like public administrative bodies and agents). Key suppliers are tubex tree shelter manufacturers, software providers / web page and social media supporters, and scientific organizations and NGOs.
- Revenues streams include *usage fees* from selling the right to use tubex tree shelters, *subscription fees*, for long term contracts with farmers, *percentages on sales* by advertising and promoting agricultural supplies, and *others* (lending/renting/leasing and brokerage fees).

6. Study Limitations

Present research showed that a significant ground for entrepreneurship is developed in Greece related to the implementation of Agroforestry. The effort runs from the adoption of some Agroforestry project by the farmers, to the actualization of relevant market, advisory companies included. However, several conditions must exist to favour and underpin the entrance of Agroforestry Consulting Company in Greek Agri-market. Condition 1. The country foresees exodus from economic crisis that heavily lean on the development of Primary Production (i.e. Agriculture). Condition 2. In many extensive plain, cultivated areas in Greece the model of growing plant monocultures is perceived as rather anachronistic. There is urgent need for an environmental-friendly, ecological-focus agriculture, while in addition agricultural reform and novelties are continuously asked, as means to improve farmers' income. Condition 3. Agroforestry practices are well recognized by farmers since there is still large number of traditional Agroforestry systems and activities in the country. Condition 4. Given its diversity, Agroforestry demands deep knowledge on crop cultivation/forest tree treatment/livestock management. Farmers need support in the establishment and maintenance of Agroforestry systems. Condition 5. The EU Common Agriculture Policy supported (2007-2013) and still supports (2014-2020), directly (Pillar 2), or indirectly (Pillar 1) the first establishment and maintenance of new Agroforestry systems (measure 222). Condition 6. There is no any Agroforestry Consulting Company in Greece. Given the completion of these six conditions, the institutional and market environment in Greece seems to favor the entrance of the

Agroforestry Consulting Company.

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Analysis of Changes in Employment of Occupational Categories in the region of Epirus in the period 2000-2012

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Abstract:

The prediction of the changes in employment of occupational categories (Statistical Classification of Occupational Categories) within the Economic Activities Sectors (Statistical Classification of Economic Activity Sectors) at regional level is interesting not only for the academic research but also in the context of the applied regional policy. This paper attempts to explore the changes in employment in the region of Epirus and proposes a model for their analysis and monitoring. What should be noted is the consideration of changes in employment not only within professional groups but also within sectors.

Keywords: Changes in employment, shift share analysis.

1. Introduction

The splitting of changes in employment by sector of economic activity into components is a common method for the ex post evaluation or the planning of sectoral or regional employment policies and also for making predictions (Bendavid 1991, Klosterman 1990, Isard 1970). Besides the splitting into components of sectoral employment at country or regional level, the splitting into components of changes in occupational categories within the

sectors of economic activity has also been attempted (Efstratoglou et al 2011, Efstratoglou 2001, Wilson et al 1987). In this project we shall attempt the splitting of changes in the number of employees per occupational category within the sectors of economic activity at regional level.

Methodologically, our approach will be based on the method of shift share analysis (Dunn 1960) by utilizing its versions (Esteban-Marquillas 1972, Wilson et al 1987) in its non-stochastic form (Berger 1984, Knudsen 1991; 2000). The version of the method used starts with the splitting of ratios (Spiezia et al 2007)

2. The model

Assuming that for the r region, ε_{ij}^r is the number of employees of the occupational category $j = 1, 2, 3, \dots, m$ at the $i = 1, 2, 3, \dots, n$ sector of economic activity and a_{ir} is the total number of people employed in the i sector in the region. We define the ratio $(\varepsilon_{ij}^r / a_{ir})$ which expresses the share of the employees of the occupational category j in the total number of people employed in the i sector. The ratio can also be written as:

$$\frac{\varepsilon_{ij}^r}{a_{ir}} = \left(\frac{\varepsilon_{ij}^r}{\varepsilon_{jr}} * \frac{\varepsilon_{jr}}{a_r} \right) : \left(\frac{a_{ir}}{a_r} \right) \quad (1)$$

Where ε_{jr} is the total number of employees belonging in the j occupational category at the r region. And a_r is the total number of employees in the r region. The logarithmic transformation of the equation (1) and the rearrangement of the terms results the following equation:

$$\log \varepsilon_{ij}^r = \log a_{ir} + \log \varepsilon_{ij}^r - \log \varepsilon_{jr} + \log \varepsilon_{jr} - \log a_r + \log a_r - \log a_{ir}$$

The differential of the above equation results the following equation:

$$g_{ij}^r = g_r + (g_{ir} - g_r) + (g_{jr} - g_{ir}) + (g_{ij}^r - g_{jr}) \quad (2)$$

where:

$g_{ij}^r = (\varepsilon_{ij,t+1}^r - \varepsilon_{ij,t}^r) / \varepsilon_{ij,t}^r$ is the rate of change at the time points t and $t+1$ of the number of employees of the j occupational category employed at the i sector at the r region.

$g_r = (a_{r,t+1} - a_{r,t}) / a_{rt}$ is the rate of change at the time points t and $t+1$ of the total number of employees at the r region.

$g_{ir} = (a_{ir,t+1} - a_{ir,t}) / a_{irt}$ is the rate of change at the time points t and $t+1$ of the total number of employees at the i sector of economic activity at the r region.

$g_{jr} = (\varepsilon_{jr,t+1} - \varepsilon_{jr,t}) / \varepsilon_{jr,t}$ is the rate of change at the time points t and $t+1$ of the number of employees of the j occupational category at the r region.

The equation (3) results when these four components of equation (2) are multiplied by $\varepsilon_{ij,t}^r$.

The equation (3) has been split into four components (σ_{ij})

$$(\varepsilon_{ij,t+1}^r - \varepsilon_{ij,t}^r) = \sigma_{ij}^1 + \sigma_{ij}^2 + \sigma_{ij}^3 + \sigma_{ij}^4 \quad (3)$$

Where:

$$\sigma_{ij}^1 = \varepsilon_{ij,t}^r * g_r \quad (4)$$

It is the part of the change which concerns the expected impact at the number of employees $\varepsilon_{ij,t}^r$, due to the total change in the number of employees in the region.

Where:

$$\sigma_{ij}^2 = \varepsilon_{ij,t}^r * (g_{ir} - g_r) \quad (5)$$

It is the part of the change which concerns the expected impact at the number of employees $\varepsilon_{ij,t}^r$ due to the sectoral restructuring. The sectoral restructuring is expressed by the difference in rates $(g_{ir} - g_r)$. That is because the difference which can be positive, negative or zero is

also written as $(\frac{a_{ir,t+1}}{a_{r,t+1}} - \frac{a_{ir,t}}{a_{r,t}})$ reflecting respectively the restructuring in favor of or against the

i sector, or no change in the structure if the difference is zero.

Where:

$$\sigma_{ij}^3 = \varepsilon_{ij,t}^r * (g_{jr} - g_{ir}) \quad (6)$$

It is the part of the change which concerns the expected impact at the number of employees $\varepsilon_{ij,t}^r$ due to the effect of the difference in the rates of change between the occupational category and the sector. We should also note that (Efstratoglou 2002, 2012) the causative forces of changes at the employment levels of the sectors are derived primarily from the demand of companies and households for the services and products produced by the sectors. Moreover, the changes in the number of employees in the occupational categories primarily

derive from the changes concerning the organization of production and also from the changes imposed by technology.

These different impacts become more apparent if the difference $\varepsilon_{ij,t}^r * (g_{jr} - g_{ir})$ is split into two new components. In component b_{ij} and a_{ij}

Where:

$$b_{ij} = (\varepsilon_{ij,t}^r g_{jr} - a_{r,t+1} \frac{a_{ir,t}}{a_{rt}} \frac{\varepsilon_{ij,t+1}^r}{a_{ir,t+1}}) \quad (7)$$

It is the part of the change which concerns the expected impact at the number of employees $\varepsilon_{ij,t}^r$ due to the effect of the difference in the rates of occupational shares $(\varepsilon_{ij}^r / \varepsilon_{jr})$ between the sectors in relation to the changes of the sectoral shares (a_{ir} / a_r) . If $b_{ij} > 0$ then

$$\frac{(\varepsilon_{ij,t+1}^r / \varepsilon_{jr,t+1})}{(\varepsilon_{ij,t}^r / \varepsilon_{jr,t})} < \frac{(a_{ir,t+1} / a_{r,t+1})}{(a_{ir,t} / a_{r,t})} \text{ and vice versa if } b_{ij} < 0.$$

Where:

$$a_{ij} = (a_{r,t+1} \frac{a_{ir,t}}{a_{rt}} \frac{\varepsilon_{ij,t+1}^r}{a_{ir,t+1}} - \varepsilon_{ijt}^e g_{ir}) \quad (8)$$

It is the part of the change which concerns the expected impact at the number of employees due to the effect of the difference in the rates of occupational shares within the sector $(\varepsilon_{ij} / a_{ir})$ in relation to the changes of the sectoral shares (a_{ir} / a_r) . If $a_{ij} > 0$ then

$$\frac{(\varepsilon_{ij,t+1}^r / a_{ir,t+1})}{(\varepsilon_{ij,t}^r / a_{ir,t})} > \frac{(a_{ir,t+1} / a_{r,t+1})}{(a_{ir,t} / a_{r,t})} \text{ and vice versa if } a_{ij} < 0.$$

Finally the section σ_{ij}^4 where:

$$\sigma_{ij}^4 = \varepsilon_{ijt}^r (g_{ij}^r - g_{jr}) \quad (9)$$

It is the part of the change which concerns the real potential of an occupational category in an economic activity sector, which can be attributed both to special factors in the region such as regional specialization in a sector and in common impacts of technological and organizational changes.

If the components $\sigma_{ij}^1, \sigma_{ij}^2, \sigma_{ij}^3, \sigma_{ij}^4$ are summed for all the sectors $i = 1, 2, 3, \dots, n$, the respective components will result relating to each j occupational category totally in the region.

Thus:

From $\sigma_{ij}^1 = \varepsilon_{ij,t}^r * g_r$ the following equation results:

$$\Sigma_j^1 = g_r \sum_{i=1}^r \varepsilon_{ij,t}^r = \varepsilon_{jr,t} g_r \quad (10)$$

It is the part of the change which concerns the expected impact at the j occupational category due to the total change in the number of employees in the region.

From $\sigma_{ij}^2 = \varepsilon_{ij,t}^r * (g_{ir} - g_r)$, the following equation results:

$$\Sigma_j^2 = \sum_{i=1}^r \varepsilon_{ij,t}^r g_{ir} - \varepsilon_{jr,t} g_r \quad (11)$$

It is the part of the change which concerns the expected impact at the j occupational category due to the sectoral restructuring.

As mentioned above, the two components b_{ij}, a_{ij} may result from the component

$\sigma_{ij}^3 = \varepsilon_{ij,t}^r * (g_{jr} - g_{ir})$. The respective sums for i are the following:

$$B_j = \sum_{i=1}^r b_{ij} = \sum_{i=1}^r \varepsilon_{ij,t}^r g_{jr,t} - \sum_{i=1}^r \left(\frac{w_{ir,t}}{w_{ir,t+1}} \right) \varepsilon_{ijt+1}^r \quad (12)$$

$$A_j = \sum_{i=1}^r a_{ij} = \sum_{i=1}^r \left(\frac{w_{ir,t}}{w_{ir,t+1}} \right) \varepsilon_{ijt+1}^r - \sum_{i=1}^r \varepsilon_{ijt}^r g_{ir} \quad (13)$$

Where $w_{ir,t} = \left(\frac{a_{ir,t}}{a_{r,t}} \right)$ and $w_{ir,t+1} = \left(\frac{a_{ir,t+1}}{a_{r,t+1}} \right)$ are the sectoral shares in the total employment of the

region at the time points t and $t+1$. The component B_j is the part of the change which concerns the expected impact at the j occupational category due to the restructuring of the j category between the i sectors, in relation to the sectoral restructuring in the region. The component A_j is the part of the change which concerns the expected impact at the j occupational category due to the restructuring of the j occupational categories within the i sectors in relation to the sectoral restructuring in the region.

Finally from the $\sigma_{ij}^4 = \varepsilon_{ijt}^r (g_{ij}^r - g_{jr}^r)$ results that the sum for i is equal to zero because:

$$\sum_i \varepsilon_{ijt}^r g_{ij}^r = \sum_i \varepsilon_{ijt}^r g_{jr}^r$$

3. Application

The model (3) was applied in order to split the absolute changes of the number of employees into components per occupational category within the sectors of economic activity in the region of Epirus. The period of analysis of the changes concerns the year 2007, where the year 2000 is the base year, and the year 2012, where the year 2008 is the base year. The data are derived from the quarterly surveys on the labor force which are conducted by the Hellenic Statistical Authority. Specifically, our data refer to employees

aged 15 years and over per the single digit categories of economic activity (Statistical Classification of Economic Activity Sectors) and single digit groups of individual occupation (Statistical Classification of Occupational Categories) for the Region of Epirus. We should note that there are difficulties in comparing the data for the entire period of 2000-2012, due to the changes in the classifications and the related codes. The following tables 1 and 2 show the results relating to the components Σ_j^1 , Σ_j^2 , B_j , A_j and also the absolute changes (Δ) in the number of employees per occupational category in the region of Epirus.

Table 1. Components for the changes of the period 2000-2007

Occupational Categories	$\Delta_{2000-07}$	Σ_j^1	Σ_j^2	B_j	A_j
1. Members of deciding bodies. Senior officials and managers	40	907	1165	-11340	9307
2. Persons engaged in scientific-artistic-related professions	4139	1058	2670	-11652	12062
3. Technicians, technical assistants and associate professionals	2230	430	196	-5739	7343
4. Office employees and associate professionals	2593	722	359	-9688	11223
5. Employees who offer services/ sellers at stores and outdoor markets	1381	1163	1515	-14735	13438
6. Skilled farmers, cattle breeders, forestry workers and fishermen	-5108	2042	-5713	-33317	31880
7. Skilled technicians and persons engaged in related technical professions	1618	1476	665	-19467	18944
8. Stationary plant-machinery-equipment operators and assemblers	-710	718	-1230	-10889	10690
9. Unskilled workers, manual workers and small tradesmen	2517	424	289	-5809	7612
O. Unclassified persons	270	52	59	-639	798

The second column in both tables concerns the absolute change (Δ) in the number of employees per occupational category. We should note that during the period 2000-2007 the number of employees in the Epirus region increased by 7.3% and in the whole country by

10.3%. During the period 2008-2013, in the Epirus region the number of employees decreased by 11.7%, essentially losing the “gains” in employment of the previous period, but it is relatively favored in relation to the whole country which had a decrease of 17.4%.

Table 2. Components for the changes of the period 2008-2012

Occupational Categories	$\Delta_{2008-12}$	Σ_j^1	Σ_j^2	B_j	A_j
1. Senior officials and managers	-6887	-1334	754	-11064	4757
2. Professionals	2174	-2034	222	-17196	21181
3. Technicians and associate professionals	-2838	-1202	-258	-10489	9111
4. Office employees	-5781	-1628	-432	-14105	10483
5. Employees who offer services and sellers	7864	-2094	934	-16561	25584
6. Skilled farmers, cattle breeders, forestry workers and fishermen	-2841	-2790	1179	-22603	21373
7. Skilled technicians and associate professionals	-6683	-2635	-2596	-24361	22909
8. Plant-machinery-equipment operators	-1871	-1224	273	-10082	9162
9. Unskilled workers, manual workers and small tradesmen	743	-893	-87	-7886	9608
O. Unclassified persons					

These trends are followed by the component (Σ_j^1) and gives positive changes in the specific part of the difference in the period 2000-2007 and negative changes in the period 2008-2012. As for the expected impact due to the sectoral restructuring, expressed by the component (Σ_j^2), the occupational categories that have a negative impact during the period 2000-2007 are the categories with the following serial numbers in Table 1: [6] and [8]. During the period 2008-2012 the occupational categories that have a negative impact are four with the following serial numbers in Table 2: [3], [4], [7] and [9]. Due to the fact that sectoral restructuring is primarily the result of the forces of demand for products and services of the sectors, the changes in these occupational categories seem to be affected by the restructuring of the following sectors of economic activities: For the period 2000-2007 from the sectors with the following serial numbers in table 4: [1], [4], [9], [11], [15] and for the period 2008-2012 the sectors with the following serial numbers in table 5: [1], [2], [6], [11], [12], [13], [17], [18], [19], [20].

The negative value of the component (B_j) in all the occupational categories means that the restructuring of the occupational categories across the *i*sectors prevails the sectoral

restructuring. The positive value of the component (A_j) also shows that the restructuring of the occupational categories within the sectors prevails the sectoral restructuring. The following Table 3 shows the number of sectors which have strengthened their presence in a professional category. This means that the component σ_{ij}^4 is positive.

Table 3. Professional categories and number of Sectors with $\sigma_{ij}^4 > 0$.

	Number of sectors
Occupational Categories	2000-07
1 Members of deciding bodies. Senior officials and managers	3
2 Persons engaged in scientific-artistic-related professions	6
4 Office employees and associate professionals	9
5 Employees who offer services/ sellers at stores and outdoor markets	8
7 Skilled technicians and persons engaged in related technical professions	10
3 Technicians, technical assistants and associate professionals	7
9 Unskilled workers, manual workers and small tradesmen	6
8 Stationary plant-machinery-equipment operators and assemblers	6
6 Skilled farmers, cattle breeders, forestry workers and fishermen	1
O Unclassified persons	0
	Number of sectors
Occupational Categories	2008-12
1. Senior officials and managers	9
2. Professionals	9
3. Technicians and associate professionals	8
4. Office employees	7
5. Employees who offer services and sellers	7
6. Skilled farmers, cattle breeders, forestry workers and fishermen	6
7. Skilled technicians and associate professionals	6

8. Plant-machinery-equipment operators	4
9. Unskilled workers, manual workers and small tradesmen	1
O. Unclassified persons	1

The tables 4 and 5 show in detail the potential of the professional category per sector for the periods 2000-2007 and 2008-2012. Where “E” means that the presence of the sector is enhanced in the specific occupational category in relation to the base year. This means that

$$\frac{\varepsilon_{ijt+1}^x}{\varepsilon_{jrt+1}} > \frac{\varepsilon_{ijt}^x}{\varepsilon_{jrt}}. \text{ Also “A” is the weak presence, i.e. } \frac{\varepsilon_{ijt+1}^x}{\varepsilon_{jrt+1}} < \frac{\varepsilon_{ijt}^x}{\varepsilon_{jrt}}.$$

Table 4. Sectors and Occupational categories with $\sigma_{ij}^4 > 0$ (E) and $\sigma_{ij}^4 < 0$ (A)

	Occupational Categories									
	1	2	3	4	5	6	7	8	9	O
Economic Activity Sectors										
1. Agriculture, livestock farming, hunting and forestry				E	E	A	E	A	E	
2. Fishery			A	E		E				
3. Mining and quarrying		A	A	E			E	A		
4. Processing industries	A	A	A	E	E		A	A	E	
5. Electricity, natural gas and water supply		E	A	A			E		E	
6. Constructions	E	E	E	E			E	E	E	
7. Wholesale and retail trade, repairs	A	E	E	E	E		E	E	A	
8. Hotels and restaurants	E	E	E	A	E		E	E	A	
9. Transport, storage and communications	A		A	A	E		A	A	A	
10. Financial Intermediaries	A	A	E	A					A	
11. Real estate, business activities	A	A	A	A	E		E	E	A	
12. Public administration and defense, compulsory social security	E	E	E	A	A		E	E	A	
13. Education	A	E	A	E	E		A	A	E	
14. Health and social care	A	A	E	A	A		A	E	A	

15. Other service activities	A	A	E	E	A		E	A	A	
16. Private households with household staff				E	E		E		E	

Table 5. Sectors and Occupational categories with $\sigma_{ij}^4 > 0$ (E) and $\sigma_{ij}^4 < 0$ (A)

	Occupational Categories									
	1	2	3	4	5	6	7	8	9	O
Economic Activity Sectors										
1. Agriculture, forestry and fishery	E	A		A	A	A	E	A	E	E
2. Mining and quarrying				A			A	A	A	
3. Processing	A	E	E	A	E		E	A	A	
4. Electricity, natural gas, steam and conditioning supply	E	A	E	A			E		A	
5. Supply of water - wastewater and waste management-remediation activities	A			A			A	E	E	
6. Constructions	E	E	A	E			A	A	E	
7. Wholesale- retail trade- repairs of vehicles and motorcycles	A	E	E	A	E	E	E	A	E	
8. Transport and storage	E	E	E	E	A			E	A	
9. Accommodation services & catering services	A	E	A	E	E		A	A	A	
10. Media & Communication	A	E	A	E	E		E			
11. Financial and insurance activities	A	A	A	A						
12. Real estate			A							
13. Professional, scientific and technical activities	A	A	A	A			A		A	
14. Administrative and supportive activities	E	E		E	A			A	A	
15. Public administration and defense - compulsory social security	E	E	E	A	A		E	E	E	A
16. Education	E	A	A	E	E		A		E	

17. Human health and social care activities	E	E	E	E	A		E	E	A	
18. Arts and entertainment	E	A	A	E	E		A		A	
19. Other activities related to offering services		A	A	A	A		A	A	A	
20. Activities of households as employers					E				A	
21. Activities of extraterritorial organizations and bodies				A						

4. Conclusions

The following conclusions could be drawn from this project. First of all, based on the proposed model, the occupational changes at regional level can easily be compared to the corresponding changes at country level or at other regions in order to examine the temporal stability or not of the occupational categories.

It is also possible to use the quarterly data of the Hellenic Statistical Authority, in order the analysis to acquire a dynamic character (Kurre et al 1989) and to be used for making predictions (Helman 1976). It is also important that the model used leads us to the causes of the changes in employees in the different occupational categories. This facilitates us in searching the explanatory variables on regional scale for the components $\sigma_{ij}^2, \sigma_{ij}^3, \sigma_{ij}^4$ and also enables us to construct composite indexes, the temporal monitoring of which will be revealing for the trends relating to an occupational category. In conclusion, all the above mentioned converge to assume that methodologically we can proceed to use the model in the evaluation of regional policies that will not only relate to employment.

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PART D

Tourism

Agro-tourism entrepreneurship in mountain areas and Community Initiative LEADER

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Abstract

Agro-tourism can be defined as a rural activity which constitutes a main occupation for farmers. Its primary objective is the enhancement of rural incomes and of the local economy.

The importance of tourism is subject to basic principles, such as the promotion of quality, respect for cultural heritage and environmental protection. Despite the fact that Greece is a purely agricultural country that receives significant financial support from the E.U., it does not seem to be able to optimally organize the sector.

The present paper examines and evaluates the role and contribution of the Community Initiative Leader in agro-tourism entrepreneurship and in the development of mountainous and disadvantageous areas, such as the areas of Kozani and Florina, which were selected as the field of research. The survey was conducted with questionnaires, filled in through personal interviews. Finally, the participants of the research submitted proposals and plans for their future course.

Key words: agro-tourism entrepreneurship, Initiative Leader, mountainous areas

Introduction

The field of tourism development is one of the major issues for the European Union, both because it is an important economic activity and because it is associated with

primary objectives of the EU, such as sustainable development, increasing employment and social and economic cohesion.

Harmonized with the EU objectives the Greek goals during the last decade were:

1. Promoting sustainable tourism development based on soft natural resources management, modernization of tourist enterprises and the exploitation of human capital and new technologies
2. Differentiation of the Greek tourist product - Mitigation of high season
3. Development of thematic tourism. Development of alternative forms of tourism
4. Improving quality of service in all sectors of tourism businesses.

Tourism as a tool and stakeholders as executors of the development process can result in an efficient and qualitative economic activity that enhances a region both economically (capital, investment, entrepreneurship, and income growth), and socially, to prevent active population from migration to the center, creating jobs, either directly in tourism businesses, or indirectly by enhancing the enterprises producing goods consumed by the tourism. In fact, we can examine the contribution of tourism to the region. The number of beds in a region may indicate the degree of tourism development, and welfare indicators of the regions showing overall economic development of a region. Regions with strong tourism activity, such as Crete, South Aegean and Ionian Islands have high welfare while participating in good proportion to the total size of the country. Unemployment rates are lower than in areas where tourist activity is weak or nonexistent, such as Western Macedonia and North Aegean (Tsatras et al. 2010).

According to estimates by the World Tourism Organization (World Tourism Organization), the main demand for tourism in the near future in Europe is focusing towards "alternative" forms of tourism (NTO, 2003) and visitor behavior is becoming more active during the vacation. A flexible framework has been formed within which a sustainable development and competitive tourism strategy could be designed in the area of Western Macedonia. The Region of Western Macedonia is mainly mountainous, which makes it possible to promote a differentiated perception of tourism compared to the standard "sun and sea" product of the rest of Greece. Moreover, the region has a set of natural ecosystems of high environmental value which are protected by international conventions. Distinctive characteristics of the

region are its remarkable cultural richness with regards to customs, traditions and events in a unique architectural setting. These features of the region create the conditions for the development of mild forms of tourism and offer high quality tourism product. The mountainous environment and geomorphology of the region are conducive to promoting a multitude of sporting activities. Alternative tourism can serve as a tool to present the traditions of the area by organizing interactive events with the participation of the visitor. A provision has been made to preserve the rich natural and cultural character of the area through the facilities and accommodation. The suggestion was to create small tourist units, aligned with the natural setting, offering visitors a close connection to the surrounding rich environment. A prerequisite for mild ecological tourism development in the area was the upgrade and improvement of human resources skills through information campaigns, training and specialization.

1. Regional Development and mountainous areas

In Greek reality, strategic development of mountainous areas is designed to enhance synergy among the factors which promote the development process, the networking of institutional, sectoral and spatial form and the establishment of integrated packages of strategic plans, serving medium and long-term development scenarios.

The European Union through the Community Support Frameworks (CSF) plays a key role in the development process of modern Greece. The development options for the Greek mountainous area are identified in the General Framework of Spatial Planning and Sustainable Development (Article 6 of Law 2742/1999) and the Development Plan of the Mountainous Area (DPMA), a special section of the Regional Development Plan 2000 - 2006. The DPMA proposes the so called “integrated development of mountainous areas” as a separate sub-program for each region and as sectoral activities of national operational programs as well.

The five priority axes recommended by the DPMA on the mountainous micro-regions are:

- ♣ Transformation of agricultural activity

- ♣ Extensive development of soft tourism
- ♣ Support for small industry and handicraft
- ♣ Establishment of mountain development centers per micro-region.
- ♣ Improvement of access to mountainous areas

2. Characteristics of the physical and socioeconomic reality of mountainous areas in Greece

Greece is a predominantly mountainous country. The mountain area occupies 19,2 million acres, of which 17% is arable land, 47% pasture and 31% forests. An important feature of mountainous areas of Greece is the great wealth of biodiversity. The mountainous regions of Greece, except in few cases, were a totally neglected field of interest, for purposes of planning, funding and all kinds of activities.

As for the anthropogenic environment, Greece is characterized by the large number of small sized mountain villages. The small size of settlements has contributed to preserving the mountain environment, water, soil and air, not abused by the massive over-water, intensive agriculture and monoculture and the accumulation of vehicles and industries. Thus, unlike the rural and urban lowland of Greece, and many European mountain areas, mountainous regions of Greece are have a unique range of natural wealth, which hosts a significant number of wild plant and animal species adapted to local conditions.

In Greece, the mountain communities were devastated in the period of mass migration abroad and urbanization, during the decades of 1950's, 1960's and 1970's. This exodus of the mountain population is largely due to the civil war conflicts and persecutions that followed the years of the national resistance to the German occupation. Each village proudly carries its own history of resistance and its toll in human lives and property damage from the ravages of war and civil division. The fact is that the villages have been devastated during the years 1950-1970, urban population has increased from 37.7% in 1951 to 58.1% in 1981 and rural population has reduced from 47.5% to 30.3% respectively.

Gradually the agricultural policy has been changed and the diversification of rural economies has been promoted in order stop depending solely on farm income. Mountainous areas have been under "special treatment". Specific chapters in national

and European programs were devoted to the “development” of the mountainous areas. The main “apparent” natural resource of them is their beauty that can be exploited in accordance with the dominant “development” rationale for tourism businesses.

However, the mountainous areas are still underdeveloped, without adequate infrastructure in roads, hospitals, water supply, sanitation and communication systems and therefore the government policy is that money should be invested to change the profile of these areas.

One study (Ministry for the Environment, Physical Planning and Public Works, 2000) classifies the prefectures of the country according to their mountainous features, using population and land criteria. According to the findings, 32 prefectures of Greece are characterized by a significant mountainous area and population. SWOT analysis in these prefectures indicated that 8 of them (Fthiotida, Karditsa, Florina, Arta, Grevena, Ioannina, Arcadia and Evrytania) contain, according to the study, the most problematic mountainous areas of the country. All 8 prefectures have declining income and declining population.

3. The official evaluation of the initiative Leader+

In order for the European Commission to gain an overview view of resource utilization, effectiveness and efficiency brought by the Community Initiative LEADER+ in the regions, it organized an in site survey regarding eight topics.

The survey focused on four key tools: a survey on 10% of the total group of Local Action Groups (LAGs), a survey of the Managing Authorities (MAs), interviews with the National Network Units (NNUs) and ten case studies. The results of the data analysis in relation to assessment issues and the recommendations arising are summarized below by topic.

1st Topic: Relevance and Community added value. The LEADER+ responded to a large number of the needs of rural areas. It constituted an important complement to the mainstream policies and institutions and contributed to economic diversification, quality of life and to the preservation and development of the natural and built environment of rural areas. In these sectors, LEADER distinguished itself from other governmental structures with its flexibility, its sensitivity to local needs and its small scale, responded to the needs and utilized capabilities that are considered

"inaccessible" by larger and more traditional organizations. However, in recognition of the strong points of the LEADER approach for the promotion and utilization of diversity and differentiation, it should be used as a means to boost the local growth potential that is to increase the adaptability and resilience of the region, rather than enhance short-term productivity and the market success of local value chains.

2nd Topic

Action 1: Integrated territorial rural development strategies of pilot nature. The pilot nature of the strategies boosted innovation, particularly by reconfiguring and enabling local agents to undertake new activities, combining the current ones with new ways and linking local capabilities with external sources of knowledge and technology. Nevertheless, LEADER will need to maintain the "laboratory» character with a strategic perspective. Furthermore, additional arrangements have to be made, aiming to meet the special needs of minorities, disadvantaged or marginalized persons that are not automatically covered by the provisions of the approach LEADER.

Action 2: Support for cooperation between rural areas. The LEADER+ programs and Leader+ type measures grouped the local entities, who otherwise would not have been grouped, in the pursuit of common goals. While working with LAGs from other countries has been a source of inspiration, cooperation with neighboring LAGs gave strong impetus to joint projects. Information and ideas to improve the project management among peers within countries are channeled primarily through cooperation activities. Territorial cooperation should, however, continue to be a cornerstone of the LEADER approach, for the more experienced LAG as well as for "beginners".

Action 3: Networking. The LAGs were based both on the national networks as well as the LEADER Observatory. Networking could be enhanced if the benefits were clearly articulated and aimed at solving common problems. The SIC played a strong role in both identifying these needs and collaborating with partners in other countries in order to create appropriate fora that will allow contact with interested LAGs. In the meantime, it is desirable to develop further targeted learning opportunities through peers for LAGs, either within or between countries.

3rd Topic: The application of LEADER. The implementation of the LEADER method promoted multidisciplinary and integrated development and contributed to the boosting of local economy and social capital in rural areas. The mobilization of entrepreneurs has been a key success factor. However, LEADER programs should continue to focus on multidisciplinary rural development, boosting social capital and increasing territorial competitiveness, while incorporating more and more local responses to global social and environmental concerns. In addition, the autonomy of LAGs should be further developed.

4th Topic: Impact. LAGs directly promoted small-scale enterprises and crafts which contributed directly and indirectly to creating and maintaining employment. In order to achieve demographic balance, both in the productive and reproductive side of life, the creation of employment opportunities and income prospects should be taken duly into account on the one hand, and the improvement of the rural environment, on the other.

5th Topic: Governance and rural citizenship. The LEADER+ has significant positive impact on local governance capabilities and through the latter it greatly promoted territorial forms of rural development and the involvement of local agents. The LEADER+ type measures considerably strengthened the capacities of rural communities in the new Member States. The autonomy was regarded as an important aspect of the LAGs' ability to effectively implement local development strategies. It is important, of course, that the creation of effective public-private sector partnerships, with clear distribution and understanding of their respective roles, should be actively promoted and supported.

6th Topic: Management, Control and Funding systems. The arrangements for the administration and funding under the LEADER+ strategy seem to have worked effectively and constitute a powerful model. Some of these elements are reflected in the new programming period. The key factors are the continuity of the LAGs and of the staff and the effective partnership between MAs and LAGs. The administrative procedures for ensuring transparency and accountability, however, should not prevent

the LAGs from the execution of their development tasks, nor should it exclude local agents with less administrative skills from the program.

7th Topic: Monitoring and evaluation. The comparison and gathering of monitoring data of LEADER+ at a European level for evaluation purposes are very seriously hampered by systemic weaknesses. An important part of LAGs reported that they had not established systems of structured observation and monitoring of local development. Progress in the development of evaluation capacity seems rather limited, as shown by evidence. Although LEADER's ability to boost the social capital is particularly important, measures should be taken, aimed at adopting credible approaches and methodologies for the evaluation of success or failure. Furthermore, LAGs should develop and use high quality and dynamic local soil strategies which they will monitor, update and actively improve through a continuous process of reflection and review. Finally, strengthening evaluation capacity, awareness, structures, resources and commitment requires active management and actual accountability obligation at all levels.

8th Topic: Clusters of rural activity/excellence. Even though, substantially, no LAG explicitly describes its activities as clustering, maintaining large-scale networks that have created new economic opportunities were the primary target for over 75% of the LAGs investigated. Consequently, LEADER areas and LAGs should be effectively linked to the wider development frame and networked with other agents and stakeholders.

4. The empirical research

4.1. The methodology

In 2012 an empirical research was carried out. It aimed to investigate in practice the developmental effectiveness of the Community Initiative LEADER+. The prefectures of Kozani and Florina were selected as the field of research. For the purpose of the research a properly structured questionnaire was structured and was subsequently completed with the method of personal interview. The questionnaire contains three sections of questions. The first relates to the demographic characteristics of the participants, the second detects and evaluates the main factors that determine the viability of the development in mountainous regions and the third includes

estimations for the developmental performance of the Community Initiative LEADER+.

The questionnaires were addressed to agritourism businesses in the prefectures of Kozani and Florina, funded by the Community Initiative LEADER+. A total of 41 questionnaires were filled in.

4.2. The research findings

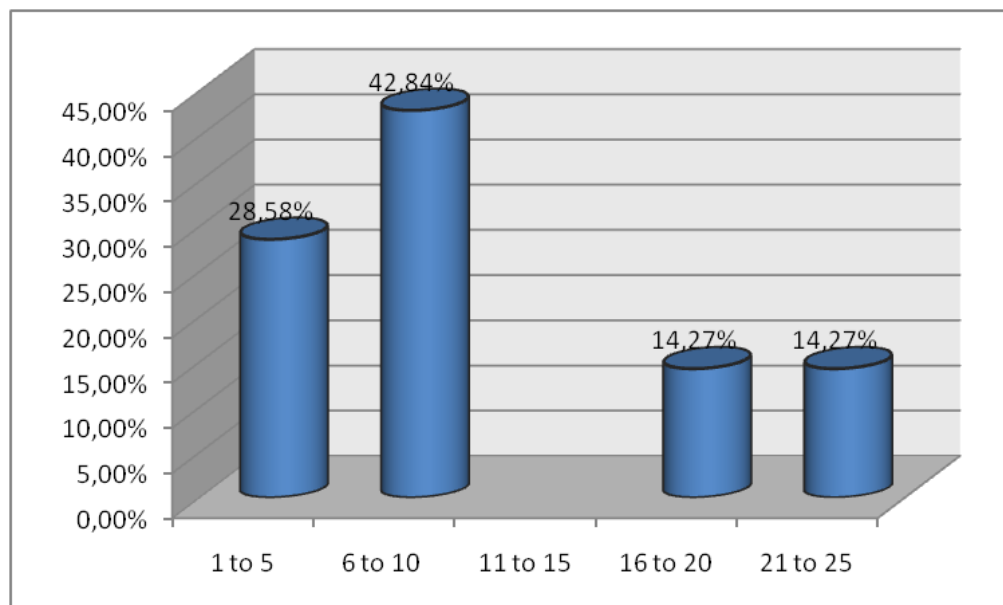
After statistical analysis of the responses shows that:

The respondents were mostly male (57%) and to a lesser extent women (43%). The age of most respondents ranged in percentage 42.86% from 51 to 60 years old. Smaller percentages (28.57%) are aged 31-40 years. In figure 14.29% are in the age of 21 to 30 and 61 to 70 years. The educational level shows that the largest percentages (42.86%) are graduates of Technological Educational Institutes and in at 28.57% are primary school graduates and high school.

Respondents owned agro tourism enterprises (34.78%), working in agritourism enterprises (22.36%), and representatives of agencies / public officials (28.58%).

As shown in the graph below the highest percentage (42.84%) are those who work from 6 to 10 years. Immediately following percentage (28.58%) is for those employed in the sector since 1-5 years. Last and smallest percentage (14.27%) as for those who have worked 16-20 years and 21-25 years.

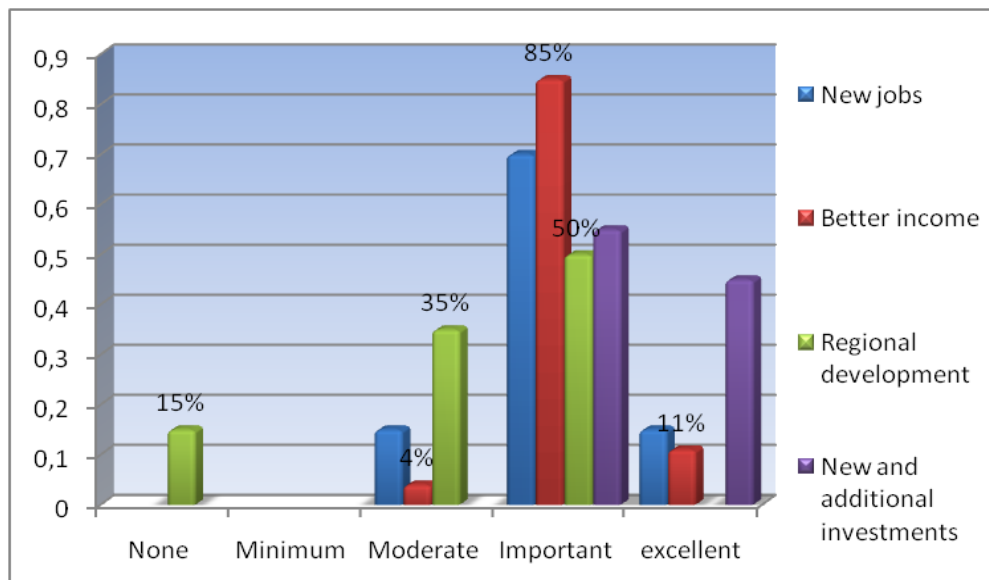
1st graph: Work Experience



Most companies (71.43%) work full time as opposed to the much smaller percentage (28.57%) which is characterized by seasonality.

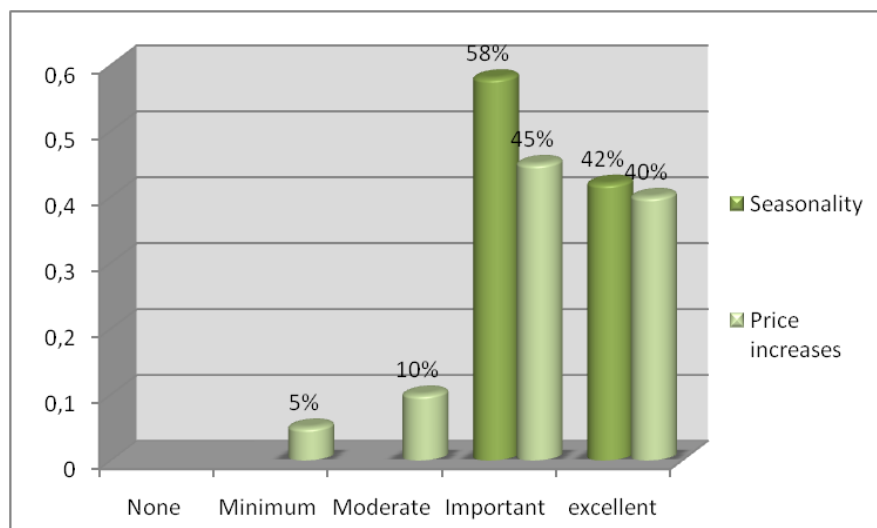
As noted by the respondents' answers to the tourism development of the area in recent years resulting benefits to the local economy such as job creation, income generation, regional development and new and additional investments. Precise estimates are shown in the graph below.

2nd Graph: Estimates of benefit / impact



Apart from the positive and negative effects are. Namely the area is characterized by strongly seasonal tourism and the tourist season occurs from small to large price increases. Also, the participants felt that still has not achieved a balanced community development.

3rd Graph: Estimates negative impact



Regarding social and cultural impact that has on the local community tourism development, the answer seems to be very important. Specifically, the development of tourism residents come in contact with new cultures, they come closer to the habits of other peoples and highlight local culture. Important role played by cultural events "The Earth Festival" organized in shoots and have now secured and assistance of the district and all relevant clubs. The cultural events believe that is an important factor for the enhancement and promotion of the region.

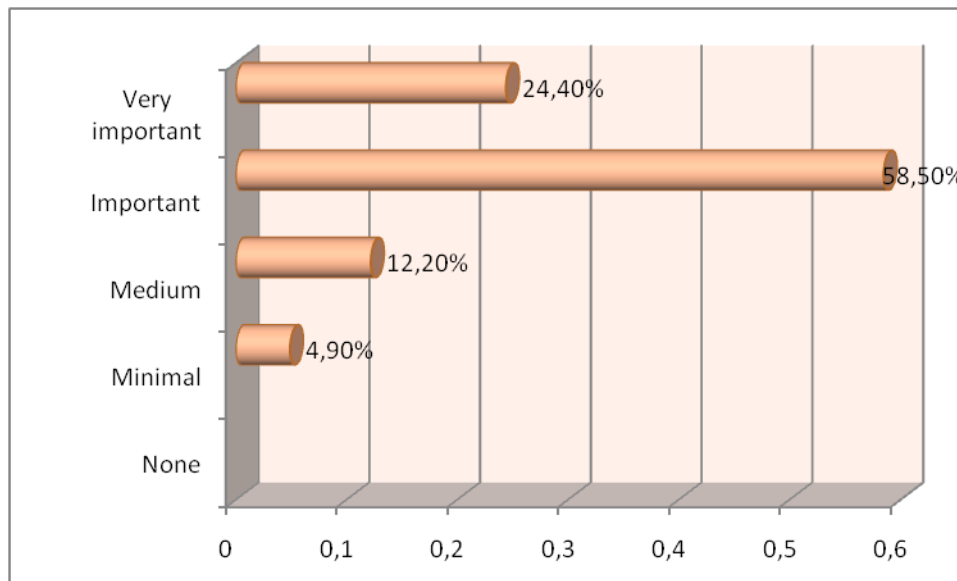
The estimates show that the residents consider important (70%) special cultural events organized by the community for tourism development and 30% consider it to be extremely important (30%).

A very large proportion of participants (86%) say that beyond the interest of residents to the nature, preservation of archaeological sites and monuments, regeneration of degraded areas have shown signs of interest and ecological sensitivity and the visitors themselves having designed the natural wealth of the area to endure and remain throughout the year.

The responses appear to benefit from tourism development and there are no appreciable negative impact on the environment since the destruction of reconstruction of hotel complexes and other buildings is minimal. Also, stated that tourists respect the area, not pollute nature with transport or waste too much water, energy and natural resources.

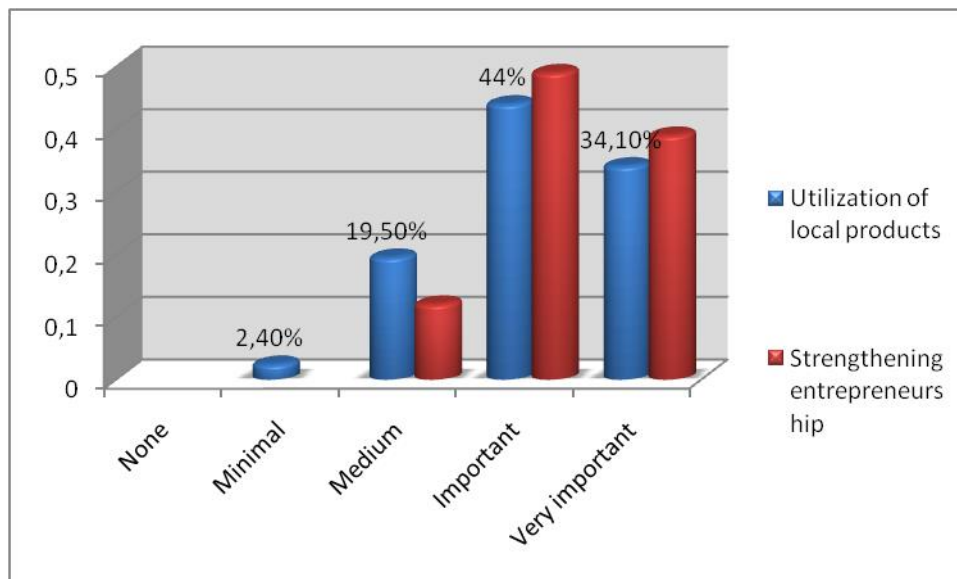
Regarding the evaluation of positive and negative developmental effects of the Community Initiative LEADER+ in the areas investigated, it can be noted that: The LEADER+ had significant (44%) impact on the reduction of local inequalities and according to 34.10% of the participants this positive effect was substantial. The program's contribution to the upgrading of the traditional settlements in the area is considered significant at an excellent percentage. Analytical estimations on the positive role of the program in the upgrade of the traditional settlements are shown in the graph below:

4th Graph: Estimation of the upgrade in traditional settlements



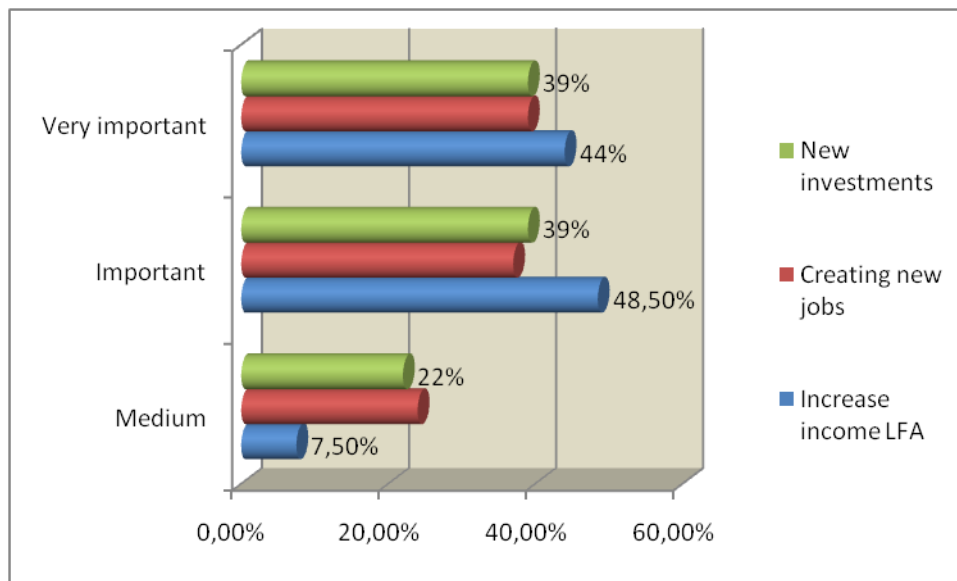
A significant contribution (44%) is stated in regard to the use of local products and the boosting of entrepreneurship. It should be noted that there is no negative response and the percentage of those who consider the effect of LEADER+ in these fields minimal is very small. A detailed overview of the estimations is given in the following chart:

5th Graph: Estimations about local products and entrepreneurship



The LEADER+ brought significant (48.50%) increase to the income indisadvantaged areas, it created new jobsand broughtnew investments. The graph below shows the impact on specific sectors:

6th Graph: Estimation on investments, jobs and income



5. Conclusions

The field of tourism development is one of the major issues for the European Union, both because it is an important economic activity and because it is associated with primary objectives of the EU, such as sustainable development, increasing employment and social and economic cohesion.

Tourism as a tool and stakeholders as executors of the development process can result in an efficient and qualitative economic activity that enhances a region both economically (capital, investment, entrepreneurship, and income growth), and socially, to prevent active population from migration to the center, creating jobs, either directly in tourism businesses, or indirectly by enhancing the enterprises producing goods consumed by the tourism.

From the official evaluation of the Community Initiative LEADER+ in the regions it can be shown that the implementation of LEADER+ can be summarized in the following topics:

- The LEADER+ responded to a large number of the needs of rural areas.
- The pilot nature of the strategies boosted innovation, particularly by reconfiguring and enabling local agents to undertake new activities, combining

the current ones with new ways and linking local capabilities with external sources of knowledge and technology.

- The LEADER+ programs and Leader+ type measures grouped the local entities, who otherwise would not have been grouped, in the pursuit of common goals.
- The implementation of the LEADER method promoted multidisciplinary and integrated development and contributed to the boosting of local economy and social capital in rural areas.
- LAGs directly promoted small-scale enterprises and crafts which contributed directly and indirectly to creating and maintaining employment.
- The LEADER+ has significant positive impact on local governance capabilities and through the latter it greatly promoted territorial forms of rural development and the involvement of local agents.
- The arrangements for the administration and funding under the LEADER+ strategy seem to have worked effectively and constitute a powerful model.
- The comparison and gathering of monitoring data of LEADER+ at a European level for evaluation purposes are very seriously hampered by systemic weaknesses.
- Even though, substantially, no LAG explicitly describes its activities as clustering, maintaining large-scale networks that have created new economic opportunities were the primary target for over 75% of the LAGs investigated.

The empirical research showed the following:

- The LEADER+ had significant impact on the reduction of local inequalities and this positive effect was substantial.
- The program's contribution to the upgrading of the traditional settlements in the area is considered significant at an excellent percentage.
- A significant contribution is stated in regard to the use of local products and the boosting of entrepreneurship. It should be noted that there is no negative response and the percentage of those who consider the effect of LEADER+ in these fields minimal is very small.
- The LEADER+ brought significant increase to the income in disadvantaged areas, it created new jobs and brought new investments.

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New e-Tourism Services Development: The Case of Greek Winter Tourism E-Business Innovation

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Abstract:

Winter tourism and sports over the last years became very popular in Greece. Moreover, the expansion of the internet and the continuous internal increasing use of tourist e-services are ideal for innovative entrepreneurship activities in this market. The purpose of this paper is to evaluate the analysis about the development of new e-business, in order to offer innovative and added-value e-services in the sector of Greek winter tourism. Furthermore, it is practical presented the most important sections of the business plan, followed by the structure and standards of online business planning. In addition, a brief overview of main statistics from 2012 for the usage of internet, new technologies and web services in Greece is illustrated. In general, the contribution of this paper is the understanding and presentation of main methodologies, to deploy new innovative services and expand old ones in the Greek winter tourism economy.

Keywords: *Digital Entrepreneurship, Electronic Services, e-Tourism, Service Blueprint, Winter Tourism, Business Planning*

1. Introduction

Winter tourism and winter sports have become very popular in Greece in recent years. There are 18 touristic active ski resorts in Greece and according to recent data [13], which shows that its visitors are calculated approximately at 500,000 per winter season. Furthermore, the wide tourism industry is ideal for innovative investments as there is a significant development and usage of electronic services in this specific market. Also, the continuous expansion of the internet and e-commerce and in combination with the increasing use of online travel and tourism services in Greece, create amazing opportunities for e-business and innovation in this sector. A survey regarding the usage of information and communication technologies by households in 2012 [7], which was conducted by the Hellenic statistical authority has shown, that more than half of the households have an internet access connection and that the 94.8% of these connections are broadband. Moreover, useful data are resulting from the usage of portable devices to access the internet, where 69% of households are connected to the web from a mobile device like smartphone or tablet, while in the same survey was recorded an important growth of electronic commerce. Furthermore, in recent years a continuous growing trend of familiarity, from the Greek consumers, as regards the usage of new technologies and e-services. Moreover, Greek consumers seem to trust progressively online systems in the names of security and confidentiality, by providing personal data to perform e-transactions in online marketplaces. In addition, significant development can be noticed in e-commerce in 2012, where 1.9 million of Greek consumers bought online products and services. Valued data can be noticed from a 2012 survey from Eltrun [6] the Greek research and observation laboratory of e-business and e-commerce, where according to it. 93% of respondents of the survey used online travel and tourism services (reservations, car rentals, etc.). It is important to mention that the increase achieved in the usage of online travel and tourism services in 2012, ranked this category of e-services in the 1st place from 3rd in 2011. Finally, the conclusion from the aforementioned data is that there is an opportunity for innovation and new services development in the area of online travel and tourism services.

2. Business idea description

The business idea's concept was created by the identification of the existing low quality and lack of services for winter tourists and athletes. With innovative services

to be provided to targeted customers, it aims to become as the first choice in Greece regarding services for winter tourism and sports. The business idea is an innovative entrepreneurship opportunity for the industry of winter tourism, by taking into account and the lack of strong competition in the specific sector. The core value that is committed to offer is the integrated solutions regarding winter tourism, with reliability and interactivity. The main concept and structure of the proposed idea is the creation of a website and e-marketplace that will provide a range of innovative services which consists of: 1) Interactive online booking engine for winter sports equipment, 2) Instant and reliable information about the status of all Greek ski centers, 3) Winter sports tutorial for beginners through multimedia applications, 4) Online information database and directory for winter destinations and ski resorts, 5) Winter sports equipment selection wizard 6) Complete tourism services via affiliates (accommodation, traveling, etc.), 7) Desktop and Smartphone application for easy access and 8) Virtual Community Services/ Social Networking for users. The above services refer to four general customers target groups which are the winter tourists, winter sports and activities enthusiasts and fans, winter shops as retailers and suppliers and portals/businesses which will be advertised in the website.

The business model of the entrepreneurship idea follows the structure of business models in digital enterprise. According to Michael Rappa [14] and the provided services the e-business model consists in the categories Advertising, Infomediary, Brokerage, Subscription and Affiliation.

3. Services

The proposed services were designed to achieve the highest value to the customer and outweigh against competitors. The whole services package constitutes a system of electronic services that fully meet the addressed customer target group needs, which targeted and achieved maximum business profitability.

Interactive online booking engine for winter sports equipment and complete tourism services: Researching the domestic market, it can be observed that similar services are absent from the winter sports industry in Greece. These services that the user currently receives from the Greek winter websites and web communities are limited in the basic information for contact details and addresses of the ski centers and winter

shops. In general, the user enters the necessary data (e.g. weight, height, etc.), destination and optional specific winter shop, type of equipment, skills level (e.g. expert) and the system will return the best possible and available options. Furthermore, by targeting broader target groups would introduce the possibility of organizing and booking a complete winter journey, so we made an approach to people who are not interested in winter sports but are fans of winter tourism. The service will be provided through cooperation with sites providing reliable tourist services to book air tickets, accommodation/hotels in ski destinations and car rental. Focusing on the Greek market, there is a fully differentiation, as there is no other competitor who will also provide the same or similar services, acquiring with this strategy the competitive advantage in the market.

Instant and reliable information about the status of the Greek ski centers: The sudden change of weather, especially during winter, is a major concern on winter sports market. Existing Greek information websites provide briefing on the status of ski resorts, however until recently updates were made indirectly. Ski resorts administration was informing the relevant website admin by phone, e-mail or fax and they in turn had to update the system properly. However, this tactic both compromises the validity and immediacy of information, as there may be problems in communication and overdue update of skiers and requires the duty of an expertise person by the company which should be available most of the time to receive and implement any new updates from ski centers. On the other hand, this service will provide reliable and immediate information as the updating will be made by the administration of each ski resort directly and easily through a user friendly web interface. This will provide a truly reliable and immediate briefing 24 hours a day and the most important straight from the source.

Online information database and directory for winter destinations: Multimedia applications and interactive content will inform the user about Greek winter destinations. These data will refer to tourism information like accommodation and transportation ways for example, as well as to the presentation of the natural and artificial beauties of local places. Also, information regarding ski centers which are located nearby will make this service a complete winter tourism guide for every potential visitor.

Winter sports tutorial for beginners through multimedia applications and winter

sports equipment selection wizard: As the concept of the business idea is to refer in all kind of levels of winter sports expertise athletes, multimedia files will be available to users from professional winter sports tutors, that will inform them about the selection criteria for proper winter gear and courses for basic instruction. Moreover, through the winter sports equipment selection wizard, users will have the ability to learn about the most suitable solutions for them by giving appropriate data entry for instance weight, height, level etc.

Desktop and Mobile Applications: There is a big portion of users who wish to use services from the moment that they turn on their pc or laptop. To reach out and this category of consumers and users a desktop application with the urgent services will be developed. Furthermore, covering the era of mobility and wireless networking, there has been a gradually continuous growing use of these technologies. In addition, there is a wide section of the market that wants to have access to services from anywhere they are and anytime on the go, so the development and transfer of basic services in application mode is urgent nowadays.

Virtual Community Services/Social Networking: Users will have the ability to develop virtual friendships with common interests, share pictures and videos regarding winter trips and sports, interesting articles on winter tourism and sports and communicate in real time via live chat application. Finally, via this virtual winter tourism community, users can arrange common excursions to ski destinations, by reducing the transportation costs.

4. Service blueprint

The methodology of designing services according to Avlonitis (2004) [2], is a “picture” or “map” that illustrates schematically the system of production and distribution of the new under development service. This methodology of designing new services or improving old ones, in simple and modified way is presented by Avlonitis (2004) [2] modified from Lovelock (2000) [10] and is including the following main components: 1)Line of Interaction, 2)Line of Visibility, 3)Line of Internal Interaction, 4)Supporting Processes. In interaction line are included the required customer actions, on other words how they can seek or make use of the service. In visibility line it can be noticed all visible and onstage actions of employees

that are involved in the providing procedure of the service. Backstage actions, which are not visible to the customer, are described in the internal interaction line. Finally, all extra supporting functions and components for distribution and use of the service are analyzed in the supporting processes element. Below, follows an empirical application of the service blueprint methodology, as a case, in one service from the business idea's services range.

Table 1. Service Blueprint for the 1st provided service

	<i>Line of Interaction</i>	<i>Line of Visibility</i>	<i>Line of Internal Interaction</i>	<i>Supporting Processes</i>
Y1	Use of the service via internet	Customer's booking receive, elaboration and chosen winter shop briefing	Payment procedure and entry data check	Electronic order tracking from customer about brief review
	Preparation and entry of the necessary personal data (weight, height, expertise level etc.)	Acceptance procedure and booking confirmation and receipt to customer	Frequent stock availability briefing from winter shops suppliers	Customer care service via phone and electronic channels (e-mail, eforum, social networks, live chat)
	Preparation and entry of the necessary payment data (credit/debit card, PayPal Account etc.)	Customer briefing about receive of the booking	Preparation of the booked winter gear from the supplier for customer receive	Phone support for troubleshooting in the service for suppliers and affiliates
	Receive of the booked winter sports equipment from the customer's chosen winter shop		Service good operation tracking and solve any troubleshooting	

5. Market and competition analysis

5.1. Winter tourism

In Greece there are 190 kilometres of ski slopes and 110 tourists lifts 30 of which are overhead with capacity around 70,000 people per hour [13]. Evidence from reports indicate that visitors in the Greek ski centers are calculated to 500,000 per ski season and the turnover of the 18 Greek tourism ski centers and resorts that are operating today is estimated at 50 million € annually. Furthermore, a survey from Alco, a Greek survey company [1] on behalf of the Greek ministry of tourism with a sample of 1500 respondents in major urban centers in the country, has shown that 23.1% are involved in winter tourism activities. In addition, 67% of those who are not taking part in winter tourism activities would be motivated for winter tourism if various suppliers regarding accommodation and sports would be offered to them, while an important element can be observed, where the 50.2% would be involved in winter tourism if there was better and easily access to information for winter destinations and the available opportunities there. Moreover, the 16.3% would have an incentive to do winter tourism if there was a better organization of winter sports. On the other hand, from the respondents who do winter tourism, the 65.2% did in Greece, where the 17.6% of them used a tourist agency to organize their travel, while the 72% organize their travel via other channels of travel services, mainly internet. Finally, an important finding is that 80.7% of those who do winter tourism will have an incentive to do more if complete packages and offers would be available to them, the 60.1% the improved briefing about winter destinations and ski resorts as well the available activities in these and the 38.2% the better organization of winter sports activities and available facilities.

5.2. Competition

The proposed business idea introduces innovative services in the winter tourism market to meet customer needs. From the competition research it can be concluded that there is only one strong competitor in the industry, with relevant business activity, who offers only some of the services from the portfolio of the business idea which are equally attractive, but in a simplistic way and without enhanced experience and interactivity for customers. The rest of the regional competition is characterized

as weak due to the limited number of services and customers that have attracted to serve.

5.3. Pest analysis

Applying PEST analysis methodology we can analyze and identify the various factors from the external environment that affect the business. Firstly, from the political aspect it can be observed that there are no funds from the Greek government in the winter tourism and sports market and also government downgrades winter sports in category B from the funding and importance scheme, as well as the continuous internal political crisis. Moreover, by looking the wide economical aspect, we can notice a worldwide economic crisis which affects Greece and new investments. Furthermore, from the social view, the economic crisis leads towards to changes in consumers' trends and needs. In addition, consumers set high requirements and reliability in the usage and selection of e-services. Finally, by looking the continuous changing technological environment, we can observe a rapid evolution of technology with visible benefits for consumers and businesses as well as new innovative emerging trends in the tourism industry.

5.4. Porter analysis

By applying the model of Porter analysis it can be noticed that customers have little bargaining power, as they are not involve in the pricing policy but affect demand. Suppliers (retailers) have strong bargaining power as they contribute to and are involved in the pricing strategy and affect the company with possible revenue reduction risk. The risk of new entries, is also possible, but taking advantage of the lack of strong and powerful competition, at the time of introduction in the market, with strategic planning, policy and marketing strategy, there is space for the business to be established as the first choice from customers for their needs and develop barriers to new entry firms by utilizing its customers loyalty, Finally, there is no significant risk level of substitute products or services in the particular market of winter tourism.

5.5. Swot analysis

According to the above data, as well as the market and competition analysis we can define strengths and weaknesses of the business idea but also the opportunities and threats that arise. The forces of the proposed business include the introduction of innovative and easy-to-use services, reliable information on the situation and weather conditions of Greek ski centers and the provision of mobile and desktop applications for portable and easier access to the services. On the other hand, the weaknesses include the lack of providing live streaming video from the ski centers and the possible lack of trust from the customers to the business as it is a new entry one. Opportunities for the business activity enable the increase of broadband and internet access as well as the continuous increase of internet and e-commerce usage. The lack of implementation of new technologies for improvement and innovation in providing services within the market from the competition is another important element. In contrast, the possibility of introducing new and powerful competitors, the economic crisis in Greece and the unpredicted winter weather conditions are severe threats for the business. Finally, a significant threat, but perhaps it can become a big opportunity later on, under the future scalability plans of the business, is the increasing competition from the neighboring countries, which offer winter tourism activities and products at a lower cost and with an improved quality in comparison with the domestic ones.

6. Future business planning

The future strategic planning of the proposed e-business development is the expansion of the business activity in overseas markets, mainly in neighboring Balkan countries, with emphasis and priority in the Bulgarian winter tourism market, where it can be noticed an increased winter tourism activity in recent years by Greek tourists. At a later stage, there is a prediction to extend to other neighboring countries where there is a significant winter tourists from Greece particularly. Moreover, the estimated planning for adding new services to the existing set is: Firstly, the introduction of a rating service (rating) and annotation of winter tourism destinations and ski resorts.

Users will have the ability to grading the overall experience of visiting a winter related destination or ski resort, so that there is a feedback to ski centers and destinations for further improvement and upgrading. Secondly, the display points of interest through the Google Maps/Earth applications of ski resorts and winter destinations. For example, the exact location of the ski medical emergency facility, which not all ski resorts present even in their websites. The service will result the full preparation of a visit to a ski resort and know before arrive there the most important spots. Finally, it is obvious that the presented e-business has a high range of further expand and improvement, to be able to achieve customer loyalty and the competitive advantage, mainly in the Greek winter tourism market.

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Innovative entrepreneurship in Greek SMEs and the Use of English as an International language

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Abstract:

In the era of new technological modulations, consideration needs to be given to the possibilities of the Information and Communication Technologies (I.C.T.) in order to exploit them in an appropriate manner and to provide learning opportunities to young and adult students. Moreover in the sector of commerce and the emerging need of the SMEs to expand their area of activities the efficient learning of a globalized language such as English is of outmost not only educational but also financial importance. The purpose of this paper is to present the patterns of learning English language through computers (CALL-Computer Assisted Language Learning) via both specialized software (CD-ROM) and through the Internet (e-learning) and to examine the perceptions of adults on these innovative computing applications and whether they may occur. The conducting of this research was a means of examining how adults perceive the integration of technology into the learning process of the English language. This research that has been conducted by the use of questionnaires will show that, although a great amount of adults use computers in their daily lives, they are not familiar to using it for other functions such as learning a foreign language.

Keywords: computer, ICT, CALL, English language learning, SME

1. Introduction

By the end of the 20th century, communication information technologies (C.I.T.) have penetrated every sector of the everyday life. The continuous production of information and its continuous exploitation, mainly via the Internet, is a challenge in our era. More specifically, there is no doubt that we live in the age of the Internet and the World Wide Web, and it should be noted that computers are not only an asset for the information processing, but they also function as a means of contribution to English language teaching and learning.

The development of the education sector has been a little slow, as far as the integration of computers in the curriculum is concerned, mainly due to high cost, but also because it has taken a while since the C.I.T. potential in the instructive and training practice was totally understood. A decade ago, the use of computers in the Greek classrooms was limited compared to those in Europe and the U.S.A. However, today's technologies constitute an integral part of the Greek education system, not merely as an isolated cognitive object, strictly limited to the module of information technology, but as a teaching tool in other courses of the curriculum. Moreover, the e-learning system has been developed, thus rendering the computer a crucial part of the educational process itself.

Learning a foreign language is a continuous challenge and a lifetime process. Everyone, without exception, is able to learn - to speak or understand - a foreign language, and it is never too late for such an endeavour. What is more, everyone should have their chance to learn languages, at every moment of their life, and they should be able to make the most of the multiple benefits that arise from foreign language learning, one of which is the development of tolerance and the mutual understanding between people of different linguistic and cultural backgrounds.

More specifically, the cognitive object of foreign languages has a particularity, namely that it has involved different methods in the teaching process from its very beginning. Since 1970, the books used to teach foreign languages were accompanied by tapes, which were used as part of the "listening comprehension" development, and which enabled students to hear native speakers of the target language and imitate their vocabulary and their accent. These tapes were succeeded by the television and videos, with which the students could visualize the dialogues. Today, there is a vast range of materials that can be used in the process of learning foreign languages, such as

multimedia, computers and the Internet, which have led to the creation of CALL (Computer Assisted Language Learning). Of the numerous surveys of SMEs that, all indicate that language skills are an issue, albeit not, on the whole, regarded as a principal reason for not exporting. Even for the case of English that are currently identified as the basic international language, English SMEs present as one of their main weakness the inability to communicate in foreign languages. The BCC 2012 survey of 8,000 businesses (of all sizes) found that 21% of respondents agreed that language barriers were highly influential in deciding if, when and where to export, and 31% agreed they were somewhat influential (BBC, 2012). Similarly the IOE 2012 International Trade Survey showed that 14% of companies identified languages as an issue preventing them from developing export markets. Whilst not the highest, these figures alone are cause for concern. What makes the picture even more disturbing is that, according to the BCC survey, "the perceived influence of language barriers on trading internationally varies significantly in line with the propensity to export: 61% of non-exporters "likely to consider" exporting in the future see language as a barrier to doing so", and "businesses that have less propensity to export are more likely to view language barriers as highly influential in any decision to enter global markets", (BBC, 2012).

2. Related Literature

The term ‘new technologies’ signifies the applications which require the contribution of computer technologies. ‘New technologies’ affect a number of different fields of our society, such as the economy, the communication field and the education. All the developments in these fields are, to a great extent, a product of the Internet, as its use can create a new framework of civilization: one which involves new ways of communication and new forms of culture; an electronic culture. According to an article by the OECD, the increase of the employment is determined today by the qualitatively exigent places of work for intellectual workers. In every industrial sector and in all individual professions, the level of the demanded qualifications is constantly on the rise (OECD, 2008).

David Crystal states that we are going through the consequences of wider dramatic changes, which show the beginning of a new era in human language development. Three are the most important changes that take place today, and they

have altered, according to him, the worldwide “linguistic ecology”: the appointment of the English language as the primary worldwide language, the risk of a gradual disappearance of a great number of languages, and the new linguistic reality which is elected by the extensive use of the C.I.T. and especially by the use of the Internet. All the aforementioned elements create a positive environment for the integration of new technologies in the education process. The pioneers in the integration and in the evaluation of new technologies in the education field are the Americans in the mid-1980s. However, the European Union has set crucial goals as far as the integration of new technologies in the education process is concerned, especially since 1995.

2.1. Linguistic barriers in SMEs

Both the absence, and acquisition, of language skills have commercial and financial consequences. Foreman-Peck analysed the language barrier as being "equivalent to a tax" and estimated that "the minimum possible gains from optimal investment in languages for Britain in 2005 was £9 billion". In 2006, an EC Survey of exporting SMEs (the ELAN survey) reported that over 10% of SMEs declared they had lost a contract as a result of a lack of foreign languages, and nearly one in five SMEs reported cultural differences as a problem. More recently, in 2011, the PIMLICO study looked at 40 SMEs across 27 EU Member States which had been selected for their significant trade growth as a result of their formulating and employing Language Management Strategies. The study reported that three out of four experienced at least a 16% increase in sales turnover as a result of the strategy, with 43% increasing their turnover by over 25%. The 2012 BCC survey found that up to 96% of respondents had no foreign language ability for the markets they served. Seventy-seven percent of companies surveyed "reckoned they had missed or lost business because of this", whereas exporters who proactively used language and cultural skills achieved on average 45% more sales. The first thought is usually only of linguistic barriers, but there are hidden obstacles which are often cultural, and can go unnoticed. These can include unexpected regulatory requirements, behavioural and perceptual differences involving, for example, preferences for certain styles of packaging, or different interpretations of what is meant by ‘a contract’. In 2010, the IES Study rated the most important barrier to internationalisation as the general price level in the home market and the level of efficiency of the firms. However, the other

barriers include languages and communication issues. The second most important barrier is the high cost of internationalization. This includes making information on international markets easily accessible to SMEs or subsidizing trade missions to facilitate participation in foreign trade fairs. For some smaller enterprises, it is the lack of suitably qualified personnel which acts as a brake. For companies that are already internationally active, the language issue is rated 2.2 on a scale of 5, but for companies that are planning to become active internationally, the perception of language as a barrier is much higher at 2.9. It is evident from the findings from PIMLICO research that, although companies and stakeholders are aware of the importance of languages for foreign trade, many will still choose not to prioritise investment in languages as a necessary means of winning business. With changing economic conditions, companies need to go further, and find creative ways of using the often unnoticed language resources that exist within the company itself. According to a representative from the Ministry of Education in Lithuania, there is not only a lack of know how among SMEs but also a need to access the resources offered by educational establishments and chambers within the country. Moreover, language barriers can affect every size of SME: micro, small and medium. Cultural (business) differences are seen as barriers by just over 20% of SMEs in Europe. For many SMEs, language and culture are not only real barriers, but are perceived to be even greater barriers by companies planning to embark on international trade but who are not yet trading abroad.

Using the above as a starting point, and before we analyze the ways with which computers can be exploited in the learning of the cognitive object of the English language and optimise the conditions of learning, it would be extremely useful to present the CALL method, that is to say the learning of the English language with the use of computers (**Computer Assisted Language Learning**) throughout a historical retrospection, in order to show the relation between the various approaches of the learning of computer language.

2.2. The CALL

According to Uzunboyly and Ozcinar (2009), CALL can be used to reinforce what has been learned in the classrooms. It can also be used as remedial to help learners with limited language proficiency. Learners and teachers can benefit from

CALL systems, because they offer learners the chance to practice extra learning material at their convenient time in a stress-free environment (Zinovjeva, 2005). Computer programs offer students opportunities for more interaction and also help learners use the language effectively and in actual environments (Harless et al., 1999). Internet has the potential to be used in EFL/ESL class and offer students what is missing from their environment. Real life language experience helps students not only to increase their functional communicative experience but also to motivate them to use English in their daily lives (Fox, 1998). Recently, there is a great interest in development of CALL systems. In the field of second language learning, many research efforts have been done to improve such systems (Tsubota et al., 2004; Abdou et al., 2006). There are a number of CALL systems which have been developed which cover almost every aspects of language learning. Some systems concentrate on vocabulary and grammar learning. Some focus on pronunciation learning, while some allow training of an entire situation-based conversation. However, as Chun and Plass (2000) believe, “ the use of a networked environment for learning in general and for second language acquisition in particular is of great importance because that is different from the traditional design of text-based and stand-alone systems”. On the one hand, there are a number of reasons to integrate using Internet and computer into a language curriculum (Chun and Plass, 2000), Egbert (2005) defines CALL as “learners learning language in any context with, through, and around computer technologies”. Moreover, Jarvis (2004) develops these broad definitions to characterise the software applications as which are “Language specific as well as more generic Information Technology (IT) programmes”. Learning has three dimensions namely motivation, confidence, and ability (Hagen 2009). These three dimensions are directly related and impact upon each other. If one of them increases or decreases, the other two will follow in a direct relationship. All three learning dimensions can be met only when students have cumulative experiences both in and out of the classroom (Shafaei, 2012, Shafaei, 2008).

2.3. The Three Stages of CALL

The stages described in the previous section have been extrapolated throughout time and modified to the needs of the current needs. The formulation of these stages and their evolvement up to the CALL are described in Table 1.

STAGE	1970-1980 Behavioristic CALL	1980-1990 Communicative CALL	1990-Today Integrative CALL
TECHNOLOGY	Mainframe	PC	Multimedia and Internet
TEACHING OF ENGLISH LANGUAGE	Grammar-translation method/audiovisual method	Communicative Language Teaching	Based on ESP/EAP content
LINGUISTIC THEORIES	Structural	Cognitive	Socio-cognitive
PC USES	Software of practice and training	Tasks	Genuine communication situation
MAIN TARGET	Accuracy	Accuracy/Fluency	Accuracy/Fluency /Energy

Table 1: *Phases of CALL use in education (modified Warschauer, 2000).*

3. Method of the study

3.1 Aims of the study

In order to complete our project we need to raise a series of research questions that will help us in our analysis of the issues and also guide our research. Thus, the following research attempts to:

- Outline how useful the knowledge of the English language is in the everyday and working life of adults.
- Determine the degree of understanding of adults' relationship with computers.
- Determine the frequency of computer use from adults.
- Define how familiar adults are with a series of simple computing applications.
- Determine the interest of adults for learning the English language.

- Outline the views of adults for learning the English language via computer.

3.2 Sample collection

Sample of 50 individual adults, working in various SMEs at the city of Thessaloniki, Greece. This sample replied, in our research tool which was performed in the form of multiple choice questionnaires, with a sense of responsibility. The completion of the questionnaires was held from March 30 to April 10, 2011 (Besas, 2011).

3.3 Questionnaire analysis and processing

The procedure followed in order to obtain the results was the standard procedure for the collection and analysis used in statistical surveys. The questionnaire was distributed to the participants and then the answers were registered to the statistics package “SPSS 17.0 Multilanguage” (Besas, 2011).

4. Research Results

All 50 respondents were asked to define their level of the English language. 52% of the participants responded that their level is medium, while 30% has a low level. Merely 18% thinks that their level of English is at optimum level (Fig 1.).

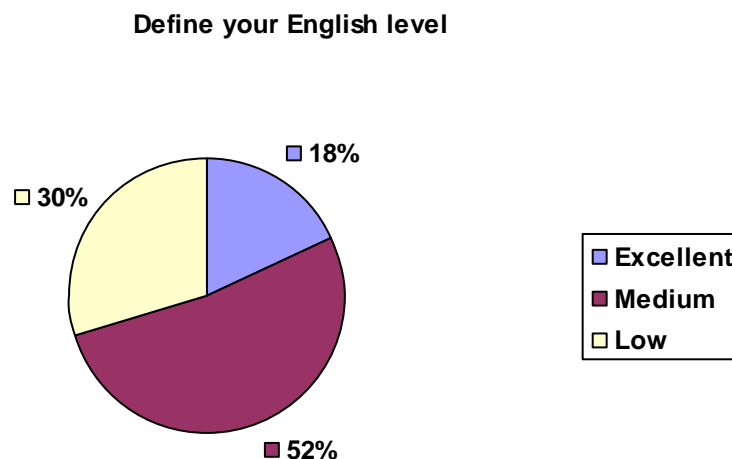


Figure 1.Response for the definition of English proficiency

Next, they were asked how useful the knowledge of English in their everyday

lives is. The majority, that is the 36% of the people asked, answered that their knowledge is medium useful. As shown in the second bar chart, 32% thinks that the English language is useful while the 20% in the fourth bar chart that is very useful. 8% and 4% of the sample replied that is not useful and that it is very useful, respectively.

Addressing the question of the usefulness of the English language in their job environments, 44% of the respondents said that the English language is a little useful in their work. Allocations of other responses as shown in the other bar charts do not seem to have large deviations between them. 18% says that the English language is not useful in their work. On the contrary, 14% considers it very useful. Finally, 6% of the participant educators consider that is highly useful (Fig 2). In the response concerning the use of computer technology, 74% of respondents said that they use a computer, while the remaining 26% does not use computers. Of the thirteen individuals who replied negatively to the question above, 92.3% would be interested in using a computer, unlike the small 7.7% who did not show the same interest for the use of computers. When the individuals were asked whether they have Internet access, 68% replied that they do have access, while the remaining 32% have no access to it. From the 16 individuals that in the previous question answered that they do not have internet access, all of them answered that they would be interest to have one. That is, 31, 4% of the respondents wish to have access to and use the Internet.

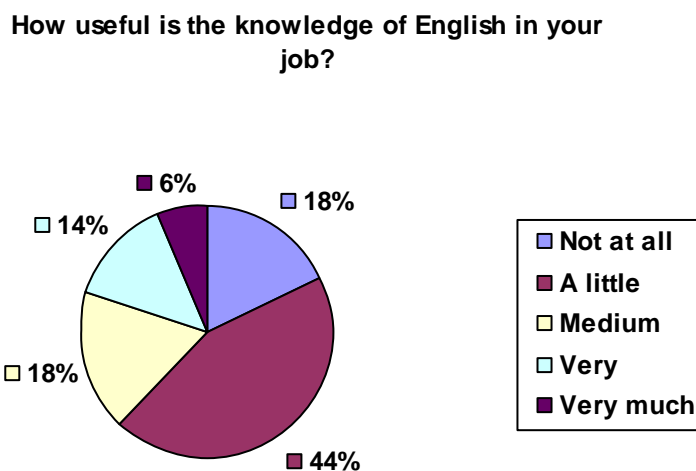


Figure 2.Response for the usefulness of English in the job environment of SMEs

The frequency of computer use is shown in Fig. 3, 44% of the respondents use

the PC on a daily basis. The remaining response allocations show no particular deviations. 18% of the respondents replied that they use the personal computer on a weekly basis, 20% on a monthly basis, and finally the remaining 18% do not use a computer.

How often do you use the personal computer?

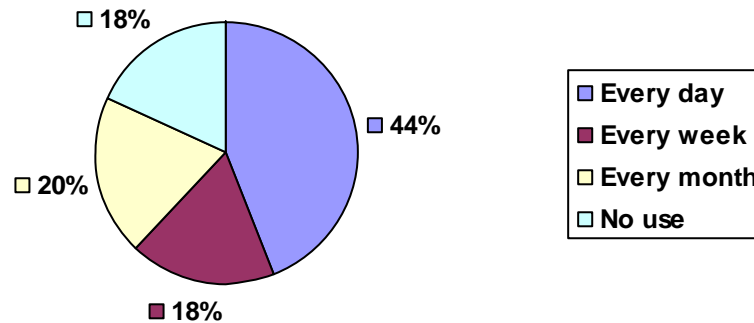


Figure 3.Frequency of PC use.

The participants were then asked if they use some kind of English learning method. 76% responded that they indeed use some method, while the remaining 24% use no English learning method. Of the 38 individuals who responded positively to the question about using some English learning method, 50% replied that they attend tutorial courses. 23,7% have a private tutor and 10,5% are learning the foreign language using a personal computer (CD-ROM). 5.3% said that they are learning English through the Internet, while four people out of 38 (i.e. 10.5%), learn English some other way (Fig.4).

If yes, which one?

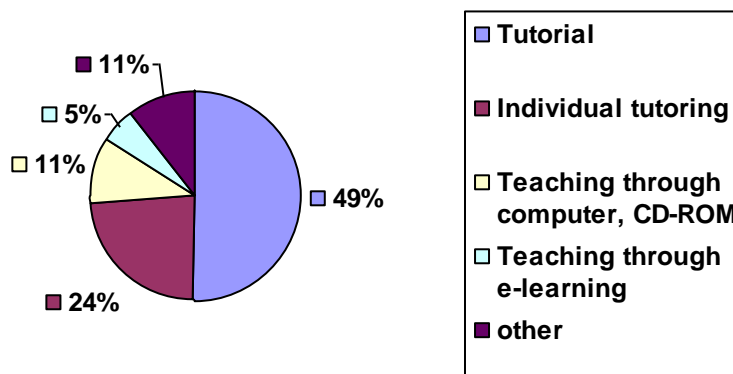


Figure 4. Ways of English language learning.

42% of the respondents consider that English is highly useful and would like to improve it. 22% believe that English is very useful, while 8% consider that it is not. Distributions of other replies do not show any particular variation (Fig 5). To the question of whether they believe that the computer can be used successfully to learn English, 62% of respondents replied that they agree with this opinion. The remaining 38% do not believe that the computer helps in learning English. From the following diagram, it seems that not many would choose the learning of English by computer, given that 58% of the respondents stated that they would never choose a learning method through e-learning or CD-ROM. The remaining 42% would actually select this method. The next two and final questions of the questionnaire concerning the demographic features of the sample. 56% of those who replied to the questionnaires are men, while the remaining 44% are female. 40% of the respondents are between the ages of 25 and 34 years. 34% are in the age group of 18-24 years old. 16% are between 35 and 44 years. The last 10% are range from ages 45 to 65 years.

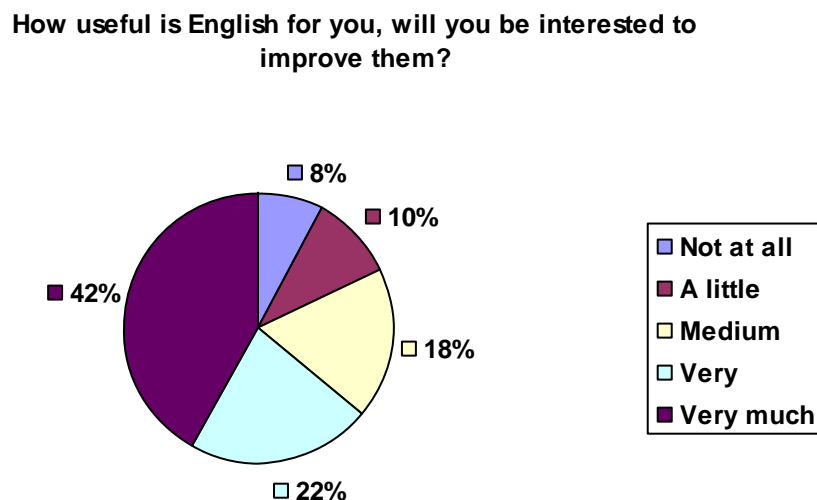


Figure 5. Degree of interest in improving English Language skills

5. Discussion – Conclusions

The objective of this research is to measure how useful the English language is in the everyday life and work of adults. This research also attempts to outline issues

relating to the adults' learning of English through computing. According to the answers they gave, it seems that they consider the usefulness of English major; however, the choice of learning English through computer does not appear to be of special acceptance. Several adults use computers nowadays and, although not everyone has access to the Internet, everyone would like to have one. What is more, the frequency of use of computers by adults is on a daily basis, although many use it on a weekly or even monthly basis.

Concerning the determination of the familiarity of adults with a series of simple computing applications, the findings are ambiguous. In some applications, adults seem to be better users than in some others. Excel, Word, Skype and the search engines are probably closer to the lives of adults, and in many cases they use them in their work, as well. Thus, familiarity with them is inevitable. The interest of adults for learning the English language is quite remarkable, and all of them want to improve their knowledge. Many of them use different methods of learning English, with tutorials and private tutoring being some of their first preferences. In any case, of course, the opinion of adults for learning the English language through the computer is not sufficiently encouraging. Most of them believe that learning a language through the computer is not profitable enough, and they would not select it.

In conclusion, it could be said that, although a large percentage of adults use computers in their everyday lives, they are not familiar enough with them so as to use them for other functions, such as learning a foreign language. Nevertheless, it would be useful to get information from the competent users as regards the benefits and advantages of the method of learning English through the computer and for the distance education, as it could be used as an additional means of learning the English language.

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“Avatour”: An intelligent avatar based virtual touristic guide

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Abstract

In this work, we provide the main concept and the architecture of a proposed wearable, interactive, touristic guide namely “Avatour” specially designed to fulfill the guided tour needs of cruise ship passengers. The intelligent guide will be based in a digital platform configured for smartphones or tablet pc (where pre-designed city walk tours among touristic information regarding places of interest to be visited, as well as other useful info (e.g weather conditions), will be provided to the passengers through a multilingual, interactive avatar. The platform will cooperate with the existing facilities (e.g. tourist guides, services provided by touristic agencies) in order to enhance the touristic guide experience in the field of cruises. “Avatour” is novel since for the first time, an intelligent, interactive persona visualized through a wearable device will play the role of a digital guide that will discreetly accompany tourists during their sightseeing expeditions. It is in our plans, “Avatour”, in an initial phase, to be provided to the tourists in the cruise ships docking in the Greek ports and especially in Igoumenitsa, Greece, port, promoting in this way the touristic attractions of the region of Epirus, Greece.

Keywords: Artificial intelligence, Interactive avatar, Touristic guide, Cruise ship passengerspersonalized services

1.Introduction

Since late 60's tourism is regarded as one of the main pillars of the Greek economic growth and stability. More specific, over the past decade cruising has become the fastest growing segment of tourism industry in our country. According to the European Cruise Council report (ECC 2012/2013) Italy, Spain, Greece, France and Norway are the top five European cruise destinations. This growing trend of the number of cruise passengers in Greece and the ranking of the country as the third most popular European cruising destination is also confirmed by Cruise Lines International Association Europe (CLIA 2012) and the Association of Mediterranean Cruise Ports (Hatzakos 2013). According to the European Cruise Council despite the difficult economic climate in Greece, the growth of the cruise sector in Greece is maintained. It must also be noticed that cruise industry is a valuable new resource for the Greek economy since passenger expenditure in our country is €470 million and direct cruise industry expenditure - passenger and cruise purchases, shipbuilding, employee compensation, cruise line purchases amounts to €14 billion across Europe, and close to €600mn in Greece.

The representatives of the world's biggest Cruise Lines Association CLIA reported that new ships, global destinations, new itineraries and innovative shipboard facilities and activities have driven consistent growth in cruise passengers as shown in Figure 1. The development of tourism sector in Greece is increasing rapidly judging from the number of tourists which is growing every year. According to the forum organized by the Hellenic Association of Travel and Tourist Agencies (HATTA) if Greece becomes an international cruise hub for the eastern Mediterranean, it will result more than five million tourists in a few years and tremendous financial returns (Greek Travel Industry News 2006).



Figure 1: Average Passenger Year-over-Year Growth Rate 1980

Considering that the growth of tourism industry is also impacted by advanced technology, Greece is in the lower ranks in the classification of the Global Information Technology Report. Unfortunately the progress of Greece in the exploitation of modern technologies and services so far cannot be judged as satisfactory compared with the corresponding performance of the other member states of the European community (Information Society 2013). A typical example is the position of Greece in the 64th place between 144 countries in the Networked Readiness Index (NRI) of the Global Information Technology Report in the current year. In addition, Greece is ranked 32nd in this year assessment of the Travel and Tourism Competitiveness Index 2013, concerning both European and the rest competitive countries in tourism industry (Blanke&Chiesa2013). This fact confirms that Greece, even though it has a good position in the global tourist market, lags behind in terms of adopting modern technologies in the tourism sector. Moreover it was also reported that although Greece is extremely popular as a destination, the country still needs to do more in order to realize its full potential, emphasizing that serious obstacles could threaten future growth.

These obstacles can be divided as Greek independent (e.g. economic crisis on tourism in the East Mediterranean) and Greek dependent (failures in the fields of services, infrastructure, taxation, etc). In all cases, Greek ports have to face many challenges in order to meet the requirements that will allow the sustainment of the passengers'

interest and satisfaction as well as to overcome the lack of advanced booking systems and the low quality regarding the provided port services and facilities. As reported at the 2nd Posidonia Sea Tourism Forum (Posidonia Sea Tourism forum 2013) Greek ports main problems constitute of:

- The lack of a regional cruise organization,
- The lack of cruise infrastructure development expertise,
- The shortage of cruise tourism expertise,
- The lack of a clean and welcoming interface between ship and shore,
- The port costs and fuel costs,
- The deficient or inadequate use of technological services and facilities
- The absence of the provision of personalized services.

It becomes obvious that in the cruise industry, to become a new or emerging port chosen by itinerary designers needs not only a serious investment in infrastructure development but also in the tourism development e.g. shore excursions, attractions, information, private tours, and especially personalized services. Thus, in the last years large operators (e.g Paul Gauguin Cruises and FTI Cruises) offer personalized services coupled with appealing itineraries taking into consideration the cultural appeal and attractions of each destination. For example, Paul Gauguin Cruises offer shore excursions with small groups tours or private tours and hotel stays in Greece (Rhodes, Santorini) in order to accommodate each passenger's personal experience (Moore 2013).

On the other hand, the port of Igoumenitsa, Epirus, Greece is one of the major transport hubs in Europe and the main West Sea gate of Northern Greece and of the Southern Balkans to Western Europe (Diamantis 2013). Epirus is investing in the port of Igoumenitsa as it is recently doing the first steps in the cruise market and has shown very positive results. The port of Igoumenitsa is labeled as a category A port, which includes all ports of international importance and is dynamically entering in the map of cruising. During the tourist season of 2013, five cruise ships, including the Seabourn's Company cruise ship which has one of the world's most luxurious ships have docked to Igoumenitsa port (Epirusgate 2013). The Igoumenitsa Port Authority, as an emerging port in the cruise tourism, is about to design new itineraries to the Adriatic and the Black Sea working hard on improving its infrastructure, the ground

transportation, the shore excursions in the region of Epirus, the development of passenger shipping between East Mediterranean countries and a more extensive networking service. Although the last years the number of the cruise ship tourists visiting the port is increasing, the full potential of the port is not deployed mainly due to the issues previously mentioned which are common to all Greek ports.

Modern technologies are the tools by which the tourism industry will be able to respond to the current needs of tourists in our country. The technological progress and the technological services so far in tourism industry cannot be judged as satisfactory compared with the corresponding performance of the other member states of the European community. Thus, in our work, we focus on the provision of advanced touristic services (based on innovative techniques) for cruise ship passengers docking in the port of Igoumenitsa and hence in Greece. The proposed Avatour system will initially “understand” the traveler’s needs and according to his/hers profile will suggest appropriate activities. Moreover it will be able to guide the tourist, interact with him and provide real time useful information e.g local cultural events, weather etc through an “intelligent” personal virtual guide – avatar. In the following sections of the manuscript initially the related literature is reported, next the Avatour concept, main features and architecture is described. Finally, in the discussion section our conclusions are provided.

2. Related literature

Tourism has experienced an enormous growth in recent years, motivated, in part, for the fast development of information and communication technologies and the global spread of Internet (Alptekin and Büyüközkan 2011), which have eased the access to large amounts of information about destinations, points of interest and travelling plans to potential tourists all around the world. Nowadays, e-Tourism (Castillo et al., 2008) enjoys a great success both from an economic and a social perspective. Many electronic sites and Web portals offer up-to-date information which is massively used by tourists to select destinations and plan their trips. Due to the obvious interest of both tourists and destination providers in selecting enjoyable destinations, and taking into account the overwhelming amount of information available through the Web, many recommender systems have been developed to assist in the process of choosing

travel destinations and planning tourist trips. Considering that Tourism is an activity strongly connected to personal preferences and interests (Garcia, Sebastia et al. 2011), recommender systems usually rely on ratings and opinions of previous users to suggest possible destinations.

The majority of the recommender systems focus on the analysis and comparison of tourist destinations, to help the user to select the most appropriate one. A travel plan typically consists of several steps, such as choosing the destinations, selecting tourist attractions, choosing accommodations, deciding routes, etc. Some of these elements are chosen before the tourists arrive at the destination (such as the place, accommodation, etc.) whereas others (such as concrete recreational activities) are commonly decided during the tourist stay (Batet, Moreno et al. 2012). Most of the travel recommender systems developed ((Fesenmaier 2003), (Ricci 2002), (Korfiatis and Poulos 2013)) have focused on the former issue. The main problem faced by this kind of systems regards the integration of heterogeneous sources of information (like Web resources associated to flight or hotel companies) in order to configure a trip that matches with the user's constraints (e.g., budget, calendar) and preferences (e.g., destination type). In many cases, information extraction techniques and semantic technologies such as specially tailored ontologies are used to parse, interpret and integrate information stored in heterogeneous sources(Ambite 2002), (Camacho, Aler et al. 2005). Those systems store a set of preferences of the user that allows them to rate a collection of destinations.

On the other side, there is a limited number of approaches focused on recommending a list of attractions that the tourist can visit at the destination. From the user point of view, the recommender will suggest places to visit in a certain geographical area taking into account his/her profile, computing a tourist daily plan, with indications about the given timeframe and even instructions about how to go from one place to another. In order to recommend satisfactory tourist attractions, it is important to ensure that their characteristics match with the travellers' preferences (Huang and Bian 2009). However, travel preferences are often hidden and are not explicitly known when users start to plan their trips, particularly if visiting an unfamiliar place (Loh, Lorenzi et al. 2003). Unlike the approaches mentioned above, attraction recommendations are typically performed on-line at the destination place according to

several dynamic criteria (e.g., user's preferences, timetable, location, etc.). In this case, the main problem consists on considering and integrating these criteria to propose a list of recommendations. However, it is also of great importance for the user to be aware of the specific attractions that can be visited when he/she has already arrived at a particular destination. Information about points of interest and cultural and leisure activities is very dynamic and, in many cases, difficult to retrieve, analyze and filter. On-site dynamic recommendations play an important role both for the tourist, who is interested in attractions that he/she may enjoy according to his/her personal profile, and for the destination provider, who is interested in increasing the visibility of the available attractions, especially in the case of low-profile activities in popular destinations, an important aspect of the so called sustainable Tourism (Borrás et al. 2011). In recent years, a scarce number of tourism recommender systems have focused on this aspect. Unlike the above-mentioned systems, these approaches should face, in addition to the profile-based recommendation task, other related issues such as the retrieval and appropriate consideration of the user's constraints during the stay (e.g., in aspects like budget, accessibility, language or agenda), the dynamic determination of the user's position and its integration in a location-aware recommendation process (i.e., geo-localisation of the user and the points of interest), and the inclusion of a desirable high degree of proactivity and dynamicity in order to adapt the system's suggestions to the behavior of the user at the destination (Castillo, Armengol et al. 2008), (Poudel and Nyaupane 2013), (Meehan, Lunney et al. 2013).

The scope of this work is to enrich the provision of personalized services offered to cruise ship passengers focusing on cruise ships docking in all Greek ports and especially the port of Igoumenitsa, Epirus, Greece by proposing an innovative touristic guide (especially configured for smartphones and tablet pc) which is based in an interactive avatar. Avatour's concept and architecture are described in the following section.

3. Hypotheses Development and Methods

As mentioned above, modern technologies can increase the efficiency and competitiveness of a tourism business or organization. In this work we propose Avatour as an innovative technological investment since for the first time an

application will bring the newest technology in the Greek cruise ship market by enhancing the passengers experience. Our aim is Avatour to be available in every port of the country starting from the port of Igoumenitsa, in order to enhance the provided touristic services, increase the port's position and competitiveness and help it to achieve a distinguishing position in the cruise market.

The basic aims of the proposed Avatour are the following:

- To **understand the tourist's needs and preferences** by creating a smart **user's profile**. To create the user profile initially predefined questions are provided to him/her in order the system to meet/learn the user's favorite activities and dislikes.
- To **help** the tourists **organize and plan their activities** by proposing (according to the previously created user profile) places to see and things to do **according to the person's preferences, available time and location**. Also additional information (e.g. weather information, local news, emergency phone numbers etc.) will be acquired and provided to the users in order to ensure their safety.
- To **navigate** users to the selected destinations and **guide** them by means of and **advanced avatar** that will act as an interactive **digital tourist guide**.
- To provide the aforementioned **services** by **means of a user friendly avatar** based interface that can be **used by non IT experts** (special care will be taken in order Avatour to be easily manipulated by elderly people).\
- To develop a wearable system that used either in the user's smartphone or tablet pc (thus no extra equipment has to be carried). In case the user does not possess a smartphone/tablet pc he/she will be granted with the appropriate equipment with the Avatour preinstalled.

The architecture of the proposed system is depicted in figure 2. Moreover in figure 3 a preliminary sketch of the proposed system user interface is provided. Avatour will be designed as a multi-agent system composed of the following modules.

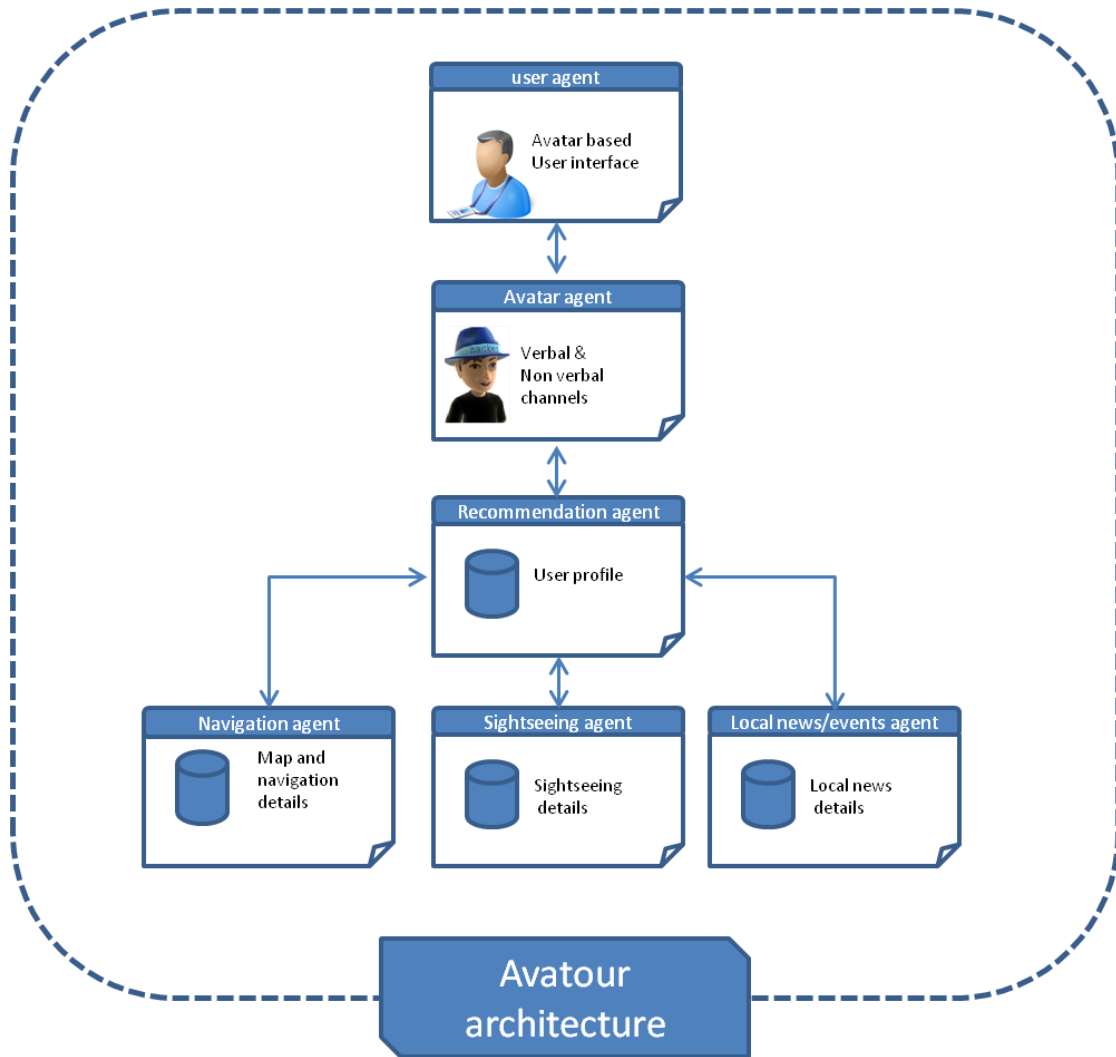


Figure 2: The proposed Avatour system architecture.

- i) User interface agent – It will be a graphical interface that offers several services, such as searching for activities with particular characteristics, updating the profile or receiving personalized recommendations.
- ii) Avatar agent- It will provide Face-to-face communication (between the user and the avatar) and will allow communication protocols that give a much richer communication channel than other means of communicating. It will enable pragmatic communication acts such as conversational turn-taking, facial expression of emotions, information structure and emphasis, visualization and iconic gestures, and orientation in a three-dimensional environment. This communication will take place through both verbal and non-verbal channels such as gaze, gesture, spoken intonation and body

posture. Users will be able to modify the avatar's basic features e.g type of voice (male or female), spoken language, point of interest description (brief or more detailed).

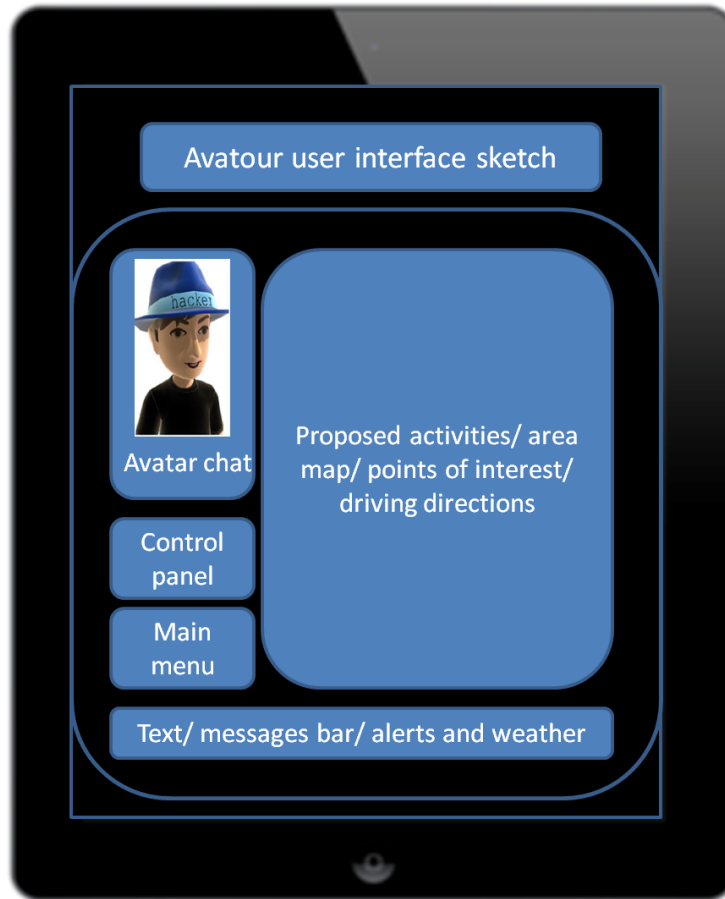


Figure 3: Preliminary sketch of the Avatour system interface

iii) Recommendation agent- it will generate and store the users' profile. The Agent will keep a database with some items about the activities available in the area in order to have a quick access to their main features. In that way, when an explicit or implicit recommendation process is needed, it can easily compare the interests of the user with the characteristics of the available events. After the profile is created it will recommend activities according to the user's preferences. Moreover the user's profile will be dynamically updated according to the user's reviews.

iv) The Sightseeing agent – It will contain details regarding the proposed activities e.g museums, food, entertainment, historic places, churches, sights etc. Special care will be taken in order to provide the system the potential to adapt to particular areas, cities, or activities.

v) The navigation agent – It will provide the necessary directions in order the user to reach the suggested destinations. It will contain a user interface providing area map, driving directions, time distance left to reach destination. Directions will be pronounced through the avatar.

vi) Local news and events agent- It will aggregate local news/events through predefined webpages/portals. Special events will be passed to the recommendation agent (e.g concerts, exhibitions, cultural events etc.) and will be reported to the user according his/hers profile/ personal preferences.

It must be noted that Avatour is only in the initial design phase. All the above mentioned modules have not yet been developed. As mentioned above, it is the scope of this work to describe the concept, functionality and the architecture of the proposed system.

4. Discussion - Conclusions

In a highly competitive environment, Greece has to follow the technological modernization by customizing modern technologies and innovative projects having as a result an equal participation in the global competitive area. The role of Innovation and technological change is critical in order to advance business/destination competitiveness and to improve the tourist's experience. Thus, innovation and cutting-edge technologies is a lever for the productive reconstruction of the country.

Through the proposed system, the users will be able to plan in an optimum way their schedule during vacations by means of proposed activities generated according to their needs and special preferences. Avatour will be based in a virtual assistant (avatar) that will guide the tourist in a discrete, simple and direct way requiring the minimal (or no) use of extra devices to be carried since it will be installed to the user's smartphone or tablet pc. Moreover, extra information like weather and emergency phone numbers will be provided in order to enhance the touristic experience and maximize safety. In our work we propose an innovative idea which will be hopefully one of the driving forces of innovation in cruise ship based tourism. The idea describes an innovative technological investment since for the first time an application will bring the newest technology in the Greek cruise ship market by enhancing the passengers' experience.

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PART E

Health

Parents Infant Massage Classes as a Function of Adult Education

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Abstract

This paper is focused on highlighting adult educational aspects involved in parents' training in infant massage. More specifically, the purpose is to address the importance of parents' participation in infant massage training groups for their own growth and development. In particular, it is argued that their involvement in this innovative practice, which, nevertheless, has deep "roots" in our culture too, presents the characteristics of an enriched experience. This experience is now evidence based and therefore theoretically and practically organized. Special emphasis is attributed, besides infant's benefits in physical and socio-emotional development, at the opportunity for parents to actively participate along with other parents in a learning process based on experience, human exchange, exploration of beliefs/assumptions and renegotiation of meanings, relationships and practices. Along with their initiation in infant massage, parents are encouraged to explore ways of thinking, feeling and acting by experiencing the benefits of human interaction and being part of a whole new process of meaning making.

Key words: Parents' Classes, Lifelong Learning, Infant Massage.

1. Introduction

This article focuses on the connection of parents infant massage classes with adult education from the perspective of basic dimensions of adult learning. Parents infant massage classes operate within the framework of the implementation of the International Association of Infant Massage Parent/Infant Course Syllabus (International Association of Infant Massage, hereinafter IAIM). The course and its content is structured on the basis of the curriculum of IAIM and is being completed during five (5) weekly meetings of parents/infants and the instructor. According to the international experience of the program implementation, a five-week course seems sufficient for adequate training and assimilation of the new experience by the participants. The basic parts that a typical session consists of is welcome/introduction, icebreaking, practice, theory, discussions and closure. According to IAIM Core Curriculum, instructors are encouraged to use different methodologies in order to creatively engage parents' knowledge, emotions and action, important aspects of adult education learning processes.

Both philosophy and methodology, by which are parents infant massage classes organized, support an interactive, inter-subjective learning process. At the same time, they promote for parents the development of a complete way of thinking, feeling and responsiveness, which is based on increased awareness and sensitive understanding. Parents are encouraged to share and negotiate meanings, while experiencing the benefits of positive/nurturing touch for themselves and their children. In this process are supported both by the learning context itself and by the instructor in order to remain open to all available information, to explore alternative choices and actions and eventually move towards behaviors that are characterized by increased flexibility.

In this paper we support that parents education in these classes can provide access to an alternative cultural experience for parents, which is inspired by the philosophy of infant massage, so as to be able to mutually explore new perspectives in childrearing and development. Specifically, we argue that the implementation of this evidence-based program, as structured according to the specifications of the IAIM core curriculum combines an ancient art with modern knowledge. This evidence-based combination aims at infants' and parents' well-being and provides a safe and positive environment capable to lead parents to alternative interpretations. In this sense, the IAIM program also supports basic dimensions of adult learning. We refer,

in particular, to "learning programs aimed at individual development and fulfillment" (Rogers, 2010: 4).

In the first part of this article we present basic dimensions of adult learning. More specifically we refer to the role of beliefs/assumptions and parental ethnotheories in particular, to the central function of perspective transformation and to the concept of learning and acting with increased awareness-sensitive understanding, while in the second part of the paper we associate these dimensions with parents infant massage classes.

2. Dimensions of Adult Learning

2.1 The Role of Beliefs and Parental Ethnotheories

The significant process of understanding the ways in which we interpret our experiences and produce new or revised interpretations aimed at taking informed action is central in adult learning. During this process the adults are faced with uncritically internalized social and cultural knowledge which has the form of "folk" theories, beliefs/assumptions, habits (Mezirow & Associates, 2005). Indeed, according to Bruner, due to the profound impact that cultural knowledge has in our lives as it shapes our worldviews and ways of thinking, feeling and acting, every learning process has to be oriented towards an increased awareness of the limitations that this knowledge imposes on our perception and meaning making (Bruner, 1996).

Socialization experiences play a significant role in shaping an individual's worldview. As Quinn and Holland mention, "[s]ocialization experiences may differ sharply in the degree to which they endow a given cultural model with directive force for the individual" (Quinn & Holland, 1987: 12). In particular, it is through early socialization experiences that a person organizes the belief system that helps her/him organize her/his life and perceive the world as a predictable place to live (Yero, 2002).

Cultural psychology is mainly concerned with "intersubjectivity", in particular with "how humans come to know 'each other's minds'" (Bruner, 1996: 13). According to psycho-cultural approach, meaning making rests upon understanding other minds and interpreting human action. Within this scientific field, we also refer to the "construction of reality" as a "product of the process of meaning making". In

particular, it is argued “that ‘external’ or ‘objective’ reality can only be known by the properties of mind and the symbol systems on which mind relies” (Bruner, 1996: 12). Certain emphasis is laid on the limitations of the perspectival tenet, namely on the limitations of understanding something from a particular perspective. It is also emphasized that one’s understanding of something in a particular way is “right” or “wrong” according to the cultural context or frame of reference, in the terms of which its particular meaning is construed (Bruner, 1996: 13).

As Harkness and Super (2004) illustrate, “parental ethnotheories are often implicit, taken-for-granted ideas about the ‘natural’ or ‘right’ way to think or act, and they have strong motivational properties for parents” (Harkness & Super 2004: 3). Keller *et al.* (2005) associate parental ethnotheories with different “caretaking arrangements” and “practices” that parents adopt during the crucial developmental phase of infancy (Keller *et al.*, 2005: 158-159).

More specifically, parental ethnotheories are cultural or “folk” models that refer to basic notions and assumptions shared between parents about themselves, children and family life. They reflect, in specific ways, general cultural models and values of the wider society and determine parenting practices (Harkness & Super, 2004). “Folk” theories or cultural models, drawn as terms from cultural psychology and anthropology, refer to the knowledge that individuals learn from the cultural group they belong to. These models “give form and direction to individual experiences by shaping and informing perception, cognition, emotion and motivation” (Fryberg & Rhys, 2009). In this sense, the version of “reality” we experience in our everyday life is a constructed one, based on the culture’s canonical ways of meaning making and interpretation (Bruner, 1996).

2.2 Perspective Transformation as a Main Function of Adult Learning

Perspective transformation is considered to be a central function for adult learning and education in terms of adults’ personal growth and development (Mezirow, 1981). Perspective transformation is based on the possibility for individuals to involve in processes of negotiating transformations in meaning perspective.

According to Mezirow, meaning perspective “refers to *the structure of psycho-cultural assumptions within which new experience is assimilated and transformed by one’s past experience*” (Mezirow, 1981: 6, *emphasis in the prototype*). Berger

και Luckmann (1966) illustrate the importance of “primary socialization” for the individual’s understanding of the social world as a meaningful place to live. In particular, they argue that it is a socially constructed version of reality as mediated by significant others and internalized through enculturation process, that becomes our frame of reference, shapes assumptions and legitimizes certain interpretations of reality and attendant action (Berger & Luckmann, 1966). Bruner, further, explains, that our beliefs or “folk” theories limit our perception by imposing on our interpretations a certain version of the world based on universals or common themes (e.g. how the mind works, how the child’s mind learns, what it takes to grow, about possible ways of life, about the concept of self) and affecting in this way our interactions with others (Bruner, 1996).

Perspective transformation concerns a process of becoming critically aware of *«how and why»* our psycho-cultural assumptions constrain the ways in which we see ourselves and our relationships. Such a critical process aims at consequently *“reconstituting [psycho-cultural assumptions] structure in order to permit a more inclusive and discriminating integration of experience and acting upon these new understandings”* (Mezirow, 1981: 6, *emphasis in the prototype*). This transformation, called “alternation”, is possible because “the reality of everyday life is ongoingly reaffirmed in the individual’s interaction with others” (Berger & Luckmann, 1966: 169).

Based on adult learning research results, the critical process of transformation can be facilitated by a number of elements. These elements include, a quest for meaning “in attempting to resolve our disorienting dilemmas”, “self-examination”, “a critical assessment of personally internalized role assumptions” and a sense of distance from “traditional social expectations”, “relating one’s discontent to similar experiences of others or to public issues-recognizing that one’s problem is shared and not exclusively a private matter”, “exploring options for new ways of acting”, “building competence and self-confidence in new roles”, “planning a course of action”, “acquiring knowledge and skills for implementing one’s plans”, “provisional efforts to try new roles and to assess feedback”, “reintegration into society on the basis of conditions dictated by the new perspective” (Mezirow, 1981: 7).

Reflexivity plays an important role in adult learning (Charissi, 2010), while “critical reflexivity” is a core process of perspective transformation (Mezirow, 1981: 13). It refers to an in-depth understanding of the reasons that lead us to specific

interpretations of reality, to the meanings we attach to our roles and relationships. It also consists of the ability to self-exploration and the critical awareness of the constraints imposed by “conventional wisdom” and “power relationships” (Mezirow, 1981: 11).

2.3 Mindful Learning and Mindfulness

Mindfulness presupposes a “mental step back” in order someone to observe a situation “without immediately engaging with intense emotions and reactions” and provides a “protection against unconstructive responses” (Schoeberlein & Sheth, 2009: 4). Langer supports that “the concept of mindfulness revolves around certain psychological states” and these are “openness to novelty”, “alertness to distinction”, “sensitivity to different contexts”, “implicit, if not explicit, awareness of multiple perspectives” and “orientation in the present” (Langer, 1997: 23).

The key to this innovative mindful approach “is based on an appreciation of both the conditional or context-dependent, nature of the world and the value of uncertainty” (Langer, 1997: 15). In contrast, the way we usually learn to deal with information is in a rote, unthinking, unconditional and absolute manner. An important aspect of the mindful approach implies implications for the instructor too. He has to be aware that he teaches with his words as much as with his physical presence and his emotional responses (Schoeberlein & Sheth, 2009).

An educational process aiming to parents’ development and mindful learning is important to promote the sufficient conditions towards an in-depth understanding of the socio-cultural situatedness of meanings, relationships and practices and ensure opportunities for more useful, inclusive insights and informed choices and actions. During this process it is important that parents are encouraged to explore whether their choices and actions are justified according to the best available each time information or alternative perspectives might serve them and their children development better. This way we can support them to avoid “sources of conflict and frustration based on outdated or erroneous information” and to increase “behavioral flexibility” (Yero, 2002: 25).

3. Parents Infant Massage Classes in terms of Adult Education

3.1 Parents Infant Massage Classes and Parental Ethnotheories

If any educational initiative is to empower individuals to transcend the limits of a culture's ways of life and thought, it has to ensure access "to more powerful symbolic systems". Symbolic systems concern both language and adopted practices.

In the case of parents we believe that their training in infant massage, in accordance with the philosophy and the core curriculum of IAIM, ensures their access to an enriched symbolic system of communication with their children. Their initiation into the evidence-based interaction model of infant massage which relies on positive/nurturing touch allows them to experience positive interactions that will empower them in their parental role. Parents' training methodology, including social contact with other parents, provides them with opportunities to raise awareness of the restrictions associated with dysfunctional ways of thinking, feeling and acting related to their role as parents and interaction with their infants.

Parent/infant course methodology provides opportunities for experiential learning through participation, interaction, positive feedback, reflection and sharing of experiences among the members of the group of parents-infants and "not just by showing and telling" (Bruner, 1996: 13). The instructor in the role of the facilitator is responsible to support parents to explore new or revised interpretations that will promote their and their children well-being, so they feel that they are worth and they are welcome, accepted and safe (Mezirow, 1981: 19).

At this point we mention examples of parental ethnotheories that were examined and renegotiated from the parents themselves during their involvement in parents infant massage classes. These beliefs were noted during our five-week practical teaching (summer 2013), an essential part of our training as IAIM certified infant massage instructors (CIMIs), organized with the support of Pre-school Education Department of the Technological, Educational Institute of Epirus. Some of those beliefs concern holding children "spoiling theories", infants' inability to empathize with others and express emotions through crying, infants' ability to use cry to manipulate parents, parents' authority to determine infant's reactions, moods/feelings and needs according to their needs and wishes.

3.2 Parents Infant Massage Classes and Perspective Transformation

In this section we associate parents infant massage classes with perspective transformation and mutual reconstruction of the meaning that parents attach to their parental reality. We argue that parents development process is feasible because parents classes support those socio-cultural, emotional and conceptual preconditions necessary to ensure possibilities for to reach more inclusive meaning making processes (Mezirow, 1981).

More specifically, perspectives are “constitutive of experience” and thus perspectives development and the subsequent shift to more inclusive interpretations depend on the quality of the lived experiences. In relation, infant massage classes provide a powerful experience sufficient to lead to that kind of knowledge production (Mezirow, 1981). Parents have access to an alternative and forgotten, through ages, cultural artifact. In particular, IAIM course syllabus provides parents with relative scientific knowledge and promotes their communication skills. Moreover, the implementation of IAIM program provides them with the opportunity to experience the physical and socio-emotional benefits of infant massage for themselves, their children and their family as a whole.

Specifically, parents education according to IAIM mission statement and course syllabus introduces parents to values and principles that favor the development of new perspectives in the light of a strong, verbal and non-verbal communication experience with their children. Namely, parents are facilitated to develop positive relationships with their children, to establish, mutual responsiveness based on care, empathy, warmth, love and respect. During their education, they are supported by the instructor, in terms of positive feedback, relaxing and respectful environment and active listening of their anxieties and concerns. Program’s basic goal is to enhance the bonding process with their children throughout their lives, whilst parents are capable of offering to their infants positive and nurturing touch and the foundations for healthy relationships.

“Parenting together” as a basic function of infant massage classes involves two important aspects: interaction with their babies and interaction with other parents and promotes “mutuality”, “equality” and an “intersubjective” way of learning. Both ways of interaction provide parents with useful feedback and support in their role.

Program implementation promotes the development of parents’ knowledge and skills in order to be empowered to create the appropriate conditions for quality parent-infant interactions. Instructor’s awareness of others’ individual ways of dealing

with issues and self-awareness, are crucial in implementing the program. It is important that the instructor recognizes that our early memories are the basis of how we process experiences and emotionally evolve as adults. In this way she/he will be able to identify and deal with others and her/his personal emotions and facilitate an enriching and positive experience for families and children.

3.3 Parents Infant Massage Classes and Mindfulness

We support here that parents infant massage classes motivate parents to identify the special features inherent in interacting circumstances depending on their own and their infants' needs and respond appropriately. In this way parents are encouraged to gradually adopt a mindful state of mind and responding based on more informed choices and actions.

Specifically, parents are being introduced to basic notions and are motivated to perceive the information provided in a flexible manner. They are treated as "experts" and are expected to apply available knowledge and skills creatively, according to the specific each time conditions (Mantziou & Oikonomou, 2008). Namely they are facilitated to establish mutual responsiveness according to parents'-infants' cues and signals, to identify their infants' behavioral states and be attuned to one another, to make adaptations as their infant grows, to empathize with their children and be able to actively listen to them, to observe, to reflect and become aware of their own ways of thinking and acting. In this way, parents are supported towards a conscious and purposeful way of attunement to their infants in order to "feel felt" by each other (Siegel, 2007). This kind of attunement which is based on mindfulness can make parents benefit from the possibilities of "greater control", "richer options" and "transcended limits" (Langer, 1989: 2).

The foregoing dimension of parents classes combines the promotion of parents' deep caring for their children and development of lifelong healthy relationships. In particular, parents are mindfully prepared to stay attuned to each parent-child unique relationship. They learn to carefully observe and respond appropriately. In this process of mutually developing a mindful way of parenting, the instructor becomes a role model for the parents, parents become role models for their children and each parent contributes to the interweaving of the various "webs of knowledge, attitudes, skills and behaviors into an interactive classroom environment" (Schoeberlein & Sheth, 2009: 2).

4. Conclusions

In this paper we attempt to present the implications of parents' participation in infant massage classes for their own growth and development, considering also the benefits for the physical and socio-emotional development of the infant.

In doing so, we describe basic concepts such as parental ethnotheories or belief systems, perspective transformation and mindfulness. We focus on their origin and "nature", their properties and their influence on parents' ways of thinking, feeling and acting. Considering that meaning making is a central process of human's innate need to make sense of their experiences and that this process is based on an intersubjective construction of reality, we consider infant massage classes as supportive of renegotiation of meanings, relationships and practices.

More specifically, we support that philosophy and methodology of parents infant massage classes allow parents to actively participate along with other parents in positive experiences. They are provided with the chance to reflect, to deeply understand their attitudes and behaviors to explore more inclusive interpretations, to strengthen their role and develop healthy relationships with their children.

Within the limits of the issues raised in this paper, we make specific references for the instructor and the implications of his role. We also presume that under certain circumstances, as highlighted in this paper, infant massage classes can take the form of an early intervention aiming at parents' personal growth and development and the promotion of mental health, parenting practices and organization of the family life as a whole.

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Professionals in Health, Early Care & Education in Applying Infant Massage

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Abstract

Aim of this paper is to present the dimensions of Professionals in Health and Early Care and Education in applying Infant massage. It will be discussed the need to enhance more the Nurse & Day Care Centers- Family Partnership, which in Greece is known as «Help in Home». It seems that it is a great need in our country to support families with infants, based to the early intervention program, known as - Home Visiting-. Research data show that Health Professionals and Early Care Educators may need additional learning and need to unlearn certain practices and adopt a different ethos within a structured educational program, based on the International Association of Infant Massage.

Key words: Professionals of Health/ Care, Infant Massage.

1. Introduction

The psycho-social problems of infants, toddlers and their families have been one of the major issues of public health for the “western world” and they seem to be interwoven with the social, economic, political and ethical web of our societies (Tsiantis, 1999). The cost of human pain and the expenditures needed to redefine and treat psychopathological characteristics is enormous compared with early parenting interventions, before or after pregnancy and during the first year of life (Osofsky, 1998).

For several years both in organizations conferences (such as: World Association for Infant Mental Health-WAIMH, Educational Seminars of the International Association of Infant Massage) and in local organizations (such as: Hellenic Society for Mental Health) has been continually pointed out the need for more early intervention programs, especially in our country.

According to the nowadays international trends, interaction is more effective when it's not been applied segmentally, through specialized programs, but in the framework of primary early prevention programs, which are innovative actions and a great challenge for researchers and clinicals (Olds, 2006· Tsiantis, 2000).

The aim of this study is to highlight the importance of early intervention programs and to enrich the existing care programs in our country, such as the program «Home Visiting», with qualified nurses and early age educators, in infant massage. Through this program, parents can understand the importance of early age and especially the benefits of infant massage, which can contribute both to organic and social-emotional health of the infant, to the improvement of the respiratory and circulatory system, the boosting of the gastrointestinal function and to the substantially communication between parent and infant.

The certification of health care professionals in infant massage is considering as a necessity and a break through, since it may applied as an intervention program for early years, to prevent later dysfunctional characteristics in later years. This design can lead to graduate withdrawal of public money that is wasted many times from several organizations and services in their effort to treat entrenched family situations when children are in older ages.

2. Early Intervention Programs

In recent years, in an international level, early intervention is rapidly expanded from pregnancy to the first year after the birth of the infant. Early interventions represent nowadays key, innovative components to the perpetually emerged and evolving field of the mental health of infants, where there is quite few research in our country. Although the term “mental infant health ” can be consider as a useful term for the framing of funds and policy, it provokes negative emotions to the families, since they link this term with long term pathologies, something that is odd for this age, considering the brain plasticity during the first age of life (Mantziou, 2007). Prevention for the psycho-social health and infants’ mental health, in general, is an essential matter for those involved in services for childlrens mental health in areas of early care, health and education.

The early appropriate interventions, immunize the mental health of infants by strengthening proper developmental practices. Bowlby, during the 70s, had admitted that specialized help to the parent during the crucial months before and after the birth of the child, as well as during the first year of his life, can support the parents so they be enabled to understand better infant’s needs.

The support of professionals in health, welfare, and early care professionals it is consider as appropriate their updating and their training to the new data of their field (Mantziou, 2005). Specifically, the familiarity in those professions is consider crucial, given the fact that through their education they can inform, expose and sensitize parents to more beneficial communicational models with their infants (Ferber et al, 2002).

However, support and counseling measures for parents are inadequate in our country, despite any apparent political will to invest in the normal development and mental health of the child. There is a lack of adequate preparation for the parenting role and also guide lines to a successful parenting (Xoudoumadi, 1994). There is of course, both in our country and in foreign countries, an oversupply of intervention and support programs for parents with toddlers and teenagers but not for infants. This happens because in these ages there is a stronger need regarding children discipline. The University of Athens, under the supervision of professor Xatzixristou (2004) offers intervention programs for children at pre and school age, which is a significant contribution to our country, but without particular references to parents with infants. There are also recorded worthwhile efforts from the Ministry of Education and other institutions such as IDEKE.

The core of our work is based to the work of intervention programs of Tsiantis & Dragona as well as David Olds' work. The most important example in our work is intervention program to the field of primary intervention. Tsiantis and Dragona (1999) in 90s contacted in our country the only early preventive intervention to general population, during pregnancy up to the first 2 years of life. The contribution of this program to Greek society is of great importance, since it sets an example to the field of preventing interventions. The aim of this program was to educate primary healthcare professionals and to cultivate these skills in evaluating the psycho-social development of children. The data from this research record the positive effects if interventions both in professionals and mothers. The same sample of kids was examined when they were at first grade and they found that children from the experimental group had less difficulties comparing to the children from the control group, in some respects of psych-emotional health (Agrevi et al., 2005).

The scientifically documented program of Olds et al. (2001) known to the world community as «The Nurse-Family Partnership» and it is applied nowadays in the U.K, the U.S.A and in other countries. This program is also an exemplar model and we adopt its basic components. This program had begun from Elmira, New York with supervisory visits to families from pregnancy up to 2 years after the birth of the children. Longitudinal research data for this program record its effectiveness to the prevention of abuse and psychopathology attitudes of children and its based in the early relationship between parent and infant is easy to be affected to this stage and they can abstract or even prevent the establishment of problems.

3. Conclusions

Through the participation of Certified Infant Massage Instructor recruited from health and education field we aim to:

1. Maternal awareness that may function to a therapeutic and informative way for them.
2. The connection of these programs with modern theoretical references and current practices in our country.
3. Knowledge adaptation and follow up internationally appropriate practices in infant massage interventions.

4. Adaptation of infant massage from local authorities, pediatric clinics and others services and organizations of our country, for the support of the maternal role in the upbringing of her child.

5. Employers' briefing of the the field in early years, might contribute to professional growth and development and improvement.

If we wish to function as a welfare state, we must lunch multidimensional activities of early intervention programs with the participation of professionals on a broad level, such as nurses and health and educators in preschool age. Through these professions we can contribute in two levels: to the prevention of insecure types of attachment in early years, which may lead to an non problematic behavior to the childhood and even to the adulthood and in second level to channel assimilation and understanding of precautionary measures to the field of healthcare and development in early years.

The interpersonal mental world that can be created between the parent and a health, care and education professional, such as a nurse or a preschool educator, is easier accessible due to the safe status emitting from these professions. The provided training from the International Association of Infant Massage educates and reflects a benevolent form of professional, that is not threatening, does not control, does not stigmatize, does not impose penalties and does not possess some kind of magic formula, but instead discuss, collaborates and examines various issues with the parents and the rest of the team.

Concluding:

A. There is a development of a cooperative effort between them, having professionals willing to hear and support the needs of the parents.

B. There is a development of their sensitivity in recognizing cases where the search and the intervention of special care is needed.

C. It is established a satisfactory relationship between parents, infants and professionals on a scale of mutual trust and satisfaction.

D. The professionals approach parents with empathy, which requires the development of an environment of understanding and trust that may allowed to the professionals to recognize the special needs of the parents and the infants and interfere with them.

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Educational Settings and the application of psycho-motric activities

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Abstract

Longitudinal research data show the importance of the role of psycho-motric activities in preschool children as well as in school age children. The article emphasizes «motricity», as a means of educating closely interlinked with the intellectual and emotional sides of the child, which hides behind it an entire universe. It will be proposed a design of thematics for an educational psycho-motric program, which is based on the three different levels of body scheme: body plan, body awareness and body esteem, since corporal awareness, is the representations that a human being has with regard to the structure and function of his/her body and mental state.

Key words: psycho-metric, creativity, holistic development

1. Introduction

Young children's physical exercise constitutes a multidimensional issue. It is constantly in great need of further researching efforts in order to understand specific characteristics which do have their affect to the development, content and teaching methods of those activities (Hinkley et al., 2012; Hinkley et al., 2008). Thus, the development of new and innovative curricula on Physical Education for preschool and primary school children is on ongoing concern, and the key point on these conditions is to stimulate children so they can think systematically, methodically and creatively in their kinetic skills. Particularly, in a preschool educational environment,

rejuvenating proposals to existing educational programmes seem to favor especially a holistic development of young children (Mantziou & Petrogiannis, 2009).

Traditional Analytical Curricula in Greece are even focused on children's physical abilities development and pre-existing sports models playback while they are lacking of a holistic development for children. Namely, Bournelli refers to this phenomenon while stating that Physical Education seems to be neglected by respective teachers, the level of non-verbal communication within which the creative movement is integrated and "probably they have not fully realised the educational value of cultivating creative skills on children through motion" (Bournelli, 1998:69).

Within this framework, focused efforts to create proposals that lead to the enrichment of the existing curriculum includes present work, too. The present literature preview elaborated research data, of two thematic sections, which are related to the all-round development of young children, i.e. psychometric - kinetic activities and kinetic creativity. Aim of this work is to present pilot modules on a physical education programme, the base of which lies in the above issues and can be piloted in respective areas of innovative educational structures for physical education.

2. Psycho-motric Activities

The term "psycho- motric development" refers to the progressive acquisition of skills adopted by a child in physical / motric / cognitive / perceptual emotional and / or social fields. All these areas are in parallel developed and affect each other. So, this kind of skills give great emphasis on direct relationship between our body, our perception and emotions, with particular emphasis on movement. The latter has a dimension that is directly related to the holistic growth and development of a child (Lupu, 2011 α,β).

During the last decade it has been recorded particularly this dimensional aspect of such activities in diverse physical educational programmes. There is a holistic approach to child's development, associated with feelings of self-sufficiency and self-confidence, as recorded in a variation of works (Grosu et al., 2007; Hinkley et al., 2012; Hinkley et al., 2008). As in most physical educational programmes, so to these programs is given special emphasis on body knowledge and assimilation through movement (Slaughter & Heron, 2004).

Motricity, at this kind of programmes, helps connect the cognitive and affective characteristics in children, through mental and kinetic activities integration (Stanescu, 2002). The latter is correlated with body autonomy actions and is a response to

specific stimuli (Horghidan, 1998). Lupu (2011 β) lists specific kinetic programme activities that contribute to the whole development children with emphasis on psycho-kinetic activities. These activities are means of education, closely connected with the cognitive and socio - emotional development of the child. That kind of approaches not only programmes specific to children programmes but in adult programmes, also, in Greek and foreign literature and are particularly popular (Zaragas, 2011; Grosu et al., 2007). Strengthening of these holistic, psycho- kinetic, activities has resulted in an increase on consciousness, other motivational incentives, better attention management, volition and memory. When the child feels more autonomous and keen on to handle his body, by increasing motivation or looking higher level of challenge, he is able to find more alternative solutions to a problem, by using not so traditional or conventional approaches (Zhou, 1998).

3. Kinetic Creativity

During the previous decade, also, physical education programmes have been employed to support the development of creative thinking, which is considered a prerequisite to humans through ingenuity adaptation, composition and design (Burnelli, 2002). These programmes place significant emphasis on kinetic creativity as one of the major factors for expression cultivation and other creative skills amongst preschool children through the process of divergent productivity and driven inventiveness (Cleland & Gallahue, 1993). It constitutes the starting point of treatment and teaching methods application on development of kinetic creative behaviour on children at this particular age, aiming that children could become more creative, expressive and imaginative. Creativity being expressed through motion is defined as a creative movement that is the result of free and spontaneous child's movement. In other words, it is a mental organising and executing various new kinetic patterns through reconstruction and processing cognitive kinetic expressions in a form that will be new to a child (Lykesas, 2002).

Research findings showed that preschoolers who participated in such school kinetic activities, had statistically high values for kinetic flexibility, kinetic fluency and kinetic ingenuity, compared with children who did not participate in such activities. Frequent use of motion components of this sample group contributed to the modification and production of new and original kinetic patterns. That is, these children could create and simultaneously discover new ideas on how to bounce, run , skip, starching bodies, fling types, kicking, slipping and passaging methods through

a bench (Lykesas et al. 2003). Corresponding data have been observed in Bournelli's (1998) control group, a significant difference in the level of expression in kinetic creativity and the development of social attitudes, kinetic skills and kinaesthetic perceptions. These data revealed that the pedagogic value of creativity is attainable through Physical Educational classes, provided that programme and teaching methods are appropriate for this.

4. Configuration Methodology of Proposed Thematic Units for modelling an Educational psychomotor Programme

For the proposed thematic configuration of an educational psychomotor programme we draw data from:

- 1) The thematic units and the various stages of a psychomotor programme can enrich the cognitive, mental and motor skills of the child (Lupu, 2011β) and Slaughter's & Heron's (2004) physical knowledge plan, which refers to representations of three levels of knowledge about the body, sensory - motor , visual - spatial-temporal and the verbal - conceptual.
- 2) The Specific Physical Education Programme on motor creativity (Bournelli, 1998), which comprises of different levels of awareness about movement in space, time, body dynamics and expressive movements.
- 3) The teaching styles spectrum, primarily by way of instruction in the treatment of motor activities, since the way the teacher instructs is being influenced by how the child assimilates that kind of knowledge (Moston & Ashwort, 2008).

4.1 Content for proposed thematic units

Based on the main axes of psychometric-psychomotor development and motor creativity, we have ended up in six aspects regarding the content of these modules and their basic characteristics:

- 1) Proclivity Aspect: kinesthetic perception and coordination, place- kinetic perceptions and body techniques and skills integration, in space and time.
- 2) Volition Aspect: decision-making, initiative, volunteer capacity, target concentration and actions and dynamics combination.
- 3) Attitudes - Values Aspect: respect of particularities, mutual effort, team spirit and discipline.
- 4) Cognitive Qualitative Characteristics Aspect: attention, perception, creativity, memory, imagination and evaluation.

- 5) Emotional Qualitative Characteristics Aspect: Self-regulation, emotional balance, nonverbal behaviour and body expressive ability, and
- 6) Personal Characteristics Aspect: idiosyncratic features, self-regulation and body expression through a non-verbal behaviour.

It therefore seems that this holistic development approach will be achieved by exercising these modules skills, preserving each personality capacity and taking into consideration these aspects in a unique methods system according to age and developmental level of each child (visual, auditory, touch perception, endurance, strength, flexibility and agility).

5. Conclusion

The proposed thematic units could probably enhance this holistic development on young children and possibly provide any precondition that give children with the chance to use their natural energies and creative skills, expressive and imaginative, enhancing simultaneously psychomotor development and their kinetic creativity.

Involvement and participating in organised kinetic activities creates the best conditions for more kinetic responses, by promoting and developing the ability to sense more freedom, self-motivation, experimentation, investigation and discovery (Lykesas et al., 2003). We conclude therefore that for more multiple responses and kinetic skills growth, children must be fed with new stimuli and ideas, characteristics which are likely to be embedded in the above suggested thematic field.

All subjects of this study are not meant to be considered better than others, but just an attempt to investigate the cradle of service on specific purposes for children holistic development.

We believe that preclusively the organisation of the proposed themes can work against a passive mode of knowledge accumulation and the children stay removed from uniquely key ways of thinking but work systematically, methodically and creatively in all modes of their educational process and not only in motor activities. Further study and pilot implementation of the proposed model has been proven to be necessary so as to ensure or not the relationship between the individual thematic points and holistic development in a child.

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The Structure and the Functional Characteristics of the Developmental Center of Infant Massage in TEI of Epirus

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Abstract

Aim of this article is to describe the role, the structure, the functions, the affiliations and collaborations of the Developmental Center of Infant Massage at the Technological Institute of Education in Epirus. Center's basic function is to offer parents infant massage practice, with minimum tuition fees. The Center is anchored in a developmental approach to follow the International Association of Infant Massage Statement, in promoting nurturing touch and communication through training, education, and research so that parents, caregivers and children are loved, valued and respected throughout the world community. The Center's belief is that healthy infant development is the base for healthy societies. Our mission is to enhance the growth of the next generation during the very critical early stages through infant massage.

Key words: Infant Massage Center, Structure, Function.

1. Introduction

The necessity of the founding of the Developmental Center of Infant Massage (Infant Positive Touch) (hereafter DCIM), in the Department of Early Childhood Education of the TEI Epirus has been established on the perceived need in our country to implement an early infant intervention program in Greece. Infant Massage (hereafter I.M.), has been characterized as early intervention, because it contributes to physical, social and emotional infant development (Fogel-Schneider & Patterson, 2010).

The term «early intervention» refers to the time period after birth, or even during pregnancy in the general population, but it also includes a range of services designed in a way that strengthens the features of the mode upbringing the parents and the dynamics of the community system.

Early prevention in infancy can have immediate results helping parents with their children problems. Parents «often become victims of the lack of psychosocial services, of the bureaucratic processes and the competition or failure in communication amongst the children mental health services, despite every promise and the efforts made to meet the needs of children and their families» (Tsiantis, 2000, p. 24). It has been recorded, that there is an increase in childhood disorders along with the importance of interventions before the age of 18 months for the protection of mental health in the population of the country (Tsiantis, 1999). The cost in human suffering and the charges required for the redefinition and coping of this stressful situation is enormous.

Besides the need of establishing early intervention programs in Greece, particular need for the center's operation is due to the current interaction of Greek parents and infants and the importance of early experiences in infancy and their impact on the subsequent evolution of the human being. Research efforts related to infancy, have been characterized by Kougioumtzakis in the foreword to the Greek edition of Murray & Andrews, (2001), as provocative and subversive, because they directly undermine many old and deeply rooted social, philosophical and religious prejudices, that unsubstantiated underestimate the cognitive abilities, the sensibilities of infant's experiences. In Greece, the public opinion on the importance of the first year of life and infants' potentials can be degrading, as demonstrated by the use of the word "baby" ("moro"), which in the ancient Greek language means "fool". Furthermore it has been dominated by beliefs that infants do not understand, don't remember, don't experience situations and all the problems in infancy harking back in the "biological sphere".

During last years, the elation and the confrontation of childhood and parental violence is recorded almost in a daily basis by the media and has caused not only the social but also scientific interest (Ambatzoglou, 2004), including the concerns and considerations of the academic community at TEI of Epirus.

However, these measures for support and counseling to the parents are not sufficient in Greece, despite any apparent political determination to invest in family mental health. There is a lack of adequate preparation for the parental role as well as for guiding lines to a successful parenthood (Chountoumadi, 1994).

Therefore, if we want to function as a welfare, providence state, as we do, we need to initiate actions to support parents, that contribute and promote Infant Mental Health and ensure an optimal early childhood development.

An evidence based practice, is the I.M. (Infant Massage). A great body of research data, emphasizes the effects of IM to physical and the socio-emotional health of full term and non full term infants (Field et al., 2011). Parents, who have attended I.M. classes are able to enhance secure attachment types for their children, minimizing the risks of postnatal depression (Onozawa et al., 2001), child abuse, neglect and developmental delays (Field et al., 2004).

I.M. is consistent with the Attachment Theory of Bowlby. In his classic trilogy -Attachment and Loss-, is pointed that, if the infant is not supported or cannot form a secure relationship with the caretaker (caretaker - person who cares, most often is the mother or another person), then the development of his personality is altered in ways that can ultimately result in infant's emotional anxiety disorders, depression, and even more important personality disorders, during childhood and even during adulthood years (e.x. Carlson, 1998). It is thus evident that the caretaker's support to perform its role, is essential, substantial and urgent (Tsiantis, 2005; Kalantzi-Azizi, Bezevegis, 2000). The ability of the caretaker to perceive and translate infant's signs, e.x. crying, is a great issue in terms of her emotional availability, as well as to her own mental representations (Mantziou, 2007). The maternal sensitivity, availability and responsiveness and consistency of the caretaker's behavior has been extensively confirmed as a factor, that contributes greatly to the development of the child (Koren-Karie et al., 2002 Sroufe, 1999, 2005). As for Freud, dreams are the royal road to understanding the unconscious, I.M. is "the royal road", the tool for the enrichment of maternal sensitivity, availability, responsiveness and consistency.

Based on these reports and concerns of our academic community, it was decided to establish the Developmental Center of Infant Massage.

2. Structure of the Center

The structure of the DCIM is supervised by and aligned with the principles of the International Association of Infant Massage (hereafter IAIM) and the TEI of Epirus. The International Association was founded in 1981 in California USA and became in 1986 a non-profit tax-exempt organization, keeping the International Office until 1991, while in the year 1992 it was moved to Sweden and registered. The first international bylaws were then introduced. Each affiliated IAIM Chapter is also incorporated legally in it's own country as a non-profit organization. In the last 20 years the Association has (allocates Chapters) in over 50 countries. In Greece are ongoing processes to create a local chapter. The purpose of the International Association of Infant Massage is "to promote nurturing touch and communication through training, education and research so that parents, caregivers and children are loved, valued and respected throughout the world community".

This purpose is being realized through Certified Infant Massage Instructor - CIMI-), of I.M., the certification granted by the IAIM, after educational seminars-training and successful completion in written exams.

The Center could not function without the moral support and the financial support of the current administration of TEI Epirus, President Glavas and V.P. Tsinas, Ganas. Their support is undoubtedly the springboard, the driving force of this project. Without it the function of this Center would not be impossible. The ensuring of its sustainability raises the expectation of an continuing financing by local operators, that subsidize and finance this present innovative action, whose goal-purpose is the family care as well as other charitable organizations.

3. Operating characteristics of the Center

The main function of the Center of the Department of Infancy and Early Childhood Care at the TEI of Epirus is focused on the collaboration with parents. This type of service is an unexplored landscape for the Greek community. The purpose is to

promote nurturing touch and communication through the implementation of this practice.

Within this framework of the Center, Parents Classes-Courses will be conducted with their infants, until the age of 12 months. The Courses-Classes will be held once a week for five weeks in a specially designed area-place of the Center, housed in the building of the TEI in Epirus. By paying a small-symbolic fee, the parents will have the opportunity to be trained in the implementation of this practice with their infant, while the instructor demonstrates the strokes on an educational doll. Then follows a theoretical part, that informs and sensitizes the parents on issues such as respect for the infant, the benefits from massage, crying and other issues, relevant to infant development. At the end of each class-course, time is dedicated for discussion, providing the opportunity to all parents to exchange opinions-views to everyone. This offers the advantage of interaction with other people and the consideration for different approaches and new points of views.

4. Parallel Dimensions of the Center

Other main characteristics of the Center are the enrichment of the interpersonal relations, the continuing education and the intercultural empathy.

- Enhancement of interpersonal relations

The enhancement of the interpersonal relations is being realized in two levels, which are:

A) Family Relations with the staff of the Center

The relations of the Center's staff with the families are associations governed by respect, as they are based on personal contact, open communication and equality. Throughout the duration of the courses-classes, parents will be having a personal contact and interact with the instructor on issues concerning the massage process as well as the training and their information-briefing. Successful interaction lies on direct contact with the instructor during the strokes, allowing proper conduct and also parental briefing on theoretical issues (such as benefits, behavioral states of the infant, cues, reflexes, colics, crying). This also initiates discussion with the whole group on issues already addressed or raised by the parents regarding the infant, allowing thus an open communication, which is the main target. Catalytic is the role of the research

data, that contributes to the updating of the Instructors' knowledge. Equality is a fundamental principal for the establishment and operation of these groups, as this value governs the spirit of Infant Massage.

B) Relations between the families

The personal contact is counted in the major benefits for the families by their attendance of Massage-Parent- Classes-Courses of I.M. The parents have the opportunity to interact with other parents, who probably face similar difficulties in their everyday life with their infant and, may embrace other points of view and solutions on how to approach their own issues. This is an advantage, that advocates the use of group classes with parents, organized in the Center, versus individual courses. Individual courses would provide all the information and training by the staff-instructor, but lack the element of interaction with other parents with similar difficulties. Exchange of views can be beneficial for all parents. The open communication that will exist, will have as principal the equality of the parents, thus everyone will have equal time and opportunities to raise issues for discussion concerning them. Mutual respect encompasses the spirit of I.M., as it is the prerequisite to establish acontact with the infant, which is the fundamental principle of the Center.

5. Continuing Education

An important subdimension, goal-aim, and function of the Center is the continuing education of the staff. The Center looks forward to collaborations with International Centers (such as the Touch Institute- University of Miami, Department of Medicine, in Florida USA and the Developmental Center of Disorders at the Montclair University of New Jersey in New York) in order to ensure the UPDATE of knowledge and enabling further specialization of its staff. Experts in the field of Infant Mental Health constitute a special space-place-field, even for advanced countries (Pankseep, 2001). After 2000, various states in USA have proposed specific criteria for certification, even for professionals in related professions with additional credentials of theoretical and practical training, such as in the State of Florida, State University Center for Prevention and Early Intervention Policy, or in the State of New

Jersey in New York, Professional Development Center – Coalition of Infant/Toddlers Educators.

The Center also, in the frame of direct connection to the local and wider community, intends to hold workshops and educational seminars, perform research in relevant issues, digitization of produced material and website creation, which in turn will contribute to the updating of knowledge in the International Community.

6. Intercultural Empathy

A fundamental tenet of the Center is the respect and acceptance of diversity in every personality. Based on and respecting the principles of interculturalism, the Center identifies all the cultural, social perceptions and educational objectives, that facilitate the development of dialectical relationships, processes of interaction and reciprocal-mutual recognition and cooperation between the groups of people with different cultural background. It's target is empathy development, the cultivation of solidarity and respect towards the cultural diversity of the families. The Center will be operate as a "recipient-space of reception", corresponding-respectively to the country of "host" for families, who live and work in our country. While respecting their fundamental rights and values WE WILL overcome language barriers (Pantazis, 2006), using English or other language, to promote nurturing touch, in purpose to enable recipients of love, appreciation and respect for parents, caretakers and children in the International Community. The particular needs, such as language barriers or cultural particularities in relation to addressing the needs of the infant is the principal guiding I.M. within the IAIM.

7. Conclusions

A basic action of the Center is to train parents on the implementation of Infant Massage, which contributes to the physical and psychosocial development of the infant. Its aim is to promote Infant Mental Health, not only in the region of Epirus but also in the rest of Greece.

The Center may contribute to the relative geographical isolation of the region of Epirus, as it may have a decisive role in the foundation for a healthy society.

The TEI of Epirus has the necessary infrastructure and in conjunction to the function of the Center, it will be able to support competitive programs and be a pole of attraction in the International Community.

Through innovative activities and international partnerships, we can focus on the effort to promote a participatory-collective culture in the sense that it helps us to focus on our Departments key priority, to provide services during the first years of a child's life. The Center can help contain the research potential and attracting professionals of high prestige from homeland and abroad, attracting new resources, to support research during infancy.

The tenet of the Center espouses, respect the diversity of the personality and acceptance, which is necessary in both Infant Massage and interpersonal relationships ensures its action as an Early Intervention Program. The Center's contribution to promote Infant Mental Health ensures their smooth subsequent development, not only in the early childhood, but also in the adulthood, contributing to a long-term foundation of a healthy society.

To implement the objectives-goals and actions of the Center, it is vital importance to continue to support the work of parents raising their children. Equally important is the continuation of its financial support, as any of its actions would be impossible without the proportional aid. Advanced technologies will lead to new partnerships and further collaborations with other research groups and thereby increase the competitiveness of Greek scientists in Europe and globally.

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Globalization and flexible working arrangements: Telework and disabled individuals

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Abstract

New forms of employment are often considered as the cause or answer to the new globalized environment. Telework is one of these. More specifically, telework can cover the needs of vulnerable populations such as the disabled people. This paper constitutes an attempt to analyze the new forms of employment, particularly telework and disabled people, first through a literature review and then by means of a survey conducted on the issue of telework and the disabled. The research was conducted in the municipalities of Keratsini and Corfu in January 2011. The objectives of our research was to investigate the number and demographic characteristics of people with disabilities who are working, whether they are aware of telework and whether they would prefer it over traditional forms of employment. According to the results of the survey, it was found that few disabled people knew about telework while only a small proportion of them would choose it as a form of employment.

KEYWORDS:New forms of employment, telework, disabled

Introduction

Globalization is a multi-faceted and spherical phenomenon whose different dimensions are reflected in the social, cultural, political, and especially financial levels. It is directly connected with the development of Information Technology and Communication (ICT). Through ICT not only the circulation of goods is promoted, but also of labor, capital, technology, human capital, organizational structures and institutions (Fokiali, 2010).

The word "globalization" has been used by economists since the 80s, however its concept only became popular in the second half of the 80s and 90s. The earliest written theoretical concepts of globalization were described by an American businessman, minister Charles Taze Russell, who introduced the term 'corporate giants' in 1897 (Wikipedia).

Globalisation is a multifaceted historical phenomenon and the nature of socio-economic changes it can bring about seems to affect all developed societies (McGrew, 2003). Since globalization brings about many changes in the economy, it could not leave the production factor labor unaffected. The result of these changes are modifications in the type and form of employment (Vitsilaki, 2004 ,as cited in Fokiali2010). More specifically, the globalization of competition as well as the technological development are the dominant forces leading to flexible working arrangements with the ultimate aim that traders can keep up with the new economic conditions and maximize their efficiency (Vassiliadis , 2010).

In this era of globalization we often refer to new - flexible forms of employment. According to Marda (2001) "In the scientific and empirical analysis the narrow term of employment is used referring to the human factor, the concept of utilizing the available time in paid work in the form of dependent work and is applied onto the entire workforce, ie the employable population". But as Anastasiadis (2000) said, replacing the term "work" with the word "employment" is not accidental, as we are getting prepared in relation to flexible working arrangements which may probably become the dominant model of employment.

In this paper we focus on a new flexible form of employment, telework and people with disabilities. The results of the research conducted which was designed to determine whether and to what extent telework as a form of employment is known and is used by people with disabilities, will also be presented.

Flexible working arrangements

In a period of continuous and rapid changes, it is a fact that the term work is changing according to the new lifestyle that citizens adopt. The employment model which was

mainly based on mass production, has now changed while the required qualifications for this new form of employment are not the same as in the past. Employment is restructured and its different dimensions are reflected in the new forms of flexible employment. There is a variety of new forms of work and each of them serves the purposes of both the employee and the employer. The new employment system is primarily aimed at fighting the phenomenon of unemployment but also gives the opportunity to different groups of people to get into employment even by sitting on their couch! (Information Society in Greece, 2002).

The pressure of technology developments in the organization of production and labor as well as social developments, led to the formation of the new conditions in the modern labor market. On the one hand, the intense competition in the labor market has made companies look for new, different ways of improving their organization and functionality, and on the other hand modern workers are faced with a multitude of options for both work and social life (K.E.TH.I., 2001).

Flexible forms of employment are considered those that deviate from the normal working model, i.e. dependent full-time employment of indefinite duration (40 hours per week) for Greece. This kind of work is rewarded with a fixed salary or hourly wage and is dependent on an employer. In addition, it is provided in the employer's workplace, with a full-time schedule (KETHI, 2001).

However, the existence of flexibility in the Greek labor market is not a new thing. Working on Saturdays and Sundays as well as working from home are quite prevalent forms of employment which emerged in the 1980s (Angeli, 2002). Flexibility in the business world may refer either to the organization of the production or the structure of employment relationships. Flexibility may be relevant to the wage of workers and other working conditions. Finally it may be related to the organization of working time or place of work (Alexandri, 2008).

Flexibility in the labor market is promoted through the policies implemented by the state which mainly have three goals: The increase of the competitiveness of the economy, tackling the problem of unemployment and the reconciliation of work and family life (Lyberaki & Mouriki, 2003).

The most prevalent forms of employment are: flexible work schedules, the individualized working time, annual distribution of working time, reduced working hours, compressed work week, seasonal employment, service contracts, telework, the flexible work in terms of location, work paid according to delivery, circular work, shared work, availability for work, temporary work, flexible working years and partial retirement (Fokiali, 2010).

Advantages and disadvantages of flexible working arrangements

Flexible forms of employment provide benefits both for employers and employees. But the fact that it may be positive for an employer is not necessarily positive for the employee.

The most important advantages for employers who are aimed at reducing the cost of production is the numerical flexibility, which refers to the fluctuation of the number of the personnel, and operational flexibility, based on better utilization and increased productivity of the human capital (Lyberaki & Mouriki, 2003).

However, there are disadvantages for businesses. These are the difficulty of integrating forms of flexible employment within the needs of an organization which is adapted to the demands of full-time employment. Problems could also be related to the control and supervision of workers as there is great variety and personal schedules. Increased costs for calculation of payments and benefits of the employees is also a negative point. Also, a redefinition of the criteria for the recruitment of employees and an adoption of criteria related to quality rather than mere qualifications may be necessary (Moschovakis, 2005).

But there are also advantages for the workers although they are often degraded because of the fact that flexible forms of employment are not always a personal choice, but the only choice available.

Initially we would say that some forms of flexible employment such as part-time employment, often are the only way for women to enter the labor market. Also, two more categories for which telework is convenient are the young unemployed and workers close to retirement. Flexible employment can also facilitate the individual to cater for his/her complex and often conflicting needs. Also, it can facilitate in doing a general reorganization of time. Finally, the flexible job lays the foundations for a

radical redistribution of working time and therefore of the income (Moschovakis 2005, Lyberaki & Mouriki 2003).

But we should not overlook the disadvantages. Most part time jobs are fairly low-paying and require minimal skills and expertise. They are usually uncertain jobs with few opportunities for career advancement. The workload of employees is increased compared with workers with full-time arrangement. Usually, in flexible forms of employment, particularly in part-time employment, we find women mostly, which intensifies the polarization between male and female occupations. Finally, workers in flexible forms of employment are characterized by downtrodden labor rights (Moschovakis 2005, Lyberaki & Mouriki, 2003).

Telework

Within the framework of a labor market that constantly changes, the development of telework is presented. This is about an emerging form of employment as stated by Mouriki (1994). Teleworking is by definition globalized, as the job and the person who performs it need not coincide (Stamatopoulos, 2001). Telework comes as a result of new technological developments. More specifically, telework (teleworking or telecommuting) is one of the most popular services deriving from the combination of telecommunications (telecommunications), IT (informatic), and telematics (telematic) (Adamopoulos, 2002).

The first definition in the international literature on telework was given by Niles (1988): «Telecommuting is the use of telecommunications technology in order to partially or fully replace travel to / from the physical workplace" (Kitrinu, 2009).

A more complete definition is given by Petala (2005) "The term telework refers to any type of work that includes electronic data processing and uses a telecommunications link with a remote employer or client for the commissioning and delivery of work. Thus it refers to work remotely handled by using a computer, and distributed via computer networks and especially over the internet".

Teleworking has many forms and the following are the most distinguished ones: Work at home (home based teleworking), Mobile Tele-working (mobile teleworking), Work in satellite centers (satellite centres), Work in telework centers (telecentres-

telecottage), tele - services (teleservices), Partial Teleworking (telecommuting), Teleworking in villages (televillages), Nomadic Teleworking (Nomadic teleworking), Disseminated Teleworking (Offshore teleworking) (Karalidou 2003, Kitrinu 2009).

Benefits and drawbacks from using telework

Expected benefits of telework concern the employers, the employees but also the community as a whole.

First, each company will save profit, which is derived from the cost of acquisition and maintenance of workplaces. It is a big advantage for any employer to be able to reduce the operating costs. Moreover, it will increase productivity because employees, will work mainly in their own places and they can adapt to it and work without feeling restricted or feel any kind of oppression. Additionally, there is an improvement in the efficiency of capital as the money that the business would spend on the workplace, etc, will now be used for other purposes such as the marketing of the company (Karalidou 2003, Greece in the Information Society 2002). Yet, each company will be able to attract professionals from around the world without geographical restrictions and labor (Anastasiadis, 2000). Finally, every business may become more competitive, since they can more effectively coordinate and manage their business units (Information Society in Greece, 2002).

Employees will have the opportunity of choosing how to allocate their time. No longer will they need to spend countless hours driving their car to go to work, but also they will have the freedom and flexibility to perform their work adapting it to their own given time, but at the same time geographically combining it so as to take care of other obligations and needs. In addition, groups such as women and the disabled as well as other groups, are given the opportunity to work and remain no more in isolation and marginalization whether due to the fact that family obligations do not allow them to work, or due to some physical dysfunction etc. (Anastasiadis, 2001).

The benefits to society are very important because it can assist in drastically reducing air pollution and traffic congestion. Also, it may help in the development of rural areas and the restriction of urban growth. Finally, non-urban areas will be economically and culturally upgraded, as well as other areas such as islands and

mainland border regions (Karalidou, 2003). The new society will bring new standards and values, relationships and behaviors (Anastasiadis, 2000).

Potential risks of the spread of telework is the isolation of people and the disappearance of the team spirit that prevails within companies. Also, it is likely that some professions may disappear, an example of which are travel agents. Another negative impact of telework that affects people but also the society as a whole, is the loss of the privacy of employees. Combining both of these, it could be inferred that boundaries tend to disappear and the roles of people may become confusing (Information Society in Greece, 2002). Finally, the specialization of the staff should be continuous under these working conditions, because more and more easily one would lose their job if not well-prepared for new developments and technologies (Anastasiadis, 2000). The form of the work as it stands today tends to disappear as there is no longer the dominant model of full and stable employment (Vassiliadis, 2010).

Telework and people with disabilities

In Greece, disabled people are considered those who: due to physical, mental or social disorders have delays, disabilities or disorders in their general psychosomatic condition or individual functions and to the extent that they are seriously hindered to follow typical education or professional development, or they do not have the opportunity to join in the production process and be accepted by the community (Stefanidis, 2004, p.11).

A 10% of the global population is included in the group of elderly or disabled people. The disabled also belong to this group based on the definition found in the article Scientific and Technological Options Assessments-Participation of Disabled and Elderly in the Information Society (C. Buehler). According to estimates from the European Commission, throughout the European Union , the teleworkers are approaching 10 million people, and out of these 4.5 million are employed under contracts of employment (Petala , 2005).

In Greece, the institutional framework has already been developed, and includes several laws that promote the elimination of inequalities between citizens and the

handicapped. According to the Constitution "People with disabilities have the right to measures which ensure the independence, occupational integration and participation in the social, economic and political life of the country" (Article 21, par. the 6th Ref. to Viki & Papanis 2008).

Despite the spirit of equality which is often mentioned, the exclusion of the disabled people from the labor market is quite extensive. More specifically, according to data from the Manpower Employment Organization (OAED), the unemployment rate for people with disabilities is 80 % while for the EU countries it is approximately 50 % (Psathas 2009, Third Part).

All citizens of the country have the right to participate in the Information Society and the Digital Age. Unfortunately, social exclusion is booming nowadays in many groups and so many do not have the necessary knowledge around technology. People with disabilities are one such minority on the grounds that they have a functional impairment that creates obstacles in their lives. The disability can be reflected in different aspects of human activity of an individual, but what matters is the result, which is not desirable both for the disabled but also for the proper functioning of all society. Today's circumstances necessitate the coexistence and interaction of people with different characteristics and different social backgrounds. This results in the creation of a situation which is unacceptable to some but beneficial to others. Thus, many different categories of people are formed, which are mainly based on prejudice, in particular traits or stereotypical considerations (Psathas 2009, Part B).

It seems that through flexible forms of employment and more specifically of telework many of the barriers that exclude people with disabilities from working are eliminated. It looks like the house will be converted into a production base giving the opportunity to people with disabilities to compete on better terms and to actively participate in the labor market (Viki & Papanis, 2008).

According to an announcement by the Manpower Employment Organization (OAED), the possibility of hiring people with disabilities who offer their services through telework, is provided for the first time. Furthermore, for the first time businesses can hire home-based employees through telework, as long as they have problems moving, or other individuals with paraplegia / tetraplegia or muscular dystrophy, blindness or those undergoing hemodialysis. In these cases, an area of the

house of the employee will be converted into a typical office and equipped according to the requirements of the object of their work (Xanthopoulos, 2010).

In Greece the steps taken for the development of telework for the disabled is still in a primitive stage. Unfortunately, these individuals are excluded from any kind of involvement in new technologies, and the overall technological revolution taking place. The impairment they have excludes them from any kind of activity (Psathas2009 , Part B).

Research methods

The purpose of our research was to see whether and to what extent Telework as a form of employment, is known and is used by people with disabilities. For this reason we set three objectives: To investigate the number and demographic characteristics of people with disabilities who are working. To investigate the knowledge of telework as a new form of employment of people with disabilities and to explore whether they would prefer the traditional form of employment.

Then we formulated our research questions.

1. What are the demographic characteristics of people with disabilities who work?
2. What are the difficulties encountered in their daily work?
3. What are the advantages and disadvantages of Teleworking compared with the traditional form of work?
4. Are there disabled people who work under this form of employment?

During the shaping of the research agenda phase, it was determined that the type of research to be conducted will be exploratory, as our intention was to investigate a group of people that few studies have tried to explore, starting with some research hypotheses to arrive at specific conclusions.

The method used in the collection of our data was the questionnaire. The choice of the questionnaire as a tool for data collection was considered as the most appropriate because it minimizes the possibility of data omission as well as the possible bias that

may occur as a result of the direct interaction between the researcher and the subject, which can be also present in the other two methods (observation - interview).

The questionnaire includes both close-end questions, to get accurate information and to make it easier to edit, and open-end questions to allow the interviewee to freely express his views on key issues of life.

Also, our questionnaire was divided into six parts: Personal information, marital status, educational level, health status, employment agencies and employment promotion. Finally we preferred the survey to be anonymous as our sample would come from workers in public services.

The sample included disabled people, randomly selected from the personnel department of the public services of the municipality of Corfu as well as disabled people working in the Municipality of Keratsini. The sample of our study was 20 people in total, as defined according to the context of the research carried out.

The survey was conducted in January 2011. The staff responsible for the conduction of the research as well as the design, implementation - execution and for data processing and analysis was Aroni Elpis and Vamvakari Eirini (Post-Graduate Students of the Aegean University).

The only cost was the printed material needed (copies of questionnaires, letters, etc.). This cost derives from the fact that the survey was implemented within the framework of post-graduate studies.

Finally, in order to achieve better cooperation with the survey population, letters were sent to the heads of staff offices of each municipality to explain the purpose of the research and highlight the desire to cooperate and ask them to inform us about their people with disabilities employed in their services.

The tool of our research is attached in Appendix (1) .

Processing-research results

After processing the data we arrived at the following results:

Starting from the *demographics* the sex and age of respondents will be mentioned. As shown in FIGURE 1, 55 % of the respondents were male and 45 % female. Continuing with the age of respondents (FIGURE 2), most were born from 1965 to 1969 (30 %).

However, since this is considered as a vulnerable group, the *expertise* they may have will also be examined, especially that related to PCs. As shown in FIGURE 3, the majority (85 %) knows how to use a computer. Making these skills more specific, as shown in FIGURE 4 most (80 %) know how to use Office and a large part uses social networks (65 %). Only 10% answered that they did not know how to use a PC.

Continuing with their *health status* most disabled people have a disability of 67% and over (85 %). A very small percentage has disability of 80% and over (15 %). Also it must be mentioned that everyone had some kind of physical impairment (100 %) while few respondents answered that they suffered from psychological problems (FIGURE 5).

Passing on to the issue of employment, we initially wanted to look at the problems they face daily with their work. As clearly shown in FIGURE 6, the biggest problem is low wages (85 %). The second one is being badly treated by their colleagues (30 %).

Then we wanted to know if they know of any form of employment from home. The majority of our sample is not aware of any form of employment that they can have from home (85%) (FIGURE 7).

In the area of *employment - working* one of the first issues we addressed was to examine telework according to the sex of our sample. We wanted to see whether women or men were the ones who knew more about employment through telework. However, as shown in FIGURE 8 a large percentage of people does not know what telework is at all (85 %). Thus, the difference between the two sexes is minimal with few women knowing what telework is (10 %), while in men the respective percentage reaches 5% .

Another issue that we addressed was whether the selection of telework as a form of employment is related to their educational level (FIGURE 9). People with disabilities in our sample were high school graduates, or higher education graduates. However,

all the high school graduates (20 %) would not want to work with any form of employment such as telework. As the level of education was rising, the responses were also changing. Among high school graduates from the total (60 %) only 20% would like to work with telework and as it was expected, the highest percentage of people who are positive towards this form of employment consists of graduates of higher education institutions. As shown in FIGURE 9, all of them would choose it (20 %).

Examining their views on the advantages of telework as shown in FIGURE 10, 75 % replied they did not know / gave no answer as it was expected. The major advantage seems to be flexibility in working hours (15 %) and more time with the family (10 %), as well as the work from their own space (10 %). The elimination of geographical restrictions also has a small percentage (5%).

As for the disadvantages it seems that 80 % answered that they did not know / gave no answer. One of the disadvantages disabled people feel that this form of employment has, is the salary reduction (15 %). Then, two other disadvantages are the reduction of job positions and the continuous involvement with and training on the use of new technologies (5 %) (FIGURE 11) .

In relation to what kind of additional knowledge is required so as to be able to engage in teleworking, as shown in FIGURE 12, the majority of the population responded that more information on this type of employment (60 %) and training (55 %) are required. Also many would also prefer practical training (50 %).

The answer to the crucial question of whether they would choose telework as a form of employment was that 60 % would not choose it and 40 % would choose it. There are no significant differences pertinent to gender and birth age (FIGURE 13).

About the form of employment that is most appropriate for the disabled almost all (95 %) would prefer to work under a permanent contract and only a small number (5%) with a fixed-term contract. It should be noted, however, that the percentage of people who replied that they would prefer the fixed-term contract were disabled with a percentage of over 80%. Also, permanent employment was not included due to the overall instability of the labor market (FIGURE 14).

In the field of the *promotion* of the employment from authorities who inform disabled on job positions (FIGURE 15) the Manpower Employment Organization (OAED) seems to be the most important source of information (85 %). A smaller percentage answered that they were informed by the unions (30 %) and social networks (5 %). In relation to the question whether these entities provide sufficient information it seems that opinions equally vary (50 % yes, 50 % no) (FIGURE 16). As the most appropriate body to promote teleworking (FIGURE 17) TAB A& B grade (55 %) are in the first place, followed by centralized power with a relatively small difference (40 %). Private operators were also found among the answers.

Finally, the general recommendations for people with disabilities in relation to the work (FIGURE 18) should be highlighted. Most respondents did not want to make any recommendations (65 %). A 30% responded that they want new forms of employment (30 %) and a small 5% required better paid work and social care.

All FIGURES are presented in Appendix (2).

Discussion-conclusions

After this work we must mention that the telework as a flexible form of employment, while widely used in other countries, is something new in Greece, especially when referring to telework and disabilities. We hope our research can trigger further investigations both in the field of telework and the disabled and generally new forms of employment involving vulnerable groups such as people with disabilities.

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APPENDIX 1

A. PERSONAL DETAILS

1. Sex :

Male

☐

Female

☐

2. Year of Birth :

B. MARITAL STATUS:

3. What is your marital status ?

Unmarried

Married

Divorced

Widowed

4. Do you have children ?

Yes

No

5. Family member ?

1

2 - 3

4 & up

6. Is there any other person with chronic disease in your family ?

Yes

No

If yes, report it

C. EDUCATIONAL LEVEL

7. Educational status

Illiterate	<input type="text"/>
Literacy	<input type="text"/>
Primary school	<input type="text"/>
High school	<input type="text"/>
University degree	<input type="text"/>
Master/Phd	<input type="text"/>
Training certificate	<input type="text"/>

8. Specific knowledge :

Foreign language	<input type="text"/>
Computer	<input type="text"/>
Other:	<input type="text"/>

9. Which computer applications do you use ?

Office (Word, Excel, Access etc)	<input type="text"/>
Internet	<input type="text"/>
e-mail	<input type="text"/>
Skype	<input type="text"/>
Second life	<input type="text"/>
Photoshop	<input type="text"/>
Windows media player	<input type="text"/>
Social Media (facebook etc)	<input type="text"/>

D. HEALTHSTATUS:

10. How would you describe your health status ?

.....

11. Your disability percentage is :

67 & over	<input type="text"/>
-----------	----------------------

80 & over

☐

12. Do you have any other health disorder – problem ?

Intellectual disorders

☐

Psychological problems

☐

Sensory disorders

☐

Speech disorders

☐

Cardiological problems

☐

Physical disability

☐

Nothing

☐

Other.....

☐

E. EMPLOYMENT

13. Your job is:

Full – time

☐

Part time

☐

14. What is your employment contract ?

Permanent

☐

Indefinite time

☐

Contract work

☐

Fixed-term contract

☐

Other.....

☐

15. What is exactly your work ?

.....

16. What problems do you meet at your work?
 (you can choose more than one)

Low wages

☐

Lack of technological equipment

☐

Poor working conditions

☐

Transition difficulties to and from the workplace

☐

Bad treated by colleagues

☐

Not interested in the subject

☐

None

☐

Other.....

☐

17. Do you know any kind of employment that you can do it at home?

Yes

☐

No

☐

If yes, report it

18. Do you know teleworking?

Yes

☐

No

☐

19. What are the advantages of teleworking?

Working at your own space

☐

No geographical restriction

☐

You don't need time to move

☐

Having more time with your family

☐

Flexibility in hours

☐

I don't know/I don't answer

☐

20. What are the disadvantages of teleworking?

Reduction of job positions

☐

Salary reduction

☐

No more private life

☐

Non securing medical insurance

☐

Non guarantee labor rights

☐

Insufficient law

Continuous training and work on
using new technologies

I don't know/I don't answer

21. What other knowledge do you think is useful in case
of using teleworking ?

More information

Training

More computer literate

Practical training

Other.....

22. Would you choose it as a form of employment?

Yes

☐

No

☐

23. What type of employment would you
choose as the best for teleworking?

Permanent

Fixed-term contract

European program

F. EMPLOYMENT SERVICES

24. Which authority promotes your jobs?

Manpower Employment

Organization

Unions

Social networks

Other.....

25. Do you think that they give you enough information?

Yes

No

26. Which services/departments would you trust to promote

Teleworking?

Public services (TAB A& B grade)

Centralized power (ministries)

Private organizations/operators

27. Recommendations:

.....

.....

.....

APPENDIX 2

Table 1. Sex of the participants

<u>Sex</u>	
Male. (Άρρεν)	55%
Female. (Θήλυ)	45%
Total	100%

Figure 1. Sex of the participants

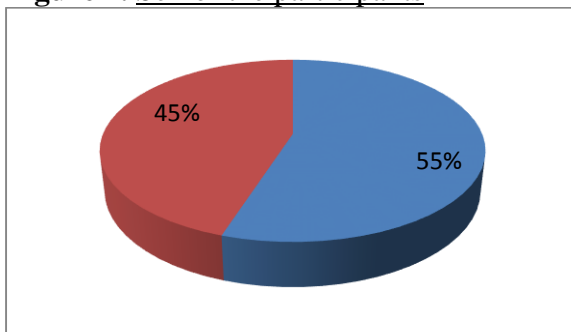


Table 2. Year of birth

Year of birth	
1960-1964	15%
1965-1969	30%
1970-1974	25%
1975-1979	15%
1980-1984	15%
Total	100%

Figure 2. Age of the participants

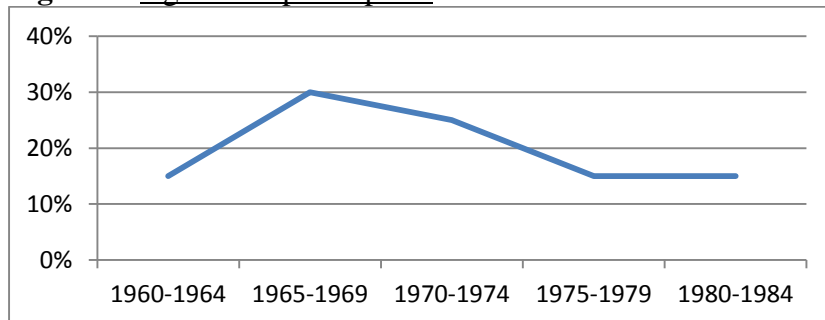


Table 3. Specific knowledge

Specific knowledge	
Foreign language. (Ξένη γλώσσα)	35%
Computer. (H/Y)	85%
Other. (Άλλο)	0
I don't know/ I don't answer. (δ.ξ/δ.α)	15%

Figure 3. Specific knowledge

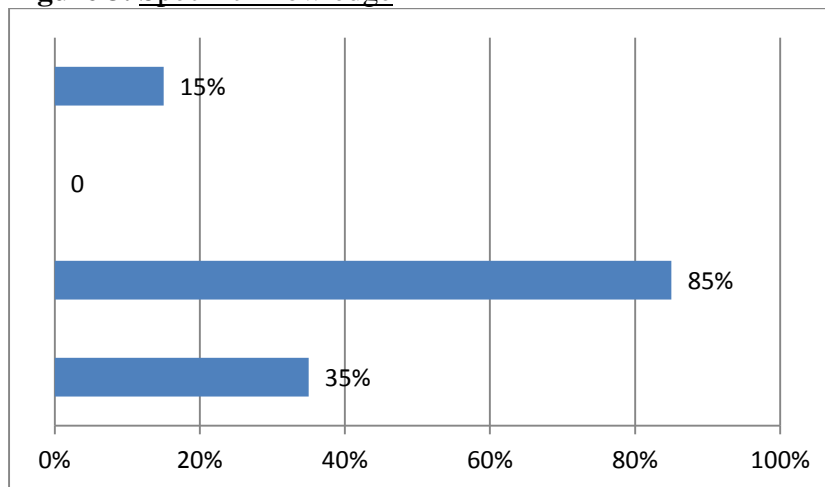


Table 4. Computer applications

<u>Computer applications</u>	
Office	80%
Internet	40%
Email	45%
Skype	10%
Second Life	0
Photoshop	10%
Windows Media Player	10%
Social Media (Κοινωνικά Δίκτυα)	65%
None (Καμία)	10%

Figure 4. Computer applications

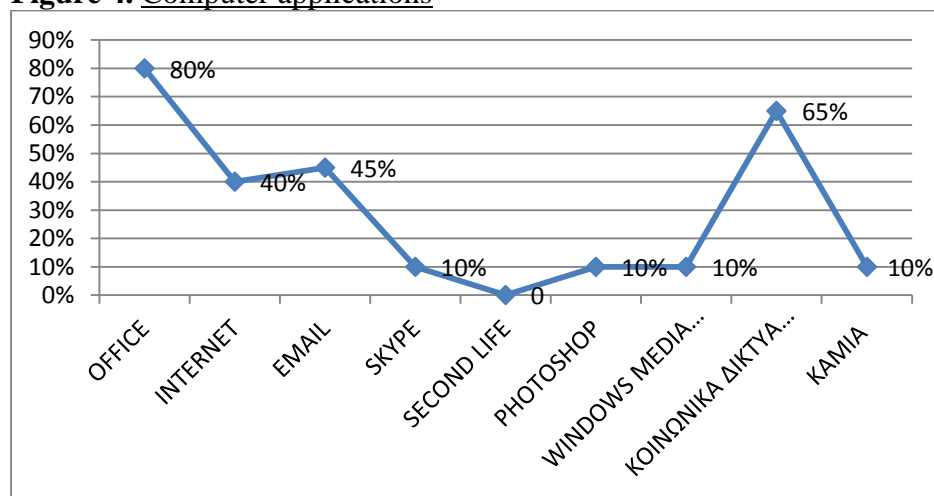


Table 5. Disability percentage

<u>Disability percentage</u>	
67 & over (67 & άνω)	85%
80 & over (80 & άνω)	15%

Figure 5. Disability percentage

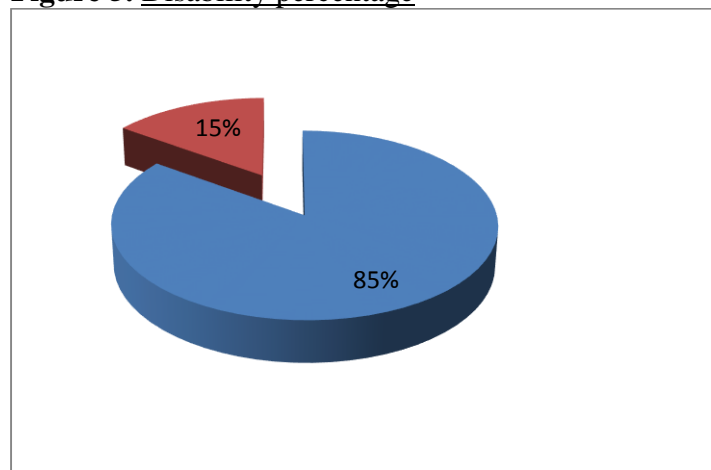


Table 6. Problems -difficulties at work

<u>Problems -difficulties at work</u>	
Low wages. (χαμηλός μισθός)	85%
Lack of technological equipment. (ελλειπής τεχνολογικός εξοπλισμός.)	15%
Poor working conditions άσχημες. (συνθήκες εργασίας)	15%
Transition difficulties. (δυσκολία μετάβασης από και προς εργασιακό χώρο)	5%
Bad treated by colleagues. (άσχημη αντιμετώπιση από συναδέλφους)	30%
Not interested in the subject. (δεν με ενδιαφέρει το αντικείμενο)	5%
None (κανένα)	0
Other (άλλο)	0

Figure 6. Problems -difficulties at work

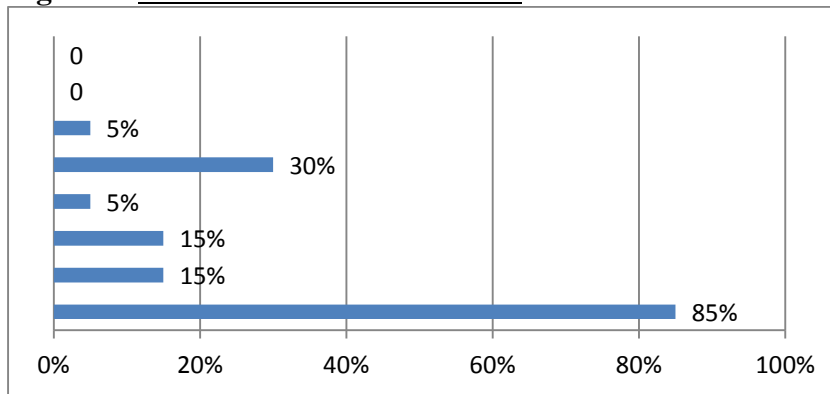


Table 7. Knowledge any type of work doing at home

<u>Type of work at home. (Μορφή απασχόλησης από το σπίτι)</u>	
Yes. (Ναί)	15%
No. (Όχι)	85%

Figure 7. Knowledge any type of work doing at home

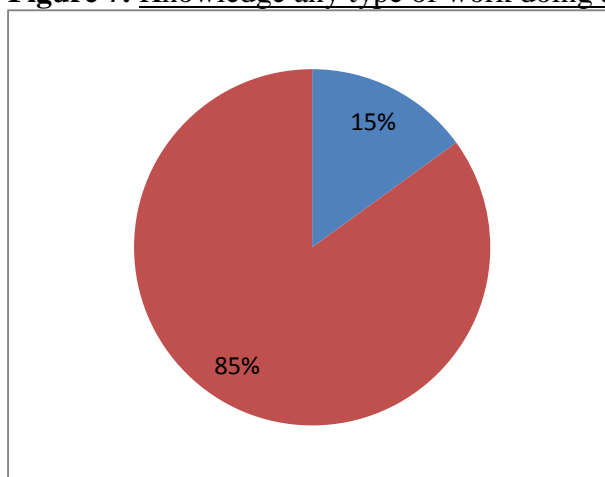


Table 8. knowledge of what is teleworking

teleworking sex	yes	no	total
Male (άνδρας)	5%	50%	55%
Female (γυναίκα)	10%	35%	45%
Total (σύνολο)	15%	85%	100%

Figure8. Knowledge of what is teleworking

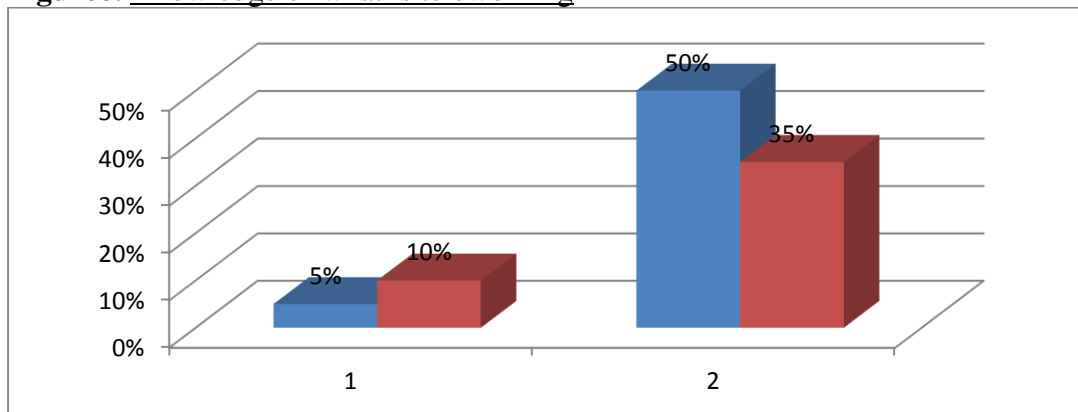


Table 9. Choose teleworking according to educational level

Choose teleworking Educational level		yes	no	total %
Illiterate	(αναλφάβητος)	0	0	0
Literacy	(γνώση γραφής/ανάγνωσης)	0	0	0
Primary school diploma	(απολυτήριο δημοτικού)	0	0	0
Junior high school diploma	(απολυτήριο γυμνασίου)	0	20%	20%
Senior high school diploma	(απολυτήριο λυκείου)	20%	40%	60%
University degree	(πτυχίο ανωτ./ ανωτατης)	20%	0	20%
Master/phd	(μεταπτυχιακό/διδακτορικό)	0	0	0
Trainingcertificate	(Πιστοποιητικό επαγγ. κατάρτισης)	0	0	0
Total	(σύνολο)	40%	60%	100%

Figure 9: Choose teleworking according to educational level

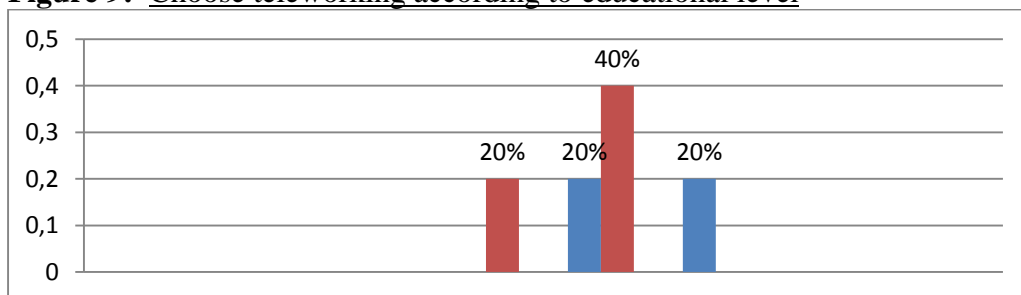


Table 10. Advantages of teleworking

Advantages of teleworking	
Working at your own space (εργάζομαι στο χώρο μου)	10%
No geographical restriction (κατάργηση γεωγραφικών περιορισμών)	5%
Save time to move (εξοικονόμηση χρόνου στις μετακινήσεις)	0
More time for the family (περισσότερος χρόνος με την οικογένεια)	10%
Flexibility in working time (ευελιξία στο ωράριο απασχόλησης)	15%
Don't know/don't answer (δξ/δα)	75%

Figure10. Advantages of teleworking

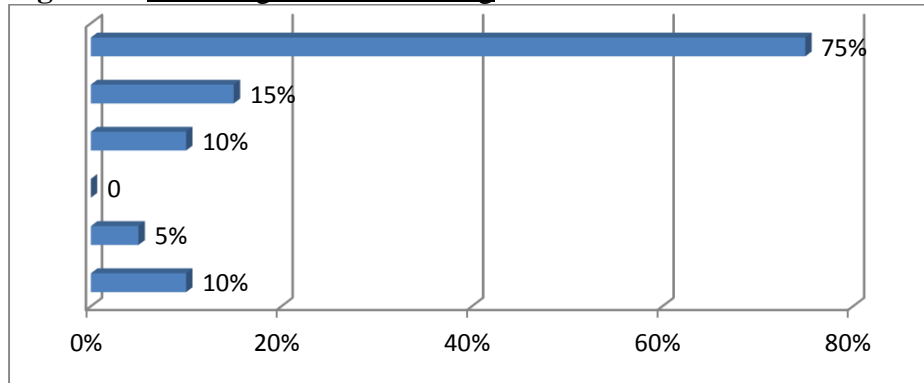


Table 11. Disadvantages of teleworking

Disadvantages of teleworking	
Reductions of job positions (κατάργηση θέσεων εργασίας)	5%
Salary reduction (μείωση αποδοχών)	15%
No more private life (απώλεια ιδιωτικής ζωής)	0
Non securing medical insurance (μη κατοχύρωση ιατροφαρμακευτικής περίθαλψης)	0
Non guarantee labor rights (μη κατοχυρωμένα εργασιακά δικαιώματα)	0
Insufficient law (ελλιπής νομοθεσία)	0
Continuous training and work (συνεχής ενασχόληση & επιμόρφωση με τη χρήση νέων τεχνολογιών)	5%
Don't know/don't answer (δξ/δα)	80%

Figure11: Disadvantages of teleworking

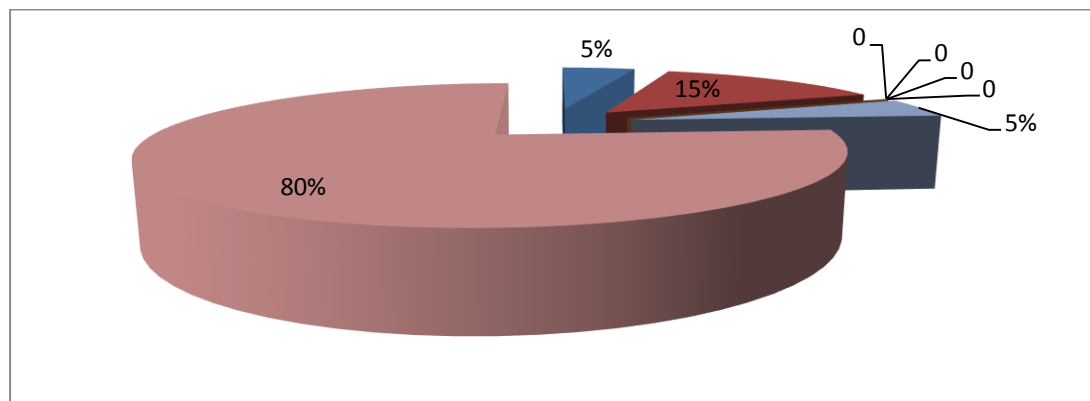


Table 12. Other necessary knowledges in case of using teleworking

Other necessary knowledges in case of using teleworking	
More information (ενημέρωση)	60%
Training (επιμόρφωση)	55%
More computer literate (περισσότερες γνώσεις η/υ)	10%
Practical training (πρακτική εξάσκηση)	50%
Other (άλλο)	0

Figure 12. Other necessary knowledges in case of using teleworking

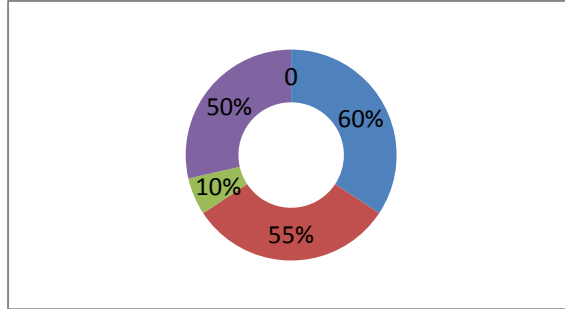


Table 13. Choose it as a form of employment

Yes (ναι)	40%
No (όχι)	60%
Total (σύνολο)	100%

Figure 13: Choose it as a form of employment

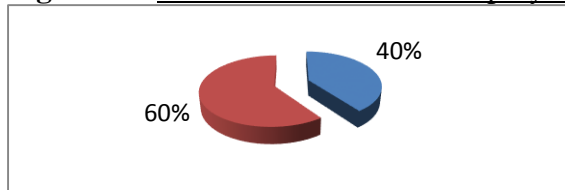


Table 14. Best way of employment

Permanent (αορίστου χρόνου)	95%
Fixed-Term contract (ορισμένου χρόνου)	5%
European program (ευρωπαϊκό πρόγραμμα)	0
Total (σύνολο)	100%

Figure 14 : Best way of employment

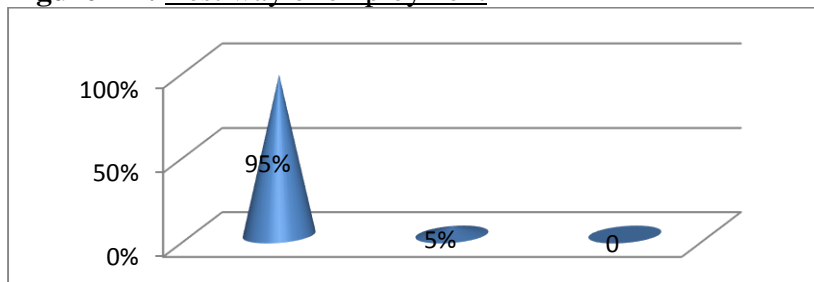


Table 15. Authorities promote jobs to disable people

Manpower employment organization (ΟΑΕΔ)	85%
Unions (σωματεία)	30%
Social networks (κοινωνικά δίκτυα)	5%
Other (άλλο)	0

Figure 15. Authorities promote jobs to disable people

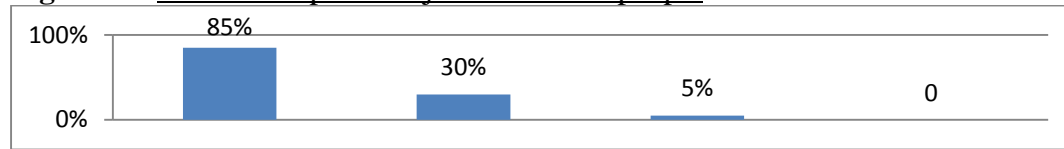


Table 16. Sufficient information

Yes (ναι)	50%
No (όχι)	50%
Total (σύνολο)	100%

Figure 16. Sufficient information

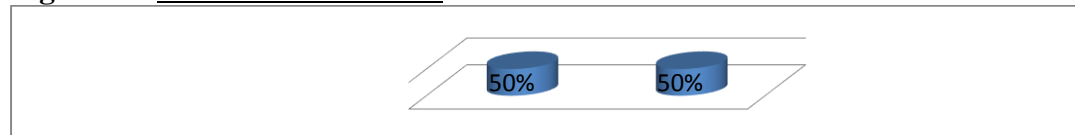


Table 17. Which are the appropriate services to promote teleworking

Tab a' & b' grade (υπηρεσίες ΟΤΑ α' & β' βαθμού)	55%
Centralized power (κεντρική εξουσία)	40%
Private operators/organisations (ιδιωτικοί φορείς)	5%
Total (σύνολο)	100%

Figure 17. Appropriate services promote teleworking

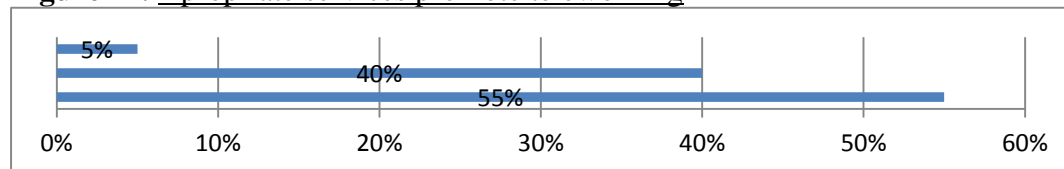
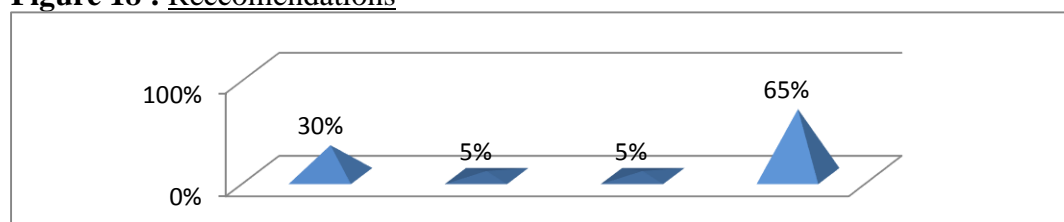


Table 18. Recommendations

New forms of employment (νέες μορφές απασχόλησης για ΑΜΕΑ)	30%
Better paid work (καλύτερες αποδοχές)	5%
Social care (κοινωνική μέριμνα)	5%
No reccom. (ουδέν σχόλιο)	65%

Figure 18 : Recommendations



Special theoretical appendix I

Honorary exceptional participation: Steve Asikin

**Finance. Risk and Management Perspective in Comprehensive.
 Interactive Interdisciplinary Micro-Macro Economic International
 Accounting Architecture of High Uncertainty Complex Fiscal
 Structure and Monetary Factor Relations:**

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

By **Steve Asikin**, *Lecturer*

Tech. Univ. Rep. Philippines, Univ. of Indonesia, Bandung Inst. of Tech.

Abstract

Turbulent markets as a context. Over the years 2007-2011, market volatility has risen enormously and just recently fell without immediate rational explanation, despite still high levels of uncertainty and perceived volatility. As a consequence, traditional planning and forecasting tools have turned out to be not always applicable, or even erroneous. Inherent complexity in structures and agent relations caused fatal and unforeseen impacts, and some tend to agree that in cases risk once again became uncertainty, because formerly reliable deterministic models on the micro and macro level were invalidated. Such an extreme environment however also creates opportunities for innovation in processes and thinking.

In the global Economic and Social Policies, “*The General Theory of Employment, Interest and Money*” from Keynes now could not be separated from “*Dual Entries T-Account*” of Paccioli and Smith’s “*Supply-Demand’s Price vs Quantity Tables*” with Inter currency “*Purchasing Power Parity*” in “*Fiscal Budget*” policies or “*T-Bills vs Monetary Bonds*” Financing on Exponential “*Compounding Rates*” enriching its serial “*Linear Regressions*”. This is the time for Economics to be integrated as one Architecture, like the Physics successfully combined the Rays, Electricity, Magnetism, Quantum, Mechanics altogether, so the Economic could do the same for International Economic and Social Policy, accurately²⁶:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Keywords: Accurate Interactive Interdisciplinary Comprehensive Policy

²⁶ For abbreviations: (cf appendix, p. 423).

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1. Introduction: Mathematical Engineering Archaeology of Global Economic Architecture

Why that we use mathematics for the economy? *First*, because mathematics is very accurate in computing. *Second*, because it could explain difficult constellation precisely. *Third*, because it is very short, so then long sentences could be stated very much shorter. *Fourth*, its symbol is common world wide, so it need less translations and interpretation. *Fifth*, it had been used in scientific research and analysis with flying colours accolade. *Sixth*, it is commonly used in many branches of business and economics world wide.

Is there any success story about that? Yes, especially in physics. The world that we see today like cellular phones, plasma television, electricity, atomic energies and universe travel are found item by items, not all things come at once. It is the art of combining mechanics develop electricity. Then it combined with magnetism, before goes far to atoms, quantum and lights, to be the Photoelectric and Electro magnetism. They did that almost a hundred years ago, although they have less data than the economics.

Why that things happened faster in physics than in economics? Because they have top of the cream and get contribution from many mathematician. On the other hand, the economics assumed as social sciences and art of business, where the luck cover the lack of mathematical skills needed there. It is proven that more than 80% (eighty percent) of the Economic Nobel laureates found the need of mathematics to solve economic cases.

Why it is called Architecture? Not Model nor Formula? *First*, it is constructed from many models altogether, while each model consist of one up to three formulas, and each formulas consist of two up to six economic factors (economic drivers). *Second*, they are structured by engineering principles and could not easily changing places, or changed to other elements easily. *Third*, it could be planned as part then constructed altogether as greater huge structure. *Fourth*, it could be very beautiful in its interactive engineering, if totally managed as proper.

What are the components we construct here? *First*, Keynesian macro economic based from his General Theory of Employment, Interest and Money. *Second*, the Smith Price vs Quantity diagrams of Supply, Demand, Revenue, Elasticity, Marginal Demand, Marginal Revenue, Market Equilibrium and government policies like Price Ceiling, Floor price, Subsidy, Quote and Minimum Mandatory Quantity. *Third*, Paccioli T-Account Dual Entry Accounting in Debit and Credit format. *Fourth*, the inter currency economics of Spot, Forward, Swap, Purchasing Power Parity, Interest Power Parity, Exchange Rate and Arbitrage opportunity. *Fifth*, Export-Import Balance of Trade and Balance of Payment. *Sixth*, Foreign Debt Management of single disbursement with periodic repayment installments. *Seventh*, the Fiscal Budgeting of Government Expenditure against the Taxes. *Eighth*, the Monetary system of Lender of the last resort for Commercial Papers against the Government Debts as Treasury Bills.

Why it is Algebra, not Geometry as common? Because we must deal with many factors interacting each other in proper constellation with high complex precision required. Easier problems like market Revenue (**R**) as multiplication of its Quantity Sold (**Q**) and Price of item (**P**), or Paccioli Dual Entry balanced T-account could easily drawn in graphic, it could only use Algebra if combining them with Keynesian Monetary and Fiscal in International settings.

1.1. Micro Economic Models of Price, Quantity, Demand, Supply and Equilibrium

In Microeconomics, Market seen as the Cartesian Graph of

Q= Quantity horizontal axis (*absis*) and **P**= Price as its vertical axis (*ordinate*).

It is almost applicable that for any quantity possible **P**= Price

seen as the function of **Q**= Quantity of the Commodity (goods or services), variable.

Then for any **N**= Number of periodic data, applied that:

μ_P = Mean of Price= Arithmetic average of **P**= $(\Sigma P/N)$

μ_Q = Mean of Quantity= Arithmetic average of **Q**= $(\Sigma Q/N)$

Since almost every data are different than average so then:

p= Deviation of Price= $(P_i - \mu_P) = P_i - (\Sigma P/N)$

q= Deviation of Quantity= $(Q_i - \mu_Q) = Q_i - (\Sigma Q/N)$

Since Sum of total Deviation is always zero, then we compute each Square Deviation (SD):

P^2 = Square Deviation of Price= $(P_i - \mu_P)^2 = (P_i - \Sigma P/N)^2 = (P_i^2 - 2P_i\{\Sigma P/N\} + \{\Sigma P/N\}^2)$

q^2 = Square Deviation of Quantity= $(Q_i - \mu_Q)^2 = (Q_i - \Sigma Q/N)^2 = (Q_i^2 - 2Q_i\{\Sigma Q/N\} + \{\Sigma Q/N\}^2)$

Since Sum of total Square Deviation is always positive, then the Sum Square Deviation (**SD**):

ΣP^2 = Sum of Square Deviation of Price= $SSD_P = \Sigma (P_i - \mu_P)^2 = \Sigma (P_i - \Sigma P/N)^2$

$= \Sigma (P_i^2 - 2\{\Sigma P/N\}P_i + \{\Sigma P/N\}^2) = \Sigma P^2 - 2\Sigma P(\Sigma P/N) + N(\Sigma P/N)^2$

$= \Sigma P^2 - 2(\Sigma P)^2/N + N(\Sigma P/N)(\Sigma P/N) = \Sigma P^2 - 2(\Sigma P)^2/N + (\Sigma P)^2/N = \Sigma P^2 - (\Sigma P)^2/N$

And by the same logic

Σq^2 = Sum of Square Deviation of Quantity= $SSD_Q = \Sigma (Q_i - \mu_Q)^2 = \Sigma (Q_i - \Sigma Q/N)^2 = \Sigma Q^2 - (\Sigma Q)^2/N$

Then the Variance or Mean of Square Deviation (**MSD**):

σ_P^2 = Mean of Square Deviation of Price= Variance of Price= $(SSD_P/N) = (\Sigma P^2 - \{\Sigma P\}^2/N)/N$

σ_Q^2 = Mean of Sq. Deviation of Quantity= Variance of Quantity= $(SSD_Q/N) = (\Sigma Q^2 - \{\Sigma Q\}^2/N)/N$

So then the Standard Deviations (**STD**) are:

σ_P = Standard Deviation of Price= $(SSD_P/N)^{0.5} = (\{\Sigma P^2 - \{\Sigma P\}^2/N\}/N)^{0.5}$

σ_Q = Standard Deviation of Quantity= $(SSD_Q/N)^{0.5} = (\{\Sigma Q^2 - \{\Sigma Q\}^2/N\}/N)^{0.5}$

Their comparison of the two variances (Fisher's ANOVA): $1 < F_a = (\sigma_p^2 / \sigma_q^2)$ or $1 < F_a = (\sigma_q^2 / \sigma_p^2)$

Its Covariances relation (by similar logic) then: $\delta = (\Sigma pq / N) = (\Sigma PQ - \Sigma P \Sigma Q / N) / N$

Then its Correlation: $\rho = (\delta / \{\sigma_p \sigma_q\}) = (\Sigma pq / N) / (\{\Sigma p^2 / N\}^{0.5} \{\Sigma q^2 / N\}^{0.5})$

$$= (\Sigma PQ - \Sigma P \Sigma Q / N) / [(\{\Sigma P^2 - [\Sigma P]^2 / N\} / N)^{0.5} (\{\Sigma Q^2 - [\Sigma Q]^2 / N\} / N)^{0.5}]$$

$$= (N \Sigma PQ - \Sigma P \Sigma Q) / (\{N \Sigma P^2 - [\Sigma P]^2\} \{N \Sigma Q^2 - [\Sigma Q]^2\})^{0.5}$$

So its Determination: $\rho^2 = (\delta^2 / \{\sigma_p^2 \sigma_q^2\}) = (\Sigma pq / N)^2 / (\{\Sigma p^2 / N\} \{\Sigma q^2 / N\}) = (\Sigma pq / (\Sigma p^2)) (\Sigma pq / \Sigma q^2)$

Then its Fisher's Regresion= $F_{reg} = (\rho^2 / \{1 - \rho^2\}) (df / \{k - 1\})$ and for bivariate $F_{reg} = \rho^2 (N - 2) / (1 - \rho^2)$

1.1.1. Price, Quantity, Linear Demand & Demand Curve Econometric Regression

Market transaction volume is the simple global ancient Algebraic trade formula

$$R = PQ$$

For

R= Revenue or Sales; **P**= Price and **Q**= Quantity of the Commodity (goods or services),

the constellation is just as simple as that, definitely.

It works for any quantity of any commodities at any prices (also for discount prices), if applied consistently.

How about many and varied commodities with also many items of varies prices?

Still similar things happen, but now they are in matrix format of weighted average:

$$[R] = [P] \cdot [Q]$$

In Quantity Discount Approach, it is assumed that the transactional price depends on the quantity of the transaction:

$$P = \alpha + \beta Q$$

for β = Demand Elasticity of Quantity;

$$\beta = \delta / \sigma^2 Q = \Sigma pq / \Sigma q^2$$

$$= (\Sigma PQ - \Sigma P \Sigma Q / N) / (\Sigma Q^2 - \{\Sigma Q\}^2 / N) = (N \Sigma PQ - \Sigma P \Sigma Q) / (N \Sigma Q^2 - \{\Sigma Q\}^2)$$

β known as the Demand Elasticity with negative slope

And α = the captive Quantity or the Intercept on $\alpha = (\Sigma P^2 - \beta \Sigma PQ) / N$

Based on any experimental paired data:

$$\{(Q_1, P_1), (Q_2, P_2), (Q_3, P_3), \dots (Q_N, P_N)\}$$

So then the Demand line could be estimated, but for the Demand Curve at least:

$$P = \alpha + \beta Q + \gamma Q^2$$

Theoretically, the Demand Curve is famous, but practically, not so many Econometrician could really understand the Square Regression principles and its coefficients. Many Econometric books do not explain it and some few just said that

$$\gamma = ([P] - \alpha - \beta[Q]) / Q^2,$$

$$\beta = ([P] - \alpha - \gamma[Q^2]) / Q,$$

$$\text{and } \alpha = [P] - \beta[Q] - \gamma[Q^2],$$

which theoretically are flexible, but very abstract when it comes to numbers.

Its dominant elasticity is γ while their total formulas are:

$$\alpha = (\Sigma P - \beta \Sigma Q - \gamma \Sigma Q^2) / N$$

$$\beta = (\{N \Sigma PQ - \Sigma P \Sigma Q\} - \gamma \{N \Sigma Q^3 - \Sigma Q \Sigma Q^2\}) / (N \Sigma Q^2 - \{\Sigma Q\}^2)$$

$$\gamma = (\{N \Sigma Q^2 - [\Sigma Q]^2\} - [N \Sigma PQ^2 - \Sigma P \Sigma Q^2] - [N \Sigma PQ - \Sigma P \Sigma Q][N \Sigma Q^3 - \Sigma Q \Sigma Q^2])$$

$$/ (\{N \Sigma Q^2 - [\Sigma Q]^2\} \{N \Sigma Q^4 - [\Sigma Q^2]^2\} - [N \Sigma Q^3 - \Sigma Q \Sigma Q^2]^2)$$

Microeconomic also familiar with the supply line with positive slope, but what used in interactive economics, are normally just Transaction, based on Revenue and Demand.

1.1.2. Revenue Sales Transactions, Linear and Curvic Marginal Revenue Measure

Since Revenue or Sales transactions (**R**) is the multiplication of Quantity (**Q**) and Price (**P**):

$$R = PQ$$

While Price (**P**) itself is the function of Quantity (**Q**), valid for any intercept (α) with elasticity (β), if assumed as linear:

$$P = \alpha + \beta Q$$

Marginal Revenue (**Mr**) is the function explaining additional Revenue at any point, supposing its Quantity (**Q**) added by one unit.

Then the conceptual understanding must be very clear before it is drawn on Cartesian Diagram of Quantity (**Q**) against the Price (**P**), in my observation, many economic books draw it at wrong intercept (α) and on the wrong slopes (β). It seems that the

graphic designer does not draw it as proper and its editor does not understand its concept, so then could not make corrections as necessary. It's even worse for (γ) square slope against linear (β) and intercept (α).

1) Supposing the linear Revenue (**R**) is:

$$\mathbf{R} = \mathbf{PQ} = \mathbf{Q}(\alpha + \beta\mathbf{Q}) = \alpha\mathbf{Q} + \beta\mathbf{Q}^2$$

So the linear Marginal Revenue (**M_R**) is its first derivative:

$$\mathbf{M_R} = \mathbf{f'(R)} = (\mathbf{d/dQ})\mathbf{R}$$

$$= (\mathbf{d/dQ}) \mathbf{PQ}$$

$$= (\mathbf{d/d})(\mathbf{Q}\{\alpha + \beta\mathbf{Q}\})$$

$$= (\mathbf{d/dQ})(\alpha\mathbf{Q} + \beta\mathbf{Q}^2)$$

$$= \alpha + 2\beta\mathbf{Q}$$

So its intercept is at the same point (α) with elasticity be doubled from (β) to (2β)

2) If Price (**P**) itself is the function of Quantity (**Q**), valid for any intercept (α) with square elasticity (γ) and linear elasticity (β), if assumed as curve:

$$\mathbf{P} = \alpha + \beta\mathbf{Q} + \gamma\mathbf{Q}^2$$

So then linear Revenue (**R**) is:

$$\mathbf{R} = \mathbf{PQ} = \mathbf{Q}(\alpha + \beta\mathbf{Q} + \gamma\mathbf{Q}^2)$$

$$= \alpha\mathbf{Q} + \beta\mathbf{Q}^2 + \gamma\mathbf{Q}^3$$

So the linear Marginal Revenue (**M_R**) is its first derivative:

$$\mathbf{M_R} = \mathbf{f'(R)} = (\mathbf{d/dQ})\mathbf{R} = (\mathbf{d/dQ})\mathbf{PQ}$$

$$= (\mathbf{d/dQ})(\mathbf{Q}\{\alpha + \beta\mathbf{Q} + \gamma\mathbf{Q}^2\})$$

$$= (\mathbf{d/dQ})(\alpha\mathbf{Q} + \beta\mathbf{Q}^2 + \gamma\mathbf{Q}^3)$$

$$= \alpha + 2\beta\mathbf{Q} + 3\gamma\mathbf{Q}^2$$

So **M_R** and **D** has their vertical intercept is at the same point (α) with linear elasticity of **M_R** be double than **D**, from (β) to (2β) and **M_R** square elasticity triplicate from **D**'s (γ) to be (3γ).

1.1.3. Equilibrium of Linear and Curvic Demand vs Linear and Curvic Supplies

Quantity at Equilibrium (Q_e), is on a condition of the crossing point of Demand and Supply Curves, that the Quantity of Demand (Q_d) is equal to the Quantity of Supply (Q_s), so:

1) If assumed has Linear Demand ($\alpha + \beta Q$) and Linear Supply ($\delta + \eta Q$):

$$\alpha + \beta Q_e = \delta + \eta Q_e \text{ or } (\beta - \eta)Q_e = (\delta - \alpha)$$

so the Quantity at Equilibrium $Q_e = (\delta - \alpha) / (\beta - \eta)$

Then the Price at Equilibrium (P_e) = $\alpha + \beta Q_e = \alpha + \beta(\delta - \alpha) / (\beta - \eta)$

$$= (\alpha\beta - \alpha\eta) / (\beta - \eta) + (\beta\delta - \alpha\beta) / (\beta - \eta) = (\alpha\beta - \alpha\eta + \beta\delta - \alpha\beta) / (\beta - \eta) = (\beta\delta - \alpha\eta) / (\beta - \eta)$$

2) If assumed has Linear Demand ($\alpha + \beta Q$) and Curve Supply ($\delta + \eta Q + \kappa Q^2$):

$$\alpha + \beta Q_e = \delta + \eta Q_e + \kappa Q_e^2$$

$$\text{or } \kappa Q_e^2 + (\eta - \beta)Q_e - (\delta - \alpha) = 0$$

Then its Quantity of Equilibrium (Q_e) using the positive Quadratic Formula²⁷:

$$0 < (Q_e) = (\{\beta - \eta\} + \{[\eta - \beta]^2 - 4\kappa[\delta - \alpha]\}^{0.5}) / [2\kappa]$$

3) If assumed has Curve Demand ($\alpha + \beta Q + \gamma Q^2$) and Linear Supply ($\delta + \eta Q$):

$$\alpha + \beta Q_e + \gamma Q_e^2 = \delta + \eta Q_e$$

$$\text{or } \gamma Q_e^2 + (\beta - \eta)Q_e - (\alpha - \delta) = 0$$

Then its Quantity of Equilibrium (Q_e) using the positive Quadratic Formula:

$$0 < (Q_e) = (\{\eta - \beta\} + \{[\beta - \eta]^2 - 4\gamma[\alpha - \delta]\}^{0.5}) / [2\gamma]$$

4) If assumed has Curve Demand ($\alpha + \beta Q + \gamma Q^2$) and Curve Supply ($\delta + \eta Q + \kappa Q^2$):

$$\alpha + \beta Q_e + \gamma Q_e^2 = \delta + \eta Q_e + \kappa Q_e^2$$

$$\text{or } (\gamma - \kappa)Q_e^2 + (\beta - \eta)Q_e - (\alpha - \delta) = 0$$

Then its Quantity of Equilibrium (Q_e) using the positive Quadratic Formula:

$$0 < (Q_e) = (\{\eta - \beta\} + \{[\beta - \eta]^2 - 4[\gamma - \kappa][\alpha - \delta]\}^{0.5}) / \{2[\gamma - \kappa]\}$$

²⁷[http://en.wikipedia.org/wiki/Quadratic equation](http://en.wikipedia.org/wiki/Quadratic_equation)<http://en.wikipedia.org/wiki/Quadratic equation>, A quadratic equation with real or complex coefficients has two solutions, called *roots*. These two solutions may or may not be distinct, and they may or may not be real. Having $ax^2 + bx + c = 0$, the roots are given by the quadratic formula, where

$$x = \frac{-b + \sqrt{b^2 - 4ac}}{2a} \quad \text{and} \quad x = \frac{-b - \sqrt{b^2 - 4ac}}{2a}$$

1.1.4. Floor Price, Price Ceiling, Quote and Subsidy as Government Public Policies

Authorities could make transactions at different points than the equilibrium, by determining mandatory Price (P^*) or mandatory Quantity (Q^*) at ($\delta > \alpha$), ($\eta > 0$) and ($\beta < 0$):

1) Floor Price²⁸ (P^*) set higher than Equilibrium Price (P_e), so then ($P^* > P_e$):

the linear Supply ($P^* = \delta + \eta Q_s$) is equal the linear Demand ($P^* = \alpha + \beta Q_d$)

so $Q_s = (P^* - \delta) / \eta$ is greater than $Q_d = (P^* - \alpha) / \beta$

then the Quantity of Supply (Q_s) is greater than Quantity of Demand (Q_d) at

$$Q_s = (\beta Q_d + \{\alpha - \delta\}) / \eta = (\beta / \eta) Q_d + \{\alpha - \delta\} / \eta$$

2) Ceiling Price²⁹ (P^*) set lower than Equilibrium Price (P_e), so then ($P^* < P_e$):

the linear Supply ($P^* = \delta + \eta Q_s$) is equal the linear Demand ($P^* = \alpha + \beta Q_d$)

so $Q_s = (P^* - \delta) / \eta$ is smaller than $Q_d = (P^* - \alpha) / \beta$

then the Quantity of Demand (Q_d) is greater than Quantity of Supply (Q_s) at

$$Q_d = (\eta Q_s + \{\delta - \alpha\}) / \beta = (\eta / \beta) Q_s + \{\delta - \alpha\} / \beta$$

3) Mandatory Quoted³⁰ Quantity (Q^*) set less than Equilibrium Quantity (Q_e), so then:

the linear Demand ($P_d = \alpha + \beta Q^*$)

$$\text{or } Q^* = (P_d - \alpha) / \beta$$

is greater than the linear Supply ($P_s = \delta + \eta Q^*$)

$$\text{or } Q^* = (P_s - \delta) / \eta$$

$$\text{so } (P_d - \alpha) / \beta = (P_s - \delta) / \eta$$

$$\text{or } \eta(P_d - \alpha) = \beta(P_s - \delta)$$

$$\text{then } P_d = \alpha + (\beta / \eta)(P_s - \delta)$$

²⁸ en.wikipedia.org/wiki/Price_floor; A **PRICE FLOOR** is a government- or group-imposed limit on how low a **PRICE** can be charged for a product. A **PRICE FLOOR** must be greater than the equilibrium **PRICE**

²⁹ en.wikipedia.org/wiki/Price_ceiling; A **PRICE CEILING** is a government-imposed limit on the **PRICE** charged for a product. Governments intend **PRICE CEILINGS** to protect consumers. A **PRICE CEILING** must be lower than the equilibrium **PRICE**

³⁰ en.wikipedia.org/wiki/quota; Quota is a limit on the quantity of a good that can be produced abroad and sold domestically. It is a type of protectionist trade restriction that sets

4) Subsidized³¹ Price (P^*) set lower than Equilibrium Price $P_e = (\beta\delta - \alpha\eta)/(\beta - \eta)$, so then:

the quantity of linear Supply ($P^* = \delta + \eta Q_s$) is less than the linear Demand ($P^* = \alpha + \beta Q_d$)

so $\delta + \eta Q_s = \alpha + \beta Q_d$

then the Quantity of Demand (Q_d) is greater than Quantity of Supply (Q_s) at $Q_d = (\delta - \alpha + \eta Q_s)/\beta$

Subsidized amount per unit ($P_e - P^*$) = $(\{\beta\delta - \alpha\eta\}/\{\beta - \eta\} - P^*)$

Since Quantity of Equilibrium is $Q_e = (\delta - \alpha)/(\beta - \eta)$

So the total Subsidy is $Q_e(P_e - P^*)$

$= (\{\delta - \alpha\}/\{\beta - \eta\})(\{\beta\delta - \alpha\eta\}/\{\beta - \eta\} - P^*)$

1.2. Operation Management in Monopolistic Market vs Free Market Competition

Behind the Operations Management,³² there are Corporate major decisions for the production. Before Linear (Primal and Dual) Programming, Queuing and Inventory (Material Requirement) Planning, Economic Order of Quantity or Transportation, big decision on the produced and sold quantity must be made, depends on the cost structure and market chances they have.

The Market could be Competitive or Monopolistic, while the costing depends on fix and variable part of the production, which is a little bit complex and could be Cubic function³³ (powered by 3), to anticipate the turning points (conjuncture) possible.³⁴

Case-1: How if for the specific case it is only Quadratic,³⁵ it is not yet a Cubic? It's easy, just assume that the Cubic Coefficient is not significantly different to zero (not

³¹ en.wikipedia.org/wiki/**Subsidy**; A **SUBSIDY** is assistance paid to a business or economic sector or producers. Most **SUBSIDIES** are set in place by the government for producers or are distributed

³² en.wikipedia.org/wiki/**Operations management**, **OPERATIONS MANAGEMENT** is an area of management concerned with overseeing, designing, and controlling the process of production and redesigning business

³³ en.wikipedia.org/wiki/**Cubic function**, In mathematics, a **CUBIC FUNCTION** is a function of the form. $f(x) = ax^3 + bx^2 + cx + d$. where a is nonzero; or in other words, a function defined by a polynomial

³⁴ en.wikipedia.org/wiki/**Conjuncture**, In **ECONOMICS**, **CONJUNCTURE** (fluctuation) is a critical combination of events. Boom is a time of high business activity, prosperity, peak of business cycle,

³⁵ en.wikipedia.org/wiki/**Quadratic function**, A **QUADRATIC FUNCTION**, in mathematics, is a polynomial function of the form. $f(x) = ax^2 + bx + c$, quad a. The graph of a **QUADRATIC FUNCTION** is a parabola

significant), so then only Quadratic and Linear Coefficient plus Vertical Axis Intercept considered.

Case-2: How if for the specific case it is only Linear,³⁶ it is not yet a Cubic and nor Quadratic? It's easy, just assume that the Cubic Coefficient and Quadratic Coefficient are not significantly different to zero (not significant), so then only Linear Coefficient and Vertical Axis Intercept considered.

Case-3: How if for the specific case it is only Linear, it is not yet a Cubic and nor Quadratic with no significant Intercept? It's easy, just assume that the Cubic Coefficient, Quadratic Coefficient and intercept are not significantly different to zero (not significant), so then only Linear Coefficient crossing at the origin (0,0) considered.

Case-4: How if for the specific case it is only Intercept³⁷ confirmed, it is not yet a Cubic, nor Quadratic and no Linear significant? It's easy, just assume that the Cubic Coefficient, Quadratic Coefficient and Linear are not significantly different to zero (not significant), so then only Intercept Coefficient considered. It is a Constant³⁸ horizontal function and not sensitive to Quantity changes (totally inelastic to quantity)³⁹.

1.2.1. Costs (Total, Fix, Variable, Marginal), Average Cost (Total, Fix, Variable)

Since the Total Cost⁴⁰ (T_c) could less or equal to the Cubic Quantity function

$$\lambda + \pi Q + \theta Q^2 + \rho Q^3$$

($T_c = F_c + V_c$), means that Total Cost (T_c) consist of

Fixed Cost (F_c) = λ ,

and Variable Cost (V_c) = $\pi Q + \theta Q^2 + \rho Q^3$

Its Marginal Cost⁴¹ (M_c) is its first derivative

³⁶ en.wikipedia.org/wiki/**Linear function**, In mathematics, the term **LINEAR FUNCTION** refers to a function that satisfies the following two properties: $f(x + y) = f(x) + f(y)$: $f(a \cdot x) = a \cdot f(x)$.

³⁷ en.wikipedia.org/wiki/**Intercept**, **INTERCEPT** may refer to: **X-INTERCEPT**, the point where a line crosses the x-axis; **Y-INTERCEPT**, the point where a line crosses the y-axis;

³⁸ en.wikipedia.org/wiki/**Constant function**, In mathematics, a **CONSTANT FUNCTION** is a function whose values do not vary and thus are constant. For example the function $f(x) = 4$ is constant

³⁹ en.wikipedia.org/wiki/**Elasticity**_(economics), In economics, **ELASTICITY** is the measurement of how changing one economic variable affects others.

⁴⁰ http://en.wikipedia.org/wiki/Total_cost, In economics, and cost accounting, **total cost** (TC) describes the total economic cost of production and is made up of Variable costs, which vary according to the quantity of a good produced and include inputs such as labor and raw materials, plus Fixed costs, which are independent of the quantity of a good produced and include inputs (capital) that cannot be varied in the short term, such as buildings and machinery.

$$\begin{aligned} f' &= (d/dQ)T_c \\ &= (d/dQ)(\lambda + \pi Q + \theta Q^2 + \rho Q^3) \\ &= (d/dQ)(\lambda) + (d/dQ)(\pi Q + \theta Q^2 + \rho Q^3) \\ &= 0 + (\pi + 2\theta Q + 3\rho Q^2) \end{aligned}$$

It is equal to Marginal Variable Cost (M_{vc}), since the Marginal Fix Cost (M_{fc}) is zero.

On the unit basis there is Average Total Cost⁴² (A_c) that ($A_c = A_{fc} + A_{vc}$)

$$\begin{aligned} &= (\lambda + \pi Q + \theta Q^2 + \rho Q^3)/Q \\ &= (\lambda/Q) + (\pi Q + \theta Q^2 + \rho Q^3)/Q \\ &= (\lambda/Q) + (\pi + \theta Q + \rho Q^2), \end{aligned}$$

means that it consist of Average Fixed Cost

$$(A_{fc}) = (\lambda/Q),$$

and Average Variable Cost

$$(A_{vc}) = (\pi Q + \theta Q^2 + \rho Q^3)/Q = (\pi + \theta Q + \rho Q^2)$$

The Average Total Cost (A_c) > 0, always because (λ/Q) component makes $Q > 0$

Both Marginal Cost (M_c) and Average Variable Cost (A_{vc}) had π as their Vertical Intercept, crossing at $(0, \pi)$ at the vertical axis.

The Linear Slope of Marginal Cost is (2θ) is doubled than Linear Slope of Variable Cost (θ), while Quadratic Slope of Marginal Cost is (3ρ) is tripled than Linear Slope of Variable Cost (ρ)

Equality in their Linear Slope (θ) and Quadratic Slope (ρ), makes Average Variable Cost (A_{vc}) almost (λ/Q) less than the Average Total Cost (A_c), so they become closer if the Quantity (Q) is greater, and their difference also bigger at $Q < 1$.

1.2.2. Monopolistic Market (Price, Demand, Marginal Revenue, Equilibrium)

In real life, the Supply Curve is the Average Cost (A_c)

$$= (\lambda/Q) + (\pi + 2\theta Q + 3\rho Q^2),$$

but the Optimum Quantity (Q_o) is at

⁴¹en.wikipedia.org/wiki/Marginal_cost, In economics and finance, **MARGINAL COST** is the change in total cost that arises when the quantity produced changes by one unit.

⁴²en.wikipedia.org/wiki/Average_cost, In economics, **AVERAGE COST** or unit cost is equal to total cost divided by the number of goods produced (the output quantity, Q).

Marginal Cost (M_c)= $(\pi+2\theta Q+3\rho Q^2)$ Equal to Marginal Revenue (M_r)=
 $(\alpha+2\beta Q+3\gamma Q^2)$

So $(\pi+2\theta Q_e+3\rho Q_e^2)=(\alpha+2\beta Q_e+3\gamma Q_e^2)$

$3(\rho-\gamma)Q_e^2+2(\theta-\beta)Q_e+(\pi-\alpha)=0$

Then its Quantity of Equilibrium (Q_e) using the positive Quadratic Formula:

$0 < (Q_e) = (2\{\beta-\theta\} + \{4[\theta-\beta]^2 - 4[\rho-\gamma][\pi-\alpha]\}^{0.5}) / (2\{\rho-\gamma\})$

At the Monopolistic Market, Seller is the Price Setter,

(α, β, γ) are significant:

so $(M_r) = (\alpha+2\beta Q+3\gamma Q^2)$,

and Revenue (R)= $(\alpha Q+\beta Q^2+\gamma Q^3)$

then Price (P)= (R/Q)

= $(\alpha Q+\beta Q^2+\gamma Q^3)/Q$

= $(\alpha+\beta Q+\gamma Q^2)$

Its Optimum Profit per unit

is $(P-A_c)$

= $(\alpha+\beta Q_o+\gamma Q_o^2) - (\lambda/Q_o + \pi + \theta Q_o + \rho Q_o^2)$

= $(\gamma-\rho)Q_o^2 + (\beta-\theta)Q_o + (\alpha-\pi) - (\lambda/Q_o)$

Total Optimum Profit

= $Q_o(P-A_c)$

= $Q_o(\{\gamma-\rho\}Q_o^2 + \{\beta-\theta\}Q_o + \{\alpha-\pi-\lambda/Q_o\})$

= $(\gamma-\rho)Q_o^3 + (\beta-\theta)Q_o^2 + (\alpha-\pi)Q_o - \lambda$

1.2.3. Free Market Competition (Price, Demand, Marginal Revenue, Equilibrium)

At the Free market, the Supply Curve is also the Average Cost (A_c)

= $(\lambda/Q) + (\pi + \theta Q + \rho Q^2)$,

and the Optimum Quantity (Q_o) is at

Marginal Cost (M_c)= $(\pi+2\theta Q+3\rho Q^2)$

Equal to Marginal Revenue (M_r)= $(\alpha+2\beta Q+3\gamma Q^2)$

Then $(\pi+2\theta Q_e+3\rho Q_e^2)=(\alpha+2\beta Q_e+3\gamma Q_e^2)$

$3(\rho-\gamma)Q_e^2+2(\theta-\beta)Q_e+(\pi-\alpha)=0$

so its Quantity of Equilibrium (Q_e) using the positive Quadratic Formula:

$$0 < (Q_e) = (2\{\beta - \theta\} + \{4[\theta - \beta]^2 - 12[\rho - \gamma][\pi - \alpha]\}^{0.5}) / \{6(\rho - \gamma)\}$$

At the Free competitive Market, Seller is the Price Taker,

(α) is significant, but (β and γ) are not significant, or equal to zero:

so (M_r) = ($\alpha + 0Q + 0Q^2$) = (α), and Revenue (R) = ($\alpha Q + 0Q^2 + 0Q^3$) = (αQ)

then Price (P) = (R/Q)

$$= (\alpha Q) / Q = (\alpha)$$

Optimum Profit per unit ($P - A_c$)

$$= \alpha - (\lambda / Q_0 - \pi - \theta Q_0 - \rho Q_0^2)$$

Total Optimum Profit = $Q_0(P - A_c)$

$$= Q_0(\alpha - \lambda / Q_0 - \pi - \theta Q_0 - \rho Q_0^2)$$

$$= (\alpha Q_0 - \lambda - \pi Q_0 - \theta Q_0^2 - \rho Q_0^3)$$

$$= (\alpha - \pi)Q_0 - \lambda - \theta Q_0^2 - \rho Q_0^3$$

In almost the cases, Free Market gives less Profit to the Producer compared to Monopolistic. The logic is that in the Free Competitive Market, the Producers are just a Price Taker and could not dictating their aimed price to their customer.

On the other hand, the Producers at Monopolistic Market, are Price Setter, and could sell commodities at desired Price and they make Quantity decision in their Operations Management.

1.3. Local Currency Management

Authorities in general could set their Economic system. This is a more general terminology than just Government or Central Bank. In China, they have Hongkong and Macau which permitted to implement other system than the Beijing system.⁴³

Permanently they could set the *Fiscal Budget*⁴⁴ that normally approved by the legislator at their parliament. It is a fore gone loses money for Government's Income and Expenses. It could be Surpluses, Deficit or Balanced depend on their favour.

On the other hand they could also borrowing money from the private sector in the form of Treasury Bills (T-Bills) which normally are interest bearing.

⁴³coinmill.com/CNY_HKD.html, This Chinese YUAN and HONG KONG DOLLAR convertor is up to date with exchange rates from ... The HONG KONG DOLLAR is the currency in Hong Kong (HK, HKG).

⁴⁴en.wikipedia.org/wiki/Fiscal_policy, In economics and political science, FISCAL policy is the use of government revenue collection (taxation) and expenditure (spending) to influence the economy.

Let's take United States for instance. Since the Virginian Bill, the country borrowing money from 12 (twelve) sources known together as Federal Reserve Bank (the Fed).

It is funny that the Fed is not a Federal Government body. It is not implementing the currency Reserve. Finally it is not a bank yet.

Surprisingly, because of the strength of US Military power, their money (US\$, USD or US Dollars) widely accepted and being world-wide medium of exchange, medium of measurement and foreign storage of value. It is risky, but many still trust it.⁴⁵

Once, it had been paid until very small amount at Andrew Jackson's era, but it could not be paid in full and now had become greater than ever.

Aside from the Fiscal purposes, Government debts could be used as Monetary for contracting the economy (pull the money out), so by paying interest, the authority could make the money fewer at the near time, and then release them again (expansion) in the managed future.

Normally it done to protect the currency exchange rate against the global currency, where "Price" of referred currency (**P**) depends on its Quantity (**Q**), so

$$P_1Q_1 = P_2Q_2 = P_3Q_3 = P_4Q_4 \text{ etc}$$

Or **PQ** is constant

On the contrary, the private sector will also ask the authority when they have bad cash flow, so they will ask financing from the authority. They will place Commercial Paper (Bonds) and if the authority lending them as the last resort,⁴⁶ a controllable amount of money placed in.

1.3.1. Fiscal Budget: Government Expenditures vs Taxes

In the ancient period, the money made from bullions,⁴⁷ so then their intrinsic⁴⁸ (real) value are almost similar to their nominally stated value, so less fake money possible.

⁴⁵ en.wikipedia.org/wiki/World_currency, This reinforced the dominance of the **US DOLLAR** as a **GLOBAL** currency. Since the collapse of the fixed exchange rate regime and the gold standard

⁴⁶ www.investopedia.com/terms/l/lenderoflastresort.asp, In the U.S. the Federal Reserve acts as the **LENDER OF LAST RESORT** to institutions that do not have any other means of borrowing and whose failure to obtain credit

⁴⁷ en.wikipedia.org/wiki/Bullion, **BULLION** traditionally stands for gold bars, silver bars, other precious metals bars or ingots. The word **BULLION** originates from the old French word bouillon,

⁴⁸ en.wikipedia.org/wiki/Intrinsic_and_extrinsic_properties, An **INTRINSIC** property is an essential or inherent property of a system or of a material itself or within. It is independent of how much of the material is present

To be richer, a country must do trading and even occupying others. So, there are so much wars and conquering in the history, because they could not find more efficient ways.

Since bullion is hard to carry and easy to be robbed, people think for depositing the bullion and using bank inter booking statements (paper money) as more secured and more efficient method.

They use the *Gold standard*⁴⁹ that every paper are backed by ample gold as promised. It works for long, until United States goes to Vietnam and make Nixon default to pay back the French gold collected by de Gaulle. Then the Bretton Woods⁵⁰ system be no longer trusted.

In the new free floating system, the government could print paper money suitable to its needs for Government Expenditures (**G**) and by force taking them back as Taxes (**T**).

The authority is in surplus fiscal (budget) the Tax (**T**) is greater than the Government Expenditure (**G**), so (**T>G**). This could make the authority be stronger and stronger with less social aid to the poor, except the (**G**) already very big, even less than (**T**).

On the contrary, the authority is in deficit fiscal (budget) the Tax (**T**) is smaller than the Government Expenditure (**G**), so (**T<G**). This could make the poor happier, but the authority will be suffering in foreign debt and difficulties.

The authority is in surplus fiscal (budget) the Tax (**T**) is greater than the Government Expenditure (**G**), so (**T>G**). This is ideal for the moderate authority, but practically need very strict budget discipline to be managed as proper.

From the government's side, the Government Expenditure (**G**) by issuing money is just a debt instrument to finance the expenses of administering the country. The debt could only be reduced if the people paying the Tax (**T**).

It could also be illustrated as Paccioli's T-Account, by placing (**G**) as the liabilities and (**T**) as the money comes to reduce the liabilities (negative liabilities).

1.3.2. Monetary: Financial Sector's Placement and Government's Local Debts

⁴⁹en.wikipedia.org/wiki/Gold_standard, The **GOLD STANDARD** is a monetary system in which the standard economic unit of account is a fixed weight of gold. There are distinct kinds of "**GOLD STANDARDS**".

⁵⁰ en.wikipedia.org/wiki/Bretton_Woods_system, The **BRETTON WOODS** system of monetary management established the rules for commercial and financial relations among the world's major industrial states

Aside from the government fiscal [**G-T**], the authority also manage the money to store the value and facilitate the transaction in suitable proportion.

1) If the authority borrow the money from the public, then its Outstanding of central bank's debt in local currency (**O**) on Expected periodic interest (**E**) and at any Number of loan period, it could be compounded⁵¹ to be=

$$\mathbf{O[1+E]^N=O[1+E]^N}$$

The standard computerized notation of $\mathbf{O[1+E]^N}$ is easier to compute than the human old style Algebra's $\mathbf{O[1+E]^N}$, but both resulting the same.

So let's use the $\mathbf{O[1+E]^N}$ as standard term in this paper.

2) On the contrary, if the private sector borrow the money from the authority, then its Financial sector's debt in local currency (**F**) if on Expected periodic interest (**E**) and at any Number of loan period, it could be compounded to be=

$$\mathbf{F[1+E]^N=F[1+E]^N}$$

The interest rate of $\mathbf{F[1+E]^N}$ could be on spread⁵² (difference) to the interest of $\mathbf{O[1+E]^N}$, but similarly works and could fairly adjusted by Commercial Discount⁵³ system etc.

3) Combining the authority's debt of $\mathbf{O[1+E]^N}$ and its collectibles of $\mathbf{F[1+E]^N}$

It is definitely $\mathbf{[O-F][1+E]^N}$

4) Considering the existing fiscal money of (**G-T**) and monetary of $\mathbf{[O-F][1+E]^N}$

It is totally $\mathbf{[G-T]+[O-F][1+E]^N}$

So if the authority committed Deficit Fiscal Budget (**G>T**) then the money will be increasing, but the more dangerous is if the authority's debt is greater than its collectibles (**O>F**), so then the Monetary additions will make the local currency rapidly growing faster and faster on Compounding basis $\mathbf{(1+E)^N}$.

⁵¹ en.wikipedia.org/wiki/Compound_interest, **COMPOUND INTEREST** arises when **INTEREST** is added to the principal, so that, from that moment on, the **INTEREST** that has been added also earns **INTEREST**.

⁵² en.wikipedia.org/wiki/Net_interest_spread, Net **INTEREST SPREAD** refers to the difference in borrowing and lending rates of financial institutions (such as banks) in nominal terms. It is considered analogous to financial gross profit

⁵³ en.wikipedia.org/wiki/Discount_rate, an **INTEREST** rate a central bank charges depository institutions that borrow reserves from it, for example for the use of the Federal Reserve's **DISCOUNT** window.

More money will not make the society wealthier, it just makes the prices going higher.⁵⁴

1.3.3. Investment Algebra: Compounding Interest of Government's Local Debts

Naturally things are multiplied on the constant growth rate, as Single Compounding and Serial Compounding.

1) Single Compounding:

Let's take Expected (**E**) growth rate of 10%

for the Monetary (**O-F**)= 1000,

then the number will grown from 1000, to 1100, 1210, 1331 etc.

The growth is 100, 110, 121

as 10% of 1000, 1100 and 1210.

Where are those numbers come from?

$$1100 = 1000 + 100 = 1000(1 + 10\%)$$

$$1210 = 1100 + 110 = 1100(1 + 10\%)$$

For any Number of Period (**N**), it will be:

$$[\mathbf{O-F}][\mathbf{1+E}]^{\mathbf{N}}$$

2) Serial Compounding:

If a series of Achievement amount (**A**) paid

On the valued periodic interest (**V**)

From the first period to the (**U**) Utilized period

At the end of all periods

$$\text{The first one be} = A(1+V)^U$$

$$\text{The second be} = A(1+V)^{(U-1)}$$

$$\text{The third} = A(1+V)^{(U-2)}$$

.....

$$\text{And the end} = A(1+V)^{(U-U)}$$

It is a Geometric⁵⁵ series of AB^U

⁵⁴en.wikipedia.org/wiki/**Inflation**, In economics, **INFLATION** is a rise in the general level of prices of goods and services in an economy over a period of time. When the general price level rises,

At $B=(1+V)$

The total of them is $A\Sigma(1+V)^U = AB^U$

$=A(B^U-1)/(B-1)$

$= A(\{1+V\}^U-1)/(\{1+V-1\})$

$=(A/V)(\{1+V\}^U-1)$

It is the total (sum) of the Geometric series Compoundings for the Utilized period (U), its principle is Series of Single Compounding of each item.

1.3.4. Local Fractional Reserve Requirement vs Its Multiplier Effect to Money

At the beginning, people does not understand the Kind of Reserve Requirement⁵⁶ (K).

If money are in bullions, so it is close to 100% value,

even corrupted they could still has 80% of its value.

When it comes to deposited bullions, then the receipt or paper money

depends on the redeem rate

or Kind of reserve required (K)

of the deposited precious metals.

If the redeeming⁵⁷ rate is just 20%,

so the account holder could make 500% receipt of bullions,

it is safe enough.

Supposing the 20% come at once,

20% of 500%= 100%

is still solvable.

So then at lower redeming rate like 5% or 2%,

many people will be attracted to work as a precious metal holder,

because they could produce 2000% and 5000% receipt

compared to their 100% bullions at hand.

It is clear now that the lower the redeem rate as Kind of Reserve (K),

⁵⁵www.mathsisfun.com/algebra/sequences-sums-geometric.html, Summing a **GEOMETRIC SERIES**. When you need to **SUM** a Geometric Sequence, there is a handy formula. To **SUM**: $a + ar + ar^2 + \dots + ar^{(n-1)}$. Each term is ar^k ,

⁵⁶en.wikipedia.org/wiki/Reserve_requirement, The **RESERVE REQUIREMENT** (or cash reserve ratio) is a central bank regulation that sets the minimum reserves that each commercial bank must hold

⁵⁷www.forbes.com/sites/afontavecchia/.../is-gld-really-as-good-as-gold/, **Gold** investing has evolved greatly with the advent of GLD, the second largest ... ordinary investors can't just go to London and **redeem** their bullion. ...allowing them to **deposit** either **gold** or shares in exchange for the other

then the more money will be created more,
 so $(1/K)$ is the multiplier effect of money.

So, if the total local money is $[G-T]+[O-F][1+E]^N$
 and the Kind of reserve required (K),
 then its Multiplier is $[1/K]$,
 so the total local money possible is $[1/K]\{[G-T]+[O-F][1+E]^N\}$

1.4. Foreign Currency Account Management:

Every country could issue their *local currency*⁵⁸
 permanently in Government Expenditure (G)
 and taking Taxes (T),
 both at the amount they are confident to manage the fiscal
 $[G-T]$.
 They could also use that currency authority to manage their *monetary*⁵⁹ of
 Financial Papers (F)
 and Obligation of authority (O),
 its Expected Interest (E),
 Number of period (N)
 and Kind of reserve required (K), so then combining them as:
 $[1/K]\{[G-T]+[O-F][1+E]^N\}$
 Things will be different for *foreign currency*,⁶⁰
 all affairs in the Foreign Currency is set by another authority,
 especially its Zoned reserve⁶¹ requirement (Z).

⁵⁸www.investopedia.com/terms/f/fiatmoney.asp, **CURRENCY** that a government has declared to be legal tender, despite the fact that it has no intrinsic value and is not backed by reserves.

⁵⁹ en.wikipedia.org/wiki/Monetary_policy, **MONETARY** policy is the process by which the **MONETARY** authority of a country controls the supply of money, often targeting a rate of interest for the purpose of forex management.

⁶⁰www.gocurrency.com/, **FOREIGN EXCHANGE** rates impact the global trade volume throughout the world, and are traded as **CURRENCY** pairs and **CURRENCY** funds by online forex traders.

⁶¹en.wikipedia.org/wiki/Foreign-exchange_reserves, Foreign-exchange reserves (also called **FOREX RESERVES** or FX reserves) in a strict sense are 'only' the foreign currency deposits and bonds held by central banks

The permanent foreign exchange gain will just come from Export (**X**, in the economy definitely it is not **E**) and the forgone loses is in term of Imports (**M**, in the economy definitely it is not **I**),

so their *balance of trade*⁶² is [**X-M**].

If the authority take the *Loan from foreign*⁶³ sources (**L**), normally taken as big amount at once in very beginning then repaid by periodic Achievement (**A**) of serial installments, at Valued periodic interest (**V**) along the Utilized period (**U**).

Then together they'll work as:

$$[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

1.4.1. Keynes' vs Sargent-Sim's Long-term Expectation

On 2011, Thomas Sargent (New York University)⁶⁴ and Christopher A. Sims (Princeton University)⁶⁵ won the Nobel Prize in economics "for their empirical research on cause and effect in the macroeconomy." Sargent and Sims, both 68, did research separately between 1970s and '80s, it is very relevant now, that both governments and central banks try to avoid their economies out from recession.

Sargent analyzing effects of broad economic policy changes, while Sims identify and measure effects of "temporary & unexpected changes," such as fluctuations in interest rates and deficits. The prize committee said that Sargent and Sims "have independently developed complimentary methods that make it possible to evaluate policy and trace effects over time." Sims'-Sargent's methods and ideas have "been

⁶²en.wikipedia.org/wiki/**Balance_of_trade**, The **BALANCE OF TRADE**, or net exports (sometimes symbolized as NX), is the difference between the monetary value of exports and imports of output in an economy

⁶³en.wikipedia.org/wiki/**External_debt**, **EXTERNAL DEBT** (or **FOREIGN DEBT**) is that part of the total debt in a country that is owed to creditors outside the country. The debtors can be the government,

⁶⁴en.wikipedia.org/wiki/**Thomas_J._Sargent**, **THOMAS** John "**TOM**" **SARGENT** (born July 19, 1943) is an American economist, specializing in the fields of macroeconomics, monetary economics and time series

⁶⁵en.wikipedia.org/wiki/**Christopher_A._Sims**, Christopher Albert "**CHRIS**" **SIMS** (born October 21, 1942) is an econometrician and macroeconomist. He is currently the Harold B. Helms Professor of Economics

adopted by both researchers and policymakers throughout the world," according to the citation.⁶⁶

Findings of Sargent and Sims: "How are GDP and inflation affected by a temporary increase in the interest rate or a tax cut? What happens if a central bank makes a permanent change in its inflation target or a government modifies its objective for budgetary balance? Then they developed methods for answering these and many of other questions."

Both Sargent and Sims work to manage the economic aspects of actual (a) and expected (e) of:

$$[G_i - T_i][1 + E_i]^{N_i}$$

Or

$$[G_a - T_a][1 + E_a]^{N_a} = [G_e - T_e][1 + E_e]^{N_e}$$

So then their work predicted the future of N_e , E_e , G_e and T_e based on the actual data by analyzing the sensitivity of other future aspect in the temporary or permanent basis:

1) Relevant period for decision validity:

$$N_e = \frac{\ln\{[G_a - T_a][1 + E_a]^{N_a} / [G_e - T_e]\}}{\ln[1 + E_e]}$$

2) Expected interest valid for the decision:

$$E_e = \{[G_a - T_a][1 + E_a]^{N_a} / [G_e - T_e]\}^{(1/N_e)} - 1$$

3) Government Expenditure necessary to finance that:

$$G_e = T_e + [G_a - T_a][1 + E_a]^{N_a} / (1 + E_e)^{N_e}$$

4) Expected Taxes must be collected from that:

$$T_e = G_e - [G_a - T_a][1 + E_a]^{N_a} / (1 + E_e)^{N_e}$$

1.4.2 Keynes' vs General Theory of Interest Rate

⁶⁶<http://www.npr.org/2011/10/10/141206489/u-s-economists-sargent-sims-win-2011-nobel-prize>,

Keyness treatise on the liquidity preference theory of interest started from a discussion on the theoretical and policy background before the publication of his General Theory. His General Theory was a full statement of his theory of a money financed economy. His theory of interest starts from an analysis primarily of money as a store of value.

Keynes's analysis led him not only to the theoretical discussion of uncertainty and expectation, but also to practical conclusions which is more important. His theory then turned against classical teachings. Interest rate then be the cause, not the passive effect, of the level of economic activity. That its quantity depends on expectation, the authorities, and if they like, could fully control of the interest rate for the best of their national economy.⁶⁷

The full theoretical and practical assessment of his debt management policies that enabled control of the interest rates relates his monetary theory and fiscal policies and his policies for the international arrangement of monetary systems. His theories concerned money as a means of exchange but were still classical in nature. A Treatise on Money starting his General Theory, to turn money as a store of value against all classical analysis in economic thought.⁶⁸

Keyness suggest to manage⁶⁹ the economic Monetary aspects of actual (**a**) and expected (**e**) of:

$$[O_i - F_i][1 + E_i]^{N_i}$$

Or

$$[O_a - F_a][1 + E_a]^{N_a} = [O_e - F_e][1 + E_e]^{N_e}$$

So then his work estimating the future of **N_e**, **E_e**, **O_e** and **F_e** based on the actual data by analyzing the sensitivity of other future aspect in the Monetary Economic⁷⁰ basis:

1) Relevant period for Keynesian Monetary decision validity:

$$N_e = \frac{\ln\{[O_a - F_a][1 + E_a]^{N_a} / [O_e - F_e]\}}{\ln[1 + E_e]}$$

⁶⁷ en.wikipedia.org/wiki/Keynesian_economics, Jump to **THEORY**: Prior to the publication of **KEYNES'** General **THEORY**, mainstream economic. By reducing the **INTEREST RATE** at which the central bank lends

⁶⁸ www.palgrave.com/products/Catalogue.aspx?is=1403996288, **KEYNES'S** General **THEORY**, the **RATE** of **INTEREST** and **KEYNESIAN'** Economics ...technique and infrastructure for the management of money at low **RATES** of **INTEREST**.

⁶⁹ www.bis.org/publ/bppdf/bispap65c_rh.pdf, by G Tily, positioned in a broader view of **KEYNES'S** economic **THEORY** and policy. The **RATE** of **INTEREST**, however, was not afforded a central role, as **KEYNES** recognised.

⁷⁰ www.marxists.org/reference/subject/.../keynes/general-theory/, John Maynard **KEYNES** (1936). The General **THEORY** of Employment, **INTEREST** and Money... The Classical **THEORY** of the **RATE** of **INTEREST**.

2) Expected interest valid for Keynesian Monetary decision:

$$E_e = \{[O_a - F_a][1 + E_a]^{N_a} / [O_e - F_e]\}^{(1/N_e)} - 1$$

3) Keynes *did not* speak about the T-Bills, but Government Local Debts could be computed as:

$$O_e = [O_a - F_a][1 + E_a]^{N_a} / [1 + E_e]^{N_e} + F_e$$

4) Keynes *did not* explain the Commercial Papers, but Financial Bonds must be computed as:

$$F_e = O_e - [O_a - F_a][1 + E_a]^{N_a} / [1 + E_e]^{N_e}$$

1.4.3. Classical Theory of Interest Rate (Marshall and Ricardo)

Keynes think that he had pioneering the discussion of the interest rate,⁷¹ that was not yet explained clearly by Marshall⁷² nor Edgeworth⁷³ nope Pigou⁷⁴, he thought that the only important clues to Marshall's position on the rate of interest as the price paid for the use of capital in any market, tends towards an equilibrium level such that the aggregate demand for capital in that market, at that rate of interest, is equal to the aggregate stock forthcoming there at that rate.

If the market, is so small (a town, or a single trade in a progressive country), an increased demand for capital in it will be quickly followed by increasing supply drawn from trades. If the world be its scale, or for a big country, as one market for

⁷¹ www.auburn.edu/~garrir/ho5guide.htm, CHAPTER 14: The Classical Theory of the **RATE of INTEREST** [compare and contrast]. Appendix on the **RATE of INTEREST (MARSHALL, RICARDO, et al.)** [doctrinal]

⁷² [http://en.wikipedia.org/wiki/Principles_of_Economics_\(Marshall\)](http://en.wikipedia.org/wiki/Principles_of_Economics_(Marshall)), **Principles of Economics** was a leading political economy or economics textbook of Alfred Marshall (1842–1924), first published in 1890.^[2] It ran into many editions and was the standard text for generations of economics students.

⁷³ en.wikipedia.org/wiki/Francis_Ysidro_Edgeworth, Francis Ysidro **EDGEWORTH** FBA (8 February 1845 – 13 February 1926) was an Irish Mathematician and **Economist** works in the **RATE of Births, Deaths and Marriages** (1885), "Review of Bohm-Bawerk's Capital and **INTEREST**", (1890), Find the equilibrium **INTEREST RATE** and depict the equilibrium in the. **EDGEWORTH** box. Hint: (1+r) = p1.p2

⁷⁴ http://en.wikipedia.org/wiki/Pigou_effect, The **Pigou effect** is an economics term that refers to the stimulation of output and employment caused by increasing consumption due to a rise in real balances of wealth, particularly during deflation. *Wealth* was defined by Arthur Cecil Pigou as the sum of the money supply and government bonds divided by the price level. He argued that Keynes' General theory was deficient in not specifying a link from "real balances" to current consumption and that the inclusion of such a "wealth effect" would make the economy more 'self correcting' to drops in aggregate demand than Keynes predicted. Because the effect derives from changes to the "Real Balance", this critique of Keynesianism is also called the **Real Balance effect**.

capital, the aggregate supply will not be altered quickly by changing its interest rate. Its capital mostly sourced from its labour and its possible capacity development. So the increase in the rate of interest could be an incentive, in relatively small amount, against all the other factors of its capital. Additional demand of capital will be quickly followed by the increase of supplies, much faster than the rate of interest. That will make capital withdrawing itself quickly from its lowest marginal utility. The rise in interest rate will increase the total capital availability”.

The rate of interest is applicable to old investments of capital only in a very limited sense, like a trade capital of some seven thousand millions is invested in the different trades of this country at about 3 per cent net interest. Taking the rate of net interest on the investments of new capital in each of those trades as about 1 per cent; then the aggregate net income, if capitalized at 33 years’ purchase (that is, on the basis of interest at 3 per cent), it would amount to some seven thousand million pounds.

So, it is just a simple one shot Pigou’s real Balance Effect for any invested amount

at

$$PQ = [O - F][1 + E]^N$$

For N= Number of investment period

1.4.4. Keynes’ vs Krugman’s⁷⁵ Psychological Business Liquidity

Paul Krugman is famous for his ability in international economics (including trade theory, economic geography, and international finance), liquidity traps, and currency crises. He is the 20th most widely cited economist in the world today and US most influential academic thinkers.

He writes are ranging from income distribution to international economics. Krugman's work, NTT- new trade theory is against David Ricardo and Heckscher-Ohlin model,

⁷⁵ http://en.wikipedia.org/wiki/Paul_Krugman, **Paul Robin Krugman** (born February 28, 1953) is an American economist, Professor of Economics and International Affairs at the Woodrow Wilson School of Public and International Affairs at Princeton University, Centenary Professor at the London School of Economics, and an op-ed columnist for The New York Times. In 2008, Krugman won the Nobel Memorial Prize in Economic Sciences for his contributions to New Trade Theory and New Economic Geography. According to the prize Committee, the prize was given for Krugman's work explaining the patterns of international trade and the geographic concentration of wealth, by examining the effects of economies of scale and of consumer preferences for diverse goods and services

and emphasized to be based on the comparative advantage of states of contrasting characteristics, like the high agricultural productivity trades to partner of highly industrial productivity. At the 21th century, the largest share exist between state with similar traits, which is against the comparative advantage. Krugman's concluded that user preferring choices of brands, while producers favors economies of scale.

"Home market effect" that Krugman found in New Trade Theory as the agglomeration "or outcome of the interaction of increasing returns, between trade costs and factor prices. Since trade is mostly shaped by economies of scale, then economic regions with most production will be more profitable then will therefore attract even more producers. NTT implies that production will tend to concentrate in a few areas, that are highly populated with people of high income.¹

Learning from global financial crisis of 2008, Krugman suggesting "international finance multiplier", to explain the real time speed with that global crisis impacting. He explained that some highly leveraged financial institutions (HLI), did massive cross-border investment could lose big in one market and selling their assets across the board. Those make prices lower, and putting pressure on the balance sheets of other HLIs, etc. Their effect is dangerous, because of "decoupling" in a globalized economy.

The international setting against the fiscal deficit is:

$$[1/K][G-T]=[1/Z][X-M]$$

so

$$[X-M]=[Z/K][G-T]$$

or

$$[G-T]=[K/Z][X-M]$$

then

$$Z[G-T]=K[X-M]$$

1.4.5. Keynes' vs Miller's⁷⁶ Nature of Capital

⁷⁶http://en.wikipedia.org/wiki/Merton_Miller, **Merton Howard Miller** (May 16, 1923 – June 3, 2000) was the co-author of the Modigliani–Miller theorem which proposed the irrelevance of debt-equity structure. He shared the Nobel Memorial Prize in Economic Sciences in 1990, along with Harry Markowitz and William Sharpe. Miller spent most of his academic career at the University of Chicago's Booth School of Business.

Different than Keynes', Modigliani-Miller's applied the idea on the Corporate Finance level and using the Accounting or Financial ratio for their basis of analysis on the Non Tax and Taxed environments:⁷⁷

1) Non-Tax Proposition I: Supposing that their Capital are Equal, then

$$V_U = V_L$$

at V_U = the value of an unlevered firm Is equal to V_L as the value of a levered (or geared) firm

2) Non-Tax Proposition II: A higher debt-to-equity ratio leads to a higher required return on equity, because of the higher risk involved for equity-holders in a company with debt, so

$$k_e = k_o + (D/E)(k_o - k_d)$$

at k_e = the required rate of return on equity, or cost of equity. k_o = the company unlevered cost of capital (ie assume no leverage). k_d = the required rate of return on borrowings, or cost of debt, (D) = the debt and (E) = equity. The formula is derived from the theory of weighted average cost of capital (WACC). These results might seem irrelevant (after all, none of the conditions are met in the real world), but the theorem is still taught and studied because it tells something very important. That is, capital structure matters precisely because one or more of these could be violated. It tells the determinants of optimal capital structure and how it affect optimal structure.

COMMENTS: *Mathematically, this Noble Winning formula is wrong for very cheap $k_o >>> k_d$ or extremely high $k_o <<< k_d$ Borrowing costs, especially at very large debt portion $D >>> E$ or $E=0$, the risk safety concept could be better stated as: $k_e = k_o + (D.k_d/E.k_o)$*

3) Taxed Proposition I: There are advantages for firms to be levered, since corporations can deduct interest payments. Therefore leverage

⁷⁷http://en.wikipedia.org/wiki/Modigliani%E2%80%93Miller_theorem.

lowers tax payments. Dividend payments are non-deductible, for T_c = the tax rate, (even not precise) could be valued as:

$$V_L = V_U + T_c D$$

4) Taxed Proposition II: for r_E = the required rate of return on equity, or cost of levered equity = unlevered equity + financing premium. r_0 is the company cost of equity with no leverage (unlevered cost of equity, or return on assets with $D/E=0$), applied:

$$r_E = r_0 + (D/E)(r_0 - r_D)(1 - T_c)(1 - T_c)$$

COMMENTS: Mathematically, this Noble Winning formula is wrong for very cheap $r_0 \gg r_D$ or extremely high $r_0 \ll r_D$ Borrowing costs, especially at very large debt portion $D \gg E$ or $E=0$, the risk safety concept could be better stated as: $r_E = r_0 + (D \cdot r_D / E \cdot r_0)$

1.4.6. Keynes' vs Myrdal's⁷⁸ Properties of Interest and Money

Gunnar Myrdal's publication of 1927, shows examination of the role of expectations to price formation. In his analysis for the Stockholm school. He built on Knut Wicksell's theories of Cumulative Causation of endogenous money and contributed to developed this ideas, and stressed the importance of Knightian uncertainty and Ex ante and Ex post expectations role in the economic process.

His works between 1925 and 1929, studied in Britain and Germany then later the United States in 1929-1930 shows *The Political Element in the Development of*

⁷⁸http://en.wikipedia.org/wiki/Gunnar_Myrdal, **Karl Gunnar Myrdal** (6 December 1898 – 17 May 1987) was a Swedish Nobel Laureate economist, sociologist, and politician. In 1974, he received the Nobel Memorial Prize in Economic Sciences with Friedrich Hayek for "their pioneering work in the theory of money and economic fluctuations and for their penetrating analysis of the interdependence of economic, social and institutional phenomena."^[1] He is best known in the United States for his study of race relations, which culminated in his book *An American Dilemma: The Negro Problem and Modern Democracy*. The study was influential in the 1954 landmark U.S. Supreme Court Decision *Brown v. Board of Education*.

Economic Theory. His studies continued at Europe, at the Graduate Institute of International Studies, Geneva, Switzerland.

Gunnar Myrdal in the early state fascinated by the abstract mathematical models (as the 1920s style) and helped found the Econometric Society, at London. Later, however, he accused the movement of ignoring the problem of distribution of wealth in its obsession with economic growth, of using faulty statistics and substituting Greek letters for missing data in its formulas and of flouting logic. Myrdal was an early supporter of the theses of John Maynard Keynes, although he maintained that the basic idea of adjusting national budgets to slow or speed an economy was first developed by him and articulated in his book *Monetary Economics*, (1932), four years before Keynes' *General Theory of Employment, Interest and Money*. Economist like G. L. S. Shackle claimed the significant of Myrdal's method by which saving and investment are allowed to be adjusted at later period (ex ante) one after another. Later, the reference to ex ante and ex post analysis has become very common in modern macroeconomics makes the work of Keynes without Myrdal's work now currently considered as an oddity, if not a yet mistake.

The Income (**Y**) explained could be used for **C**=Consumption and Saving (**S**), which later could also be Invested (**I**), then together they'll use to purchasing Quantity of commodities (**Q**) and the weighted average Price (**P**) and creates the **R**= Revenue to the economy;⁷⁹

$$Y = [C+S] = [C+I] = PQ = R$$

So the dual identity of interest:

If interest set first, will determine the money value, 2) If set after, adjusted by the money value.

1) Inflation: Additional Income (**Y**) with no additional Quantity (**Q**), increase the prices (**P**)

2) Harvest: Additional Quantity (**Q**), without additional Income (**Y**), lowering Prices (**P**)

⁷⁹en.wikipedia.org/wiki/National_savings, In **ECONOMICS**, a country's national savings is the sum of private and public savings. If **Y** is national income (GDP), then the three uses of **C** consumption, **I** investment at **S**=**I**(**r**). The interest rate plays the important role of creating an equilibrium.

3) Consumptive Debt: Caused by additional C= Consumption without additional Income (Y)

4) Business Debt: Caused by additional Investment (I) without additional Income (Y)

1.4.7. Keynes' vs Phelps⁸⁰ Theory of Employment

Along his life, Phelps support the **microfoundations** using the microeconomic analysis of the behavior of economic agents such as households or firms that related to macroeconomic thoughts. Most early macroeconomic models, including early Keynesian models, were based on conceptual thinking about relationships between aggregate quantities, such as aggregate output, employment, consumption, and investment. Critics said that these models never regard whether these aggregate relationships were harmonized with the principles of microeconomics. So, even though for decades later, macroeconomists try to combine microeconomic models of household and firm behavior to derive the relationships between macroeconomic variables. Today, many macroeconomic thoughts, using new theoretical points of view, are synchronized to microeconomic principles, allowing economists to test them both in macroeconomic and microeconomic settings.

Phelps studying the puzzle of the persistent high unemployment in Europe despite no let-up in inflation and published on this subject with Jean-Paul Fitoussi (the director of OFCE). Fitoussi, Jean-Paul work with Phelps in *The Slump in Europe: Open Economy Theory Reconstructed* (1988). Advance studies of Phelps not confirming the transitory phenomena, for the effect of changes in unemployment equilibrium. For years, Phelps build a theory to determine internal natural factors and rate of unemployment. The partial research recorded in his book, *Structural Slumps: The Modern Equilibrium Theory of Employment, Interest and Assets* (1984).

⁸⁰http://en.wikipedia.org/wiki/Edmund_Phelps, **Edmund Strother Phelps, Jr.** (born July 26, 1933) is an American economist and the winner of the 2006 Nobel Memorial Prize in Economic Sciences. His most seminal work inserted a microfoundation—one featuring imperfect information, incomplete knowledge and expectations about wages and prices—to support a macroeconomic theory of employment determination and price-wage dynamics. This led to his development of the natural rate of unemployment—its existence and the mechanism governing its size.

Between 1980s-1990s, Phelps created a new non-monetary thoughts of employment in which business asset values drive its natural rate. This theory, first fully set out in his book *Structural Slumps* (1994), explains Europe's slump without disinflation in the 1980s. He said that increase of the world real rate of interest, less chances to continue the technological adoption and the spreading of social wealth granted by Europe's welfare state system be the dominant causes. His papers of 2000-2001 on the theory of 'structural booms' describes America's inflationless expansion in the late 1990s impacting problems. These support the thesis that great economic turning in the West in the past century not just creating non-monetary shocks but also works significantly on its non-monetary system. His 1990s research, explains the economic inclusion. Also in his 1997's book for the general public, *Rewarding Work*, he explains the causes and cures of the joblessness and low wages among disadvantaged workers.

The money creates purchasing power and employment opportunity in the local economy as balanced Price (**P**) and Quantity (**Q**), of the country's Fiscal (**G-T**) and Monetary Settings of $[1/K]\{[G-T]+[O-F][1+E]^N\}$, and together shapes its economic volume and capacity:

$$PQ = [1/K]\{[G-T]+[O-F][1+E]^N\}$$

1.5. Global⁸¹ Money-Wages and Prices

Wages⁸² is also a Price⁸³ (**P**) of Service⁸⁴ Commodity,⁸⁵ given in exchange of the labour works, so then it has the Quantity (**Q**) which depends on the existing supply of money:

$$PQ = [1/K]\{[G-T]+[O-F][1+E]^N\}$$

And at the global arena

$$PQ = [1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

⁸¹ en.wikipedia.org/wiki/**Global**, **GLOBAL** means of or referring to a globe and may also refer to: Contents. 1 Entertainment; 2 Companies and brands; 3 Math and science; 4 Politics;

⁸² en.wikipedia.org/wiki/**Wage**, A **WAGE** is remuneration paid by an employer to an employee. It may be calculated as a fixed task based amount, or at an hourly rate, or based on an easily

⁸³ en.wikipedia.org/wiki/**Price**, In modern **ECONOMIES**, **PRICES** are generally expressed in units of some form of currency. (For commodities, they are expressed as currency per unit

⁸⁴ en.wikipedia.org/wiki/**Service** (economics), In economics, a **SERVICE** is an intangible commodity. More specifically, **SERVICES** are an intangible equivalent of economic goods.

⁸⁵ en.wikipedia.org/wiki/**Commodity**, In economics, a **COMMODITY** is the generic term for any marketable item produced to satisfy wants or needs. Economic **COMMODITIES** comprise goods and services.

For the listed abbreviation:(cf appendix, p. 424).

1) If the Total country reserve in Foreign Exchange as the Money Supply, is assumed stable at:

$$[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

2) Then on any Wages rate or Price (P) depends on the Quantity (Q) of labour available globally

$$P=[1/Z]([X-M]+[L-[A/V]\{[1+V]^U-1\}]/Q$$

3) At Global arena, even though less common, it could also possible that the Quantity (Q) of labour available, depends on the Wages rate or Price (P):

$$Q=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})/P$$

1.5.1. Keynes-Pigou's vs Diamond's⁸⁶ Money-Wagesand Unemployment

Diamond had focused more on the analysis of U.S. Social Security policy as its similar aspects in other countries, such as China. At numerous journal articles and books, he had written treatises of social welfare systems for the global setting and the American Social Security Administration for his specific purpose. He has several times suggesting policy adjustments, such as incremental but small increases in social security contributions, using mortality tables to adjust for changes in common life average and increase in the proportion of earnings that are subject to taxation.

His studies of wages, population and social welfare, put all his energies of the real sector (fiscal **G-T**) and put the money creation from monetary liquidity of authority vs private sector as less important and not giving real impact to the real individual subjects in economy.

Since his study are mostly in the single an local currency, so then it's about:

⁸⁶ http://en.wikipedia.org/wiki/Peter_Diamond, **Peter Arthur Diamond** (born April 29, 1940) is an American economist known for his analysis of U.S. Social Security policy and his work as an advisor to the Advisory Council on Social Security in the late 1980s and 1990s. He was awarded the Nobel Memorial Prize in Economic Sciences in 2010, along with Dale T. Mortensen and Christopher A. Pissarides. He is an Institute Professor at the Massachusetts Institute of Technology. On 6 June 2011 he withdrew his nomination to serve on the Federal Reserve's board of governors, citing intractable Republican opposition for 14 months, spearheaded by Senator Richard Shelby.

$$PQ = [1/K]\{[G-T] + [O-F][1+E]^N\}$$

1) The weighted average of wages rate as Price (**P**), if high increases the unemployment factor and if relatively low decreasing the unemployment, could be computed as:

$$P = [1/K]\{[G-T] + [O-F][1+E]^N\}/Q$$

2) The weighted average supply of labour as Quantity (**Q**), , if high increases the unemployment factor and if relatively low decreasing the unemployment, could be computed as:

$$Q = [1/K]\{[G-T] + [O-F][1+E]^N\}/P$$

3) The government income in the form of Tax (**T**) collected, could be computed as:

$$T = G - KPQ + [O-F][1+E]^N$$

4) The government expense in the form of Government Expenditures (**G**), could be computed as:

$$G = T + KPQ - [O-F][1+E]^N$$

Even though Diamond assumed that the monetary sector is not realistic and less relevant, the monetary component must still be understood as a whole or its individual components:

$$[O-F][1+E]^N$$

1.5.2. *Keyness' vs Roth-Shapley's⁸⁷ Employment Function*

In Roth-Shapley's theoretical illustration there are Algorithms to match the Active Initiator (illustrated as men) and Passive Approver (illustrated as women).⁸⁸ Their role and rules are different:

⁸⁷ www.bloomberg.com/.../roth-shapley-share-2012-nobel-economics-..., Alvin E. ROTH and Lloyd S. SHAPLEY shared the 2012 Nobel Prize in ECONOMIC Sciences for their work on matching supply and demand

⁸⁸ <http://marginalrevolution.com/marginalrevolution/2012/10/noble-matching.html>.

1) Man will propose to the most favourable woman, it's OK if accepted, and if rejected do the proposal to second most favourable, it's OK if accepted, and if rejected do the proposal to third most favourable, and so on, and so on until be accepted by the most favourable woman possible to accept him.

2) The case could be different for woman, Woman not permitted to propose, so she will wait for the incoming proposal to the least regretted man in her opinion, she will reject the undesired most, and she will put him on her waiting list if the man is not the undesired most, she'll wait for the proposal of other man, then she will reject the undesired most, and if the man is not the undesired most, a and she will put him on her waiting list and so on, and so on she select the most regretted man in her preference.

3) Things could be easier, if women and men are both permitted to propose actively, so then thongs are matched faster, especially if the and she will put him on her waiting listcomputer did the selection process' Algorithm.

SUGGESTED BETTER ALGORITHM:

1) Let's take 100 men and 100 women, with the best person rated as maximum satisfaction of 100% and minimum satisfaction of 1%. Even though its average satisfaction is $(100\%+1\%)/2 = 50.5\%$, its best could be $(100\%+100\%)/2 = 100\%$ and its worst possible is $(1\%+1\%)/2 = 1\%$.

2) Two sincere people will have no regret if they have the sum of 101% in the liking each other scoring system. If they are very easy going, they will finalize the case there and become permanent couple. If they are both opportunistic, they'll be very good friend each other and each member still trying to search a better partner. In doing that, they could supporting each other, waiting until the partner also find a better person, just leaving the partner quickly after find a better match, or discussing the threshold set for them before joining another person.

What had done by Roth-Shapley here is just a decision making, that could be use in many fields including the business and economy. The idea is good, so then economist must set priority and criteria in good order among

ACEFGIKLMNOPQRSTUVWXYZ for the Comprehensive Interactive Economic architecture:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

1.5.3. Keynes' vs Friedman's⁸⁹ Theory of Prices

Friedman's fights hard to the old fashioned "Keynesian" (not the New Keynesian)⁹⁰ theory, started by his 1950s explanation of the consumption function, and he became the prime intellectual opposing old Keynesian government policies. After 1960s he declare his personal opinion (against all of mainstream thoughts) against "Keynesian style and followers" then refuse its "main" suggestions. Since 1960s he suggested alternative macroeconomic policies in the "monetarism" way⁹¹. He describes the "natural" rate of unemployment, and hope that governments must try hard to make employment higher than it (e.g., by adding aggregate demand), with the risk of higher inflation. He said that the Phillips curve⁹² had changed over time and introducing the stagflation.⁹³ Though the dominance of Federal Reserve, Friedman said that, small but continuous expansion of the money supply is the best policy.

1) Inflation is simply a higher prices ($G > T$) occur when Government Expenditure (G) is greater than incoming Taxes (T), while the Quantity of commodities (Q) not becomes greater.

⁸⁹http://en.wikipedia.org/wiki/Milton_Friedman, **Milton Friedman** (July 31, 1912 – November 16, 2006) was an American economist, statistician, and author who taught at the University of Chicago for more than three decades. He was a recipient of the Nobel Memorial Prize in Economic Sciences, and is known for his research on consumption analysis, monetary history and theory, and the complexity of stabilization policy

⁹⁰ en.wikipedia.org/wiki/Keynesian_economics, **KEYNESIAN ECONOMICS** are the group of macroeconomic schools of thought based on the ideas of 20th-century economist John Maynard Keynes.

⁹¹ en.wikipedia.org/wiki/Monetarism, **MONETARISM** is a tendency in economic thought that emphasizes the role of governments in controlling the amount of money in circulation.

⁹² en.wikipedia.org/wiki/Phillips_curve, In economics, the **PHILLIPS CURVE** is a historical inverse relationship between the rate of unemployment and the rate of inflation in an economy.

⁹³ www.investopedia.com/terms/s/stagflation.asp, A condition of slow economic growth and relatively high unemployment - a time of stagnation - accompanied by a rise in prices, or inflation.

2) Stagnation occur when the economic activities or $R=Revenue$ is small, and at the same or higher Price (P), it means the Quantity of the sold commodities (Q) is not added,

3) More banking Savings (S), and Investment (I) made could add $R=Revenues$ than just $C=Consumption$, because capital goods and production commoditiesbought more.

4) So the complex Friedman's concern about Gross Domestic income (Y) regarding those many factors could be constructed as:

$$Y = [C+S] = [C+I] = R = PQ = [G-T]$$

While

- a) $Y=[C+S]$ is the Home Economics, Individual usage of money
- b) $[C+S]=[C+I]$ is the reinvested Banking Economic principle
- c) $[C+I]=R$ is the Commodities Purchased by Investors and Consumers
- d) $R=PQ$ is the Micro Economic Revenue from all Transactions
- e) $PQ=[G-T]$ explains the Money Supply, Transaction made and Inflation Possibilities

so Friedman's Stagflation is really possible

Quod Erat Demonstrandum

1.6. Field Marshall (Pershing's Class)⁹⁴ Architecture vs Suggestion of the General Theory

Keyness General Theory⁹⁵ could be fantastic in his age, like importance of three stars General George Washington posthumous later as General of the Armies (higher than

⁹⁴http://en.wikipedia.org/wiki/John_J._Pershing, Pershing is the only person to be promoted in his own lifetime to the highest rank ever held in the United States Army—General of the Armies (a retroactive Congressional edict passed in 1976 promoted George Washington to the same rank but with higher seniority). Pershing holds the first United States officer service number (O-1). He was regarded as a mentor by the generation of American generals who led the United States Army in Europe during World War II, including George C. Marshall, Dwight D. Eisenhower, Omar N. Bradley, and George S. Patton. In 1944, with the creation of the new five star rank General of the Army, Pershing was acknowledged as the highest-ranking officer of the United States military. When asked if this made Pershing a six star General, Secretary of War Henry L. Stimson commented that it did not, since Pershing never wore more than four stars but that Pershing was still to be considered senior to the present five star generals of World War II.

⁹⁵http://en.wikipedia.org/wiki/The_General_Theory_of_Employment,_Interest_and_Money, ***The General Theory of Employment, Interest and Money*** was written by the English economist John Maynard Keynes. The book, generally considered to be his magnum opus, is largely credited with creating the

five stars generals), compared to Black Jack Pershing that serves in the two World Wars, in its complexities.

SPECIAL AMERICAN CASE:

Since international trades are in US Dollars, American Economy could stated as common⁹⁶

$$Y=[C+S]=[C+I]+[G-T]+[X-M] \text{ or } S+T=C+I+G+[X-M]$$

Although forgotten by many Macro, Micro and Global Economist, the Paccioli's⁹⁷ Accounting T-account works for the many currency Economies, except the United States:

- 1) $Y=[C+S]$ in Local currency Home Economics
- 2) $Y=[C+I]$ in Local currency Banking Economics
- 3) $Y=R= PQ$ in Local currency Market
- 4) $Y=[G-T]$ in Local currency Fiscal Economics
- 5) $Y=[X-M]$ in Foreign currency Trade Economics
- 6) $Y=[1/K][G-T]$ in Local currency Multiplied Fiscal Economics
- 7) $Y=[1/Z][X-M]$ in Foreign currency Multiplied Trade Economics
- 8) $Y=[1/K][G-T]+[O-F][1+E]^N$ in Local currency Multiplied Fiscal and Monetary
- 9) $Y=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$ in Foreign currency Multiplied Int'l Trade & Debt

Mathematically there are 7 accurate possibilities of Y, so then 21 Paccioli T-accounts possible

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

1.6.1. Keynes' vs Hayek's⁹⁸ Notes on the Trade Cycle

terminology and shape of modern macroeconomics.^[1] Published in February 1936 it sought to bring about a revolution, commonly referred to as the "Keynesian Revolution", in the way economists thought – especially in relation to the proposition that a market economy tends naturally to restore itself to full employment after temporary shocks. Regarded widely as the cornerstone of Keynesian thought, the book challenged the established classical economics and introduced important concepts such as the consumption function, the multiplier, the marginal efficiency of capital, the principle of effective demand and liquidity preference.

⁹⁶ marsh.shidler.hawaii.edu/FALL2008/B313_Macro_001.ppt, $NNP = C + S + T$. C still equals consumption, but. S = saving, and. T = taxes paid (TO all governments). Y = Income = NNP or NDP. $Y = C + I + G + X - M$;

⁹⁷ en.wikipedia.org/wiki/Luca_Pacioli, Fra Luca Bartolomeo de Pacioli was an Italian mathematician, Franciscan friar, collaborator with Leonardo da Vinci, and seminal contributor to the field now known as accounting.

Keynes-Hayek debate, during 1930 Depression on reason of business failures, based on Keynes 'Treatise on Money' (1930) 'The General Theory of Employment, Interest, and Money' (1936). The debate dominated by different terminological interpretations, especially savings and investment. Hayek send 3 opinion on 'Treatise of Money' and Keynes wrote only one reply.⁹⁹

Keynes reshaped and improved his argument of his 'The General Theory', known as Keynesianism, stated that private sector decisions sometimes lead to inefficient macroeconomic then required active policy responses of public sector, (monetary policy and fiscal policy interventions to stabilize the economy. Hayek's fundamental contributions are theory of business cycles, capital, and monetary. He got the Nobel Prize in 1974, with Gunnar Myrdal, "in theory of money and economic fluctuations". He believed that price system of a free market was an efficient mechanism as a result of spontaneous order, because markets were highly organic, and any interference would distort efficient operation. Keynesian economic are more mechanistic, and could be manipulated in a machine-like fashion to behave like its plan.

Hayek also made intellectual contributions in political theory, psychology, and methodology. It is because of Hayek's criticism of the Keynesian model, his ideas remained ignored, by many economists and policy-makers. Keynes portrayed as bright economist at the top between academia, political elites, and his friends. Hayek, however, looked as a stiff, humorless, theoretical, and linguistically challenged, central European scholar, seeing that Keynes' view could caused economic slumps, and that decisive government action was needed to pull the economy back to an equilibrium state of full employment, as heresy. In contrast to Keynes, he thought that free markets, driven by people's choices tended to adjust to equilibrium if left alone, and free from government intervention:

$$PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}$$

⁹⁸www.auburn.edu/~garriro/e4hayek.htm, by RW Garrison, Friedrich August von **HAYEK** (1899-), a central figure in twentieth-century **ECONOMICS** and foremost representative of the Austrian tradition, 1974 Nobel laureate

⁹⁹www.reuters.com/subjects/keynes-hayek, Keynes vs. **HAYEK**: An **ECONOMICS** Debate. Was John Maynard Keynes correct, can government fix the mass unemployment generated by a financial slump?

Keynes and Hayek are different in government's role. Hayek's 1944 book 'The Road to Serfdom', is against socialism. His main argument was that government control of people's economic lives was a form of totalitarianism: "Economic control is not merely control of a sector of human life which can be separated from the rest.... it is the control of the means for all our ends" (1944). The book became a best seller in the USA and it established Hayek as a leading classical liberal, or 'libertarian', as he would be called today. However, the success of the book, which was serialized in 'Reader's Digest', typecast Hayek as a free market ideologue, detracting attention away from his scientific contribution in economics.

Both Keynes and Hayek are true if the requirement complied with. If the market is efficient and free with all factors adjusted, government fiscal and monetary could impacting best if planned and done properly, but it would be a disaster if the market is inefficient.

1.6.2. Keynes' vs Petty's¹⁰⁰ Mercantile, Usury, Money & Under-consumption

In Mercantilism, government control of foreign trade is of very essential to assure the military strengths of the country. Specifically, it required a positive balance of trade. Mercantilism dominated Western European economic from the 16th to late-18th centuries. Mercantilism also causing some European conflicts of colonial expansion motives. Mercantilist theory spread among many writers to other and people of different era. Preference for power needs the mercantilist background as the reason.

Trade tariffs, on traded goods, already be global principle of mercantilist regime. Their policies are also applied in:

- Spreading a network of colonies abroad;
- Instructing colonies for not trading with other governments;
- Dominates markets with prioritized harbours;
- Forbiding export of gold and silver, even for the trade payments;
- Prohibiting trade to be carried in foreign ships;

¹⁰⁰en.wikipedia.org/wiki/Mercantilism, William **PETTY**, a strong **MERCANTILIST**, is generally credited with being the first to use empirical analysis to study the economy. Smith rejected this,

- Dumping (export subsidy);
- Support manufacturing (R&D or Financial subsidies);
- Regulating wages;
- Optimizing the use of domestic resources;
- Limiting domestic consumption with non-tariff barriers to trade.

It is just a bullionism, with circulation of money and rejected hoarding. Their interest on monetary metals value protection, restrict the money supply, against any fiat money and floating exchange rates. Their emphasis on metal values backed up by industrial policy, adding by ability to make wars to increase prosperity. Latest neomercantilist theory recommends selective high tariffs for starting strategic industries or to promote country's trading specialization. Now, the mercantilist methods for maintaining high wages in advanced economies be favourable between workers in those economies, but such ideas are rejected by most policymakers and producers.

Empirical studies of serial reciprocal linear regression had been popular in Econometric, before the computer era and could explain some phenomena, but with the higher computer ability, people are more interested on the causal relations than the linear regression itself.

In addition, like the SEDAM-SEOUL school of thoughts here, people find that the real life consist of many separate disciplines that should be analyzed altogether, after the simplified individual models and formula understood. It is good in the past, but must be advances for better future.

1.6.3. Social Philosophy¹⁰¹ of Field Marshall Architecture vs General Theory

The big mistake of the economic society in Keynes General Theory are 1)Failure to set full employment and 2)Could not distribution of wealth and incomes. It was absolutely true in his era of 100 countries with less complexities compared to our 400 countries era with excellent information and telecommunication, that capital could cross our globe just in seconds.

So then in our Field Marshall Theory's era, the weaknesses are: 1)Failure to understand the closest most interactive constellations among economic factors

¹⁰¹<http://www.marxists.org/reference/subject/economics/keynes/general-theory/ch24.htm>,

accurately, so then we could give two thumbs up for the SEDAM-SEOUL's FACTS intention on Interdisciplinary Business and Economic Research, the problem concern is already half (50%) of the solution. 2) Could not manage affordable Price (**P**) of basic commodities at ample Quantity (**Q**).

After understanding the food, home, health, education and security's structure:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

It is not income (**Y**) from employment, nor the Local Expected Interest (**E**), the authority must concern to ensure affordable Price (**P**) of basic commodities at ample Quantity (**Q**). But it is still

Manageable money supply in easier Local currency

$$[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

And optimization of Foreign Currency gains

$$[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

1) Affordable Price (**P**) of basic commodities could be subsidized by charging unnecessary or luxury commodities higher tax of 100% and above its original cost, and high penalties for transferring subsidized commodities abroad. Authorities could do that aside from the local currency management above.

2) Authority could also developing the government basic commodity productions and stocks until higher than the critical Quantity (**Q**) needed. Government planting the local food at mandatory quantity, and absorb as many Employment by Government Expenditures (**G**) and strong Tax (**T**) collection system. If (**G=T**), then authority had ample Free Food to provide.

3) We must limit the bottom line of the poorest people suffering, but let the wealthy people enjoy their wealth legally at no limit, as long as they pay the Taxes (**T**) as proper. Please let as many wealthy foreigners naturalized, intermarriage if not let the foreign exchange gone.

4) Give only English, Mathematics and Economic in the formal school, and let other subject learned voluntarily with quality tests (like TOEFL, GMAT, GRE), if they want to know others.¹⁰²

2. Contribution of the Findings for Doing Business in Current Global Economy

1) Based on the plenty economic consideration above, the Field Marshall Architecture:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

2) Be the longest with most comprehensive interactive factors interrelated each other. It is already the optimum since the more complex architecture will be very hard to be applied, while less interactive models and formulas could not exactly telling the impact of one item to others.

3) It consist of 7 (seven) important economic sectors, so then could be broken down to 21 (twenty one) Paccioli's T-account equilibrium models of paired two sectors, for common businesses.

4) Its long insights altogether like stated above will only be important to the governing authorities and Multi National Corporations (MNCs) that must work in Global arena.

5) The long mathematical proposition does not have to be remembered, just make them available and read as many as possible in all economic books (textbook and reports), statements, documents, website, advertisement, former school cover books, children toys etc, to make all people aware about this inter disciplinary facts, as many as possible (just aware).

6) Like the original intension of SEDAM-SEOUL's and /or FACTS, we're starting and motivating many intensive economic discussions in the internet, seminars and

¹⁰²en.wikipedia.org/wiki/Education_in_India, EDUCATION in INDIA is provided by the public sector as well as the private sector, with control and funding coming from three levels: central, state, and local.

universities to increase public controls upon governmental authorities and large multi national corporations.

7) This might not be the sharpest interdisciplinary economic works, but surely could be the most influential if distributed to global observer both within and outside all the economic scholars.

8) Like in the universities: World-wide parliaments, higher government officers and corporate supervisors and even court judges, will start using this architecture to examine any economic decisions made (especially the major ones with mass public impacts). It makes a better world!

9) Reporters of all the news will be very happy to ask this very simple question, and let the responsible person be difficult facing the wide public accountability like You Tube, etc.

10) Both Fiscal and Monetary decisions will be more conservative since all the economic factors will be easily ask by public and must be defended in both financial and ethical spectrums.

11) Big company bankruptcy will be less, since they now have a better economic roadmap far before they make risky decision because more parameters already given as measures up front.

12) Poor people will be less suffer since ample Quantity of essential commodities (**Q**) are provided at affordable Prices (**P**) and Unemployment will be less because of the starting 400 countries government food plantation program world wide for self support food resilience.

13) Wealthy people will be happier since all the world's fiat money will be better managed in stricter public control, both in its Fiscal, Monetary and International exchanges.

2.1. Introduction to Interactive & Comprehensive Global Economic Architecture

- 1) Principle Centered Leadership as idea could now really lead our world as short as:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$
- 2) But it contains almost every economic thoughts in interdisciplinary approach for 400 (four) hundred years, at least in global Macroeconomic, Microeconomic, and Accounting.
- 3) Yes, it is a trick to millions of useful words of deep thoughts in just a stated line. It short and easy to be widely copied and asked, but extremely to be explained for accountability.
- 4) Sure, the “Top-Down” approach is very useful and relatively easy to all users, but it comes from bottom up theories, formulas, models to be constructed as a monumental architecture.
- 5) Time saving is just for economic user, and not for the producer (just like the aeroplane “risky” passengers asking the responsibility of the aircraft industries). It’s quickly hit the Bull’s eye.
- 6) Yes, it is like reading the novel from its last pages to know its endings then start reading its first pages to understand the problematic situation. It could be continued by reading its middle pages quickly, or even carefully, but not as necessary as the last pages and its front ones.
- 7) Practical and “easy to bear” ideas, is like the military ration: The more its targeted user, the more simple, compact and “easy to bring” it must be.
- 8) How about its accuracy? If measured by the fairer criteria: An economic architecture that is calibrated from seven direction, must be better than just single or dual direction ones.

9) How about its difficult concepts? We do not have to understand all the high gain question: It is just giving better ability to ask the right questions to experts, and then evaluating the answers.

10) So, please forget its mathematics and let the experts answering them, as long as they do not change the essential part of that constellation, so then all answers be evaluated properly.

11) How to evaluate the expert answers? Please come to them with as many as possible audience then together evaluate carefully, whether the answer following the common senses.

12) Is it a dangerous question for people asking that? Yes, the last time they did this, many people asking to the authorities, and people behind those questions (Socrates) punished to die.

13) How could we face the smart and sincere people that not yet agree with this concept? Please tell them that our common foes are the poverty and injustice. This concept is extremely useful and very easy to ask. This will not claiming for absolute truth, but aiming the optimum benefit.

14) Could this concept be improved? Yes, for its economic advancement, but that could takes longer statement that less practical in its benefit. No, for its optimum benefit, longer than it will be harder tu use, and shorter than it could be less comprehensive for the economic rules.

2.1.1. Paccioli's Field Marshall Architecture vs Keynes' General Theory

1) For hundred of years, the Accounting Principles dab been disregarded by both macro and Micro economists. Its T-account "Balance" seen as "to narrow" and "not relevant" because of different graphical expressions the three has used.¹⁰³

¹⁰³ www.accountingcoach.com/online-accounting-course/07Xpg02.html, **ACCOUNTANTS** and bookkeepers often use **T-ACCOUNTS** as a visual aid for seeing the effect of the **DEBIT** and **CREDIT** on the two (or more) accounts.

2) If both of the use Algebra like described above in this paper, the terminology is no longer “Balance” but “Equation” or “Equilibrium” things could be understood better by all the three.

3) Both in words definition and in practical cases, makes Macroeconomic and Microeconomic “less accountable”, “Speculative” and hard to be audited as proper: So they become disaster. Not just “uncountable” but also definitely “unaccountable”.¹⁰⁴

4) Sure, that the ideas of “Dual Entries” had no explicit benefit for Macroeconomics neither for the Microeconomics, but the idea of “Balance” and “Accountable” bring real benefits to them.

5) Although Accounting in the sense of “Historical Recording” less relevant there, its “Audited”, “Classified”, “Simplified” are useful besides its “Planning” and “Analysis” computations.¹⁰⁵

6) Even though widely adopted, the T-account was not his single method of Accounting. In 1494, his first published book, *Summa de arithmetica, geometria, proportioni et proportionalità*, he proposed more common Algebra than the T-account’s debit/credit. In 1497, he accepted a job from Duke Ludovico Sforza of Milan. There he met, collaborated with, lived with, and taught mathematics to Leonardo da Vinci, legendary they designed the helicopter.¹⁰⁶

¹⁰⁴ en.wikipedia.org/wiki/**Accountability**, In ethics and governance, **ACCOUNTABILITY** is answerability, blameworthiness, liability, and the expectation of account-giving. As an aspect of governance,

¹⁰⁵ www.investopedia.com/terms/a/account-analysis.asp, In cost **ACCOUNTING**, this is a way for an accountant to **ANALYZE** and measure the cost behavior of a firm. The process involves examining cost drivers

¹⁰⁶ en.wikipedia.org/wiki/**Luca Pacioli**, Frater **LUCA** Bartolomes **PACIOLI** was born about 1445 at Borgo San Sepulcro in Tuscany. He was a "Renaissance man" in the true sense of the expression,

7) So it is funny that many accountants did not trained as he expected, and less mathematician like Macroeconomist and Microeconomist said that Accounting is not relevant to them.¹⁰⁷

8) Also the different of currencies which is very important in Accounting principles, not enough be differentiated in major Macroeconomic and Microeconomic, so the exchange risk occurs.¹⁰⁸

9) The Absent of conceptual relatedness for inter currency cases, makes perfect information and insider trading cheating over the Foreign Exchange and International Stock Exchange, especially for more than two countries global player with better communication technologies.

2.1.2. Postulates of the Keynesian vs Smith's¹⁰⁹ Classical Economics

Keyness set his focus to Employment, Interest and Money, so then the conflicting classical economic postulates are just 3 (three), in his mind.

1) Classical, said that natural employment opportunity will always absorb Labour forces, until its Marginal Cost equal to its Marginal Revenue, while Keyness thinks that Labour forces are not always available, even though the opportunities still could absorb them.

2) Classical, said that natural wages will could be increasing, until its Marginal Wages equal to its Marginal Productivity, while Keyness think that if the market is imperfect, it could be pushed higher than their productivity.

¹⁰⁷ books.google.com/books?isbn=0765611414, Thomas R. Michl, 2002 - Business & Economics, **MACROECONOMIC** theory focuses on the determinants of the level of economic activity. National income **ACCOUNTING** concerns the measurement of economic

¹⁰⁸ en.wikipedia.org/wiki/Foreign_exchange_risk, Foreign **EXCHANGE RISK** (also known as exchange rate risk or currency risk) is a financial risk posed by an exposure to unanticipated changes in the exchange

¹⁰⁹ www.adamsmith.org/adam-smith, **ADAM SMITH** (1723-1790) was a Scottish philosopher and **ECONOMIST** who is best known as the author of An Inquiry into the Nature and Causes of the Wealth Of Nations.

3) Classical, said that natural Employment Marginal utility would be equal to the Marginal Disutility of being Unemployed, while Keyness think that if the market is imperfect, it could be nicer be Unemployed, rather than accepting lower wages they expect.

DISCUSSION:

1) In perfect market of unlimited Labour available, the company could set its quantity of employee determine their relative rewards and also their relative productivity. Resources availability then be questioned, like the employable population, the extent of natural wealth and the accumulated capital equipment, has often been treated descriptively. Theory of actual employment in the available resources has seldom occur. Fluctuations employment, also missed in the fundamental theory behind it.

So then: Do practices like the classical economic optimum Labour efficiency by hiring more employee until the Marginal Productivity be equal to the Marginal Labour Cost, both in normal or over Labour situation, but do as optimum as possible if exist scarcity of labour.

2) The classical theory of employment said that the wage is equal to the marginal product of labour, so the wage of an employed person, is equal to the value which would be lost if employment were to be reduced by one unit. The equilibrium could be adjusted, if competition and markets are imperfect or changes.

Opinion: Here the Keynes critics are to much since in Classical economic, changes in Supply or Demand curve will be shifted to the new Equilibrium.

3) Real Wage of an Employed person is equal to the Disutility of being Unemployed. Keynes said that it is to conceptual and very ideal that in real life would never be equal.

Opinion: Here the Keynes critics are valid since being Unemployed in some culture would not considered as a good alternative for the family bread winner.

2.1.3. Keynesian vs Kotler's¹¹⁰ Effective Demand

Demand for Employees (aggregate) according to Keynes is less complicated than Kotler's concept. As the S.C. Johnson & Son Distinguished Professor of International Marketing at the Northwestern University Kellogg Graduate School of Management in Chicago, he is hailed by Management Centre Europe as "the world's foremost expert on the strategic practice of marketing." He participates in KMG client projects and has consulted to many major U.S. and foreign companies - including IBM, Michelin, Bank of America, Merck, General Electric, Honeywell, and Motorola - in the areas of marketing strategy and planning, marketing organization, and international marketing.

If the organization is attractive, people interested to be employed at any standard wages given:

- 1) The Catholic Church or Buddhist Monastery asking for Life Dedication and give No wages
- 2) The Armed Forces asking for LifeCommitment of their member, for the standard wages
- 3) Musical workers are interested to perform on public stage even for low wages rate
- 4) Manchester United attracting many world class soccer player at any wages level
- 5) Citicorp attracting thousand of world smartest employee ever at relatively low wages
- 6) World's top-5 Accounting Firms could attract high class employee at relatively low wages

Reputable Organization searching Employees that could be happy with the organizational identity, so only standard or sub standard organization using wages to attract their employees. So then some law firms even charging the associate fee and not paying wages to their employee.

In modern world, young people join the organization for peers brotherhood and future networks and identity. They will work very hard at very low wages.

¹¹⁰<https://twitter.com/KOTLERMARKETING>, PHILIP KOTLER. @KOTLERMARKETING. The author of Marketing Management: Analysis, Planning, Implementation and Control, the most widely used marketing

After they got ample experience, they'll join other organization at very competitive wages, as expert and reliable skilled workers.

It is surprising, that competitive wages not only demanded by the most qualified employees, but also demanded by low class unskilled employee that have no hope to join other organization later. So that their only bullet they have and they fight very has to earn the best of it.

Against to the aggregate demand ideas of Classical and Keynesian economists, Kotler suggest the organization to have excellent public image that employees waiting hard to be hired.

In modern world, employee is not a main aggregate demand. Aerospace, Poisoned Chemistry, Steel Cooking, Computer Chips, Satellites and Automotives prefer Robots than human employees, because they could not bargaining the wages, less strikes or riots, much more precision and could working in extreme Poisoned or Steel Melting Heat conditions.

Keynesian Employment then be less important compared to Interest and Money matters in the current business in the global economies that never yet thought in the last decades.

2.2. New Definitions and Ideas on Interest, Employment and Money

From the whole *Field Marshall's*¹¹¹ Architecture of:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

*General*¹¹² Keynes choose to be in charge at the squad of Employment (**PQ**) which depends on the availability of local money and its interest $[1/K]\{[G-T]+[O-F][1+E]^N\}$, on his area of:

$$PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}$$

¹¹¹[http://en.wikipedia.org/wiki/Field_marshal_\(United_Kingdom\)](http://en.wikipedia.org/wiki/Field_marshal_(United_Kingdom)), **Field marshal** is the highest military rank of the British Army. It is considered a five-star rank, immediately above the rank of *General*, and is the army equivalent of an *Admiral of the Fleet* and a *Marshal of the Royal Air Force*.

¹¹²en.wikipedia.org/wiki/General_officer, A **GENERAL** officer is an officer of high military rank, usually in the army, and in some nations, the air force. It is also given to master chiefs in Task Force.

Rather than just wordings of difficult works, Keynesian works will be better understood as precise exact mathematical constellation that could be explain by words later:

1) Wages determined as Employment Price (**P**):

$$P = [1/K] \{ [G-T] + [O-F][1+E]^N \} / Q$$

2) Job availability determined as Employment Quantity (**Q**):

$$Q = [1/K] \{ [G-T] + [O-F][1+E]^N \} / P$$

3) Then the interest created by the *Monetary*¹¹³ economy is:

$$[1/K] \{ [O-F][1+E]^N - [O-F] \}$$

4) Since the physical money comes from *Fiscal*¹¹⁴ (**G-T**) and Monetary (**O-F**):

$$[G-T] + [O-F][1+E]^N - [O-F]$$

5) What General Keynes did not see in his era is the *multiplication*¹¹⁵ of *fiat*¹¹⁶ money:

$$[1/K] \{ [G-T] + [O-F][1+E]^N \}$$

6) Since the Kind of reserve required (**K**), then its multiplier effect¹¹⁷ of money is $[1/K]$, like employed by Fisher's mathematical economy.¹¹⁸

2.2.1. Keynesian vs Porter's¹¹⁹ Choice of Units

¹¹³www.investopedia.com/terms/m/monetarypolicy.asp, The actions of a central bank, currency board or other regulatory committee that determine the size and rate of growth of the money supply, which in turn affects

¹¹⁴en.wikipedia.org/wiki/Fiscal_policy, In economics and political science, **FISCAL** policy is the use of government revenue collection (taxation) and expenditure (spending) to influence the economy.

¹¹⁵en.wikipedia.org/wiki/Money_multiplier, The **MONEY MULTIPLIER**, *m*, is the inverse of the reserve requirement, *RR*: $m = \frac{1}{RR}$. This **FORMULA** stems from the fact that the sum of fiat money divided by its fractional reserve

¹¹⁶www.investopedia.com/terms/f/fiatmoney.asp, **CURRENCY** that a government has declared to be legal tender, despite the fact that it has no intrinsic value and is not backed by reserves. ¹¹⁶ moneyterms.co.uk/money-multiplier/, As you might infer from the above, the **multiplier** is the reciprocal of the **reserve** requirement. If the **reserve** requirement was (a very high) 20% the **multiplier is 5**

¹¹⁶ www.econlib.org/library/Enc/bios/Fisher.html, Irving **FISHER** was one of America's greatest mathematical economists and one of the clearest economics writers of all time. He use mathematics to solve daily problems.

Porter's strategy to be competitive is for a company competing in a specific business (that its total strategy of many business area firms said as the *corporate strategy*). Strategy to win the competition is concentrated on how a firm could get an advantage among other competitors through a different or unthinkable way of attracting the buyers and repeated customers.

Michael Porter suggest his thoughts in 1985, proposing that country and firms must employ strategy that create highest-quality commodities to be sold at the top affluent market. He pointing vary sharp that capacity growth must be the main concern of every country strategy. Advantage among others, could not only depends on low paid employees or wealth of its natural resources, but on superior economic thinking. His other suggestion on comparative advantage, will lead nations that only exporting primary commodities and unrenewable resources will keep the nation in low-paid labours and loosing international trading. His proposal for relentless effort to maximized economies of scale for unique commodities to be sold on premium prices.

Advantage in competition exist if the firm adopt or nurture a behaviour or habits that allows it to be better than its competitors. These traits could be access to natural resources, such as high grade precious ores or inexpensive energies, or plenty of highly trained and skilled personnel. Sophisticated technologies like robotics or information technology could be together becomes part of the product, or to make the total of it. Information and communication has become such an essential part of the global business that could also contribute to winning the competition by fighting against competitors in the internet business communication. Since the start of Adam Smith's Wealth of Nations, the main difficulties is transferring the information, which give chances to mediators at almost every market, since information is significant to advancing against all the competitors. Now the internet as reducing mediators, acting as channel of information and public relation to the end user. So then firm could get a lead on competition by composing creative website, without any mediators to build relations with its end users.

Porter's competitiveness is just simply:

$$P^+Q^+ > P_0Q_0$$

¹¹⁹www.hbs.edu/faculty/Pages/profile.aspx?facId=6532, **MICHAEL E. PORTER** is a leading authority on competitive strategy, the competitiveness and economic development of nations, states, and regions,

That Corporations, firms, or individuals must concentrate on their competitive advantage so then could sell quality commodities at Premium price (P^+) higher than ordinary Price (P_0), so then that even though the Quantity of quality commodities (Q^+) could be lower than Quantity of ordinary one (Q_0). So then even though ($Q^+ < Q_0$), but because of ($P^+ \gg P_0$), then the total output of quality revenue (P^+Q^+) is greater than ordinary Revenue (P_0Q_0).

2.2.2. Keynesian vs Allais'¹²⁰ Output and Employment

Allais contributions to decision theory, monetary policy are more mathematics because of his Physical Engineering Mathematics background, in significantly different approach but could enrich the Keynesian thoughts. In his famous book, *Économie et Intérêt* (1947), he stated the lagged regression which later known as overlapping generations model (popularized by Paul Samuelson in 1958), and mass employment possibilities which later known as golden rule of optimal growth (popularized by Edmund Phelps) or optimal cash management (later known as William Baumol's cash model). He found many things in in Behavioral economics, which later attributed to Daniel Kahneman and Amos Tversky.

His Allais paradox, a decision problem he first presented in 1953 almost similar like Porter's expected utility hypothesis of multiplying reward and chances. So then 50% chances to get \$50 reward is better than 15% chances of getting \$100 prize or 90% chances of gaining \$20.

In 1992, Maurice Allais criticized the Maastricht Treaty for too much supporting the free trade. He also against the single European currency. In 2005, he expressed similar reservations about unifying European constitution. During the 1940s, Allais did research on choosing under uncertainty and developed his own cardinal utility. All his works he committed to be published in French so then be less known to the rest of the world, compared to later thinkers like von Neumann and Morgenstern whose Theory of Games and Economic Behavior using the development of expected utility theory, for employment.

¹²⁰en.wikipedia.org/wiki/Maurice_Allais, Maurice Félix Charles Allais (31 May 1911 – 9 October 2010) (31 May 1911 – 9 October 2010) was a French economist, and was the 1988 winner of the Nobel Memorial Prize in Economics "for his pioneering contributions to the theory of markets and efficient utilization of resources."

His opinion to the fiat money he said different than Keynes: "In essence, the present creation of money, out of nothing by the banking system, is similar – I do not hesitate to say it in order to make people clearly realize what is at stake here – to the creation of money by counterfeiters, so rightly condemned by law."

Since his work and Keynesians are on local currency, then:

$$PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}$$

1) It could be stronger if at ($G < T$) fiscal since it is easier to make ($O < F$) monetary, regardless of any Price (P) and any Quantity (Q) exist.

2) On the real sector, it could be stronger output of quality revenue (P^+Q^+) is greater than ordinary Revenue (P_0Q_0), regardless any $[1/K]\{[G-T]+[O-F][1+E]^N\}$ local money exist.

3) like the Keynesian, he also miss the money multiplier $[1/K]$ impact, for the set Kind of reserve required (K) that its danger he already warn the public.

2.2.3. Keynesian vs Schumacher's¹²¹ Income, Saving and Investment

Schumacher's Small Is Beautiful makes people counted in economy, it is a series of essays by British economist E. F. Schumacher. The phrase "Small Is Beautiful" came from his mentor Leopold Kohr. To be surviving in small scale, applied technologies used intensively to support people, it is on the opposite to economies of scale's "bigger is better".

Schumacher be a highly respected economist who had been a member in the team of John Maynard Keynes and John Kenneth Galbraith, and for two decades becomes Chief Economic Advisor to the British National Coal Board. He make a contrast to the majority of neo-classical economics, thinker by stating that unified concentration on output and technology will value human less. He told that one's workplace must

¹²¹en.wikipedia.org/wiki/E._F._Schumacher, Ernst Friedrich "Fritz" Schumacher was an internationally influential economic thinker, statistician and economist in Britain, serving as Chief Economic Advisor to the UK National Coal Board for two decades.

be loved and people love it, although efficient in nature, and that proper constellation is very precious.

He suggest a brilliant thoughts of "smallness within bigness": as a kind of decentralization. Too large organization is hard to work effectively, so it must act like a supporting group of small teams. It is then adopted in the general Electric. Schumacher's support the increasing of environmental concerns and with the birth of ecological work space and he became a warrior of the green economics movement.

His book consist of four parts: 1)"Modern World," 2)"Resources," 3)"Job," and "Institutional Ownership." In Chapter-1, "Problem of Production", he worries that the modern economy could not be sustainable. Unrenewable resources (like gas, fuels and minerals), must be considered as very costly income, even though it could be treated as capital, since they are forever gone, and must be quickly replaced. He also concern about natural degradation like pollution to be limited and managed strictly. He suggest that government must try hard to do sustainable growth. If improvements are just small, like transfer of technology to Underdeveloped nations, could not overcome their real problem of economic discontinuity.

His philosophy on "satisfaction," considering both human wants, restrictions and proper use of technology. His study could be seen as village-based economy, like the "Buddhist economics," world wide. He blame the conventional economic theories as miss to place the most comfortable size of activity. He strongly against "all growth is good," and "bigger is better," school; of thought, and criticize adoption of mass production in third world states. He then telling to do "economy by the masses." He also against the gross national product as parameter of wealth, and stressing that "maximum well being with minimum consumption" is the best regarding the complex constellation of:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M)+L-[A/V]\{[1+V]^U-1\})$$

2.2.4. Appendix on Keynesian vs Sen's¹²² User Cost

¹²² http://en.wikipedia.org/wiki/Amartya_Sen, **martya Sen**, CH (born 3 November 1933) is an Indian Bengali economist who was awarded the 1998 Nobel Memorial Prize in Economic Sciences for his contributions to welfare economics and social choice theory, and for his interest in the problems of society's poorest members. Sen is best known for his work on the causes of famine, which led to the

Against the Keynesian theories of Employment, Interest and Money, Sen's papers shown empirical evidence of social option, like the work of Kenneth Arrow. Like in the RAND Corporation, which all votes, even for less than half (50%) participation is sacred under the democratic norm. Sen's contribution strongly supported by past economic thoughts

Sen published *Poverty and Famines: An Essay on Entitlement and Deprivation* (1981), a book shows that famine exist not because lack of food, but from bad food distribution. The Bengal famine caused by raising of food prices, so then millions rural workers to starve to death since their wages are too small to buy food. Critics said that food inavailability at Bengal Famine also make the War Cabinet refuse aid to Bengal, since lack of food, is not the famine's cause.

Sen's personally experience the famine. He is in the Bengal famine of 1943, when three million died unnecessarily. Data show adequate food exist in Bengal, but rural landless labourers and urban service providers did not have the enough money to buy food on its high price. British military acquisition, make people panic and hiding some food. In his *Poverty and Famines*, he found that in most cases of famine, food supplies did not reduced. In Bengal, the food production, was higher than in previous non-famine years. Then, Sen shows some social and economic factors, (declining wages, unemployment, rising food prices, and poor distribution). The starvation is only for some groups in society.

He focused on positive person's actual ability to do. In Bengal famine, rural laborers' starved because they were not positively free to do anything, they did not have the capability to escape morbidity. In addition to his famine studies, he suggest the development economics to make Human Development Report, supervised by the United Nations Development Programme. This ranks countries' economic and social indicators, owes much to Sen social theory of poverty. His introduce the concept of 'capability' that governments measured by concrete capabilities of their citizens. Top-down development will always unhuman with doubted terms. To Sen, this concept is fairly empty. In order for citizens to have a capacity, they first must have education, and transportation to the workplace. Only when such barriers

development of practical solutions for preventing or limiting the effects of real or perceived shortages of food.

are removed can the citizen truly be said to act out of personal choice. It is up to the individual society to make the list of minimum capabilities guaranteed by that society.

His welfare economics seeks to evaluate economic policies in terms of their effects on the well-being of the community *Collective Choice and Social Welfare* (1970), almost similar to:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}$$

2.2.5. Keynesian vs Yunus¹²³ Saving & Investment Consideration

As a professor of economics he developed and then work with the concepts of microfinance. Loans given to real businesses, that are not qualify for traditional bank. He is the *Banker to the Poor*. On 2011, the Bangladesh government fired Yunus from his position at Grameen Bank, citing legal violations and an age limit on his position. Bangladesh's High Court affirmed his removal that was politically motivated. Professor Yunus chosen by Wharton as one of 'The 25 Most Influential Business Persons of the Past 25 Years'.

In 1976, at poorest village of Jobra near Chittagong University, Yunus discovered that very small loans could make big difference to a poor person. Jobra's bamboo furniture industry take heavy usurious loans. His first loan, consisting of US\$27.00 from his own pocket, was made to 42 women in the village, who made a net profit of BDT 0.50 (US\$0.02) each on the loan. Accumulated through many loans, this vastly improving Bangladesh's ability to export.

Yunus, then creates institution to lend to those who had nothing. He shows that if given the chance the poor will repay the borrowed money. He finally succeeded in securing a loan from the government Janata Bank to lend it to the poor in Jobra. By 1982, the bank had 28,000 members, then on 1 October 1983 renamed the Grameen Bank (*Village Bank*) to make loans to poor Bangladeshis. He faced violent radical leftists to the conservative clergy. At July 2007, Grameen Bank lends US\$ 6.38 billion to 7.4 million debtors. The bank uses a "solidarity groups", apply together

¹²³en.wikipedia.org/wiki/Muhammad_Yunus, In a **SPEECH** given at University of California, Berkeley in 2002, President Clinton described Dr. **YUNUS** as "a man who long ago should have won the **NOBEL Prize**"

for loans and act as co-guarantors of repayment and support one another's efforts at economic self-advancement.

He improve unutilized or underutilized fishing ponds, as well as irrigation pumps like deep tubewells of Grameen Motsho (Fisheries Foundation) and Krishi (Grameen Agriculture Foundation). Grameen grown into a multi-faceted group of profitable and non-profit ventures, including major projects like Grameen Trust and Grameen Fund, Grameen Software Limited, Grameen CyberNet Limited, and Grameen Knitwear Limited, Grameen Telecom, which has a stake in Grameenphone (GP). The Village Phone (Polli Phone) project of GP has brought cell-phone for 260,000 rural poor in over 50,000 villages. Grameen model of microfinancing has inspired similar efforts in a hundred countries, including the United States.

Many of them lending specifically to women, who suffer disproportionately from poverty and who are more likely than men to devote their earnings to their families. Yunus demonstrated how can empower poor women to overcome their poverty. Yunus' said that the poor are like a "bonsai tree," and they can do big things if they get access, that gives assistance while empower them to become self-sufficient in the difficult economic constellation:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

2.3. *Modern Propensity to Consume*¹²⁴

Tendension or propensity to consume depends on habits and culture of the person. Same person with the same budget will consume differently when living in different country, and different ethnic group of the similar budget in the same country will consume differently.

- 1) Careful person will buy the basic needs and insurances before do the saving.
- 2) Moderate person will buy the basic needs, and do the saving before buying the insurance

¹²⁴www.britannica.com/EBchecked/topic/.../propensity-to-consume, In economics, the proportion of total income or of an increase in income that consumers tend to spend on goods and services rather than to save.

- 3) Risk takers, will buy basic needs, insurances, savings and investing the disposable income
- 4) People which have retirement and pension loans behave differently than who did not
- 5) Western urban people eat foods with good nutrients and renting the apartments
- 6) Eastern rural people will eat minimum food, practicing Tai Chi martial arts and peace of mind
- 7) Eastern urban people, buy downtown apartments, work hard and prefer to eat discount food
- 8) Lethal disease like SARS, Avian Influenza, and H1N1 could not work in poor countries
- 9) Asian men are busy buying the Viagra, while their African friend be busy with White ladies

Indonesian armed forces are dominated by Siliwangi troops (on more than 95% of its wars). Although they are just 20% of the population, the handsome people of traditional tribes, who prefer to eat raw leaves and raw unboiled waters along their lives, in traditional dietary Pencak Silat martial arts vegetarian. They are the Phantom of the Jungle, silent killer in the dark, and make no fire, except their guns (very rarely) shot. Myths said that half of them (50%) are committed to bullet proof shamanic martial arts rituals. They are less brave than average soldier in the world, but they always come back with very high surviving soldiers from wars. Even the legendary Ghurkas, get problems to fight them in jungle's dark night. The world history said that on 400BC-1400AD, no naval fleet could beat them between the Pacific and Indian oceans.

Back to the economic constellation, the propensity to consume depends on its income (Y), prices (P), Quantity available (Q) and local money matters $[1/K]\{[G-T]+[O-F][1+E]^N\}$, except for commodities priced in Foreign currency it has $[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$, for the total interactive constellation:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

How could be the marginal propensity to consume?

Three possibilities of the total money changes identified

- 1) For a unit increase of Y , additional $Q=[Y/P]$
- 2) For a unit increase of the Local currency, additional $Q=[1/K]\{[G-T]+[O-F][1+E]^N\}/P$
- 3) For a unit increase of the Foreign currency,
 additional $Q= [1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})/P$
- 4) For smaller item please see Part 3. The New 21 Sensitivity Impact of Factor Changes, p.67

2.3.1. Keynes' vs Deaton's¹²⁵ Objective Propensity to Consume

Deaton's work could enrich the Keynesian by his research of widely known was the Almost Ideal Demand System, which he developed with John Muellbauer. In his proposed Almost Ideal Demand System, he represents an elegant treatment of consumer demand. It provides a priority order approximation to any demand system, one which meet the assumption of choice while avoiding unnecessary characteristic of other models. On 1978, he became the first winner of the Frisch Medal, a prestigious award in Econometric Society once in two years to an implementative paper works for the past 5 years in Econometrica. He also be a Local Fellow of the Econometric Society, a Foreign Fellow of the British Academy, and an active Fellow of the American Academy of Arts and Sciences. He holds honorary degrees from the University of Rome, Tor Vergata, University College London, and the University of St. Andrews. At 2007, he becomes President of American Economic Association. In 2011, he was elected as recipient of the BBVA Foundation Frontiers of Knowledge Award of Economics, Finance and Management for his significant explanation to the theory of consumption and savings, and the parameters of economic wealth. He also developed the applicative methodology for measuring poverty.

His proposition of "Deaton Paradox"¹²⁶ based on the empirical evidences of excess smoothness of consumption against unanticipated permanent income shocks.

¹²⁵ http://en.wikipedia.org/wiki/Angus_Deaton, Thompson Reuters cited Deaton for his "empirical research on consumption, income and savings, poverty and health and well-being," according to the press release. Most recently, he has been researching what is called "subjective well-being," or more simply, "happiness."

¹²⁶ www.minneapolisfed.org/research/wp/wp427.pdf, **DEATON'S PARADOX** has been interpreted by some to imply that economic theory cannot account for the observed smoothness of consumption relative to income.

Supporting his analysis of home economic behavior at the home economic level, Deaton's research areas discovering the parameters of global poverty, health economics and economic development. Deaton is also a contributor of Royal Economic Society Newsletter on his a twice a year Letters from America.

Although much hated by the Keynesian, the Deaton paradox implies that the permanent income hypothesis (PIH) under certainty equivalence is not realistic, but observed consumption is excessively consistent. It is shown how many logical measures of the PIH under precautionary saving imply that consumption is hard to be changed, but labour income and that is less consistent follow the income as found in his data. This finding is consistent with the less predictable future world and shifting economic power from one to other regions.

By integrating all the economic theories shortly:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

It is appeared that exchange risk is really dangerous for specialized countries, because the commodity price changes and shifting of resource place, could danger local consumption and production competitiveness in the global arena.

So happiness is just simply as 1) Expecting the low or moderate gains, 2) Fight hard to get as many as possible, 3) Happy is when result is higher than expected, sadness if result is lower.

2.3.2 *Keyness' vs Ries-Trout's Subjective¹²⁷ Propensity Consume*

In our modern world, consumption will no longer taking common good like in Keynesian era, information and communication technologies had made our world much smaller. So, now it is depend on marketing: **Positioning** be the process of creating an image or uniqueness in the minds of their target market for its commodities (product, brand, or organization). **Re-positioning** is changing the identity of commodity, to be significantly different than the identity of competing products. **De-positioning** is an effort to change the characteristic of competing products, to be faraway from our own product. Positioning is focused on the question

¹²⁷[en.wikipedia.org/wiki/Positioning_\(marketing\)](http://en.wikipedia.org/wiki/Positioning_(marketing)), **POSITIONING** is a concept in marketing which was first introduced by Jack **TROUT** ("Industrial Marketing" Magazine- June/1969) and then popularized by Al **RIES**

relative to competitive products and away from information "noises". Avis is No.2, "We Try Harder," so shocking and made us forget all about who was #1.

High-tech marketing's world wide web aided Google, Yahoo and Bing, need Search Engine Optimization, also known as SEO. It is very important competitive positioning for younger customer, who are Web oriented in their shopping and purchasing. So positioning, is very well knowing a market niche for the commodity by creating impressions in the customers mind. This concept in marketing popularized by Al Ries and Jack Trout in "Positioning - The Battle for Your Mind." (McGraw-Hill 1981), which also said about *Industrial Marketing*, in which the case is finding a comfortable (and empty) slot in the consumers mind. Positioning is perception in the minds of the target market, against their perceptions of the competitors in same category.

Company can positively influence the perceptions by starting from positioning concept. If you don't position your business, your competitor will. Positioning sell the benefits to a potential buyer by focusing on rational vs emotional benefits that buyer will feel. Positioning concept must done before a "positioning statement" (an articulation of the target audience). Positioning statement about commodity's name and category, showing key benefit and reason to buy.

Differentiation in the context that no other business can and is being the least expensive. Being the first or the fastest. A business can use it to stand out from the rest. Differentiation in today's very crowded market is a business key to success, but also to be still survive.

Hiring decision on the employee Quantity (**Q**) and wages Price (**P**), now is no longer depends on the local money $[1/K]\{[G-T]+[O-F][1+E]^N\}$ and nor based on foreign money it has $[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$, but on the employer's subjective perception about the employee image in comprehensive constellation:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Which every labour or employee must evaluate his /or her own position related to competitor

2.3.3. *Keyness' vs Drucker's*¹²⁸ *Marginal Propensity to Consumer's Multiplier*

Drucker is the greatest management thinker especially modern management, for complex organizations he give us the handbook for that in plain language that resonated with ordinary managers. His easy advices influencing many daily actions; they did mine over decades. It's the story of modern corporation and managers. Drucker hates the excessive riches of mediocre executives against ordinary workers. Organization and management today use his teachings as a blueprint for every leader. He said that leading people and institutions is complex. He taught generations of managers the importance of picking the best people, of focusing on opportunities, get on side as customer, and understand the competitive advantages, then continue refine them. Talented people were the essential for every successful enterprise.

Drucker already a legend, he was the guru's guru, many roles as journalist, professor, historian, commentator, and raconteur. Over his 95 prolific years, he is a true Renaissance man, a teacher of religion, philosophy, political science, and Asian art, even a novelist. If John Maynard Keynes is Economics or W. Edwards Deming to Quality, Drucker is to Management. He found great hope in modern corporation to build communities and provide meaning for the people who worked there. For 50 years he helps companies live up with possibilities in medium trends of 20 years and more before anyone else. In his long career, Drucker consulted for the most celebrated CEOs of his era, from Alfred P. Sloan Jr. of General Motors Corp. to Grove of Intel. Drucker introduced the decentralization in 1940s, in 1950s he said that workers is asset, since the corporation is a human community built on trust and respect for the worker and not just a profit-making machine, he also said "no business without a customer,". In 1960s he stress the importance of substance over style, and benefit of knowledgeable workers, in 1970s he said that knowledge becomes more important than raw material. Drucker's observation resulting useful simple questions like "If you weren't already in a business, would you enter it today?" he asked. "And if the answer is no, what are you going to do about it?" His questions led Welch to set that every business under the GE umbrella had to be either No. 1 or No. 2 in its class. If not, Welch decreed that the business would have to be fixed, sold, or closed. Welch remake GE successful American for 25 years.

¹²⁸ en.wikipedia.org/wiki/**Peter Drucker**, **PETER** Ferdinand **DRUCKER** (November 19, 1909 – November 11, 2005) was an Austrian-born American management consultant, educator, and author,

His job is to ask questions. It's our job to provide answers. He is excellent in quality of thinking but for his foresight, which was amazing. He was way ahead of the curve on major trends. In minutes through a series of digressions until finally coming to some specific business point. He is able to find patterns among seemingly unrelated disciplines supporting the Management:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Similar to Ries-Trout and Porter, Drucker thinks that knowledgeable employee is company asset so then must be managed to love it as a social group as Kotler said, and together they are against the Keynesian thoughts of aggregate demand. It is because the time had changed and Employment be much more complex than Interest and Money that was said in Keynesian.

2.4. Current Inducement to Invest¹²⁹

In macroeconomics, investment (**I**) is much related to saving (**S**) and different than consumption (**C**). Investment exist in many branches of economy, like business management and finance whether for person, households, firms, or governments. In economic theory or in macroeconomics, investment is the instrument bought per unit time of goods which are not consumed but are producing future incomes (i.e. capital), like the railway or workshop construction. It is a financing in human resources includes costs of advancing degree or on-the-job training. Inventory capital is the accumulative all inventories; it can be positive or negative, and it can be purposive or unpurposive. In measures of national income and output, "total investment", represented by the variable (**I**) is a component of gross domestic product (**GDP=Y**), in the formula $Y = C + I + G + NX$, where **C**= Consumption, (**G**) is government spending, and NX or (**X-M**) is net exports. Thus investment is everything that remains of total expenditure after consumption, government spending, and net exports are subtracted i.e. $I = Y - C - G - [X-M]$.

Non-residential fixed investment (such as new factories) and residential investment (new houses) combine with inventory investment to make up **I**. "Net investment"

¹²⁹en.wikipedia.org/wiki/Investment, **INVESTMENT** has different meanings in finance and economics. In economics, **INVESTMENT** is related to saving and deferring consumption.

deducts depreciation from gross investment. Net fixed investment is the value of the net increase in the capital stock per year. Fixed investment, as expenditure over a period of time ("per year"), is not capital. The time dimension of investment makes it a flow. By contrast, capital is a *stock*— that is, accumulated net investment *to a point* in time (as December 31). Investment is often modeled as a function of Income and Interest rates, given by the relation $I = f(Y, r)$. An increase in income encourages higher investment, whereas a higher interest rate may discourage investment as it becomes more costly to borrow money. Even if a firm chooses to use its own funds in an investment, the interest rate represents an opportunity cost of investing those funds rather than lending out that amount of money for interest.

In finance, investment is putting money into something with the expectation of gain, usually over a longer term. This may or may not be backed by research and analysis. Most or all forms of investment involve some form of risk, such as investment in equities, property, and even fixed interest securities which are subject, inter alia, to inflation risk. In contrast putting money into something with a hope of short-term gain, with or without thorough analysis, is gambling or speculation. This category would include most forms of derivatives, which incorporate a risk element without being long-term homes for money, and betting on horses.

1) Single investment growth will be compounded easily by $[1+E]^N$

2) Serial investment growth will be compounded in series by $[A/V]\{[1+V]^U-1\}$

2.4.1. Keynes' vs Financial Efficiency of Capital¹³⁰

Financial efficiency of Capital measured by ratio of output against to the amount of capital expenditure utilized for operating the business or a product line. The contrasting comparison serves as parameter to determine if a some operation could be left as it as, improved by some adjustments, or left and its resources given to other operations. The main fraction for computing capital efficiency is dividing the average

¹³⁰www.investorwords.com/.../capital_efficiency.... ,Definition of **CAPITAL EFFICIENCY**: The informal ratio of output divided by capital expenditure. The larger the ratio, the better the **CAPITAL EFFICIENCY**.

value of output by the amount of expenditure for the same period of time. Result divided by expenditure shows whether a venture that currently generating a moderate profit? Analyzing if profitability could be realized if some minor expenditures decreased, or is it worthy to financing the venture. While the latter situation is one to avoid at all costs, the two former are just regular situations that should be considered. Starting business ventures needs higher amount of capital expenditures, and normally a project hard to score a profit in the first stages of the operation. With expectation is that after some steps, some expenses (like Fix Cost) will be still, even though not be recurring. As the cost be lower and the output or production increasing, then its opportunity for profit expands. For this reason, periodic calculation of the capital efficiency of a project, can help investors to know that the project is heading in the right track.

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Since the monetary investment
 principal is a single investment of **[O-F]**,
 compounded by **[1+E]^N**
 then it becomes **[O-F][1+E]^N**

The periodic installment

Is **A**

Compounded by **[1/V]\{[1+V]^U-1\}**

So then it becomes **[A/V]\{[1+V]^U-1\}**

To be repaid successfully

$$[A/V]\{[1+V]^U-1\} > [O-F][1+E]^N$$

So then:

- 1) Installment's Periodic Achievement (**A**) $> V[O-F][1+E]^N / \{[1+V]^U-1\}$
- 2) Utilized Period of Installment (**U**) $> \text{Ln}\{1+[V/A][O-F][1+E]^N\} / \text{Ln}[1+V]$
- 3) Number of Financing Period (**N**) $< \text{Ln}([A/V]\{[1+V]^U-1\} / [O-F]) / \text{Ln}[1+E]$
- 4) Expected Financing Interest (**E**) $< ([A/V]\{[1+V]^U-1\} / [O-F])^{(1/N)} - 1$
- 5) Financial Debt to Authority (**F**) $> O - ([A/V]\{[1+V]^U-1\} / [1+E]^N)$
- 6) Organized Authority Debt to Public (**O**) $< F + ([A/V]\{[1+V]^U-1\} / [1+E]^N)$

2.4.2. Keynes' vs Sarget-Sim's Long-term Investment¹³¹ Strategy

Even though almost every investment books talking about mathematics and rational decision, investment does depend on the type of investor (60% risk aversion, 10% risk taker and 30% risk neutral). Investment seen as no man's land that like in gambling: all people comes with small money, some return with big money and most of them come back with no money. According to financial management, **investment strategy** is determined principles, habits or Dos vs Don'ts, advised to help the investors to design optimum investment portfolio. Normally the priority are composed for optimum risk vs return option: Some 10% will choose maximum possible gains by placing their money in high-risk assets, 60% while others favour to small and moderate risk, but 30% the smartest will select a strategy somewhere in between. Thrift player will search for minimum investment expenses, and full time market watchers will look for best market timing in order to get the maximum returns.

The assumed best strategy of investment is normally come in and wait. It is a totally long term smart strategy, because in the long run turn of world's inflation, investment will give a geometric rate of return excepts in time of fluctuation or downturn. An extreme passive investment strategy is following the index, if investor had a weighted average portion of all the investments in the market (as the index shows) like S&P 500, shaped and shared in a portfolio such as indexed mutual fund or exchange-traded fund (ETF), they will gain moderate profits as long as they have the sleeping money and long time budget to do that long games.

Another style compare to that is the market timing optimization, that investor enter the market quickly to buy on the low prices and sell them quickly on the high levels. It could not be done or does not secure for small players, that simply buy and hold the investment. Smaller, individual investors are better use the buy and hold strategy investment like in the real estate where the investing period is typically the lifespan and it has a practical utility to be used.

¹³¹en.wikipedia.org/wiki/Investment_strategy, In finance, an **INVESTMENT STRATEGY** is a set of rules, behaviors or procedures, designed to guide an investor's selection of an investment portfolio.

Since Sargent-Sims already mentioned that the government investment works

$$[G_a - T_a][1 + E_a]^{N_a} = [G_e - T_e][1 + E_e]^{N_e}$$

It could be optimized as

$$[G_e - T_e][1 + E_e]^{N_e} > [G_a - T_a][1 + E_a]^{N_a}$$

1) Optimum period for decision validity:

$$N_e > \frac{\ln\{[G_a - T_a][1 + E_a]^{N_a} / [G_e - T_e]\}}{\ln[1 + E_e]}$$

2) Optimum interest valid for the decision:

$$E_e > \{[G_a - T_a][1 + E_a]^{N_a} / [G_e - T_e]\}^{(1/N_e)} - 1$$

3) Optimum Government Expenditure necessary to finance that:

$$G_e > [G_a - T_a][1 + E_a]^{N_a} / [1 + E_e]^{N_e} + T_e$$

4) Optimum Taxes must be collected from that:

$$T_e > G_e - [G_a - T_a][1 + E_a]^{N_a} / [1 + E_e]^{N_e}$$

2.4.3. Keynes' vs Fisher's¹³² Arbitrage Theory of Interest Rate

Irving Fisher, proposing his unique opinion about money, inflation and interest rates, especially his Purchasing Power Parity. He suggest the Rational Expectations manifested in the interest rates, in relations to inflation according to market rates (**E**). At inflation the price (**P**) increased, so the real value of money be lower, so it is a negative rate of interest. If, a loan given 6% interest p.a., and inflation is 2% p.a., real interest rate = 6% - 2% = 4%. If prices deflated by 2% p.a., real interest = 6% + 2% = 8%, so Deflation add the real interest. Real interest rate is sensitive to price (**P**) changes, only if price are stable, nominal interest be equal to real interest rate. Fisher propose the Rational Expectations based on *complete illusion*, *adaptive lag*, and *rational expectations*. They are consistent with the divergence of market and real interests.

Complete Illusion: In price stability, the public believe that prices (**P**) will be stable. No profit in selling insurance or protection against inflation. But the public is

¹³²en.wikipedia.org/wiki/**Fisher**_equation, For the unrelated partial differential equation, see Fisher's equation. It is named after **IRVING FISHER**, who was famous for his works on the theory of interest. In economics, this equation is used to predict nominal and real **INTEREST RATE**

in danger if inflation occur. Then inflation raise quickly in the early 1960s, and public give little concern when the oil shock appears in 1973 (crude oil quadrupled from \$3.50 to \$14.00 a barrel in a nanosecond), then people start considering the difference between real and nominal interest rates.

Adaptive Lag: In a lag, the public adjust their expectations so lenders, savers, and investors preserving inflation premiums in higher interest rates (**E**), to compensate possible losses. Before the oil shock of 1973, the market rates did not considering the inflation. Now the real interest rate adjusted to compensate for inflation in the form of an inflation premium. Public face reality of inflation and redistributive effects, and considering inflation premiums to interest rates after a lag. Public reserve a premium in interest rates, based on past experience. If inflation is rapidly increase, the nominal market interest rates wii rising while the real interest rate (**E**) be lower. It is a backward looking and not yet considering the actual acceleration occurring (like in 1970s).

Rational Expectations: Now the public fully concern about the reality of increasing Price (**P**) and nominal market interest rates (**E**) began consider reality in Rational Expectations. Market then adapt and adjust to according to public newly concerns. Significant changes occur in the financial markets after 1970s. Public experienced the reality of inflation, wanted to be protected and financial entrepreneurs start selling new products for savers, lenders, investors. It is like global warming were realized so the Artic be hot then Inuits start buying refrigerators. Fisher shows the inflation, so then savers, investors, lenders, and fixed income recipients start to realize inflation is real. After 1970, importance of these products clearly showed and protect the inflation becomes main concern. Future contracts, adjustable loan rate, zero derivatives bonds, loan securitization, as financial analysis, money market and mutual funds, be more Algebraic.

As Fisher concern:

$$P_i Q_i = [G_i - T_i] + \{[O_i - F_i][1 + E_i]^{N_i}\}$$

Then

$$P_e = [G_e - T_e] + \{[O_e - F_e][1 + E_e]^{N_e}\} / Q_e$$

2.4.4. Classical Theory of Interest Rate (Marshall and Ricardo)

The world after the 1970s Fisher's Rational Expectation, significantly becomes safer and more efficient in nature, but also significantly more complex and very difficult in its process of decision making, as long as the Information and Communication Technologies replacing leader's gut feelings and abstract irrational decision making process. So the oblique current information could be composed as the human optimum design of future state (architecture).

Inflation factor is difficult for local economies even without Kind of reserve (**K**):

$$P_i Q_i = [G_i - T_i] + \{[O_i - F_i][1 + E_i]^{N_i}\}$$

Definitely it becomes more difficult in series of foreign exchanges:

$$P_i Q_i = [X_i - M_i] + (L_i - [A_i/V_i]\{[1 + V_i]^{U_i} - 1\})$$

Even though:

1) Rationally Expected Price (**P**):

$$P_i = (X_i - M_i + L_i - [A_i/V_i]\{[1 + V_i]^{U_i} - 1\})/Q_i$$

2) Rationally Expected Quantity (**Q**):

$$Q_i = (X_i - M_i + L_i - [A_i/V_i]\{[1 + V_i]^{U_i} - 1\})/P_i$$

3) Rationally Expected Exports (**X**):

$$X_i = P_i Q_i + M_i - L_i + [A_i/V_i]\{[1 + V_i]^{U_i} - 1\}$$

4) Rationally Expected Imports (**M**):

$$M_i = X_i - P_i Q_i + L_i - [A_i/V_i]\{[1 + V_i]^{U_i} - 1\}$$

5) Rationally Foreign Debted Loan (**L**):

$$L_i = P_i Q_i - [X_i - M_i] + [A_i/V_i]\{[1 + V_i]^{U_i} - 1\}$$

6) Rationally Foreign Periodic Achieved Repayment (**A**):

$$A_i = V_i \{L_i - P_i Q_i + [X_i - M_i]\} / \{[1 + V_i]^{U_i} - 1\}$$

7) Rationally Foreign Number of Installment Period (**N**):

$$U_i = \ln(1 + [V_i/A_i]\{L_i - P_i Q_i + [X_i - M_i]\}) / \ln[1 + V_i]$$

2.4.5. Keynes' vs Business's Financial Liquidity

Keyness assume that more Employment could be created by putting more money in the economy, based on the assumption of:

$$Y=[C+S]=[C+I]=R=PQ=[G-T][1+E]^N$$

So by doing more Government spending (**G**) , then the total income (**Y**) will increase, so then **C**= Consumption, **S**= Savings, **I**= Investments and **R**= Revenue on consumption and industrial goods could also increased as the Wages or Price (**P**) of aggregate will increase.

Problem will exist from the Malthus and Ricardo's additional Quantity (**Q**) of workers in global setting, by Migration, Baby Booming and Longer Life Expectancy, which make prices go higher, while employer paying more, but each individual worker does not paid better.

On the other hand, the Drucker and Kotler's opinion on quality (supporting Deming,¹³³ Juran¹³⁴ and Crosby¹³⁵) will also concentrating the additional money among the skilled workers and quality goods, left the majority workers less employed. Expected periodic interest (**E**) and Number of debt period (**N**) which Keynes said will add the money, could not helping much.

Modern problem with Interest Power Parity (IPP) and Purchasing Power Parity (PPP), will also makes people leaving soft currencies¹³⁶ and searching harder currencies more.¹³⁷

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

¹³³ en.wikipedia.org/wiki/W._Edwards_Deming, William Edwards **DEMING** (October 14, 1900 – December 20, 1993) was an American statistician, professor, author, lecturer and consultant. He is perhaps best known for the "Plan-Do-Check-Act" cycle popularly named after him.

¹³⁴ en.wikipedia.org/wiki/Joseph_M._Juran, Working independently of W. Edwards **DEMING** (who focused on the use of statistical process control), **JURAN**—who focused on managing for quality

¹³⁵ en.wikipedia.org/wiki/Philip_B._Crosby, Philip Bayard "Phil" **CROSBY**, (June 18, 1926 – August 18, 2001) was a businessman and author who contributed to management theory and **QUALITY** management

¹³⁶ www.investopedia.com/terms/s/softcurrency.asp, A **CURRENCY** with a value that fluctuates as a result of the country's political or economic uncertainty, as a result of the of this **CURRENCY'S** instability,

¹³⁷ en.wikipedia.org/wiki/Hard_currency, **HARD CURRENCY** (also known as a safe-haven currency or strong currency), in economics, refers to a globally traded currency that is expected to serve as a reliable

Worse than that, multiplied money¹³⁸ also makes the real physical (*cartal*)¹³⁹ money in Keynesian era just a minority compared to the total money created by the bank account (*giral*).¹⁴⁰

2.4.6. Keynes' vs Capital Market Power

Global money could come in and invested in the local Capital Market, some even stronger by dual listing¹⁴¹ in famous World Class Capital Markets (Stock Exchanges).¹⁴²

Market price of stocks not just referring to their accounting book value, but mostly based on the Supply and Demand of perception of their buyer and seller in the Stock Exchange.¹⁴³ So then, most of these quick temporary money supply could not be used in Keynesian employment.

Capital Market's fund generation is like a debt, that the money comes in exchange for paper. Its difference is on the unpredicted tenure that it could be sold back in hours or could stay long for centuries, depends on investor's confidence to the corporation, stock exchange's performance and tradeability of the shares.

This is something different than the Money in Keynesian term and it does influencing the Employment. If the money comes at the Initial Public offering (IPO), the corporate will have more money for business development and additional employee recruitment (relatively on permanent basis, since the money will be impossible to drawn back from the corporation).

Its dividend could comes out from the public listed company, but it is a different money, although seen as repayment to the investor and share holders. Why? Because

¹³⁸en.wikipedia.org/wiki/Money_multiplier, In monetary economics, a **MONEY MULTIPLIER** is one of various closely related ratios of commercial bank money to central bank money under a fractional-reserve. The **MONEY MULTIPLIER** (also called the credit multiplier or the deposit multiplier) is a measure of the extent to which the creation of money in the banking system.

¹³⁹www.ted.com/conversations/.../should_physical_money_be_a_fun.ht..., With over 90% of liquidity existing as digits, or credit, it is time to shut down the printing press.

¹⁴⁰en.wikipedia.org/wiki/Telegraphic_transfer, **TELEGRAPHIC TRANSFER** or Telex Transfer, often abbreviated to **TT**, is an electronic means of transferring ... A transfer charge is collected while sending **MONEY**.

¹⁴¹en.wikipedia.org/wiki/Dual-listed_company, **DUAL-LISTED** companies should not be confused with cross listed companies, where the stock of one company is listed on more than one stock exchange.

¹⁴²en.wikipedia.org/wiki/Capital_market, **CAPITAL MARKETS** provide for the buying and selling of long term debt or equity backed securities. The **CAPITAL MARKETS** channel the wealth of savers

¹⁴³www.getsmarteraboutmoney.ca > ... > Investing > Stocks, Many **FACTORS** can cause the **PRICE** of a **STOCK** to rise or fall from specific news about a company's earnings to a change in how investors feel about the **STOCK**

dividend is a part of the corporate profit (newly found money), which is different than the invested money, which still securely stays in the corporation.

Like had been said above, the stock exchange's transactional money in various duration (from minutes to centuries), is like a debt for the corporate owners. This money will not be invested in the same corporation, because what is bought is just shares from the owners, even though it is a changing of ownership for very long time. It could not be touched by the firm's management.

Could this temporary money also be invested in different corporations there? This could still follow the Keynesian terms of 1) Transactional motive, 2) Pecuniary motive and 3) Speculative motive, depends on the previous corporate owner's confidence and new owner's trust. Since the shares could be sold on a sudden to both local or foreign new owners.

Most probably, the money will be invested in different country to spread the risk in better portfolio investments, on safety motive like explained by Sharpe¹⁴⁴ and Black.¹⁴⁵

2.4.7. Keynes' vs Interest Power Parity

Current facts as Interest Power Parity (IPP)¹⁴⁶ and Purchasing Power Parity (PPP)¹⁴⁷ happened all the times and works different than the Interest term in Keynesian teachings.

Every country determine their Central Bank's Treasury Bill's Interest,¹⁴⁸ that always be followed by their commercial sector. So then another country will make necessary adjustment to the exchange rate, depends on the Arithmetic¹⁴⁹ and Geometric¹⁵⁰ Interest Differences.

¹⁴⁴ www.gsb.stanford.edu News, **SHARPE William SHARPE**, the **NOBEL PRIZE**-winning **ECONOMIST** whose groundbreaking work on the dynamics of the stock market has guided generations

¹⁴⁵ en.wikipedia.org/wiki/Black-Scholes, The model was first articulated by **FISCHER BLACK AND MYRON SCHOLES** in their 1973 paper, "The Pricing of Options and Corporate Liabilities",

¹⁴⁶ en.wikipedia.org/wiki/Interest_rate_parity, **INTEREST rate PARITY** is a no-arbitrage condition representing an equilibrium state under which investors will be indifferent to **INTEREST** rates available on bank

¹⁴⁷ www.investopedia.com/terms/p/ppp.asp, Definition of '**PURCHASING Power PARITY - PPP**'. An economic theory that estimates the amount of adjustment needed on the exchange rate between countries

¹⁴⁸ www.investopedia.com/terms/t/treasurybill.asp, A short-term debt obligation backed by the U.S. government with a maturity of less than one year. **T-BILLS** are sold in denominations of \$1000

¹⁴⁹ en.wikipedia.org/wiki/Arithmetic, **ARITHMETIC** or **ARITHMETICS** is the oldest and most elementary branch of mathematics, used by almost everyone, for tasks ranging from simple day-to-day counting

Let's take the current US Annual Interest of 4% p.a. and Indonesian Yearly Interest of 7% p.a. for the recent USD/IDR Exchange Rate¹⁵¹ of 9,600 (1 USD= 9,600 IDR).¹⁵²

If both are invested, Arithmetically they will grow by 7%-4%= 3% difference. It means that the total amount of Indonesian Rupiah will 3% more against the 4% growth US. Dollars.

Geometrically the 9,600 IDR will become IDR 10,272 by 7% p.a. growth rate, while 1 USD will become USD 1.04 by 4% p.a. growth rate. So the new equilibrium is IDR 10,272= USD 1.04, or the exchange rate naturally becomes 10,272/1.04= 9,876.92 or $(1+7\%)/(1+4\%)= 1.0288$ times, which is simply said that the IDR is depreciated¹⁵³ by 2.88% to USD. This could also said that the USD get appreciated¹⁵⁴ by 2.88% to the IDR.

On the Purchasing Power Parity, things could be different since Food is kept very cheap in Indonesia (approximately 40% of the US prices), while cars are very expensive in Indonesia (400% import duty¹⁵⁵ makes them 5 times their prices in US), that Keynesian must consider.

2.4.8. Keynes' vs Simon's Employment

After the Drucker's Management considered, employment decision in modern corporation made by organizational decision making.¹⁵⁶ So then the Keynesian employment based on interest and money could only be done at government's public

¹⁵⁰ en.wikipedia.org/wiki/Geometry, **GEOMETRY** (Ancient Greek: γεωμετρία; geo- "earth", -metron "measurement") is a branch of mathematics concerned with questions of shape, size, relative position

¹⁵¹ en.wikipedia.org/wiki/Exchange_rate, In finance, an **EXCHANGE RATE** (also known as the foreign-**EXCHANGE RATE**, forex rate or FX rate) between two currencies is the rate at which one currency will be traded as commodity

¹⁵² en.wikipedia.org/wiki/Indonesian_rupiah, ISO 4217 code, **IDR**. Central bank. Issued and controlled by the Bank of Indonesia, the ISO 4217 currency code for the Indonesian rupiah is **IDR**.

en.wikipedia.org/wiki/United_States_dollar, The **UNITED STATES DOLLAR** (sign: \$; code: **USD**; also abbreviated US\$), also referred to as the **U.S. DOLLAR** or American dollar, is the official currency of the United States of America.

¹⁵³ financial-dictionary.thefreedictionary.com/De..., A decline in the value of one **CURRENCY** relative to another **CURRENCY**. **DEPRECIATION** occurs when, because of a change in exchange rates, a unit of one **CURRENCY**

¹⁵⁴ financial-dictionary.thefreedictionary.com/Cu..., An increase in the value of one **CURRENCY** relative to another **CURRENCY**. **APPRECIATION** occurs when, because of a change in exchange rates, a unit of one **CURRENCY**

¹⁵⁵ en.wikipedia.org/wiki/Duty_(economics), **DUTIES** levied by the government in relation to **IMPORTED** items is referred to as **IMPORT DUTY**. In the same vein, **DUTIES** realized on export consignments

¹⁵⁶ www.amazon.co.uk > ... > Decision Making, This book is a result from **SIMON'S** research into **DECISION-MAKING** processes within administrative **ORGANIZATIONS** (with a larger emphasis on public **ORGANIZATIONS**).

works like the *Tennessee Valley*.¹⁵⁷ Sure that the Keynesian public works still useful for governmental initiative economic *stimulus*.¹⁵⁸

Although corporation has their own selection mechanism according to their business field and some specific skills needed, governmental public works could still be done for food farming and national basic needs resiliences.

Let each government identify their food and basic needs and the resources exist both from imports and from internal power. Take the unused lands as the example for instance, so government can make a total land lists and evaluate them strategically.

Then the government could send letter to their owner and give them 3 options:

- 1) Pay a higher land taxation for cross subsidy and national contribution
- 2) Build them as proper for better economic use and pay the building retribution
- 3) Lend the land to government and get the profit sharing from food and basic needs farming

Almost every less plan owners will choose option-3 (as the Carrot) compared to option-1 or option-2 (the Sticks), while the well planned owner will choose option-2, since they have a better strategy for the land productivity.

So then government could list every unemployed person to be placed there. 1) In socialist country, it is mandatory that every unemployed person must go there to work, 2) In some free nation, only unemployed that are willing to work will be sent there and get employment with minimum wages, 3) In the mutual support countries they'll get minimum wages and performance bonus as additional profit sharing.

All alternatives will be assisted by government experts to produce result on optimum basis according to the minimum quality requirement and maximum output for the existing resources. In this case, the Keynesian deficit spending ($G > T$) and issuance of additional money could be very powerful in generating power from local resources. Superfluous harvest then utilized, distributed as proper, stored in buffer stocks safe warehouses, exported or used as raws materials or in process materials for more advanced industries.

¹⁵⁷en.wikipedia.org/wiki/Tennessee_Valley, The **TENNESSEE VALLEY** is the drainage basin of the Tennessee River and is largely within the U.S. state of Tennessee. It stretches from southwest Kentucky

¹⁵⁸ en.wikipedia.org/wiki/Stimulus, **STIMULUS** may refer to: **STIMULUS** (physiology), something external that influences an activity; **STIMULUS** (psychology), a concept in behaviorism and perception

2.5. Global Money-Wages and Prices

Computerized global money movement had changed drastically since the Keynes era, now the electronic bites could easily be transferred to many countries in seconds, and transactional tracking be more difficult for the *moving moneys* (some also said as monies).¹⁵⁹

If we really consider that the earth is just a big ball, then additional fiat money will do nothing to global employment, but it could be useful for short term local *imperfect informed* of demand and supply.¹⁶⁰

Market imperfection like local unskilled worker's vacancy, managerial level local contents, language proficiency limitations, and discrimination (of race, beliefs, gender, age and sexual orientation), could still supporting the Keynesian validity in modern global setting.

Wages also depend on local settings, because some country make the food subsidized but the minimum requirement is different from one place to another. In Russia or Canada or Middle East with extremely cold or hot climate, housing is important, but at tropical areas like Indonesia and Philippines homeless people also exist in rural area because the climate is so friendly, that people coul still living happily without any house.

In Papua or Irian Jaya (Eastern Part of Indonesia), the Sago tree are plenty compared to the human population, and anybody could easily cut Sago trees freely as needed with high penalty for wasted uneaten tree, then the wages are not significantly rewarding them, compared to the social status as government officer and pride of statesmanship.

Health is not really a problem for the elder Indonesian, since the family planning in the Soekarno era give high respect to Darwinian natural selection. Babies keep naked and uncured until older than five years. People believe that children mortality is much better for the deaths themselves, because no religious punishment awaiting them in the eternity. If the children be older than 15 (fifteen) years, then they must face the God's hard examination in the doomesday, that rarely people could be found as

¹⁵⁹ www.onlinegrammar.com.au/monies-or-moneys/, Reader's question: Which is correct: **MONIES** or **MONEYS**? Answer: You can use either. In everyday usage, most people don't pluralize **MONEY**.

¹⁶⁰ en.wikipedia.org/wiki/Information_asymmetry, In economics and contract theory, **INFORMATION ASYMMETRY** deals with the study of decisions in transactions where one party has more or better **INFORMATION**

proper heaven's citizen.¹⁶¹ It is different from Soeharto's family planning of not more than two children for a family, the people born will get strong medical protection since the very beginning and not yet pass the Darwinian natural selection.

Similar things also happen in education: Children of the Dutch and Japanese administration, trained very hard in Mathematics, Dutch, English, German, French (and Latin for the Catholics or Arabic for the Moslems), their teacher has the authority to give them physical punishment. At home, they must practicing their tribal mother tongue and Malay as the unification language. They were better prepared and perform much better than modern children that could only speak Malay and English, with poor Mathematics, because their teacher prohibited to hit them.

2.5.1. Keynes-Pigou's vs Global Employment Trends

Global employment gives more rooms for specialization in the reason of world class excellence and others, argued that a specialist could get better life than multi skilled workers. It is no longer true, because the world is changing so quickly where less adapted powerful dinosaur be extinct, compared to the adaptive multi skilled polymath workers.¹⁶²

Who said that the life is fair? Stereotypes networking, different access to opportunity, funder's agenda (both obvious and hidden), elite brotherhood (commeraderie) and prejudices, never gives minority or lower class equal opportunity to a better life.¹⁶³

The elites tends to disproportionate scholarship distribution, higher than the portion of majority in the society. Studies said that it does happen not only in America.¹⁶⁴

At least there are 3 (three) types of employees: Highly specialist, Global specialist and Local unskilled. 1)The highly specialists like medical researchers of Pasteur Institute could work in Paris and enjoying their patent and /or licensed world-wide. 2)Global specialist, like Philippine nurses could be imported by the needed country for serving same quality treatments at cheaper wages. 3)Local unskilled are highly prioritized in Keynesian terms for the local vacancy, but not yet achieving foreign standards to be

¹⁶¹ kamus.kapanlagi.com/contain/aki, ber~ have **CONSEQUENCES**. akibat. meng~kan result s.t., cause ... akil-balig. of age; grown-up; adult (over 15 years). **AKIL-BALIGH**.legally responsible.

¹⁶² www.lifestudiesonline.com/dinosaurs/extinct.htm, How did **DINOSAURS** become **EXTINCT**? Find out about theories scientists about how the **DINOSAURS** became **EXTINCT**.

¹⁶³ en.wikipedia.org/wiki/Elite, An **ELITE** in political and sociological theory, is a small group of people who control a disproportionate amount of wealth or political power.

¹⁶⁴ articles.businessinsider.com > Collections, White students receive 76% of all university funding -- including need-based grants and merit **SCHOLARSHIPS** -- despite representing only 62%

accepted abroad. In totalitarian country, they only have the local passport, compared to the international passport for the other two.¹⁶⁵

This is surprising, since it is really a passport for internal usage only. What is its difference to the common practiced Identity Card (ID)? It contains more information about the persons who bear them, and detailed records of the places they visits in their country, that could hardly been thought by persons from the free country. In this case, Keynesian Employment is closely related to government Interest and Money.

Global employment be more difficult to Keyssians because they pay in different currency than the home currency of the workers. Even though the naturalization could make foreign labour legally equal to local, discrimination could still practiced in private sectors and some times by their own governments.¹⁶⁶

In the global setting, the Employment situation becomes very complex that Keynesian factors as interests and money work partially, but not as drastically as said in the last centuries books that still in gold standard, that the Keynesian principles applied more consistently.

2.5.2. *Keyness' vs Virtual Employment*

Trusted mediator is needed in Virtual Employment, because both parties are relatively stranger to the other party. Which should come first? Advance Payment? Or Works?
1) If the money come first, then mostlt no works will come. 2)On the other hand although more common, if the works come first, then the money could never comes.

Implementation of Uniform Common Practices of Documentary Credits (UCPDC)¹⁶⁷ and Uniform Rules of Collections (URC),¹⁶⁸ are needed here, so then the international bank as the trusted party could act as the fair referee of this virtual transactions.

¹⁶⁵ http://en.wikipedia.org/wiki/Russian_passport, **Russian passports** are of two types: *domestic passports* issued to citizens of the Russian Federation for the purpose of certifying identity, *international passports* are issued for the purpose of international travel.

¹⁶⁶ <http://www.Christian Post.com>, **COPTIC** Patriarch H.H. Pope Tawadros II has highlighted how**DISCRIMINATION** in **EGYPT** against **COPTIC** Christians has hurt them significantly.

¹⁶⁷ www.acronymfinder.com/Uniform-Customs-and-Practice-for-Docum... Acronym Finder: **UCPDC** stands for **UNIFORM CUSTOMS AND PRACTICE FOR DOCUMENTARY CREDITS**. This definition appears very rarely.

¹⁶⁸ www.businessdictionary.com/.../uniform-rules-for-collections-URC.h..., Definition of uniform rules for **COLLECTIONS (URC)**: Standards of draft (bill of exchange)**COLLECTION** practices proposed by the International Chamber Of Commerce

Virtual employment deals more with perception than common direct employment. Reputable and trusted employer are good, but strong legal referee could make it much better.

This is needed since distance is no longer a limit of current employment, but legal fairness some times different from one jurisdiction to others, especially between the Common Law¹⁶⁹ countries against the Civil Law ones.¹⁷⁰

Employment is sacred in many countries, since most of the bread winners do not have ample capital to advancing the family's monthly or weekly expenses. So then the failure to get wage and payment will be very dangerous for the family and local governments could not strongly protect their citizen, who works virtually.

Different things will happen for the local companies that selling virtual services world-wide,¹⁷¹ if some thing happened to the wages, the local government could protect the employee better.¹⁷²

Sure that stronger expert will get global virtual employment easily before establishing their own company that treated virtual workers with more respect.¹⁷³

Virtual global employment could only practizising the Keynesian employment, interest and money partially, since it deals with many authorities, although it saves some working facility and employee transport, because of their after Keynesian Information Technology.

2.5.3. *Keyness' vs Price Discrimination*

Discriminatory prices¹⁷⁴ for various employment could be done, depends on the quality and service attitude of the providers. Luxury services needs more humble employee to serve, although they are not necessary paid more.

¹⁶⁹en.wikipedia.org/wiki/Common_law, **COMMON LAW**, also known as case law or precedent, is law developed by judges through decisions of courts and similar tribunals, as opposed to statutes

¹⁷⁰[en.wikipedia.org/wiki/Civil_law_\(legal_system\)](http://en.wikipedia.org/wiki/Civil_law_(legal_system)), **CIVIL LAW** (or civilian law) is a legal system originating in Western Europe, intellectualized within the framework of late Roman law,

¹⁷¹en.wikipedia.org/wiki/Infosys, **INFOSYS** Limited (formerly **INFOSYS** Technologies Limited) is an Indian multinational provider of business consulting, technology, engineering, and outsourcing

¹⁷²www.slideshare.net/shrmindia/hr-challenges-managing-virtual-work-t..., Scholars and practitioners differ on the definition of team and the degree of virtuality. The common factor is the predominant use of technology.

¹⁷³http://en.wikipedia.org/wiki/N._R._Narayana_Murthy, **Nagavara Ramarao Narayana Murthy**, better known as **N. R. Narayana Murthy**, is an Indian businessman and co-founder of **Infosys**. Murthy started Infosys in 1981 and served as its CEO from 1981 to 2002. From 2002 to 2011, he served as the Chairman. In 2011, he stepped down from the board and became Chairman Emeritus. Murthy serves as an independent director on the corporate boards of **HSBC** and has served as a director on the boards of **DBS Bank**, **Unilever**, **ICICI** and **NDTV**.

Swiss Hotel and Banking Industries could profit more from premium prices, similar things with French Fashion, Perfume, Wines and Cabarets.¹⁷⁵ Airline industry normally charge passenger in same flight differently, according to reservation and internal corporate regulations.¹⁷⁶

In the case of “*Apple and Oranges*” comparison above, the Keynesian employment could not directly related to simply interest and money, but more related to Kotler’s marketing decisions.

Although practiced widely in physical good industries, the value creation normally still depends on the customer’s perception and purchasing power, while *human touches* in direct selling or after sales support is extremely necessary in determining proper prices. Customer is the King and they could not imagine that less attractive people could also smart and qualified.¹⁷⁷

Only religion and Human Rights said that all people are equal. Marketing said differently that people with better purchasing power could dictates more on quality and preferences. So, if the customer is willing to pay, customer can do no wrong.

Another fact that people must consider now is that building perception is not cheap. It needs much money, ideas and energies to make things accepted in the customer’s mind. So then research based Public Relations and Advertisements must be done massively.

The research must deal with perception of the First, the Biggest and the Better as well, but in almost the case the first in Customer’s mind will be seen as better. Columbus¹⁷⁸

¹⁷⁴ en.wikipedia.org/wiki/Price_discrimination, **PRICE DISCRIMINATION** or **PRICE** differentiation exists when sales of identical goods or services are transacted at different **PRICES** from the same provider.

¹⁷⁵ en.wikipedia.org/wiki/Premium_pricing, **PREMIUM PRICING** is the practice of keeping the price of a product or service artificially high in order to encourage favorable perceptions among buyers,

¹⁷⁶ www.foxbusiness.com/.../how-to-get-cheapest-price-on-airf..., From the time and day you book, to your final destination here are industry secrets on how to get the cheapest **PRICE** for your next **AIRFARE** ticket.

¹⁷⁷ <http://www.psychologytoday.com/blog/the-scientific-fundamentalist/200903/beautiful-people-are-more-intelligent-i>, A large number of experiments over the years have shown that, when asked to rate the *intelligence* or competence of unknown others, people tend to rate attractive others as more intelligent and competent than unattractive others. This sentiment is captured in an old aphorism “What is beautiful is good.”

¹⁷⁸ http://en.wikipedia.org/wiki/Christopher_Columbus, **Christopher Columbus** (Italian: *Cristoforo Colombo*; Spanish: *Cristóbal Colón*; Portuguese: *Cristóvão Colombo*; before 31 October 1451 – 20 May 1506) was an explorer, navigator, and colonizer, born in the Republic of Genoa, in what is today northwestern Italy. Under the auspices of the Catholic Monarchs of Spain, he completed four voyages across the Atlantic Ocean that led to general European awareness of the American continents. Those voyages, and his efforts to establish permanent settlements on the island of Hispaniola, initiated the Spanish colonization of the New World.

known better as the founder of the new world, although facts said it is Leif Ericson, not him.¹⁷⁹

Why? Because marketing is the battle of fact in customer's mind and not wholly a conflict of realities as Keynesian said before the existence of modern economic and management.

2.6. Field Marshall Architecture vs Suggestion of the General Theory

Keynesian General Theory is the great achievement of the last century genius, which still valid today, although the world economy had changed drastically. There's nothing wrong with the inter relatedness theory. Area for improvement is just on the more complex branches of the modern economics and some Accounting facts regulates them. Its mathematical relations still valid, but more complex equation needed to describe it.

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M)+L-[A/V]\{[1+V]^U-1\})$$

Statement is basically Keynesian Employment, Interest and Money in modern economic constellation that is very short, but more closely related to the causal empirical facts.

Up to the current search in Google, not so many papers discussing the interdisciplinary business factor as requested by SEDAM-SEOUL's FACTS, even though almost every economist thought that several economic fields are related each other. But how? No one could explain it clearly because world and graphs are limited to describe more than three dimensional (**X, Y, Z**) *orthogonal* illustration.¹⁸⁰

Only Algebraic approach possible to state all equation precisely, and it is also interactive and becomes very short computable in its good sensitivity. Its disadvantages are only it needs more Economic Comprehension and Algebraic Equation skills.

¹⁷⁹ en.wikipedia.org/wiki/Leif_Ericson, **LEIF ERICSON** was a Norse explorer regarded as the first European to land in North America (excluding Greenland), nearly 500 years before Christopher Columbus

¹⁸⁰ www.scipress.org/e-library/rpf/pdf/chap2/0043.PDF, (**XYZ**) and the perpendicular. Also, the **ORTHOGONAL PROJECTION** a ' of the point A into R² (XY) means the intersection of R² (XY) and the perpendicular.

So, the proof of the pudding is in the eating, so then we could discuss it more intensively in the next chapter-3. In this stage let us be familiar with its general logics (or field marshall ideas):

Total = Consumption = Consumption = Total Local Money = Total Forex Owned

Income + Saving + Investments Issued by the Nation

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Almost every component had been discussed before in this paper, including its compounding formulas and multiplier effects implemented there.

It seems that all possibilities had been stated there. Could it be added for better interactive constellation and more accurate future predictions?

Yes, but not this time, because people need to absorb the main ideas before could deal with more complex constellation. So it is not optimum to let newly considered people in precise difficult constellation now. Only the main ideas stressed here and more sophisticated development should come after people be accustomed with these main ideas.

2.6.1. *Keyness' vs MNC/MNEon Global Trades*

How if the people do not agree with the proposed equilibrium?:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N$$

It is like annoying the Ricardo's classical international trade theory.¹⁸¹ British 20 Cloth or 10 Wines against Portugal's 10 Cloth or 20 Wine capability. Aside from Smith and Ricardo's difficult Linear programming, less Analitical traders could easily get rich by doing these:

- 1) Buy 20 Cloths in Britain and Exchange them to 40 Wines in Portugal
- 2) Then Exchanging 40 Portugal Wines to 80 Cloths in Britain
- 3) At the next, do convert the 80 Britain Cloths to 160 Wines in Portugal

¹⁸¹ <http://kalyan-city.blogspot.com/2011/02/ricardos-theory-of-comparative.html>, The classical theory of international trade is explained is 3 (three) components: 1) Absolute Cost Advantage, 2) Equal Cost Advantage, 3) Comparative Cost Advantage. For instance 2 (two) countries, Portugal and England, international trade can take place when there is a clear-cut cost advantage. However, trade can take place even in absence of absolute cost advantage. Trade can take place when the domestic exchange rates are different. Wine Cloth Domestic Exchange Rate

4) Then Exchanging 160 Portugal Wines to 320 Cloths in Britain

The insight is just following the market imperfection. If the Price is too High, Sell them at profit. On the contrary if Price is too Low, Buy them at Profit. So by continuing Buy Low and Sell High, the Profit will be Accumulated quickly.

1) Let's take for instance:

$$PQ < [1/K] \{ [G-T] + [O-F][1+E]^N \}$$

Logically at same Quantity (Q), the Price (P) must be Higher or Inflated, so if the Price is still the same or Lower than

$$[1/K] \{ [G-T] + [O-F][1+E]^N \} / Q$$

It is a Buying signal at profit for Cheap Buying below the equilibrium

2) Let's take for instance:

$$PQ > [1/K] \{ [G-T] + [O-F][1+E]^N \}$$

Logically at same Quantity (Q), the Price (P) must be Lower or Deflated, so if the Price is still the same or Higher than

$$[1/K] \{ [G-T] + [O-F][1+E]^N \} / Q$$

It is a Selling signal at profit for Expensive Selling below the equilibrium

2.6.2. *Keyness' vs Trading Nations*

How if the people do not agree with the proposed equilibrium in international currency?:

$$Y = [C+S] = [C+I] = R = PQ = [1/Z] \{ [X-M] + L - [A/V] \{ [1+V]^U - 1 \} \}$$

Let's say that 1000 Million Square miles of land at USD 1 Million per miles, worth USD 1 Trillion. If the Money becomes USD 2 Trillion, for Price at still USD 1 Million per mile, with or without Smith and Ricardo's difficult Linear programming, less Analitical traders could easily get rich by doing these:¹⁸²

¹⁸² www.investopedia.com/terms/l/landvalue.asp. The **VALUE** of a piece of property, including both the **VALUE** of the **LAND** itself as well as any improvements that have been made to it. Land values increase when demand for land exceeds the supply of available land, or if a particular piece of land has intrinsic value greater than neighboring areas (e.g. oil can be found on the land).

- 1) Buy 1000 Million Square miles of land at USD 1 Million per mile= USD 1 Trillion
- 2) Then Sell only the Land at more than USD 2 Million per mile, and never less than that
- 3) Increase the Price of 1000 Million Square miles of land at USD 3 Million per miles, if the Money becomes USD 3 Trillion,

Similar insight is just following the market imperfection. If the Price is too High, Sell them at profit. On the contrary if Price is too Low, Buy them at Profit. So by continuing Buy Low and Sell High, the Profit will be Accumulated quickly.

- 1) Let's take for instance:

$$PQ < [1/Z]([X-M] + L - [A/V]\{[1+V]^U - 1\})$$

Logically at same Quantity (Q), the Price (P) must be Higher or Inflated, so if the Price is still the same or Lower than

$$[1/Z]([X-M] + L - [A/V]\{[1+V]^U - 1\})/Q$$

It is a Buying signal at profit for Cheap Buying below the equilibrium

- 2) Let's take for instance:

$$PQ > [1/Z]([X-M] + L - [A/V]\{[1+V]^U - 1\})$$

Logically at same Quantity (Q), the Price (P) must be Lower or Deflated, so if the Price is still the same or Higher than

$$[1/Z]([X-M] + L - [A/V]\{[1+V]^U - 1\})/Q$$

It is a Selling signal at profit for Expensive Selling below the equilibrium

2.6.3. Social Philosophy of Field Marshall Architecture vs General Theory

How if the people do not agree with the proposed equilibrium in foreign exchange rate?:

$$PQ = [1/K]\{[G-T] + [O-F][1+E]^N\} = [1/Z]([X-M] + L - [A/V]\{[1+V]^U - 1\})$$

Let's say that Indonesian authority had 10,000 Trillion IDR issued at USD 1 Billion hard currency owned, so the fair worth of 1 USD= IDR 10,000, as the latest equilibrium between the two (USD/IDR).

If the IDR becomes 9,000 Trillion, for at USD 1.1 Billion, at still 10,000 USD/IDR Exchange Rate, by using Smith and Ricardo's Linear programming, less Analitical traders could arbitrage profit by doing these:

- 1) Sell 0.9 Billion USD at USD/IDR 10,000 and pull back all the IDR 9,000 Trillion

2) So then no more IDR exist in the world, so the Country will have no IDR obligations

3) Keep the $1.1 - 0.9 = 0.2$ Billion USD, and prepare to Buy USD if its less than USD/IDR 9.000

In this case, let USD be the *currency treated as commodity*¹⁸³ and IDR is the currency reference, in price quotation terms. Similar insight is just following the market imperfection. If the Price is too High, Sell them at profit. On the contrary if Price is too Low, Buy them at Profit. So by continuing Buy Low and Sell High, the Profit will be Accumulated quickly.

1) Let's take for instance:

$$[1/K]\{[G-T]+[O-F][1+E]^N\} > [1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Logically at same Quantity (Q) the Price (P) of USD must be Higher or Inflated than USD/IDR= 10,000, so if the Price is still the same or Lower than it:

$$[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})/Q$$

It is a Buying signal at profit for Cheap Buying below the equilibrium

2) Let's take for instance:

$$[1/K]\{[G-T]+[O-F][1+E]^N\} < [1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Logically at same Quantity (Q), the Price (P) must be Lower or Deflated, so if the Price is still the same or Higher than

$$[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})/Q$$

It is a Selling signal at profit for Expensive Selling below the equilibrium

3. The New 21 Powerful Models of the Findings for Doing Business in Global Economy

The Findings, after some Theoretical, Causal and Empirical Studies resulting construct:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

¹⁸³ www.howthemarketworks.com/forex/real-time-forex-quotes.php, **FOREX** real time **QUOTES**: Red **PRICES** have gone down in the past few seconds. Green **PRICES** have gone up. Market Data by Xignite. Warning: Real-life currency

For **A-Z** abbreviation (Except the **B, D, H, J**), representing Interactive Relation between Income, Consumption, Saving, Investments, Local Fiscal, Local Monetary, Local Reserve Requirement, Balance of Trade, Foreign Reserve Requirement and Balance of Foreign Debt. (cf appendix, p. 424).

Main idea of using Algebraic Capital Letter is continuing the common economic mathematical expression like in famous macroeconomic formula:

$$S+T= I+G+[X-M]$$

Other Capital letters are used for specific identity representation (avoiding similar expression of different things) and short Algebraic relationship expression.

So far, this method has not yet common in Microeconomics and Accounting, while in Econometric and Macroeconomics, it just appears on some simple linear and series of linear reciprocal dynamic programming, which most of them just be a One Quadrant (both Positive **X** and Positive **Y**), Cartesian **XY** Graph.

3.1. Interactive & Comprehensive Global Macro Economic Architecture

The comprehensive Field Marshall Architecture of:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Herewith will be highlighted on its macro Part:

$$Y=[C+S]=[C+I]=[1/K]\{[G-T]+[O-F][1+E]^N\}$$

The terminology of Income (**Y**) here, is not coherence with Accounting Income, but more similar to Accounting Cash Inflow. Moderately it is not any of them, but precisely a Money Flow, both from Loan, Fiscal and Monetary activities.¹⁸⁴

This is necessary to compute the exact amount of all legal money, since it shows the total money from Fiscal Budget (**G-T**) and Monetary instruments (**O-F**), to be used for **C**= Consumption, Savings (**S**) and /or Investments (**I**), related to its Kind of Reserve (**K**), Expected Interest (**E**) and its Number of Period (**N**).¹⁸⁵

¹⁸⁴ en.wikipedia.org/wiki/John_Kenneth_Galbraith, John Kenneth "Ken" **GALBRAITH**, OC was a Canadian-American economist. He was a Keynesian, an institutionalist, and a leading proponent of 20th-century

¹⁸⁵ books.google.com › [Business & Economics](#) › [Economics](#) › [General](#), In this timeless analysis, John Kenneth Galbraith, in a witty and sometimes hilarious manner, traces the history of money from the kings of Lydia to the early 1970s, using the lessons of the past to illuminate the economic turmoil of the present

As the leading Keynesian scholar, Galbraith seen that Money (**G-T**) be the most important factor of the Keynesian employment thoughts, with Expected Interest (**E**), determining options between the Saving (**S**) against the Investment (**I**) as the Go >< Not Go, entrepreneurial decision making on number of employment.

Although it needs more Income (**Y**)¹⁸⁶ analysis, from Accounting *Profit and Loss Statement*¹⁸⁷ determining the personal positive or negative Savings (**S**), then for individual return over the market average return in Treynor-Sharpe's *Capital Asset Pricing Model*,¹⁸⁸ the validity of Galbraith works are very much obvious.

Aside from the Accounting's Fixed and Variable Cost records, the *Econometric Regression*¹⁸⁹ between the Total Cost against its Quantity (**Q**) could also contribute significant understanding about the semi or *Quasi Fixed Cost*¹⁹⁰ involved, which could also be continued to *Single Index Model*, the risky investment's simple analysis.¹⁹¹

3.1.1. *Y= The Impact Interactive Factor Changes to Income*

From the Field Marshall Architecture of:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

It could be found that:

$$Y=[C+S]$$

Means that normally the income (**Y**) used for **C**= Consumption

And **S**= Savings be its Profit

¹⁸⁶en.wikipedia.org/wiki/Fixed_income_analysis, Fixed **INCOME ANALYSIS** is the valuation of fixed income or debt securities, and the analysis of their interest rate risk, credit risk, and likely price behavior

¹⁸⁷beginnersinvest.about.com > ... > *Investing Lessons*, The primary purpose of the **INCOME** statement is to report a company's earnings to investors. **INCOME** statement **ANALYSIS** can provide important insights into profit

¹⁸⁸ en.wikipedia.org/wiki/Capital_asset_pricing_model, In finance, the **CAPITAL ASSET PRICING MODEL (CAPM)** is used to determine a theoretically appropriate required rate of return of an asset, if that asset is to be added

¹⁸⁹ en.wikipedia.org/wiki/Econometrics, **ECONOMETRICS** is the application of mathematics and statistical methods to economic data and described as the branch of economics that aims to give empirical explanation

¹⁹⁰www.nber.org/papers/w0597, We formulate a **VARIABLE COST** function model in which certain inputs are treated as **QUASI**-fixed, and develop a simple statistical test of whether optimization occurs

¹⁹¹en.wikipedia.org/wiki/Single-index_model, The **SINGLE-INDEX MODEL (SIM)** is a simple asset pricing model to measure both the risk and the return of a stock, commonly used in the finance industry.

$$Y=[C+S]=[C+I]$$

Shows that if the banking System works, the Profit could also be Invested (**I**)

At (**I**<**S**) after the Investment Expenses

$$Y=[1/K]\{[G-T]+[O-F][1+E]^N\}$$

Be the Keynesian-Galbraith's Total local Money Generated

and

$$Y=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

As its Smith-Ricardo's Foreign Currency Magnitude

At Equilibrium of Foreign Exchange Rate

$$[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

As the Price Quotation of Currency Commodity

So then the authority could implement *Open Market Operation*¹⁹² (Buy Low, Sell High) to gain profit from the imperfection against the Calculated Equilibrium of Different Currency Accounting Balance.

The Accounting give strong Critics to the contrasting Market Intervention¹⁹³ (Buy High, Sell Low), an effort of the Authority to stabilize the Exchange Rate, that is an Obvious Accounting Loss for buying the image of stability.

Even in a less free country, this common macro economic effort is seen as illegal because transferring the authority losses to public profits, that only few people could benefit from the losing of public assets.¹⁹⁴

3.1.2. C= The Impact Interactive Factor Changes to Consumption

From the Field Marshall Architecture of:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

It could be found that:

¹⁹² en.wikipedia.org/wiki/Open_market_operation, An **OPEN MARKET OPERATION** (also known as **OMO**) is an activity by a central bank to buy or sell government bonds on the open market.

¹⁹³ www.tutor2u.net/.../as-marketfailure-government-intervention-2.html, As **MARKET** Failure. **GOVERNMENT INTERVENTION** in the **MARKET**. In a free **MARKET** economic system, scarce resources are allocated through the price mechanism

¹⁹⁴ http://wps.pearsoned.co.uk/ema_uk_he_sloman_econbus_3/18/4748/1215583.cw/index.html, Government intervention in the market sets out to attain two goals: social efficiency and equity. Social efficiency is achieved at the point where the marginal benefits to society for either production or consumption are equal to the marginal costs of either production or consumption. Issues of equity are difficult to judge due to the subjective assessment of what is, and what is not, a fair distribution of resources.

$$C=[Y-S]$$

Means that normally depends on the income (Y) used

And the S= Savings be its Profit

$$C=[Y-S]=[Y-I]$$

Shows the permissible C= Consumption after the planned Investment (I)

At (I<S) because of the Investment Expenses

So the C= Consumption in local currency

$$C=[Y-S]=[1/K]\{[G-T]+[O-F][1+E]^N\}-S$$

Aside from Y and S also depends on the K, G, T, O, F, E and N

Or

$$C=[Y-I]=[1/K]\{[G-T]+[O-F][1+E]^N\}-I$$

Other than Y and I also depends on the K, G, T, O, F, E and N

and

the C= Consumption in foreign currency

$$C=[Y-S]=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-S$$

Aside from Y and S also depends on the Z, X, M, L, A, V and U

Or

$$C=[Y-I]=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-I$$

Other than Y and I also depends on the Z, X, M, L, A, V and U

At Equilibrium of Foreign Exchange Rate

$$[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

As the Price Quotation of Currency Commodity

So the exchange rate depends on the K, G, T, O, F, E, N against Z, X, M, L, A, V and U

Consumption in Economic is what people Buy and never sold gain, this is similar to legal definition of consumption, which slightly different compared to Consumption in Ecological understanding of for gone loses.

A bought Mango that bought, eaten and its seed planted, ecologically is not consumed, because the fruit flesh has few relevance to the tree's regeneration. It is still productive and possibly resulting thousands of new Mangoes. On the other hand the bought and burn Manggo, economically is consumed but no body eat that and it is definitely for gone loses.

So, sharpen definition of biological and economic consumption or productivity must be done in discussing the meaning of post Keynesian Employment, Interest and Money.

3.1.3. *S= The Impact Interactive Factor Changes to Savings*

The Field Marshall Architecture of Interdisciplinary Economic said that:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

It could be found that:

$$S=[Y-C]$$

Means that normally depends on the income (Y) used

And the C= Consumption

$$S=[Y-C]=I$$

Shows the permissible S= Savings related to planned Investment (I)

At (I<S) because of the Investment Expenses

So the S= Savings in local currency¹⁹⁵

$$S=[Y-C]=[1/K]\{[G-T]+[O-F][1+E]^N\}-C$$

Aside from Y and C also depends on the K, G, T, O, F, E and N

Or

$$S=I=[1/K]\{[G-T]+[O-F][1+E]^N\}-C$$

Other than Y and I also depends on the K, G, T, O, F, E and N

and

the S= Savings in foreign currency¹⁹⁶

$$S=[Y-C]=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-C$$

Aside from Y and C also depends on the Z, X, M, L, A, V and U

Or

$$S=I=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-C$$

Other than Y and C also depends on the Z, X, M, L, A, V and U

At Equilibrium of Foreign Exchange Rate¹⁹⁷

¹⁹⁵ en.wikipedia.org/wiki/**Saving**, **SAVING** is income not spent, or deferred consumption. Methods of **SAVING** include putting money aside in a bank or pension plan. **SAVING** also includes reducing

¹⁹⁶ www.fractionallife.com/articles_savings_through_foreign_exchange...., **SAVINGS** through **FOREIGN EXCHANGE**. The fractional ownership market is fast becoming the smartest way for individuals to live the millionaire lifestyle at a fraction

$$[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

As the Price Quotation of Currency Commodity¹⁹⁸

So the exchange rate depends on the **K, G, T, O, F, E, N** against **Z, X, M, L, A, V** and **U**

3.1.4. *I= The Impact Interactive Factor Changes to Investments*

From the Field Marshall Architecture of:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

It could be found that:

$$I=[Y-C]$$

Means that normally depends on the income (**Y**) used

And the **C**= Consumption

$$I=[Y-C]=S$$

Shows the planned **I**= Savings related to the possibility of Savings (**S**)

At (**I**<**S**) because of the Investment Expenses

So the **I**= Investment in local currency¹⁹⁹

$$I=[Y-C]=[1/K]\{[G-T]+[O-F][1+E]^N\}-C$$

Aside from **Y** and **C** also depends on the **K, G, T, O, F, E** and **N**

Or

$$I=S=[1/K]\{[G-T]+[O-F][1+E]^N\}-C$$

Other than **Y** and **I** also depends on the **K, G, T, O, F, E** and **N**

and

the **I**= Investment in foreign currency²⁰⁰

$$I=[Y-C]=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-C$$

¹⁹⁷ <http://www.investopedia.com/articles/basics/04/050704.asp#axzz2HxAfaUp>, **Determinants of Exchange Rates:** Numerous factors determine exchange rates, and all are related to the trading relationship between two countries. 1) **Differentials in Inflation**, 2) **Differentials in Interest Rates**, 3) **Current-Account Deficits**, 4) **Public Debt**, 5) **Terms of Trade** and 6) **Political Stability and Economic Performance**

¹⁹⁸ www.investopedia.com/ask/answers/06/maincurrencypairs.asp, There are many official **CURRENCIES** that are used all over the world, but there only a handful of **CURRENCIES** that are **TRADED** actively in the forex.

¹⁹⁹ www.investopedia.com/terms/i/investment.asp, An asset or item that is purchased with the hope that it will generate income or appreciate in the future. In an economic sense, an **INVESTMENT** is the purchase of mutual funds and exchanged traded funds, stocks, etc.

²⁰⁰ www.econlib.org/library/Enc/Investment.html, **INVESTMENT** is usually the result of forgoing consumption. In a purely agrarian society, early humans had to choose how much grain to eat after the harvest

Aside from **Y** and **C** also depends on the **Z, X, M, L, A, V** and **U**

Or

$$I=S=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-C$$

Other than **Y** and **C** also depends on the **Z, X, M, L, A, V** and **U**

At Equilibrium of Foreign Exchange Rate

$$[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

As the Price Quotation of Currency Commodity

So the exchange rate depends on the **K, G, T, O, F, E, N** against **Z, X, M, L, A, V** and **U**

Aside from the individual small scale investments, the global world after keynes (especially the multi national enterprises), send the money abroad for better opportunity.²⁰¹

3.2. Interactive & Comprehensive Global Micro Economic Architecture

The microeconomic also following the Field Marshall Architecture:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Especially its left part:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}$$

1) Yes, in the country Accounting T-account:

The toatal people's **I**=Income is equal to their **R**=Revenue

$$Y=R$$

Then if they **S**= Save their **I**=Income in the Banking System

$$[C+I]=[C+S]$$

Or simply could be reinvested

$$I=S$$

2) For the Market Equilibrium in T-account format:

$$R=PQ$$

Means that the Total **R**=Revenue is Multiplication of **P**= Price to its **Q**= Quantity

3) Finally for the Local Currency Based Market T-account:

²⁰¹ en.wikipedia.org/wiki/**Foreign_direct_investment**, **FOREIGN DIRECT INVESTMENT (FDI)** is direct investment into production or business in a country by a company in another country, either by buying a company in the stock market or establish a new one abroad.

$$PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}$$

Since the amount of local money is basically fiscal

$$[G-T]$$

Then add by the Monetary Bills

$$[O-F][1+E]^N$$

Then they're multiplied by the

$$[1/K]$$

At K= Kind of Reserve Required for the local money

4) Then in shorter expression, the more comprehensive equation is:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}$$

5) Since the whole composition is:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Which is relevant in some small trading countries

Like Singapore, Switzerland and Hongkong

Since their do trading

Both in Local

And Foreign Currency as Well

3.2.1. P= The Impact Interactive Factor Changes to Weighted Average Price

According to the Field Marshall Architecture:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

So then related to the Income (Y), then:

$$P=Y/Q$$

Then related to C= Consumption, S= Savings and Q= Quantity, then:

$$P=[C+S]/Q$$

If determined by C= Consumption, I= Investment and Q= Quantity, then:

$$P=[C+I]/Q$$

In Market forces against the R= Revenue and Q= Quantity, then:

$$P=R/Q$$

But in more complex local money Fiscal [G-T] and Monetary [O-F][1+E]^N with K= Kind of Reserve Required or [1/K] as the Multiplier against Q= Quantity, then:

$$P=[1/K]\{[G-T]+[O-F][1+E]^N\}/Q$$

Almost similar in complex foreign money Trade $[X-M]$ and International Debt determined as $L-[A/V]\{[1+V]^U-1\}$ with Z = Zoned Foreign Reserve or $[1/Z]$ as the foreign Multiplier against Q = Quantity, then:

$$P=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})/Q$$

The finding also depends on its Elasticity²⁰² on P = Price Demanded,²⁰³ which is very common in Accounting but too complex for the Econometric regression that commonly are linear.

P = Price here should be read as the weighted average matrix $[P]$ for all the relevant commodities (goods and services) at their individual worth and coherence quantity, both in common Demand or Supply²⁰⁴ and their suitable formulas²⁰⁵ for all the possibilities.

3.2.2. Q = The Impact Interactive Factor Changes to Weighted Average Quantity

According to the Field Marshall Architecture:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

So then related to the Income (Y), then:

$$Q=Y/P$$

Then related to C = Consumption, S = Savings and P = Price, then:

$$Q=[C+S]/P$$

If determined by C = Consumption, I = Investment and P = Price, then:

$$Q=[C+I]/P$$

In Market forces against the R = Revenue and P = Price, then:

$$Q=R/P$$

²⁰² en.wikipedia.org/wiki/Elasticity_(economics), In economics, **ELASTICITY** is the measurement of how changing one economic variable affects others. For example: "If I lower the price of my product, how much

²⁰³ en.wikipedia.org/wiki/Price_elasticity_of_demand, Price **ELASTICITY OF DEMAND** (PED or Ed) is a measure used in economics to show the responsiveness, or elasticity, of the quantity demanded of a good or service

²⁰⁴ en.wikipedia.org/wiki/Price_elasticity_of_supply, Price **ELASTICITY OF SUPPLY** (PES or Es) is a measure used in economics to show the responsiveness, or elasticity, of the quantity supplied of a good or service

²⁰⁵ **economics**.about.com/cs/microhelp/a/priceelasticity.htm, The **FORMULA** for the Price **ELASTICITY** of Demand (PEoD) is: PEoD = (% Change ... A good **ECONOMIST** is not just interested in calculating numbers.

But in more complex local money Fiscal **[G-T]** and Monetary **[O-F][1+E]^N** with **K=** Kind of Reserve Required or **[1/K]** as the Multiplier against **P=** Price, then:

$$Q=[1/K]\{[G-T]+[O-F][1+E]^N\}/P$$

Almost similar in complex foreign money Trade **[X-M]** and International Debt determined as **L-[A/V]{[1+V]^U-1}** with **Z=** Zoned Foreign Reserve or **[1/Z]** as the foreign Multiplier against **P=** Price, then:

$$Q=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})/P$$

The advantage of this interactive²⁰⁶ Architecture is placing precise possible condition in sensitivity arrangement that could be implied for normal commodities (goods and /or services) and also relevant for the contrary ,²⁰⁷ inferior commodities (goods and /or services),²⁰⁸ as well although they behave differently in the market,²⁰⁹ but their mathematical for Algebraic) composition still working based on the similar principle.

3.2.3. *R= The Impact Interactive Factor Changes to Revenue or Sales*

R= Revenue os Sales is the Total of **Q=** Quantity sold multiplied by the proper **P=** Price, it is depend on the **Y=** Income:

Since the **Y=** Income is the maximum **R=** Revenue, then

$$R= Y$$

Or

$$Y=R=PQ$$

According to the Field Marshall Architecture:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Because **Y=** Income could be **C=** Consumed or **S=** Saved, it is:

$$Y= [C+S]$$

And it could also be **I=** Invested

²⁰⁶ www.sil.org/lingualinks/.../WhatsAnInteractiveReadingMode.htm, An **INTERACTIVE** reading **MODE** **L** attempts to combine the valid insights of bottom-up and top-down **MODELS**. It attempts to take into account the

²⁰⁷ [Normal good - WIKIPEDIA, THE FREE ENCYCLOPEDIA, EN.WIKIPEDIA.ORG/WIKI/NORMAL_GOOD](http://en.wikipedia.org/wiki/Normal_good), IN ECONOMICS, normal goods ARE ANY GOODS FOR WHICH DEMAND INCREASES WHEN INCOME INCREASES and FALLS ... EXAMPLE OF A normal good and AN inferior good

²⁰⁸ en.wikipedia.org/wiki/Inferior_good, In economics, an **INFERIOR GOOD** is a good that decreases in demand when consumer income rises, unlike normal goods, for which the opposite is observed.

²⁰⁹ answers.yahoo.com > [All Categories](#) > [Social Science](#) > [Economics](#), Top answer: When your income goes up, your **NORMAL GOODS** consumption increases, AND your **INFERIOR GOODS** consumption decreases.

$$Y = [C+I]$$

Then combining the two, we get:

$$Y = R = PQ = [C+S] = [C+I]$$

In local money, Fiscal $[G-T]$ and Monetary $[O-F][1+E]^N$ with K = Kind of Reserve Required or $[1/K]$ as the Multiplier against P = Price, then:

$$Y = [C+S] = [C+I] = R = PQ = [1/K] \{ [G-T] + [O-F][1+E]^N \}$$

Finally in complex foreign money Trade $[X-M]$ and International Debt determined as $L - [A/V] \{ [1+V]^U - 1 \}$ with Z = Zoned Foreign Reserve or $[1/Z]$ as the foreign Multiplier against

P = Price, then:

$$Y = [C+S] = [C+I] = R = PQ = [1/Z] \{ [X-M] + L - [A/V] \{ [1+V]^U - 1 \} \} / P$$

The principle is relevant for both personal C = Consumptive or I = Industrial or Investment commodities (goods and /or services) both as complimentary,²¹⁰ or substitution.²¹¹

3.3. Interactive & Comprehensive Local Monetary and Fiscal Budget Architecture

The next intellectual challenge to combining and constructing all Economic structures is:

- 1) To make all famous Economic Factors precisely composed, while representing all branches of economic disciplines, that already known world-wide
- 2) The well known teachings must be written as Interactive Formula, shows that a change in one factor could definitely impacting all the other factors accurately
- 3) The formulas must be chained in Model Formats, so then the changing of one formula could make the whole constellation adjusted as proper
- 4) Finally all models must be integrated constructed as a planned and sharp measured structure of great Architecture, as a memorable monumental landmark of useful achievement

The proposed According to the Field Marshall Architecture:

²¹⁰ www.businessdictionary.com/definition/complementary-good.html, Definition of **COMPLEMENTARY GOOD**: Material or good whose use is interrelated with the use of an associated or paired good such that a demand for one

²¹¹ en.wikipedia.org/wiki/Substitute_good, In economics, one way two or more **GOODS** are classified is by examining the relationship of the demand schedules when the price of one **GOOD** changes.

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Has calculating all Monetary Factors,²¹² $[O-F][1+E]^N$ aside from the Fiscal Budget $[G-T]$ inflation,²¹³ related to employment,²¹⁴ $Y=[C+S]=[C+I]=R=PQ$ while considering Q = Quantity of Employment available and P = Price of aggregate or the weighted average employee wages.

In this part, all the discussion will be focused on the local money

$$[1/K]\{[G-T]+[O-F][1+E]^N\}$$

Especially putting attention on the K = Kind of local reserve requirement, G = Government Expenditures, T = Taxes, O = Obligations of its Central Bank, F = Financial Bonds issued and bought by the financial authority, E = Expected local interest there and N = Number of borrowing period elements, in relations to Y = Income in Home Economic, C = Consumption vs S =Savings and the banking I = Investment possibilities:

$$Y=[C+S]=[C+I]$$

3.3.1. K = The Impact Interactive Factor Changes to Kind of Local Reserve

According to the Field Marshall Architecture:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

So then regarding to the Kind of Local Money Reserve Required (K), then:

$$\{[G-T]+[O-F][1+E]^N=$$

$$KY=K[C+S]=K[C+I]=KR=KPQ=[K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Then related to C = Consumption, S = Savings and P = Price, then:

$$K= \{[G-T]+[O-F][1+E]^N/[C+S]$$

or

²¹² in.answers.yahoo.com › ... › Higher Education (University +), Top answer: **MONETARY FACTORS** implies money or financial factors, non-monetary factors are the ones which do not involve money

²¹³ en.wikipedia.org/wiki/Monetary_inflation, The system is complex and there is a great deal of argument on the issues involved, such as how to measure the **MONETARY** base, or how much **FACTORS** like

²¹⁴ www.federalreserve.gov/faqs/money_12856.htm, Sep 14, 2012 – As a result of these **FACTORS**, household wealth increases, which spurs even more spending. These linkages from **MONETARY** policy to production

If determined by **C**= Consumption, **I**= Investment and **P**= Price, then:

$$K = \{[G-T] + [O-F][1+E]^N / [C+I]\}$$

In Market forces against the **R**= Revenue, **Q**= Quantity and **P**= Price, then:

$$K = \{[G-T] + [O-F][1+E]^N / R\}$$

or

$$K = \{[G-T] + [O-F][1+E]^N / [PQ]\}$$

But in more complex local money Fiscal **[G-T]** and Monetary **[O-F][1+E]^N** with **K**= Kind of Reserve Required or **[1/K]** as the Multiplier against **P**= Price, then:

$$K = \{[G-T] + [O-F][1+E]^N / Y\}$$

Almost similar in complex foreign money Trade **[X-M]** and International Debt determined as **L-[A/V]{[1+V]^U-1}** with **Z**= Zoned Foreign Reserve or **[1/Z]** as the foreign Multiplier against **P**= Price, then:

$$K = [1/Z]([X-M] + L - [A/V]\{[1+V]^U - 1\}) / Y$$

So

$$K([X-M] + L - [A/V]\{[1+V]^U - 1\}) = Z\{[G-T] + [O-F][1+E]^N\}$$

Or

$$K = Z\{[G-T] + [O-F][1+E]^N\} / ([X-M] + L - [A/V]\{[1+V]^U - 1\})$$

As international comparison of Reserve banking,²¹⁵ myths,²¹⁶ multiplier²¹⁷

3.3.2. *G= The Impact Interactive Factor Changes to Government Expenditures*

The Fiscal **G**= Government expenditures,²¹⁸ in its prerogative economic freedom²¹⁹ in the whole construction of Field Marshall Architecture:

$$Y = [C+S] = [C+I] = R = PQ = [1/K]\{[G-T] + [O-F][1+E]^N\} = [1/Z]([X-M] + L - [A/V]\{[1+V]^U - 1\})$$

If focusing on the local money, it's better written as:

²¹⁵ en.wikipedia.org/wiki/**Fractional_reserve_banking**, **FRACTIONAL-RESERVE BANKING** is the practice whereby banks retain only a portion of their customers' deposits as readily available reserves (currency or deposits)

²¹⁶ www.debtdeflation.com/.../the-myth-of-fractional-reserve-banking/, Three Business Spectator readers contacted me directly about one topic last week – **BANK** money creation, and how **BANK RESERVES** work.

²¹⁷ www.forbes.com/.../ron-paul-fractional-reserve-banking-and-the-mo..., It's certainly true that **BANKS** could maintain 100% of funds deposited, but if so, they wouldn't be **BANKS**.

²¹⁸ en.wikipedia.org/wiki/**Government_spending**, **GOVERNMENT SPENDING** (or **GOVERNMENT EXPENDITURE**) includes all government consumption and investment but excludes transfer payments made by a state.

²¹⁹ www.heritage.org/index/**government-spending**, **GOVERNMENT SPENDING** is one of the components in measuring the Index of Economic Freedom. It looks at the level of **GOVERNMENT EXPENDITURES** and how it affects

$$[G-T]+[O-F][1+E]^N=KY=K[C+S]=K[C+I]=KR=KPQ$$

$$=[K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Then based on **Y**= Income:

$$[G-T]=KY-[O-F][1+E]^N$$

Regarding its **C**= Consumption and **S**= Savings:

$$[G-T]=K[C+S]-[O-F][1+E]^N$$

So regarding its **C**= Consumption and **I**= Investment possibilities:

$$[G-T]=K[C+I]-[O-F][1+E]^N$$

While based on **R**= Revenue, it becomes:

$$[G-T]=KR-[O-F][1+E]^N$$

When based on the market **P**= Price and **Q**= Quantity:

$$[G-T]=KPQ-[O-F][1+E]^N$$

And compared to its Foreign Exchange:

$$[G-T]=[K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-[O-F][1+E]^N$$

Then for the specific **G**= Government Expenditures, as an Economic Factor:

$$G=T+KY-[O-F][1+E]^N$$

and based on its **C**= Consumption and **S**= Savings:

$$G=T+K[C+S]-[O-F][1+E]^N$$

Then based on its **C**= Consumption and **I**= Investmentss:

$$G=T+K[C+I]-[O-F][1+E]^N$$

where based on its local money it becomes:

$$G=T+KR-[O-F][1+E]^N$$

since on the market **P**= Price and **Q**= Quantity:

$$G=T+KPQ-[O-F][1+E]^N$$

Finally compared to its Foreign Exchange:

$$G=T+[K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-[O-F][1+E]^N$$

3.3.3. *T= The Impact Interactive Factor Changes to Taxes*²²⁰

Back to the whole construction of Field Marshall Architecture:

²²⁰en.wikipedia.org/wiki/Tax, A **TAX** (from the Latin *taxo*; "I estimate") is a financial charge or other levy imposed upon a taxpayer (an individual or legal entity) by a state or the functional

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

If focusing on the local money, it could be more simple if written as:

$$[G-T]+[O-F][1+E]^N=KY=K[C+S]=K[C+I]=KR=KPQ \\ = [K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Then based on Y = Income:

$$[G-T]= KY-[O-F][1+E]^N$$

Regarding its C = Consumption and S = Savings:

$$[G-T]= K[C+S]-[O-F][1+E]^N$$

So regarding its C = Consumption and I = Investment possibilities:

$$[G-T]= K[C+I]-[O-F][1+E]^N$$

While based on R = Revenue, it becomes:

$$[G-T]= KR-[O-F][1+E]^N$$

When based on the market P = Price and Q = Quantity:

$$[G-T]= KPQ-[O-F][1+E]^N$$

And compared to its Foreign Exchange:

$$[G-T]= [K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-[O-F][1+E]^N$$

Then for the specific T = Tax, as an Economic Factor:

$$T=G-KY-[O-F][1+E]^N$$

and based on its C = Consumption and S = Savings:

$$T=G-K[C+S]-[O-F][1+E]^N$$

Then based on its C = Consumption and I = Investments:

$$T=G-\{K[C+I]-[O-F][1+E]^N\}$$

where based on its local money it becomes:

$$T=G-\{KR-[O-F][1+E]^N\}$$

since on the market P = Price and Q = Quantity:

$$T=G-\{KPQ-[O-F][1+E]^N\}$$

Finally compared to its Foreign Exchange:

$$T=G-[K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})+[O-F][1+E]^N$$

3.3.4. F = The Impact Interactive Factor Changes to Financial Bonds

Based on the whole construction of Field Marshall Architecture:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

If focusing on the local money, it could be helping if written as:

$$[G-T]+[O-F][1+E]^N=KY=K[C+S]=K[C+I]=KR=KPQ \\ = [K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Then based on **Y**= Income: $KY-[G-T]=[O-F][1+E]^N$

Regarding its **C**= Consumption and **S**= Savings: $K[C+S]-[G-T]=[O-F][1+E]^N$

So regarding its **C**= Consumption and **I**= Investment: $K[C+I]-[G-T]=[O-F][1+E]^N$

While based on **R**= Revenue, it becomes: $KR-[G-T]=[O-F][1+E]^N$

When based on the market **P**= Price and **Q**= Quantity: $KPQ-[G-T]=[O-F][1+E]^N$

And its Foreign Exchange: $[K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-[G-T]=[O-F][1+E]^N$

and based on its **Y**= Income: $\{KY-[G-T]\}/[1+E]^N=[O-F]$

and based on its **C**= Consumption and **S**= Savings: $\{K[C+S]-[G-T]\}/[1+E]^N=[O-F]$

Then based on its **C**= Consumption and **I**= Investments: $\{K[C+I]-[G-T]\}/[1+E]^N=[O-F]$

While based on **R**= Revenue, it becomes: $\{KR-[G-T]\}/[1+E]^N=[O-F]$

When based on the market **P**= Price and **Q**= Quantity: $\{KPQ-[G-T]\}/[1+E]^N=[O-F]$

And to its Forex: $[K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})/[1+E]^N-[G-T]/[1+E]^N=[O-F]$

If focused on its **F**= Financial Sector's Debts to the Authority: $F=O-\{KY-[G-T]\}/[1+E]^N$

and based on its **C**= Consumption and **S**= Savings: $F=O-\{K[C+S]-[G-T]\}/[1+E]^N$

Then based on its **C**= Consumption and **I**= Investments: $F=O-\{K[C+I]-[G-T]\}/[1+E]^N$

where based on its local money it becomes: $F=O-\{KR-[G-T]\}/[1+E]^N$

since on the market **P**= Price and **Q**= Quantity: $F=O-\{KPQ-[G-T]\}/[1+E]^N$

And its Forex: $F=O-[K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})/[1+E]^N+[G-T]/[1+E]^N$

3.3.5. *O= The Impact Interactive Factor Changes to Organized T-Bills*

Based on the whole construction of Field Marshall Architecture:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

If focusing on the local money, it is much easier written as:

$$[G-T]+[O-F][1+E]^N=KY=K[C+S]=K[C+I]=KR=KPQ \\ = [K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Then based on Y = Income: $[O-F][1+E]^N=KY-[G-T]$

Regarding its C = Consumption and S = Savings: $[O-F][1+E]^N=K[C+S]-[G-T]$

So regarding its C = Consumption and I = Investment: $[O-F][1+E]^N=K[C+I]-[G-T]$

While based on R = Revenue, it becomes: $[O-F][1+E]^N=KR-[G-T]$

When based on the market P = Price and Q = Quantity: $[O-F][1+E]^N=KPQ-[G-T]$

And its Foreign Exchange: $[O-F][1+E]^N=[K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-[G-T]$

and based on its Y = Income: $[O-F]=\{KY-[G-T]\}/[1+E]^N$

and based on its C = Consumption and S = Savings: $[O-F]=\{K[C+S]-[G-T]\}/[1+E]^N$

Then based on its C = Consumption and I = Investments: $[O-F]=\{K[C+I]-[G-T]\}/[1+E]^N$

While based on R = Revenue, it becomes: $[O-F]=\{KR-[G-T]\}/[1+E]^N$

When based on the market P = Price and Q = Quantity: $[O-F]=\{KPQ-[G-T]\}/[1+E]^N$

And to its Forex: $[O-F]=[K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})/[1+E]^N-[G-T]/[1+E]^N$

Based on its F = Financial Sector's Debt to Authority: $O=F+\{KY-[G-T]\}/[1+E]^N$

and based on its C = Consumption and S = Savings: $O=F+\{K[C+S]-[G-T]\}/[1+E]^N$

Then based on its C = Consumption and I = Investments: $O=F+\{K[C+I]-[G-T]\}/[1+E]^N$

where based on its local money it becomes: $O=F+\{KR-[G-T]\}/[1+E]^N$

since on the market P = Price and Q = Quantity: $O=F+\{KPQ-[G-T]\}/[1+E]^N$

and its Forex: $O=F+[K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})/[1+E]^N-[G-T]/[1+E]^N$

3.3.6. E = The Impact Interactive Factor Changes to Expected Local Interests

Based on the whole construction of Field Marshall Architecture:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

If focusing on the local money, it is much easier written as:

$$[G-T]+[O-F][1+E]^N=KY=K[C+S]=K[C+I]=KR=KPQ \\ = [K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Then based on Y = Income: $[O-F][1+E]^N=KY-[G-T]$

Regarding its C = Consumption and S = Savings: $[O-F][1+E]^N=K[C+S]-[G-T]$

So regarding its C = Consumption and I = Investment: $[O-F][1+E]^N=K[C+I]-[G-T]$

While based on R = Revenue, it becomes: $[O-F][1+E]^N=KR-[G-T]$

When based on the market P = Price and Q = Quantity: $[O-F][1+E]^N=KPQ-[G-T]$

And its Foreign Exchange: $[O-F][1+E]^N=[K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-[G-T]$

and based on its Y = Income: $[1+E]^N=(KY-[G-T])/[O-F]$

and based on its C = Consumption and S = Savings: $[1+E]^N=\{K[C+S]-[G-T]\}/[O-F]$

Then based on its C = Consumption and I = Investments: $[1+E]^N=\{K[C+I]-[G-T]\}/[O-F]$

While based on R = Revenue, it becomes: $[1+E]^N=\{KR-[G-T]\}/[O-F]$

When based on the market P = Price and Q = Quantity: $[1+E]^N=\{KPQ-[G-T]\}/[O-F]$

And to its Forex: $[1+E]^N=[K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})/[O-F]-[G-T]/[O-F]$

Based on its F = Financial Sector's Debt to Authority: $E=({KY-[G-T]}/{O-F})^{[1/N]-1}$

and based on its C = Consumption and S = Savings: $E=({K[C+S]-[G-T]}/{O-F})^{[1/N]-1}$

Then based on its C = Consumption and I = Investments: $E=({K[C+I]-[G-T]}/{O-F})^{[1/N]-1}$

where based on its local money it becomes: $E=({KR-[G-T]}/{O-F})^{[1/N]-1}$

since on the market P = Price and Q = Quantity: $E=({KPQ-[G-T]}/{O-F})^{[1/N]-1}$

and its Forex: $E=([K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-[G-T])/[O-F]^{[1/N]-1}$

3.3.7. N = The Impact Interactive Factor Changes to Number of Bonds' Period

Based on the whole construction of Field Marshall Architecture:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

If focusing on the local money, it is much easier written as:

$$[G-T]+[O-F][1+E]^N=KY=K[C+S]=K[C+I]=KR=KPQ \\ = [K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

Then based on $Y = \text{Income}$: $[O-F][1+E]^N=KY-[G-T]$

Regarding its $C = \text{Consumption}$ and $S = \text{Savings}$: $[O-F][1+E]^N=K[C+S]-[G-T]$

So regarding its $C = \text{Consumption}$ and $I = \text{Investment}$: $[O-F][1+E]^N=K[C+I]-[G-T]$

While based on $R = \text{Revenue}$, it becomes: $[O-F][1+E]^N=KR-[G-T]$

When based on the market $P = \text{Price}$ and $Q = \text{Quantity}$: $[O-F][1+E]^N=KPQ-[G-T]$

And its Foreign Exchange: $[O-F][1+E]^N=[K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-[G-T]$

and based on its $Y = \text{Income}$: $[1+E]^N=\{KY-[G-T]\}/[O-F]$

and based on its $C = \text{Consumption}$ and $S = \text{Savings}$: $[1+E]^N=\{K[C+S]-[G-T]\}/[O-F]$

Then based on its $C = \text{Consumption}$ and $I = \text{Investments}$: $[1+E]^N=\{K[C+I]-[G-T]\}/[O-F]$

While based on $R = \text{Revenue}$, it becomes: $[1+E]^N=\{KR-[G-T]\}/[O-F]$

When based on the market $P = \text{Price}$ and $Q = \text{Quantity}$: $[1+E]^N=\{KPQ-[G-T]\}/[O-F]$

And to its Forex: $[1+E]^N=[K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})/[O-F]-[G-T]/[O-F]$

Based on its $F = \text{Financial Sector's Debt to Authority}$: $N=\text{Ln}(\{KY-[G-T]\}/\{O-F\})/\text{Ln}[1+E]$

and based on its $C = \text{Consumption}$ and $S = \text{Savings}$: $N=\text{Ln}(\{K[C+S]-[G-T]\}/\{O-F\})/\text{Ln}[1+E]$

Then on its $C = \text{Consumption}$ and $I = \text{Investments}$: $N=\text{Ln}(\{K[C+I]-[G-T]\}/\{O-F\})/\text{Ln}[1+E]$

where based on $R = \text{Revenue}$, it becomes: $N=\text{Ln}(\{KR-[G-T]\}/\{O-F\})/\text{Ln}[1+E]$

since on the market $P = \text{Price}$ and $Q = \text{Quantity}$: $N=\text{Ln}(\{KPQ-[G-T]\}/\{O-F\})/\text{Ln}[1+E]$

and its Forex: $N=\text{Ln}([(K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-[G-T])/[O-F])/\text{Ln}[1+E]$

3.4. Interactive & Comprehensive Inter Currency International Finance Architecture

Even though it is not just a theoretical dream the whole construction of Field Marshall Architecture, will be useful in International Economics:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

If focusing on the Foreign Money, it is much easier written as:

$$Y=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

The National Balance of Trade or Gross Domestic Products is:

$$[X-M]$$

At **X**= Total Export

And **M**= Total Import

Supposing that its

L= Loan or foreign Debts, as a one shot big withdrawal,
that periodically installed back by

A= Achievement per period amount,
on the

V= Valued Foreign Interest per Period
for the

U= Utilized Period of Foreign Debts

1)Again it is really important to remember that the United States of America (USA or US) in an anomaly, because most of its Foreign Debts and Trades also quoted in US Dollars (USD). No country could do the similar things after the breaking of the Bretton Wood's Agreement.

2)Other country different than United States of America (commonly just said as the United States), must differentiate its Local Currency from their Foreign Currencies used in their Trades (mostly the Hard Currencies),

in

EUR (Euro),

JPY (Japanese Yen)

GBP (Great Britain Pounds)

And

USD (United States Dollar)

As well

So then it is important to always watch on their Exchange base:

$$[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

3.4.1. Z= The Impact Interactive Factor Changes to Zoned Foreign Reserve

Back to the whole construction of Field Marshall Architecture:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

If focusing on the Foreign Money, it is much easier written as:

$$[X-M]+L-[A/V]\{[1+V]^U-1\}=[Z/K]\{[G-T]+[O-F][1+E]^N\}$$

$$=ZY=Z[C+S]=Z[C+I]=ZR=ZPQ$$

Then related to C= Consumption, S= Savings and P= Price, then:

$$Z=([X-M]+L-[A/V]\{[1+V]^U-1\})/[C+S]$$

or

If determined by C= Consumption, I= Investment and P= Price, then:

$$Z=([X-M]+L-[A/V]\{[1+V]^U-1\})/[C+I]$$

In Market forces against the R= Revenue, Q= Quantity and P= Price, then:

$$Z=([X-M]+L-[A/V]\{[1+V]^U-1\})/R$$

or

$$Z=([X-M]+L-[A/V]\{[1+V]^U-1\})/[PQ]$$

But in more complex local money Fiscal [G-T] and Monetary [O-F][1+E]^N with K= Kind of Reserve Required or [1/K] as the Multiplier against P= Price, then:

$$Z=[1/K]([G-T]+[O-F][1+E]^N)/Y$$

Almost similar in complex foreign money Trade [X-M] and International Debt determined as L-[A/V]\{[1+V]^U-1\} with Z= Zoned Foreign Reserve or [1/Z] as the foreign Multiplier against P= Price, then:

$$Z=([X-M]+L-[A/V]\{[1+V]^U-1\})/Y$$

So

$$K([X-M]+L-[A/V]\{[1+V]^U-1\})=Z\{[G-T]+[O-F][1+E]^N\}$$

Or

$$K=Z\{[G-T]+[O-F][1+E]^N\}/([X-M]+L-[A/V]\{[1+V]^U-1\})$$

3.4.2. X= The Impact Interactive Factor Changes to Export in Foreign Exchange

Since the whole construction of Field Marshall Architecture:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

If focusing on the Foreign Money, it could better be written as:

$$[X-M]+L-[A/V]\{[1+V]^U-1\}=[Z/K]\{[G-T]+[O-F][1+E]^N\}=ZY=Z[C+S]=Z[C+I]=ZR=ZPQ$$

Then based on Y = Income:

$$[X-M]=ZY-L+[A/V]\{[1+V]^U-1\}$$

Regarding its C = Consumption and S = Savings:

$$[X-M]=Z[C+S]-L+[A/V]\{[1+V]^U-1\}$$

So regarding its C = Consumption and I = Investment possibilities:

$$[X-M]=Z[C+I]-L+[A/V]\{[1+V]^U-1\}$$

While based on R = Revenue, it becomes:

$$[X-M]=ZR-L+[A/V]\{[1+V]^U-1\}$$

When based on the market P = Price and Q = Quantity:

$$[X-M]=ZPQ-L+[A/V]\{[1+V]^U-1\}$$

And compared to its Foreign Exchange:

$$[X-M]=[Z/K]\{[G-T]+[O-F][1+E]^N\}-L-[A/V]\{[1+V]^U-1\}$$

Then for the specific X = Total Exports, as an Economic Factor:

$$X=M+ZY-L+[A/V]\{[1+V]^U-1\}$$

and based on its C = Consumption and S = Savings:

$$X=M+Z[C+S]-L+[A/V]\{[1+V]^U-1\}$$

Then based on its C = Consumption and I = Investments:

$$X=M+Z[C+I]-L+[A/V]\{[1+V]^U-1\}$$

where based on R = Revenue, it becomes:

$$X=M+ZR-L+[A/V]\{[1+V]^U-1\}$$

since on the market P = Price and Q = Quantity:

$$X=M+ZPQ-L+[A/V]\{[1+V]^U-1\}$$

Finally compared to its Local Money:

$$X=M+[Z/K]\{[G-T]+[O-F][1+E]^N\}-L+[A/V]\{[1+V]^U-1\}$$

3.4.3. M = The Impact Interactive Factor Changes to Imports (Foreign Exchange)

Referred to the whole construction of Field Marshall Architecture:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

If focusing on the Foreign Money, it could better be written as:

$$[X-M]+L-[A/V]\{[1+V]^U-1\}=[Z/K]\{[G-T]+[O-F][1+E]^N\}$$

$$=ZY=Z[C+S]=Z[C+I]=ZR=ZPQ$$

Then based on Y = Income:

$$[X-M]=ZY-L+[A/V]\{[1+V]^U-1\}$$

Regarding its C = Consumption and S = Savings:

$$[X-M]=Z[C+S]-L+[A/V]\{[1+V]^U-1\}$$

So regarding its C = Consumption and I = Investment possibilities:

$$[X-M]=Z[C+I]-L+[A/V]\{[1+V]^U-1\}$$

While based on R = Revenue, it becomes:

$$[X-M]=ZR-L+[A/V]\{[1+V]^U-1\}$$

When based on the market P = Price and Q = Quantity:

$$[X-M]=ZPQ-L+[A/V]\{[1+V]^U-1\}$$

And compared to its Foreign Exchange:

$$[X-M]=[Z/K]\{[G-T]+[O-F][1+E]^N\}-L-[A/V]\{[1+V]^U-1\}$$

Then for the specific M = Total Imports, as an Economic Factor:

$$M=X+L-[A/V]\{[1+V]^U-1\}-ZY$$

and based on its C = Consumption and S = Savings:

$$M=X+L-[A/V]\{[1+V]^U-1\}-Z[C+S]$$

Then based on its C = Consumption and I = Investmentss:

$$M=X+L-[A/V]\{[1+V]^U-1\}-Z[C+I]$$

where based on its R = Revenue, it becomes:

$$M=X+L-[A/V]\{[1+V]^U-1\}-ZR$$

since on the market P = Price and Q = Quantity:

$$M=X+L-[A/V]\{[1+V]^U-1\}-ZPQ$$

Finally compared to its Local Money:

$$M=X+L-[A/V]\{[1+V]^U-1\}-[Z/K]\{[G-T]+[O-F][1+E]^N\}$$

3.4.4. L = The Impact Interactive Factor Changes to Foreign Loans (Debts)

In coherence with the whole construction of Field Marshall Architecture:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

If focusing on the Foreign Money, it could better be written as:

$$[X-M]+L-[A/V]\{[1+V]^U-1\}=(Z/K)(\{G-T\}+\{O-F\}\{1+E\}^N) \\ =ZY=Z(C+S)=Z(C+I)=ZR=ZPQ$$

Then based on Y = Income:

$$[X-M]=ZY-L+[A/V]\{[1+V]^U-1\}$$

Regarding its C = Consumption and S = Savings:

$$[X-M]=Z[C+S]-L+[A/V]\{[1+V]^U-1\}$$

So regarding its C = Consumption and I = Investment possibilities:

$$[X-M]=Z[C+I]-L+[A/V]\{[1+V]^U-1\}$$

While based on R = Revenue, it becomes:

$$[X-M]=ZR-L+[A/V]\{[1+V]^U-1\}$$

When based on the market P = Price and Q = Quantity:

$$[X-M]=ZPQ-L+[A/V]\{[1+V]^U-1\}$$

And compared to its Foreign Exchange:

$$[X-M]=[Z/K]\{[G-T]+[O-F][1+E]^N\}-L-[A/V]\{[1+V]^U-1\}$$

Then for the specific L = Loan or Total Foreign Debts, as an Economic Factor:

$$L=ZY-[X-M]+[A/V]\{[1+V]^U-1\}$$

and based on its C = Consumption and S = Savings:

$$L=Z[C+S]-[X-M]+[A/V]\{[1+V]^U-1\}$$

Then based on its C = Consumption and I = Investments:

$$L=Z[C+I]-[X-M]+[A/V]\{[1+V]^U-1\}$$

where based on R = Revenue, it becomes:

$$L=ZR-[X-M]+[A/V]\{[1+V]^U-1\}$$

since on the market P = Price and Q = Quantity:

$$L=ZPQ-[X-M]+[A/V]\{[1+V]^U-1\}$$

Finally compared to its Local Money:

$$L=[Z/K]\{[G-T]+[O-F][1+E]^N\}-[X-M]+[A/V]\{[1+V]^U-1\}$$

3.4.5. *A= The Impact Interactive Factor Changes to Achieved Loan Installments*

Still considering the Interactive Construction of Field Marshall Architecture:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

If focusing on the Foreign Money, it could better be written as:

$$[X-M]+L-[A/V]\{[1+V]^U-1\}=(Z/K)([G-T]+[O-F][1+E]^N) \\ =ZY=Z[C+S]=Z[C+I]=ZR=ZPQ$$

Then based on Y = Income:

$$[A/V]=\{[X-M]+L-ZY\}/\{[1+V]^U-1\}$$

Regarding its C = Consumption and S = Savings:

$$[A/V]=\{[X-M]+L-Z(C+S)\}/\{[1+V]^U-1\}$$

So regarding its C = Consumption and I = Investment possibilities:

$$[A/V]=\{[X-M]+L-Z(C+I)\}/\{[1+V]^U-1\}$$

While based on R = Revenue, it becomes:

$$[A/V]=\{[X-M]+L-ZR\}/\{[1+V]^U-1\}$$

When based on the market P = Price and Q = Quantity:

$$[A/V]=\{[X-M]+L-ZPQ\}/\{[1+V]^U-1\}$$

And compared to its Foreign Exchange:

$$[A/V]=[X-M]+L-[Z/K]\{[G-T]+[O-F][1+E]^N\}/\{[1+V]^U-1\}$$

Then for the specific A = Achievement per Period of Loan or Foreign Debts:

$$A=V\{[X-M]+L-ZY\}/\{[1+V]^U-1\}$$

and based on its C = Consumption and S = Savings:

$$A=V\{[X-M]+L-Z[C+S]\}/\{[1+V]^U-1\}$$

Then based on its C = Consumption and I = Investments:

$$A=V\{[X-M]+L-Z[C+I]\}/\{[1+V]^U-1\}$$

where based on its R = Revenue, it becomes:

$$A=V\{[X-M]+L-ZR\}/\{[1+V]^U-1\}$$

since on the market P = Price and Q = Quantity:

$$A=V\{[X-M]+L-ZPQ\}/\{[1+V]^U-1\}$$

Finally compared to its Local Money:

$$A=V([X-M]+L-[Z/K]\{[G-T]+[O-F][1+E]^N\})/\{[1+V]^U-1\}$$

3.4.6. U = The Impact Interactive Factor Changes to Utilized Period of Debts

Back to all the principles in Interactive Construction of Field Marshall Architecture:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

If focusing on the Foreign Money, it could better be written as:

$$[X-M]+L-[A/V]\{[1+V]^U-1\}=(Z/K)([G-T]+[O-F][1+E]^N) \\ =ZY=Z[C+S]=Z[C+I]=ZR=ZPQ$$

Then based on Y = Income:

$$[1+V]^U-1=\{[X-M]+L-ZY\}/[A/V]$$

Regarding its C = Consumption and S = Savings:

$$[1+V]^U-1=\{[X-M]+L-Z[C+S]\}/[A/V]$$

So regarding its C = Consumption and I = Investment possibilities:

$$[1+V]^U-1=\{[X-M]+L-Z[C+I]\}/[A/V]$$

While based on R = Revenue, it becomes:

$$[1+V]^U-1=\{[X-M]+L-ZR\}/[A/V]$$

When based on the market P = Price and Q = Quantity:

$$[1+V]^U-1=\{[X-M]+L-ZPQ\}/[A/V]$$

And compared to its Foreign Exchange:

$$[1+V]^U-1=\{[X-M]+L\}/[A/V]-(Z/K)([G-T]+[O-F][1+E]^N)/[A/V]$$

Then for the specific U = Utilized Period of Loan or Foreign Debts:

Then based on Y = Income:

$$U=\text{Ln}(1+\{[X-M]+L-ZY\}/[A/V])/\text{Ln}[1+V]$$

Regarding its C = Consumption and S = Savings:

$$U=\text{Ln}(1+\{[X-M]+L-Z[C+S]\}/[A/V])/\text{Ln}[1+V]$$

So regarding its C = Consumption and I = Investment possibilities:

$$U=\text{Ln}(1+\{[X-M]+L-Z[C+I]\}/[A/V])/\text{Ln}[1+V]$$

While based on R = Revenue, it becomes:

$$U=\text{Ln}(1+\{[X-M]+L-ZR\}/[A/V])/\text{Ln}[1+V]$$

When based on the market P = Price and Q = Quantity:

$$U=\text{Ln}(1+\{[X-M]+L-ZPQ\}/[A/V])/\text{Ln}[1+V]$$

And compared to its Foreign Exchange:

$$U=\text{Ln}(1+([X-M]+L-[Z/K]\{[G-T]+[O-F][1+E]^N\})/[A/V])/\text{Ln}[1+V]$$

4. Conclusion

After almost a hundred years, “*The General Theory of Employment, Interest and Money*” from Keynes still fantastically works in Macroeconomics, while

another three hundred years “*Dual Entries T-Account*” from Paccioli strongly dominates the Accounting, also another three hundred years of “*Supply-Demand’s Price vs Quantity Tables*” works perfectly in the Microeconomics, then the decade of international Economics shows “*Purchasing Power Parity*” as a perfect constellation for the inter currency economics.

Dominant Macroeconomic, ideas of “*Fiscal Budget*” and “*T-Bills vs Monetary Bonds*” also decided and works, while “*Marketing*” has furnishing the Microeconomics Management accompanied by “*Compounding Rates*” as element of Financial Engineering and “*Linear Regression*” mostly works for bivariate and multivariate Econometric (parametric) statistical.

It is proven that they do exist and impacting each other, and to avoid the people’s surprise, we need to explain that the problem goes to another discipline’s subject. Since they are interactively related, then we could shortly put all them in a comprehensive Factors, Formulas and Models in its Total Architectural Construction. It is a similar process like in physics while their experts successfully combined the Rays, Electricity, Magnetism, Quantum, Mechanics altogether, so the Interdisciplinary Business and Economic could do the same steps for current international decision making in the whole Economic:

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

APPENDIX

A= Achievement or periodic installment of foreign debts, *normally said as the debt repayment, on the same currency as the loan principal, it must be paid properly and regularly according to the investment algebra with the high penalties for late payment.*

C= Consumptions, *bought commodities (goods and /or services) that seen as for gone loses like the basic needs as necessary or luxury items prestige and emotional satisfaction.*

E= Expected periodic interest of local currency debt, *simply said as interest rate, the algebraic addition for loan repayment together with the debt principal, normally it is more prioritize that the loan principal repayment itself.*

- F**= Financial sector's borrowings from the central bank, *like commercial papers and corporate bonds for liquidity purposes. Issued by the financial institution to be bought by the financial authority as its lender of the last resort.*
- G**= Government expenditures, *normally in the shape of governmental annual budget (fiscal), in the era of fiat money this is no longer in the form of bullions, but just a printed paper money functioned as the governmental debt instruments.*
- I**= Investments, *also a kind of capital good's expenditures that are bought for the productive functions that could be paid in reasonable period (BEP= break even point) and profits.*
- K**= Kind of reserve required for reference local currency, so $(1/K)$ = its multiplier, *amount of mandated money to be stored in the financial authority, as a percentage of the total money borrowed by the banks that should be less than the total money issued by the authority.*
- L**= Loan principal of foreign debts, *the amount withdrawn at the starting of the loan, normally one shot at very large amount, for investment purposes, before repaid back on schedule.*
- M**= Mposed total imports of commodities (goods and /or services), *it is normally the total amount of imported commodities (goods and /or services), normally in foreign hard currency that should be paid to the exporting country.*
- N**= Number of local currency debt period, *normally called as the tenure (tenor) or duration of the loan, from the starting point to its last repayment in full.*
- O**= Outstanding of local currency debt of the central bank, *normally in the shape of treasury bills, issued by the financial authority an the monetary open market policy, to stabilize the supply and demand of its local currency.*
- P**= Price of commodities (goods and /or services) on weighted average, *agreedable fair value that satisfy both seller and buyer, thru the money as its medium of exchange, deferred payment, stored of value and medium of measurement.*
- Q**= Quantity of commodities (goods and /or services) on weighted average, *the amount of commodities (goods and /or services) delivered as agreed in the fair exchange, in return of the total money, at the size of total money divided by the weighted average price.*
- R**= Revenue or sales of transaction purchased, *the total money delivered to the seller as the multiplication of the quantity times their weighted average price.*

- S**= Savings, *the amount of money kept for pecuniary (security) motives that will not be used now, but preparing for the planned future utilization.*
- T**= Taxes, *simply it is a governmental act to pull back with force the paper money issued on government expenditures, so then the fiat money still in a manageable magnitudes.*
- U**= Utilized periodic of foreign debts, *normally called as the duration of the foreign debt, including the repayment period that will algebraically fair adjusted on its time value.*
- V**= Valued periodic interest rate of foreign debts, *normally called as foreign debt interest, that must be paid in the agreeable foreign currency.*
- X**= Xposed total exports of commodities (goods and /or services), *simply said as the total export of commodities (goods and /or services) that sold in another country, normally paid in the foreign hard currencies,*
- Y**= Yield or total income (gross national products), *simply said as the GDP= Gross Domestic products or the total national income on a certain period.*
- Z**= Zoned reserve required for reference foreign currency, so $(1/Z)$ = its multiplier), *commonly said as the reserve requirement of the foreign country that issued the hard currency used for export-import.*

Accurate and Useful Business Interpretations Proposed for the Economic Factor
Abbreviations used as follows:

- A**= Achievement or periodic installment of foreign debts
- C**= Consumptions
- E**= Expected periodic interest of local currency debt
- F**= Financial sector's borrowings from the central bank
- G**= Government expenditures
- I**= Investments
- K**= Kind of reserve required for reference local currency, so $(1/K)$ = its multiplier
- L**= Loan principal of foreign debts
- M**= Mposed total imports of commodities (goods and /or services)
- N**= Number of local currency debt period
- O**= Outstanding of local currency debt of the central bank
- P**= Price of commodities (goods and /or services) on weighted average

Q= Quantity of commodities (goods and /or services) on weighted average

R= Revenue or sales of transaction purchased

S= Savings

T= Taxes

U= Utilized periodic of foreign debts

V= Valued periodic interest rate of foreign debts

X= Xposed total exports of commodities (goods and /or services)

Y= Yield or total income (gross national products)

Z= Zoned reserve required for reference foreign currency, so $(1/Z)$ = its multiplier)

in the Economic Field Marshall's equation of

$$Y=[C+S]=[C+I]=R=PQ=[1/K]\{[G-T]+[O-F][1+E]^N\}=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

means that

$$1) Y=[C+S]$$

$$2) Y=[C+I]$$

$$3) Y=R$$

$$4) Y=PQ$$

$$5) Y=[1/K]\{[G-T]+[O-F][1+E]^N\}$$

$$6) Y=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$$

$$7) C=[Y-S]$$

$$8) C=[Y-I]$$

$$9) C=[R-S]$$

$$10) C=[R-I]$$

$$11) C=[PQ-S]$$

$$12) C=[PQ-I]$$

$$13) C=[1/K]\{[G-T]+[O-F][1+E]^N\}-S$$

$$14) C=[1/K]\{[G-T]+[O-F][1+E]^N\}-I$$

$$15) C=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-S$$

$$16) C=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-I$$

$$17) S=[Y-C]$$

$$18) S=I$$

- 19) $S=[R-C]$
- 20) $S=[PQ-C]$
- 21) $S=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-C$
- 22) $S=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-C$
- 23) $I=[Y-C]$
- 24) $I=S$
- 25) $I=[R-C]$
- 26) $I=[PQ-C]$
- 27) $I=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-C$
- 28) $I=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-C$
- 29) $P=Y/Q$
- 30) $P=[C+S]/Q$
- 31) $P=[C+I]/Q$
- 32) $P=R/Q$
- 33) $P=[1/K]\{[G-T]+[O-F][1+E]^N\}/Q$
- 34) $P=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})/Q$
- 35) $Q=Y/P$
- 36) $Q=[C+S]/P$
- 37) $Q=[C+I]/P$
- 38) $Q=R/P$
- 39) $Q=[1/K]\{[G-T]+[O-F][1+E]^N\}/P$
- 40) $Q=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})/P$
- 41) $R=Y$
- 42) $R=[C+S]$
- 43) $R=[C+I]$
- 44) $R=PQ$
- 45) $R=[1/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})$
- 46) $R=[1/K]\{[G-T]+[O-F][1+E]^N\}$
- 47) $K=\{[G-T]+[O-F][1+E]^N/Y$
- 48) $K=\{[G-T]+[O-F][1+E]^N/(C+S)$
- 49) $K=\{[G-T]+[O-F][1+E]^N/(C+I)$
- 50) $K=\{[G-T]+[O-F][1+E]^N/R$
- 51) $K=\{[G-T]+[O-F][1+E]^N/(PQ)$
- 52) $K=Z\{[G-T]+[O-F][1+E]^N/([X-M]+L-[A/V]\{[1+V]^U-1\})$

- 53) $G = KY - [O - F][1 + E]^N + T$
- 56) $G = K[C + S] - [O - F][1 + E]^N + T$
- 57) $G = K[C + I] - [O - F][1 + E]^N + T$
- 58) $G = KR - [O - F][1 + E]^N + T$
- 59) $G = KPQ - [O - F][1 + E]^N + T$
- 60) $G = [K/Z]([X - M] + L - [A/V]\{[1 + V]^U - 1\}) - [O - F][1 + E]^N + T$
- 61) $T = G - \{KY - [O - F][1 + E]^N\}$
- 62) $T = G - \{K[C + S] - [O - F][1 + E]^N\}$
- 63) $T = G - \{K[C + I] - [O - F][1 + E]^N\}$
- 64) $T = G - \{KR - [O - F][1 + E]^N\}$
- 65) $T = G - \{KPQ - [O - F][1 + E]^N\}$
- 66) $T = G + [O - F][1 + E]^N - [K/Z]([X - M] + L - [A/V]\{[1 + V]^U - 1\})$
- 67) $O = F + \{KY - [G - T]\} / [1 + E]^N$
- 68) $O = F + \{K[C + S] - [G - T]\} / [1 + E]^N$
- 69) $O = F + \{K[C + I] - [G - T]\} / [1 + E]^N$
- 70) $O = F + \{KR - [G - T]\} / [1 + E]^N$
- 71) $O = F + \{KPQ - [G - T]\} / [1 + E]^N$
- 72) $O = F + ([K/Z]([X - M] + L - [A/V]\{[1 + V]^U - 1\}) - [G - T]) / [1 + E]^N$
- 73) $F = O - \{KY - [G - T]\} / [1 + E]^N$
- 74) $F = O - \{K[C + S] - [G - T]\} / [1 + E]^N$
- 75) $F = O - \{K[C + I] - [G - T]\} / [1 + E]^N$
- 76) $F = O - \{KR - [G - T]\} / [1 + E]^N$
- 77) $F = O - \{KPQ - [G - T]\} / [1 + E]^N$
- 78) $F = O - ([K/Z]([X - M] + L - [A/V]\{[1 + V]^U - 1\}) - [G - T]) / [1 + E]^N$
- 79) $E = (\{KY - [G - T]\} / [O - F])^{[1/N] - 1}$
- 80) $E = (\{K[C + S] - [G - T]\} / [O - F])^{[1/N] - 1}$
- 81) $E = (\{K[C + I] - [G - T]\} / [O - F])^{[1/N] - 1}$
- 82) $E = (\{KR - [G - T]\} / [O - F])^{[1/N] - 1}$
- 83) $E = (([K/Z]([X - M] + L - [A/V]\{[1 + V]^U - 1\}) - [G - T]) / [O - F])^{[1/N] - 1}$
- 84) $N = \ln(\{KY - [G - T]\} / [O - F]) / \ln[1 + E]$
- 85) $N = \ln(\{K[C + S] - [G - T]\} / [O - F]) / \ln[1 + E]$
- 86) $N = \ln(\{K[C + I] - [G - T]\} / [O - F]) / \ln[1 + E]$
- 87) $N = \ln(\{KR - [G - T]\} / [O - F]) / \ln[1 + E]$
- 88) $N = \ln(\{KPQ - [G - T]\} / [O - F]) / \ln[1 + E]$

- 89) $N = \ln\left(\frac{([K/Z]([X-M]+L-[A/V]\{[1+V]^U-1\})-[G-T])/([O-F])}{\ln[1+E]}\right)$
- 90) $Z = ([X-M]+L-[A/V]\{[1+V]^U-1\})/Y$
- 91) $Z = ([X-M]+L-[A/V]\{[1+V]^U-1\})/[C+S]$
- 92) $Z = ([X-M]+L-[A/V]\{[1+V]^U-1\})/[C+I]$
- 93) $Z = ([X-M]+L-[A/V]\{[1+V]^U-1\})/R$
- 94) $Z = ([X-M]+L-[A/V]\{[1+V]^U-1\})/[PQ]$
- 95) $Z = K([X-M]+L-[A/V]\{[1+V]^U-1\})/([G-T]+[O-F][1+E]^N)$
- 96) $X = ZY + [A/V]\{[1+V]^U-1\} - L + M$
- 97) $X = Z[C+S] + [A/V]\{[1+V]^U-1\} - L + M$
- 98) $X = Z[C+I] + [A/V]\{[1+V]^U-1\} - L + M$
- 99) $X = ZR + [A/V]\{[1+V]^U-1\} - L + M$
- 100) $X = ZPQ + [A/V]\{[1+V]^U-1\} - L + M$
- 101) $X = [Z/K]\{[G-T]+[O-F][1+E]^N\} + [A/V]\{[1+V]^U-1\} - L + M$
- 102) $M = X - ZY - [A/V]\{[1+V]^U-1\} + L$
- 103) $M = X - Z[C+S] - [A/V]\{[1+V]^U-1\} + L$
- 104) $M = X - Z[C+I] + [A/V]\{[1+V]^U-1\} + L$
- 105) $M = X - ZR - [A/V]\{[1+V]^U-1\} + L$
- 106) $M = X - ZPQ - [A/V]\{[1+V]^U-1\} + L$
- 107) $M = X - [Z/K]\{[G-T]+[O-F][1+E]^N\} - [A/V]\{[1+V]^U-1\} + L$
- 108) $L = ZY + [A/V]\{[1+V]^U-1\} - [X-M]$
- 109) $L = Z[C+S] + [A/V]\{[1+V]^U-1\} - [X-M]$
- 110) $L = Z[C+I] + [A/V]\{[1+V]^U-1\} - [X-M]$
- 111) $L = ZR + [A/V]\{[1+V]^U-1\} - [X-M]$
- 112) $L = ZPQ + [A/V]\{[1+V]^U-1\} - [X-M]$
- 113) $L = [Z/K]\{[G-T]+[O-F][1+E]^N\} + [A/V]\{[1+V]^U-1\} - [X-M]$
- 114) $A = V\{[X-M]+L-ZY\}/[1+V]^U-1$
- 115) $A = V\{[X-M]+L-Z[C+S]\}/[1+V]^U-1$
- 116) $A = V\{[X-M]+L-Z[C+I]\}/[1+V]^U-1$
- 117) $A = V\{[X-M]+L-ZR\}/[1+V]^U-1$
- 118) $A = V\{[X-M]+L-ZPQ\}/[1+V]^U-1$
- 119) $A = V([X-M]+L - ([Z/K]\{[G-T]+[O-F][1+E]^N\})/[1+V]^U-1)$
- 120) $U = \ln(1 + \{ZY - [X-M] - L\}/[A/V])/\ln[1+V]$
- 121) $U = \ln(1 + \{Z[C+S] - [X-M] - L\}/[A/V])/\ln[1+V]$
- 122) $U = \ln(1 + \{Z[C+I] - [X-M] - L\}/[A/V])/\ln[1+V]$

$$123) U = \text{Ln}(1 + \{Z\text{R} - [X - M] - L\} / [A/V]) / \text{Ln}[1 + V]$$

$$124) U = \text{Ln}(1 + \{Z\text{PQ} - [X - M] - L\} / [A/V]) / \text{Ln}[1 + V]$$

$$125) U = \text{Ln}(1 + ([Z/K]\{[G - T] + [O - F][1 + E]^N\} - [X - M] - L) / [A/V]) / \text{Ln}[1 + V]$$

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Special appendix II

Business innovative applications: Sterling D. Allan

Top 5 Exotic Free Energy Technologies Closest to Market

Sterling D. Allan,

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<http://PESN.com> and <http://EnergyNEST.org>

Abstract:

There are many ways to harness the wheelwork of nature -- energy sources that the environment provides free for the taking, that are not only clean but inexhaustible and ubiquitous. Conventional renewable energy (there are 25 genres) has made great strides but has limitations. We are tracking some exotic modalities (there are 25 of those, as well) -- that science has not yet acknowledged as legitimate -- that are making great strides toward being proven and preparing for marketplace introduction. Wouldn't that be embarrassing for science if the ultimate proof, prior to academic acquiescence, would be marketplace arrival? When you realize that these exotics will not only be clean but much cheaper than even polluting power, you begin to understand why academia has become politically manipulated to be so slow to accept these new breakthroughs. It's "power to the people" in a very literal sense. We'll look at some of the leading contenders, including: Andrea Rossi's E-Cat and Defkalion's Hyperion, based on a low [referring to input required] energy nuclear reaction (LENR) process involving hydrogen and nickel; several groups independently pursuing a self-looped motor-generator set-up, in which a smaller motor powers a larger generator, which loops back to keep the motor running while providing copious excess power, most likely due to some kind of resonance set up with the surroundings that draws the power from the surroundings. And we'll talk about magnet motors and electromagnetic overunity. See <http://Top5Energy.com>

"Imagine a world in which each home has its own power generator that obtains its energy in such a way that no fuel has to be added. Imagine every vehicle being able to run without ever stopping for fuel. Imagine each appliance having its own power source that never has to be recharged. That is

the world of the future. Join with us now as we track our progress toward such a world." -- PESN

It's Not Perpetual Motion

When we say "free energy", we're referring to harvesting sources that are free for the taking, and renewable. Just because it appears to be coming from "nowhere" doesn't mean there isn't some unseen mechanism in play. It's a matter of "harvesting the wheelwork of nature", as Nikola Tesla put it.

There are at least twenty-five "**conventional**" free energy modalities: Animal-Powered, BetaVoltaics, BioElectricity, Biomass/Biofuels/Biodiesel/Algae, Conservation, Fuel Efficiency, Geothermal (Turbine), Geothermal (Mass), Human-Powered, Hydroelectric (Dam), Hydrogen, Nuclear/Fusion, Ocean Current, Ocean Thermal, Ocean Tide, Ocean Vent, Ocean Wave, Piezoelectric, Run-of-the-River, Salt-Fresh-water Mix (Blue), Solar (Photovoltaic/Thermal), Thermal Electric/Thermionic, Vibrations from the Environment, Waste-to-Energy, Wind.

There are also twenty-five "**unconventional**" modalities that mainstream science has yet to acknowledge as legitimate, yet a plethora of claims to working prototypes keep propping up: Aether, Anti-Gravity/Electrogravitics, Atmospheric Pressure Differences, Ball Lightning, Cavitation, Dark Energy, Electret, Electromagnetic overunity, Electrostatic, GEET (H₂O Plasma), Gravity/Inertial Motors, Joe Cells, LENR / Cold Fusion, Lightning, Magnet Motors, Noble Gas, Orgone, Petravoltaics, Plasma, Pyramid Power, Quantum Energy, Radiant Energy, Vortex, Water Fuel/Hydroxy/HHO/Brown's Gas, Zero Point Energy.

In **gauging** the best modalities to seek to facilitate toward the marketplace, the attributes we weigh include: Affordable, Renewable, Non-depleting, Environmentally Friendly, Continuous Output, Load-following, Robust, Low Maintenance, Scalable, Portable, Materials are Sustainable, Practical, Strong Team.

Since free energy is **all about freedom** and independence, yet today's world seems bent on tyranny, supporting the emergence of free energy technologies ends up being

a revolutionary act -- a peaceful revolution. Free energy empowers the individual: "Power to the People". It can mitigate economic collapse, which the corrupt powers-that-be have been planning and trying to hoist on the world for decades to solidify their police-state control. It counters their agenda because it creates jobs, provides cheap energy, and most importantly it provides hope, contrary to the depression they want. Free energy can also enable more people to survive (even comfortably) through the collapse. And it can facilitate the building of new, more enlightened society after the collapse.

This quest for free energy is aided by the **New Energy Congress** I founded in 2005, which is a global association of experts who review the most promising new and emerging energy technologies, taking into consideration a number of criteria including: environmental impact, sustainability, cost benefits, reliability, scalability, safety, and availability. We especially focus on facilitating the emergence of promising, exotic technologies that may have difficulty gaining assistance through more traditional means.

More recently, our focus has shifted from reviewing the Top 100 Renewable Energy Technologies to just the Top 5 Exotic Free Energy Technologies, based on the criteria of those being closest to market and able to make a significant difference.

On May 1, 2012, I founded the **New Energy Systems Trust** (NEST) as an association for matching up the best exotic free energy technologies with business professional services, financing, licensees, and customers. We are preemptively setting up a network to help facilitate the rapid emergence into the marketplace of breakthrough, affordable, clean energy technologies.

With that introduction, let's now take a look at the Top 5 Exotic Free Energy Technologies.

In first place is not one technology or company, but a technology class that has many individuals, groups, and companies making strides, any one of which could end up surprising us by being first to market. At first glance, it appears to be a classic violation of common sense and the laws of physics. It is a **Self-Looped Motor-**

Generator system in which a smaller input motor powers a larger output generator, which is looped back to the input to keep it running, with excess energy left over. I coined the phrase "QMoGen" (See QMoGen.com) for this class of technologies, since the shape of the letter Q conveys the idea of "self-looped with energy left over." Of course the energy has to be coming from somewhere. It could be a quantum effect, or it could have to do with a phase angle off-set creating some kind of harmonic resonance with the surrounding electromagnetic environment.

One of the things that is most exciting about this genre is that it usually involves off-the-shelf components that merely need to be assembled in a certain way for it to work, so the mass production of this won't require tooling up a completely new process.

As of the time of this writing, we know of 26 groups that have arrived at this modality independent of one another.

The second technology is Italian inventor, Andrea Rossi's **E-Cat**, short for Energy Catalyzer, which is in the class of Low Energy Nuclear Reaction (LENR) technologies, where "low energy" refers to the initiation energy requirement to get the reaction to go, whereas on the sun, fusion takes 100 million degrees Celsius to take place.

The E-Cat uses nickel and hydrogen under pressure and heat, in the presence of a proprietary catalyst to generate at least six times more heat output than the energy input requirement. No radioactive elements are required or produced in the process. On October 28, 2011, I witnessed a demonstration of his 1 MW unit, which presently is available for sale for \$1.5 million; but people aren't buying yet because the first two units built are in private hands, not available for inspection by interested buyers. Third party test results were published in May of 2013. Due to the low cost of nickel, the high power output, and the simplicity of construction, this technology could revolutionize energy production across the world. This is cheap, safe, clean energy. See <http://ECat.com>

The third technology is **Defkalion**, a former partner turned competitor to the E-Cat. They've developed their own Ni-H LENR approach and have around 50 people

working full-time, and are licensing their technology. Results of third party testing were first published in October, 2012; and in August of 2013 they performed a live demonstration of their technology for the 18th International Conference on Cold Fusion (ICCF-18) held at the University of Missouri. See <http://Defkalion-Energy.com>

The fourth technology is **Steorn's** HephaHeater, which is an electromagnetic overunity technology. Steorn is a security company in Ireland that needed a way to power their security equipment for teller machines, which led to their discovery of an overunity phenomenon, in which more energy was being produced by the device than was being put into the device. Once they arrived at a solid state version, they were having problems with heat, and trying to dissipate heat; but then they realized "heat is good."

Steorn is presently under contract with the two largest corporations in the electric hot water heating market worldwide. I saw those contracts and witnessed their technology in operation last year. One HephaHeat product will cost about as much as the electric water heater it's replacing, but will consume 1/5 as much electricity. With this marketplace vindication in as little as 6 months from now, they will then open the technology to other applications, probably starting with a charging station for portable electronics so power cords will become unnecessary. See <http://Steorn.com>

The fifth technology is one of the QMoGens: **E-MAG** by Platinum Invests, a company in Spain that has developed a generator that is said to produce continuous power output. They built a 7.5 kW prototype and are in process of filing patents.

The company has a "molecular dissociation via plasma" technology already implemented, on which they hold multiple patents, so they, too, are not a start-up.

Some things to **consider** regarding this Top 5 list include: There are some technologies we know about but can't disclose; There are multiple teams pursuing each modality; there are likely to be "sleepers" we don't know about that will suddenly rise on the scene; the competition between contenders is like a slow-motion

horse race; and it takes time to vet the technologies. If you know of a contender that should be on this list, let us know.

While I applaud each of these companies for what they have done and are doing, what I think has the biggest potential to really impact the planet in a short period of time would be an open source project. Actually, "**open license**" would be a better terminology for a technology that has been developed to the point of being ready to implement. Plans could be posted so people could download, build and start up a company locally to build and distribute the device, creating jobs, and fostering rapid dissemination of the solution. Any commercial implementation would remit royalties (e.g. 5% retail) to the inventor.

In order to fit into this model, the ideal technology would need to have the following attributes: Works / Validated, Easy to Replicate, Inexpensive, Unencumbered IP, Significant Power. I could see one of the QMoGen variants fitting this model very well, and I hope eventually one of them will go with the open license roll-out.

There are many ways you can **get involved** in the free energy revolution. I invite you to subscribe to our free newsletter (<http://www.freeenergynews.com/newsletters/>) so you can be apprised of these developments as they unfold. I also encourage you to read *Breakthrough Power: How quantum-leap new energy inventions can transform our world* by my associates Jeane Manning and Joel Garbon. This book is a good primer to these possibilities. I encourage you to become an editor at PESWiki.com -- intended to be the Wikipedia of free energy. And, of course, there are many places where donations are very much appreciated, including our news and directly service. FreeEnergyNews.com

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Epilogue

The 1st International Conference on Applied Innovation was successfully held on 13 and 14 September 2013. The participation was great and the quality of the contributions laid the foundations of continuing the effort in the same direction: utilizing scientific research and direct using it in the production. This concept in addressing innovation that can link research with its implementation, we aspire to become our contribution with proliferative economic, technological and social dimensions.

As Chair of Scientific Commission I have to thank the notable scientists who participated and those who expressed their intention to participate, but either the abstracts or the papers were not judged positively for various reasons and there was no time to adapt to the requirements of the conference. We invite them to participate in the next conference, which we aspire to be better because we already know our weaknesses and our mistakes.

I am bound to thank, also, on behalf of the scientific and the organizing committee the participating scientists, producers, and students involved (with their physical presence and online) giving interest in presentations with their questions, comments and critical remarks. They are registered (with the help of the Secretariat, which we also thank) and studied to be exploited scientifically in the future.

The sequel will not only be the organization of the 2nd conference on the 16th and 17th of October 2015 (where we invite all interested parties to participate), but (among other actions of the Unit of Entrepreneurship and Innovation of TEI Epirus) and the writing of the book (in Greek language) entitled "Applied innovation and entrepreneurship." The book will be based on articles of the first conference, but it will be significantly enriched with new articles-chapters, which have already started to be sent, and it will have the form of a manual, where through "Eudoxus" may be taught in TEIs.

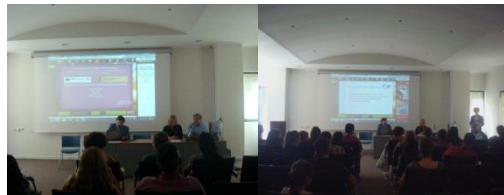
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Sotiropoulos Ioannis

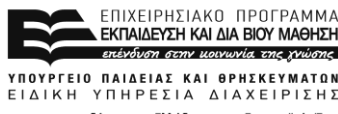
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ΥΠΟΥΡΓΕΙΟ ΠΑΙΔΕΙΑΣ ΚΑΙ ΘΡΗΣΚΕΥΜΑΤΩΝ
ΕΙΔΙΚΗ ΥΠΗΡΕΣΙΑ ΔΙΑΧΕΙΡΙΣΗΣ
Με τη συγχρηματοδότηση της Ελλάδας και της Ευρωπαϊκής Ένωσης



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