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THE VALUE OF HUMAN CAPITAL AND EDUCATION:  
A SNAPSHOT OF GREECE

OLGA PAPADOPOULOU\*

ABSTRACT

*In Europe, human capital along with its basic expression education has been placed high on the policy agenda. This paper aims to analyze the human capital in Greece, in order to provide an integrated overview on how well Greece is operating its human capital, under the terms of Europe 2020 strategy. The importance of human capital for economic growth, development and individual's labour market outcomes (earnings) has been emphasized by economic literature. Consequently, the achievement of the relevant ethnic targets is vital, for having a "smart, sustainable, inclusive growth".*

*Keywords: Human capital; education; Greece.*

1. INTRODUCTION

In a context of major economic and social challenges, as the financial crisis, which can be felt all over Eurozone, and especially Greece, economic and social progress have been wiped out, exposing structural weaknesses in the economy (European Commission, 2013a: p.3). After almost five years of economic unrest, unemployment has been stabilized, but remains unacceptably high in several Member States with stark differences across the European Union (Eurofound, 2014). These negative trends and the constant reshuffle of the status quo have shaped a fluctuating reality for national economies and societies aiming for more jobs, inclusive growth, sustainable development and prosperity (OECD, 2014a; Ostry et al., 2014; Pickett et al., 2014).

Reforms have so far focused on economic issues, but it is also essential to focus more on the empowerment of human capital. Human capital can serve as a response to major social and economical challenges. Understanding and addressing challenges related to human capital is thus fundamental to short term stability as well as the long term growth, prosperity and competitiveness of countries. Failing to pay attention and neglecting such an important factor as human capital in the present will lead to significant costs in the future, since the key for the future is the investment in talent, skills and capabilities of people.

In Europe, human capital along with its basic expression, education, has been placed high on the policy agenda. Firstly, for the period 2000 – 2010, under the terms

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of the Lisbon strategy – together with some key structural reforms in product, labour and capital markets – in order to make Europe “a more competitive, knowledge-based and dynamic economy”. Secondly, for the period 2010 – 2020, the Europe 2020 strategy established, in order to achieve a “smart, sustainable, inclusive growth” (European Commission, 2010). Characteristic is the statement by the Commissioner for Employment, Social Affairs and Inclusion Laszlo Andor that “the challenges we face are much bigger than the crisis itself. If Europe is to be successful, we must ensure sustained investment in human capital”.

This paper attempts to analyze the human capital in Greece, in order to provide an integrated overview on how well Greece is operating and leveraging its human capital, under the terms of Europe 2020 strategy and also to examine plausible effects in economy. Greece is an ideal case study, since the crisis transformed the labour market, along with country’s entry into the European stabilization mechanism in 2010 (Christopoulou and Monastiriotis, 2014; Matsaganis and Leventi, 2014; Papadopoulou, 2013; Ward-Warmedinger and Macchiarelli, 2013).

In what follows, we present the context and characteristics of human capital. In addition, we analyze the human capital theory. Also, we present the current situation in Greece, in order to give a concrete view of education and assessment of targets of Europe 2020 strategy, related with education. In the final part, we provide some conclusions and recommendations.

## 2. THE CONCEPT AND THE THEORY OF HUMAN CAPITAL

This section provides an overview of human capital as a term and gives an extensive description of human capital theory, the latter being fundamental to answer questions related to the uneven development in countries, questions that are in the focus of research interest of economists.

### *2.1. Human capital*

The emergence of capital as an important economic concept took place in the late 1950s and 1960s. At that time, economists such as Theodor Schultz began to use the term “capital” to interpret the role of education and to promote development.

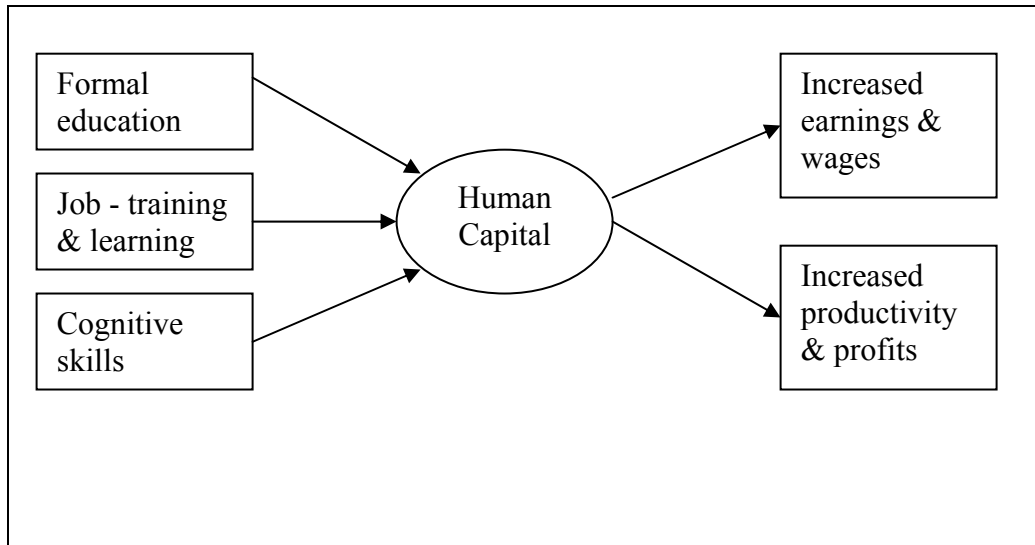
By definition, human capital includes the stock of individual’s talents and abilities, (innate or acquired), such as physical characteristics, talent, knowledge and qualifications. In addition to physical abilities, human capital can be improved by training or experience. Consequently, human capital has been viewed as a function of education and experience, the latter reflecting both training and learning by doing, within and outside workplace. Moreover the abilities and skills included in the definition of human capital cannot be only general (reading and writing skills), but also specific to the relevant working environment.



Human capital is considered as a multidimensional concept and not as a homogenous and static set of skills and competencies (Bloom et al., 2004). Therefore, education (the quantity and quality of schooling) is the key component in the production process of human capital, together with on-the-job training and learning and cognitive skills (Figure 1). Education affects economic growth both directly as well as indirectly by influencing the other factors of production and total factor productivity. Also, it means different things to different stakeholders, namely individual welfare and the national economy (Figure 1). According to the Human Capital Report (World Economic Forum, 2013: p.3), “in the business world, human capital is the economic value of an employee’s set of skills. However, to the policy maker, human capital is the capacity of the population to drive economic growth.” Consequently, human capital as an investment can also benefit national economies and boost economic growth (Borjas, 2003; OECD, 2007; Duflo, 2010).

The importance of human capital for economic growth, development and individual’s labour market outcomes (earnings), as developed in particular through education, has been emphasized by economic literature (Lucas, 1988). To measure human capital, Hanushek and Kimko (2000) introduce measures of mathematics and science skills from international assessments into growth analysis. They found that quality of human capital was very significantly related to economic growth. Sala-i-Martin et al. (2004) show on a sample of eighty-eight countries during the period 1960-1996 that primary schooling, in a total of sixty-seven explanatory variables, is the second most robust factor influencing growth in GDP per capita. Ferreira and Hamilton (2010) find that human capital (years of schooling) is the most important component of intangible capital for all countries, including also high income countries. According to Li and Westlund (2013), human capital in terms of years of education has also played an important role to Chinese economic growth from 1981 – 2010, and it is “human capital that can contribute to technological improvement and innovation which can help to advance economy” (Li and Westlund, 2013: p. 145). Finally, the analysis by Quintini (2014) reveals the important role played in the labour market by skill proficiency in literacy, numeracy and problem solving and positive association with the probability of participating in the labour and being employed with high wages.

**FIGURE 1: THE INTERRELATIONSHIPS OF HUMAN CAPITAL**



Source: Author's analysis

## 2.2. The theory of human capital

Development as a process and as a target has been studied in many disciplines, but its economic aspect was investigated during the last decades, through the Human Capital Theory. Among the beginners of the theory were Schultz (1961) and Becker (1964), together with Mincer (1958; 1974) from Chicago School of Economics. Important was also the contribution of Sweetland (1996).

According to the theory (Becker, 1964; Mincer, 1974), which is an extension of the neoclassical microeconomic theory, the role of education and employment is vital in the production process. Each activity that increases the quality of labour and thus productivity could be seen as an investment in human capital. Therefore, investment in human capital includes not only expenditures on education and skills, but also the costs for job search. In particular, it is the investment in skills and knowledge that will determine the future profits from labour market activities (Mincer and Polachek, 1974).

It should be noted that investment in education is an activity that has costs in the present, but returns in the future, since it increases and improves individuals' knowledge and skills. The cost of investment could be monetary and non - monetary, direct and indirect. For instance, direct costs include fees or the monetary difference in the cost of living of trained persons if there is need to move to another city or country for training purposes. On the other hand, indirect costs include the income that the

person would have received from activities that yield income, instead of devoting part of personal time for studying.

The main contribution of human capital theory is the explanation of both income, which derives from labour, and the existence of wage gap among workers (Chiswick, 1978). However, human capital is often associated with a wide range of (non)financial benefits and it is considered as the most important factor in the development process.

### 3. LITERATURE REVIEW

The question of human capital and education in Greece is quite complicated, because the social impact of the crisis has been extremely serious. The increasing social inequality threatens the social cohesion of the country. According to a recent study (Mitrakos, 2013) the largest share of inequality belongs to education, followed by employment.

At this point a short literature review is provided with a focus on human capital in Greece. The first study by Psacharopoulos (1982) was focused on human capital and the structure of wages, according to the educational level for the years of 1960, 1964 and 1977, using microdata for 12,000 workers in urban areas. It was shown that human capital can explain about one third of income inequality.

The study by Kanellopoulos and Mavromaras (2000) investigated the labour market participation from 1988 to 1994, in paid employment and the differences in wages between men and women in Greece. The results showed that discrimination against women limits their participation in the labour market and their remuneration. Moreover, Asteriou and Agiormirgianakis (2001) examined the relationship between human capital and economic growth in Greece. According to their main research hypothesis, the formal education is the primary mechanism for the development of human skills. The results showed a relationship between education (enrollment rates in primary, secondary and tertiary education) and Gross Domestic Product, per capita.

Particularly interesting are two studies by Prodromidis. The first one (2006) focused on the spatial distribution of income at 895 municipalities of Greece, with data from the 2001 census and the reported income for the year of 2002. The statistical model of the study included professional and other demographic factors as independent variables and respondents' declared income as dependent one. The results suggest that regions with low population density present low incomes, due to limited capacity. Moreover, the high concentration of skilled labour is associated with high income, meaning that individuals can improve their income through an extension of their education. The second study by Prodromidis (2008) deals with the distribution of employment, unemployment and general non - participation in the labour market at the level of municipalities and communities in the Greek territory. Using data from the 2001 census, the study shows the population distribution in terms of gender, age, educational level, labour force participation and paid work. The study reveals the

dispersion of the population by educational level and the heterogeneity of regions because of different employment levels. Crucial is the role of the population density, since it has a positive effect on employment, but a negative effect on the absence of women from the labour market, suggesting that urbanization might provide more employment opportunities. Also, the study shows that the proportionally higher than the average presence of men aged 20 - 64 affects the employment rate of men; while proportionally higher presence of women of the same age has a positive effect on alternative occupation of women. Finally, the presence of children ages 5-9 is associated with the decline of employment and the increase of unemployment of women, along with reduced rate of unemployment of men. On the other hand, the presence of children ages 10-19 has a negative effect on unemployment of women and thus in their participation in the labour market.

Karagiannis and Benos's study (2009) evaluated the relationship for the period from 1981 to 2003, between human capital and economic growth in Greece. Authors used as indicators of education, the records in primary and secondary education. The results show a positive correlation between enrolment rates of education and economic growth. Extremely notable is also the existence of a negative correlation between the high ratio of students – teachers and growth.

### *3.1. Assessment of education challenges*

According to Europe 2020 strategy (European Commission, 2010), the headline targets in the area of education for the EU in 2020 are:

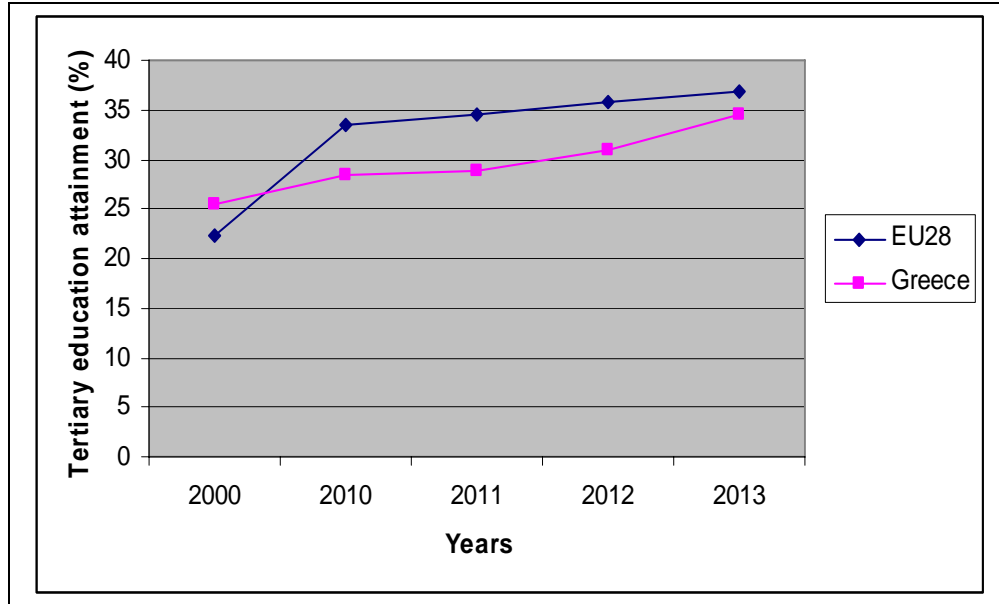
- The share of 30-34 year olds with tertiary educational attainment should be at least 40% (32% for Greece).
- The share of early leavers from education and training (aged 18-24) should be less than 10% (9.7% for Greece).

As concerns the first target of the EU 2020 strategy, low rates of tertiary education attainment can create gaps in knowledge - intensive economic sectors and influence productivity. It is therefore no surprise that one of the main concerns of the EU 2020 strategy is tertiary education, which is conceived as a key factor in order to achieve smart growth for EU. Moreover, Barro and Lee (2010: p.1) also highlight the important role of the level and distribution of educational attainment on income.

A first glance at the data shows that the percentage of individuals with a tertiary education has been increasing since 2000. For 2013, the average rate of tertiary educational attainment in the EU is 36.8%, compared with 35.7% for 2012 (Figure 2). Also, from 2010 to 2013 there is an increase of 3.4% in tertiary education attainment. If the recent progress is sustained, the EU can reach its 40% target by 2020, confirming the positive trend that is observed for tertiary education attainment across the EU (European Commission, 2013b).

In the case of Greece, there is achievement of the target of 32% with tertiary education attainment of 34.6% for 2013. In fact, in one year time between 2012 and 2013, there is an increase of 3.7% (Figure 2). It is also interesting to see, that for the year of 2000, the relevant percentage in Greece was higher than that of EU27 (25.4% compared with 22.4%). Although Greece has an attainment rate below 40%, it shows a significant improvement (European Commission, 2013b).

**FIGURE 2: TOTAL TERTIARY EDUCATION ATTAINMENT, FOR EUROPEAN UNION AND GREECE (2000, 2010 – 2013)**

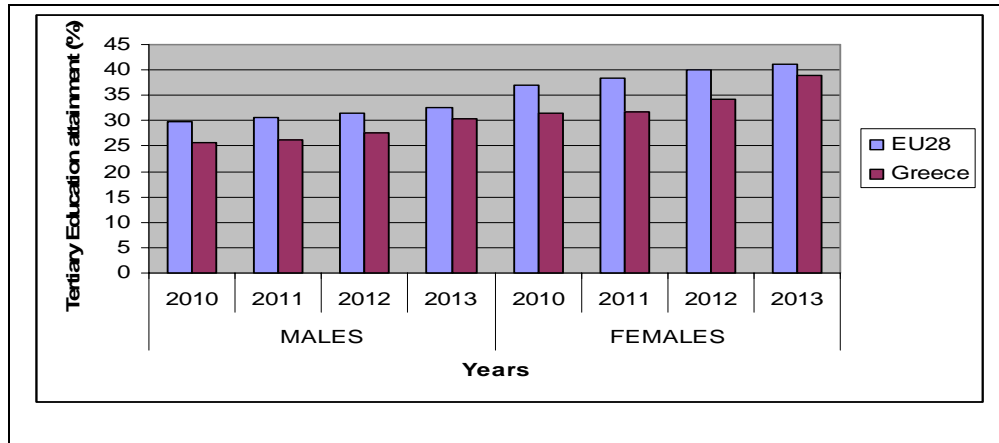


*Source: Author's own analysis.*

*Note: For 2000, we refer to EU27.*

By gender, the rate of tertiary education attainment is significantly higher for women (41% in EU28) than for men (32.6% in EU28) in 2013. From 2010 to 2013, there is an increase of 2.7% for men and 4.1% for women. In Greece, the relevant rate is also higher for women (39.0%) than for men (30.5%). From 2012 to 2013, both have the highest improvement in their rates, namely 2.6% increase for men and 4.8% increase for women (European Commission, 2013b).

**FIGURE 3: TERTIARY EDUCATION ATTAINMENT BY SEX, FOR EUROPEAN UNION AND GREECE (2010 - 2013)**



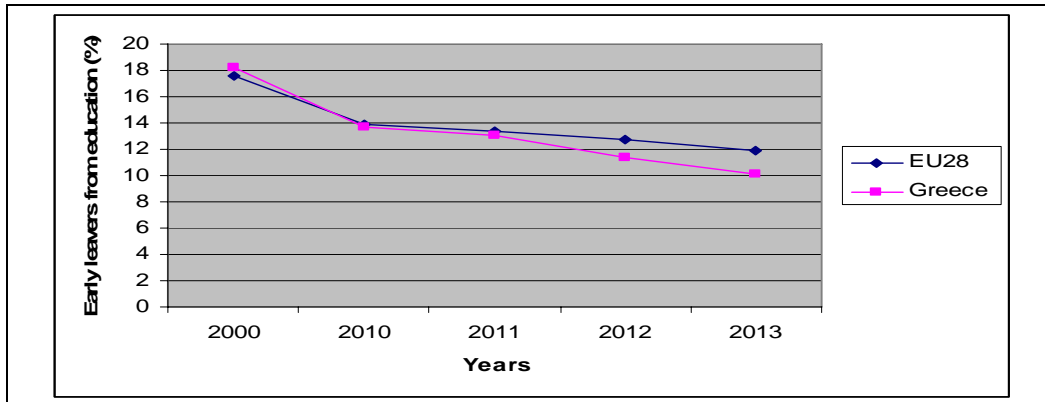
Source: Author's own analysis.

As for the second target, we understand that early education leaving is an obstacle to economic growth and employment, since it influences negatively productivity and competitiveness, through lack of skills and qualifications. But it is also an extremely important target related with social inclusion objectives, since disadvantaged groups are more likely to be affected by early school leaving.

For 2013, the EU average rate of early leavers from education and training is 11.9%, which means a decrease of 0.8% compared to 2012. Similarly, from 2010 to 2013 the percentage of early leavers from education and training is decreased by 2%. This improvement is in line with recent progress and, if continued, means that the Europe 2020 headline target of below 10% is within reach (Figure 4) (European Commission, 2013c).

In the case of Greece, the achievement of the target of 9.7% early leavers from education and training is not achieved for 2013 only for 0.4% (the relevant percentage is 10.1%). In fact, in one year time between 2012 and 2013, there is a decrease of 1.3%. However, between 2011 and 2012 there is the highest decrease of 1.7% (Figure 4). Although Greece has an early school leaving rate above 10%, it makes significant progress, suggesting that policies in place are having positive effects (European Commission, 2013c).

**FIGURE 4: EARLY SCHOOL LEAVING FOR EUROPEAN UNION AND GREECE (2000, 2010 - 2013)**



Source: Author's own analysis.

Note: For 2000, we refer to EU27.

By gender, the rate of early leavers from education and training is significantly higher for men (13.6% in EU28) than for women (10.2% in EU28) for 2013. From 2010 to 2013, there is a decrease of 2.2% for men and 1.8% for women. In Greece the relevant rate is also higher for men (12.7%) than for men (7.6%). For men, the highest yearly improvement (2.4 percentage points) is between the year of 2011 and 2012 and for women (1.5 percentage points) between the year of 2012 and 2013 (Figure 5) (European Commission, 2013c).

But which is the connection between unemployment and level of education? Table 1 presents unemployment rates by level of education, providing also a measure of difficulties that people with different levels of education have to face in the labour market and offering a first idea of the impact of education in reducing the chances of being unemployed.

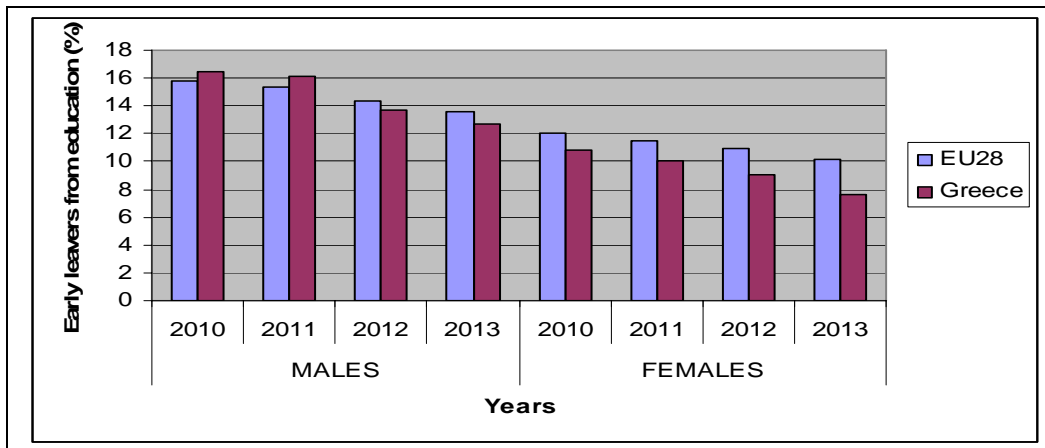
On average across the EU, the unemployment rate among tertiary-educated individuals (aged 25-64 years old) stands in 5.9% in 2013 (up from 1% in 2010, 0.8% in 2011 and 0.3% in 2012). By comparison, the unemployment rate for individuals with upper secondary and post-secondary (non-tertiary educational attainment) reached 8.6% in 2013, compared to 7.8% in 2010, 7.7% in 2011 and 8.2% in 2012 (Eurostat, 2014a). The unemployment rates are higher for less than primary, primary and lower secondary educational levels (17.9% only in 2013) (Table 1). On average, over 90% of tertiary-educated adults are employed compared to around 80% of adult with below upper secondary education.

Although higher levels of education are linked to lower unemployment in the EU, for Greece the unemployment rates remain high (Table 1). Furthermore, Greece

continues to have some of the highest unemployment rates at all educational levels of all OECD countries (OECD, 2014b). Especially during the period of 2010-2013, unemployment in Greece continued to rise for all levels of educational attainment. Specifically, for less than primary, primary and lower secondary level the rate from 11.9% in 2010 reaches 25.1% in 2012 and 28.7% in 2013. For upper secondary and post-secondary non-tertiary, the rate ranges from 12.8% in 2010 to 28.1% in 2013. But it is essential to note that for 2010 and 2011, the relevant unemployment rate was higher compared to the previous educational level. Finally, for bachelor/master and doctoral level, the unemployment rate ranges from 8.8% in 2010 to 19.4% in 2013 (Eurostat, 2014a).

For an integrated view, we should also look on the risk of poverty, since educational attainment is one of the measures by which people are being sorted into poverty. Education has thus become increasingly important dimension of social inequality. The least well educated are at greater risk of poverty than those with a higher level of education (41.8% in 2012 for those with basic education or less, 37.8% for those with secondary or post-secondary education and 18.1% for those with university degrees) (Table 2) (Eurostat, 2014b).

**FIGURE 5: EARLY LEAVERS FROM EDUCATION BY SEX, FOR EUROPEAN UNION AND GREECE (2010 - 2013)**



Source: Author's own analysis.



**TABLE 1: UNEMPLOYMENT RATES OF THE POPULATION BETWEEN THE AGE OF 25-64 BY LEVEL OF EDUCATION IN GREECE AND THE EUROPEAN UNION (2010-2013)**

	2010	2011	2012	2013
<b>Less than primary, primary and lower secondary (levels 0-2)</b>				
EU28	14.2	14.7	16.7	17.9
Greece	11.9	17	25.1	28.7
<b>Upper secondary and post-secondary non-tertiary (levels 3 and 4)</b>				
EU28	7.8	7.7	8.2	8.6
Greece	12.8	17.8	24.5	28.1
<b>Short-cycle tertiary, bachelor or equivalent, master or equivalent and doctoral or equivalent (levels 5-8)</b>				
EU28	4.9	5.1	5.6	5.9
Greece	8.8	13	17.1	19.4

Source: Eurostat (2014a) (online data code: tps00066).

**TABLE 2: RISK OF POVERTY BY LEVEL OF EDUCATION IN GREECE AND THE EUROPEAN UNION (2010-2013)**

	2010	2011	2012	2013
<b>Less than primary, primary and lower secondary (levels 0-2)</b>				
EU28	32.8	34.4	35.0	:
Greece	36.7	39.8	41.8	:
<b>Upper secondary and post-secondary non-tertiary (levels 3 and 4)</b>				
EU28	21.7	22.5	23.3	:
Greece	26.2	30.5	37.8	:
<b>First and second stage of tertiary education (levels 5 and 6)</b>				
EU28	10.8	11.7	12.1	:
Greece	10.7	16.4	18.1	:

Source: Eurostat (2014b) (online data code: ilc\_peps04).

Note: (:) data not available.

#### 4. CONCLUSIONS AND RECOMMENDATIONS

This paper provides evidence of the role of human capital and specifically of education, in the changing structure of economy and society in Greece. In the light of the above, the Greek State has to implement targeted policies that actually address education and generate smart growth. The implications for policy making lie in more even distributed labour market and the continuous investment in people's education, which may generate lasting effect on wages and thus economic growth and development. Although Greece has made a significant improvement, in order to achieve its targets for Europe 2020 strategy, the following initiatives are recognized.

First, the Greek state should increase participation and the access to higher education. In other words, include students from all parts of society, especially from

disadvantaged socio-economic backgrounds or different ethnic groups. This is especially important from social equity perspective, in order to be achieved and secured an inclusive growth that will improve living standards and share the benefits of increased prosperity more evenly across social groups.

Also, the time to complete a degree and also drop-out rates should be reduced. In Greece, a high rate of students not only fails to undergraduate, but also remain students, surpassing the official duration of their studies. All this highlights the inefficiency of the Greek educational system and also the inefficiency of public investments in education. Key actions include guidance and counseling to support students, in all stages of school-life, in order to eliminate the rate of early school leaving.

Moreover, the quality of education should be improved and make more relevant the connection between labour market and education (namely universities). Education that can offer future employment for all (recent) graduates should be the target of all state policies, avoiding migration movements abroad, limiting this way “the brain drain” phenomenon. However, there is a large gap between demand and supply sides. A special feature of Greek educational system is also the lack of appeal of Vocational Education and Training (VET) that needs to be better adapted to labour market needs. Last but not least, a crucial point remaining in Greece within the current economic environment is the power of collaboration among all stakeholders of the civil society, and this should be enhanced, as it is expected to unlock the underlying potential of the driving force, which is the human capital.

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## ASSESSMENT OF WILD LIFE IN NAGALAND: A CASE STUDY OF INTANKI NATIONAL PARK

TONGDI JAMIR\*, LIKHUMLA SANGTAM, LIVIKA MURU,  
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### ABSTRACT

*In the recent past the wild life in the state of Nagaland is threatened by human beings. Therefore, wild life in Intanki National Park (Peren District) of Nagaland was selected to be assessed during the period from 1978-2011. For this, linear regression was used to find out the annual trend. The result indicates that Mithun, Green pigeon, Sambar Western Hoolock Gibbon, Fox, Squirrel, Wild boar, Jungle Fowl and Pied Hornbill show significant increase. This increase can be attributed by better policing whereas Barking Deer, Elephant, Monkeys, Wild Cat and Civet show a decreasing trend but not a significant one. The analysis also reveals that in the Intanki National Park, the elephant population is decreasing significantly, the same pattern is observed for the state but not significantly. It is also observed that the elephant corridor linking different habitats has been broken at various points due to human settlement creating a human-elephant conflict. Further, elephants prefer the secondary forest rather than the primary forest worsening the situation. Thus, the elephant-human conflict might have lead to the decline of the elephant population in the state.*

*Keywords: Wild life; trend; increase; decrease.*

### 1. INTRODUCTION

Nagaland is situated between 25°10' - 27°01' N and 93°17' - 95°15' E in the northeast region of India with a geographical area of 16, 579, 00 km<sup>2</sup>. The State consists of mountain ranges running from the northeast to the southwest, which is the northern extension of the Arakan Yoma ranges of Myanmar. It is bounded on the south by Manipur, Assam on the west and north, and on the northeast by Arunachal Pradesh. The altitude varies from 194 m to the highest peak Saramati (3,841 m). The recorded forest area in Nagaland is 863, 000 ha, which is 53% of the geographical area. 88% of the recorded forest area is under private control and the rest under State Government. Nagaland has one National Park (NP) and three wildlife sanctuaries. The total protected area is 22,643 ha, constituting 1.37% of the geographical area. Nagaland is located in one of the 25 hotspots of the world in terms of biodiversity. At least 106 species of mammals are found in the state, these includes nine insectivores,

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34 bats, seven primates, one pangolin, 34 carnivores, one elephant, seven ungulates, one hare and 12 rodents.

## 2. LITERATURE REVIEW

Numerous studies on wildlife were undertaken in India. Fernando et al., 2005; Talukdar and Barman, 2003 found that the growth of human population has caused increased conversion of the natural habitat to human dominated landscapes leading to a conflict with the wildlife (elephant). The World Bank, 1999; World Wide Fund for Nature, 2004 reported that the most severe threats to Protected Areas are poaching, encroachment, agriculture, ranching, urban development, illegal and legal logging. Conflicts in northeastern states are unique because of aggression by the local people and retaliatory persecution of the snow leopard (Mishra et al., 2004) and dholes on account of livestock depredation (Aiyadurai et al., 2004). In the studies, the threat to the protected area in southern India Barve et al., (2005) strongly correlated with the human- related disturbance activities. Kumar and Subudhi (2013), investigate the occurrence of the wild animal species after relocation of Van gujjars in Chila and Motichur Ranges of Rajaji National Park (NP). The result revealed that wild animals use the grasslands for feeding after the removal of anthropogenic pressure. Selvan et al., (2013) investigated the harvesting of wild animals through hunting in Ziro valley of Arunachal Pradesh. The study concludes that hunting was carried out mainly for subsistence (55%), commercial purposes (25%) and medicine (10%). Hilaluddin (2005) investigates the patterns of wild meat extraction and consumption by indigenous communities in Northeast India. The study found that consumption of wild meat grows as their cash income also increases. Horwich et al., (2013) studied on golden Langur in Assam and Bhutan which reveals an increase from 1,500 (1997) to 5,600 (2012). Das et al., (2012) reported that in the recent past the Human Elephant conflict (HEC) has emerged as the main threat for the survival of Asian elephants due to population growth and conversion of natural habitat to human dominated landscapes. Aishwarya et al., (2009) investigate ungulate species of Ladakh in Jammu and Kashmir. The densities are decreasing due to heavy grazing pressure from local herders, large scale killing for making shahtoosh shawls and the presence of dogs at security camps. Satterfield (2009) found that the primary threats for the snow leopard are poaching, killing by villagers due to livestock lost, destruction and fragmentation of its habitat.

There are many areas in Nagaland which are not yet properly explored due to the physical terrain. For this study, Intanki NP which is located in Peren district was selected as this is the largest and the only NP in the state. The altitude varies from 200 m to 682 m (msl). The park is located 45 km from Dimapur, which is the biggest commercial town of the state. Intanki NP is adjacent to the Dhansiri Reserve Forest in Assam. Dhansiri (Assam) has become an Elephant Reserve, while Intanki (Nagaland)

is lacking behind. There is encroachment and illegal logging activity in the Park. Due to the alleged presence of extremists in the Park, the movement of government officials is restricted. Apart from this, cultivation of Jhum, the felling of trees, poaching and trapping become the main environmental issues in the state. All the species in the state are threatened by poachers for food and also by local trade. The commercial sale of wild life in the local markets is the most serious threat. The existing protected area in Nagaland is inadequate for the long-term protection of all wildlife. Wild life indicates the health of the ecosystem, therefore it is essential for the vitality of an ecosystem. Hence, there is an urgent need to assess the wildlife particularly in the NP. With this in mind, wildlife during the past decade will be assessed with regard to the different species in Intanki NP as this is the only NP in the state. The study area is shown in Figure 1.

**FIGURE 1: MAP OF NAGALAND**



*Source: Department of Forest and Environment, Government of Nagaland*

### 3. METHODOLOGY

Annual wild life data of different species during period ranging from 1978-2011 were used for this study. The annual data were obtained from the Ministry of Forest,

Ecology, Environment and Wild life, Government of Nagaland. Apart from this, elephant population in the Intanki NP as well as the state total population is used for the study. To determine the significance of trend, linear regression was used and the time series graphs were plotted for the entire period. The trends are tested at 95% and 99% level of confidence.

Linear regression has been used in various ways and this simple model can be expressed in the form of an equation:

$$Y = a + bX$$

Where,

Y is the dependent variable

a - is the intercept

b - is the slope or regression coefficient

X - is the independent variable (or covariate)

The equation will specify the average magnitude of the expected change in Y given a change in X. Statistical significance was determined by the t-test in the following way.

$$t = \frac{r^2(N-2)}{\sqrt{1-r^2}}$$

Where 'r<sup>2</sup>' is squared correlation coefficient and 'N' is the number of observations. The obtained value of "t" is compared with its table value. If the computed value is greater than the table value at the desired level of significance, then the correlation is significant.

In statistics, a moving average is commonly used with time series data to smooth out short-term fluctuations and highlight longer-term trends or cycles. The threshold between short-term and long-term depends on the application, and the parameters of the moving average will be set accordingly. For the present work 5 years moving average is used.

The results of trend in wild life and moving averages over the study area are presented in the following paragraphs.

## 4. RESULTS

### 4.1. Trend in wild animals

The trends for change in annual are worked out and indicated in Table I below.



**TABLE 1: TREND IN WILD LIFE IN INTANKI NP**

S.N	Animals	Slope Value	R <sup>2</sup>	SV
1	Mithun	$y = 1.6x + 5.2$	$R^2 = 0.441$	99
2	Green Pigeon	$y = 10x + 32.4$	$R^2 = 0.880$	99
3	Sambar	$y = 3x + 3.4$	$R^2 = 0.461$	99
4	Himalayan Bear	$y = 0.7x + 1.8$	$R^2 = 0.074$	
5	Western Hoolock Gibbon	$y = 3.538x - 4.461$	$R^2 = 0.830$	99
6	Fox	$y = 2.657x - 1.885$	$R^2 = 0.984$	99
7	Squirrel	$y = 48.5x - 31.1$	$R^2 = 0.807$	99
8	Porcupine	$y = 2.2x + 15$	$R^2 = 0.311$	
9	Wild Boar	$y = 12.3x - 8.9$	$R^2 = 0.707$	99
10	Jungle Fowl	$y = 15.2x + 0.4$	$R^2 = 0.875$	99
11	Pied Hornbill	$y = 1.5x + 27.33$	$R^2 = 0.964$	99
12	Tiger	$y = 0.1x + 0.95$	$R^2 = 0.133$	
13	Capped Langur	$y = 4$	$R^2 = \#N/A$	
14	Leopard	$y = 2$	$R^2 = 0$	
15	Barking Deer	$y = -0.1x + 21.3$	$R^2 = 0.000$	
16	Elephant	$y = -0.5x + 29.5$	$R^2 = 0.178$	
17	Monkeys	$y = -0.6x + 9.8$	$R^2 = 0.09$	
18	Wild Cat	$y = -1.2x + 11.8$	$R^2 = 0.117$	
19	Civet	$y = -0.971x + 9.657$	$R^2 = 0.235$	

Note: SV- Significant Value

Table 1 shows that among the wild animals, the Squirrel is increasing at the rate of 48 per year, followed by the Jungle Fowl (15) and the Green pigeon (10). However, the rate of increase in wild animals such as the Himalayan bear and the Tiger is minimal. The high rate of increase in wild animals is due to difficulty among the poachers to kill wild life, however, the rate of increase in Western Hoolock Gibbon, Sambar and Fox can be attributed to the non-consumptive the localite. Apart from this, better policing by the forest department under the Forest Protection Force (FPF) effectively tackles encroachment inside the park. This could be one of the attributes in the decline of the poaching activities in the NP. Intelligence network in Wildlife crime cell controls illegal trade in wildlife and its products. Because of all these anti poaching measures the reports of big cats being killed are minimized.

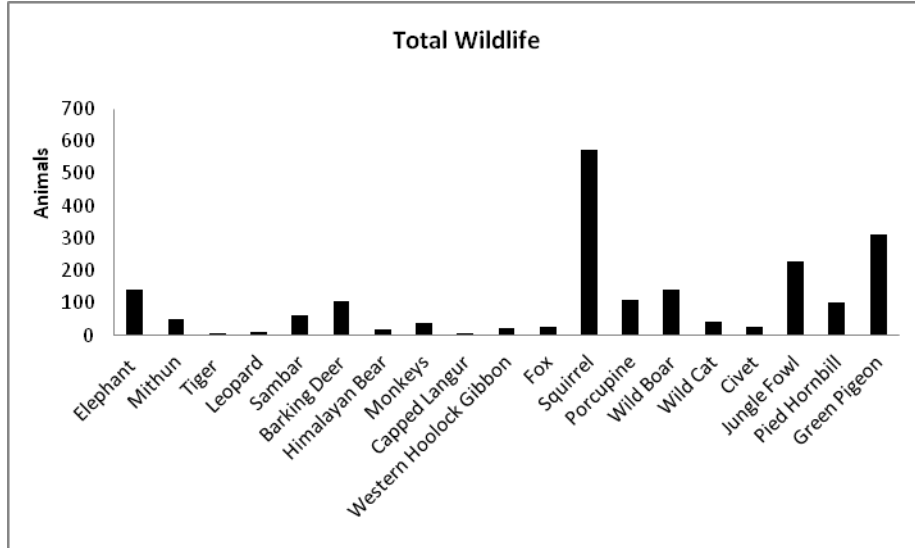
Animals like the Barking Deer, the Elephant, Monkeys, the Wild Cat and the Civet show a decreasing trend but not a significant one. The rate of decrease varies from 0.1/year for the Barking Deer to 1.2/year for the Wild Cat.

#### 4.2. Assessments of wild animals

Further, the total population of each species during the study period is summed up as shown in Figure 2. The study reveals that the highest number of animal is the

squirrel followed by the Green pigeon and the Jungle Fowl. The population of wild animals such as the Tiger, the Leopard, the Himalayan Bear and the Capped Langur are few.

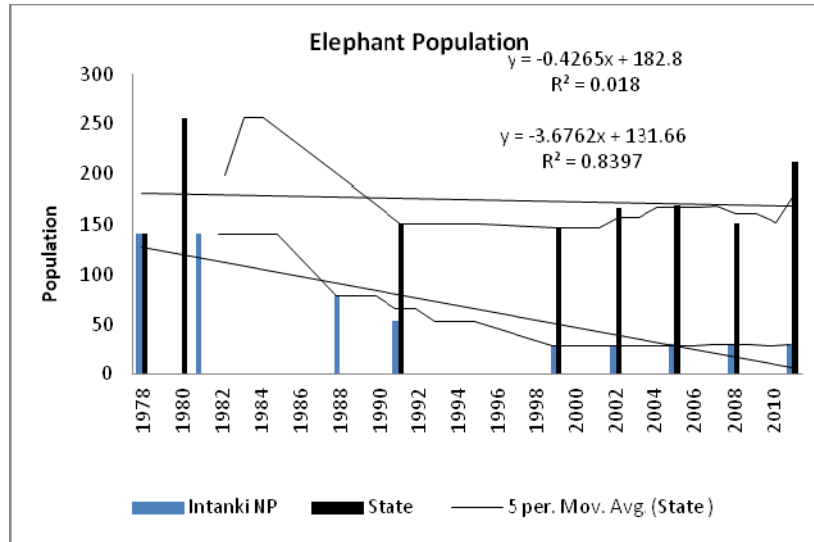
**FIGURE 2:** TOTAL WILD LIFE POPULATION IN INTANKI NP



#### 4.3. Trend and moving average for the wild elephant

Trend analysis was carried out to find whether there is a rise on the elephant population in Intanki NP as well as the state. The results are illustrated in Fig. 3. It is reported that except the Elephant, the rest of the animal's census in the state is very poor. There is a long data range for the elephant so trend analysis was undertaken. The analysis reveals that in the Intanki NP, the elephant population is decreasing significantly. The same pattern is observed for the state as a whole but not significantly.

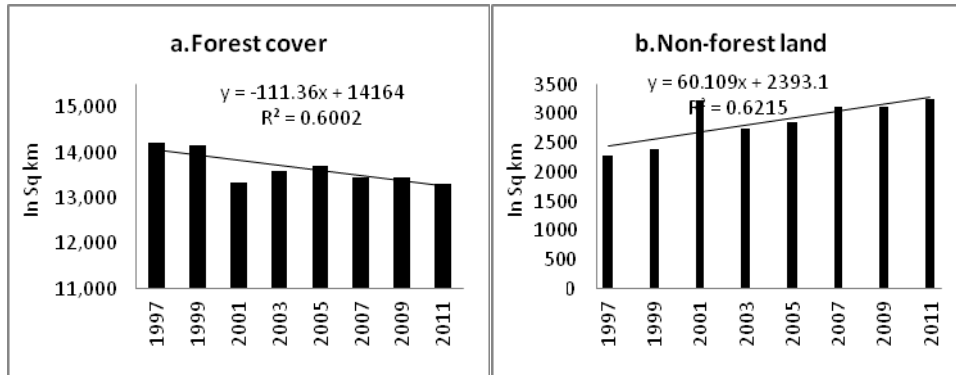
**FIGURE 3: TREND IN ELEPHANTS' POPULATION IN INTANKI NP AND THE STATE**



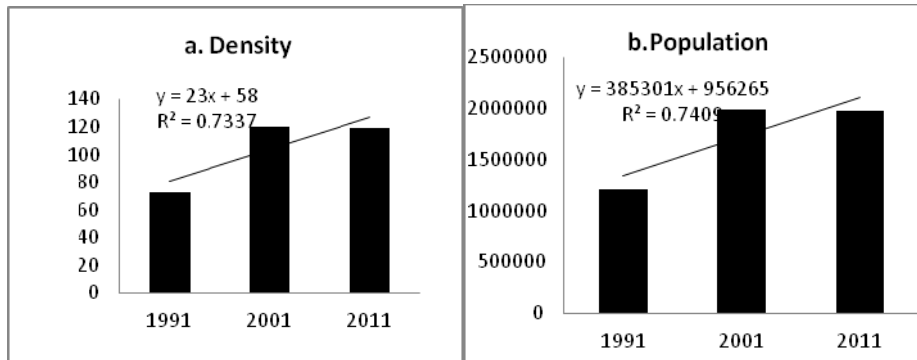
The moving average for the state as well as National park is explained below. The census for the wild elephants in the state began by 1978; it rose during the year of 1980. However, it dropped abruptly during the year 1990 and stabilized till 1999 and rose again during the year 2000. It has declined during the year 2008 and increased again during the year 2011. Whereas for the National park, from 1978 till 1981 it was stabilized but was suddenly reduced during the year 1988 and declined further till 1999 and went on until 2011.

The findings show that the elephant population in the Intanki NP and the state as a whole show a decreasing trend, for this the forest cover in the state was assessed to find whether there is any relationship. The result reveals that forest cover from 1981-2011 shows a significant decreasing trend as well as a significant increase in non-forest land (Fig. 4a and 4b).

**FIGURE 4:** (A) FOREST COVERED LAND IN NAGALAND (B) NON-FOREST LAND IN NAGALAND



**FIGURE 5:** (A) DENSITY OF POPULATION IN NAGALAND (B) POPULATION TREND IN NAGALAND



This can be compared with the decrease in elephant population over the state. According to the Forest, Ecology, Environment and Wild life Department, when the last census was taken in 2011, it has reported that the majority of them are harbouring outside the protected areas or elephant reserves. It is also observed that the elephant corridor linking different habitats has been broken at various points due to human settlement creating a human-elephant conflict. Further, elephants prefer the secondary forest rather than the primary forest. They enter the agricultural field by consuming and damaging agricultural crops. Elephants are killed by the tribal settlers in retaliation for raiding the crop. A quarter of the 20,200 hectare NP has been encroached upon in the last 20 years covering 14 settlements. There are about 21 villages settled around the National park. Most of them are from nearby Dimapur

town, the commercial hub of Nagaland. This city acts as a pull factor on which the economic and developmental activities of the state are centred.

The main factor contributing to the large increase in population within the periphery of the National Park is migration from other parts of state. As a result the neighbouring villages/settlements have expanded considerably over the years merging with town. According to available data, there are 222 villages (recognized and unrecognized) under Dimapur district. Latest data has indicated that Dimapur entire agglomeration has an estimated population of 350,000–400,000 and is one of the fastest growing Indian cities. Its population has more than tripled in the last two decades. This trend of in-migration as well as influx of illegal immigrants, have created a serious impact on the environment.

Intanki NP possessed a rich reserve of wildlife and timber which has long been a soft target for encroachers, with ambitions of setting up self-christened villages. Since, its declaration as a wildlife sanctuary in 1975, and subsequently as a national park in 1998, it has been reduced to 1/3<sup>rd</sup> of its original area. The first eviction was carried out by the Department of Forests and Environment in 2002, the total forested area encroached and destroyed by human settlers within the park is estimated to be around 760 hectares. According to the Forest Department, more than 24 times such an eviction exercise has been carried out in the past decade.

The chief Wildlife Warden of Nagaland reported that encroachment in the Intanki NP lead to the disappearing of wildlife where most of the energy is spent in evicting the encroachers. Apart from this, the elephants have almost always been persecuted for their flesh by the tribals. It is also observed in Fig. 5 (a & b) that there is a significant increase in density of population as well as significant growth of population in the state. And this could be one of the reasons for the decrease in elephant population over the state.

## 5. CONCLUSIONS

The study revealed that the Squirrel, the Jungle Fowl, the Green pigeon, the Himalayan bear, the Tiger, the Western Hoolock Gibbon, the Sambar and the Fox show an increase, while animals like the Barking Deer, the Elephant, the Monkeys, the Wild Cat and the Civet show a decreasing trend. The analysis also reveals that in the Intanki NP, the elephant population is decreasing significantly, the same pattern is observed for the state as a whole but not in a significant scale. The majority of the population of the state is Christian (90%) and follows the tribal way of life in food habits. People consume all types of meat as the main source of food. There is no industry and had to depend on primary occupation. About 70 percent of the population depends on agriculture. The contribution of the agricultural sector in the state is very significant.

Unless effective mitigation measures are undertaken, the conservation of wild elephants is in doubt. The following recommendations are presented for protecting the wild elephant in Intanki NP as well as in the state. Firstly, fences (electric), trenches, early warning systems and a satellite tracking system will be effective. Secondly, elephant migration corridors should be legally protected. Thirdly, encroachment should be strictly monitored. Fourthly, educating the tribal people related to environmental protection has to be taken seriously into consideration by the respective districts and state government. Finally, environmental laws should be enforced by the State government if ecological balance has to be maintained. All these can be progressed by multidisciplinary collaborations between the Department of Forest, Agriculture, Land-use planners, Biologists as well as the participation of social scientists and economists.

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## WHICH ARE THE DETERMINANTS OF RECYCLING? A CASE STUDY IN GREECE

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### ABSTRACT

*This survey investigates the socioeconomic characteristics and the environmental parameters of sustainable development at the Saronikos municipality in Athens, Greece. Specifically, it examines the advantages and the shortcomings of the municipal recycling program focusing mainly on factors that influence consumers' attitude on paper waste management. This study was based on a random sample survey involving 160 questionnaires distributed locally to residents of the area using the random stratified method. The findings indicate that the majority of the residents know the proper use of blue recycling containers (for plastic, glass and paper). On the other hand, only 1/4 of the questioned residents are aware of the proper use of the green containers with the yellow lid (for printed paper only). Income, educational attainment, age, marital status and awareness of environmental issues affect the frequency of recycling. Also, it is of high policymaking interest that a change of municipal taxation from the existing system, which is based on surface square meters of each household, to a taxation system based on the quantity of waste produced by each household, can contribute to more sustainable lifestyle regarding recycling practices.*

*Keywords: Environment; economy; society; energy; recycling; paper.*

### 1. INTRODUCTION

Sustainable Development was first mentioned in 1987 by the World Commission on Environment and Development of the UN. The primary goal of this committee was to review the major problems of environment and economies' development. Secondly, it endeavored to make proposals for increasing consumers' life quality following a path that human progress is sustainable through the development but without destroying the natural resources of future generations (Pearce et al., 1989). More specifically, the definition of sustainable development is defined as follows: "*Sustainable development is called the development that meets the needs of*

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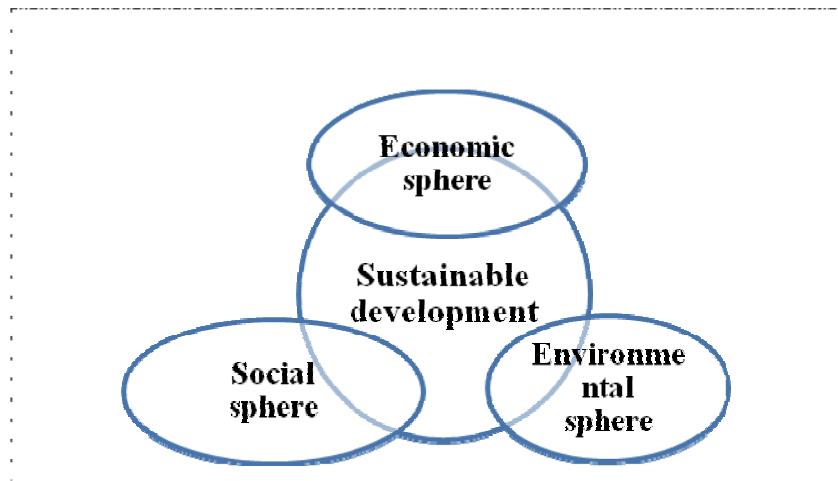
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*present generations without compromising the needs of next generations*”. The concept was coined explicitly to suggest that it was possible to achieve economic growth and industrialization without environmental damage (Adams, 2006) highlighting that recent years, several studies have tried to shed light to real terms of sustainable development. A very interesting research was Hatting’s proposal of the model of the three spheres. The three axes twist together so as to make a holistic approach to sustainable development. The most important relationship of all three spheres that are presented, is that, economic, social and environmental considerations cannot be valuable separately; they are interrelated. They have to be examined together. The next figure illustrates the aforementioned relationship.

**FIGURE 1: INTERRELATED SPHERES**



Based on these topics, European Union has presented the goals that Greece has to succeed. They are presented on the following table.

**TABLE 1: GOALS OF EUROPE 2020**

Level of employment (%)	70%
Decrease in greenhouse gas (%)	4%
Usage of renewable energy resources	18%
Decrease in population who live under poverty	450,000

It is easily understandable that these targets are important for a better quality of life in Greece. Especially, the goals that are referred to the environment could lead to a more environmentally friendly lifestyle for the Greek consumers. One of the

environmental characteristic-indicators, which has attracted the interest of many researchers, is recycling. The remainder of the paper is organized as follows. Section 2 presents a shot of the literature review on recycling practices. Section 3 illustrates the data and methodological approach that was followed. Section 4 describes the main results while Section 5 presents the concluding remarks.

## 2. LITERATURE REVIEW

It is a reality that a wide variety of environmental indicators in use exists. This is needed in order to i) supply information on environmental problems, ii) support policy development and priority setting and iii) monitor the effects of policy responses (Bosch et al., 1999). The level of recycling could be a very important indicator for a society lifestyle (Diamadopoulos et al., 1994). Recycling today is an important priority for each society that endeavors to contribute actively to the improvement of living conditions. Also, recycling is a key part of waste management which includes a variety of problems including environmental, technological, economic, legal and social issues. That is why a lot of studies have been performed on the factors that influence the behavior of consumers to recycle (Anghinolfi et al., 2013; Adams, 2006; Williams and Clark, 2006).

Recently, Hirohisa et al., (1998), Williams and Clark, (2006), Lane and Wagner (2013) examined the characteristics of consumers' recycling and the impact of bins' characteristics on the household recycling habits. Some of their findings showed that households recycling rate is influenced by: i) the size of the storage bucket, ii) the existence of multiple storage spaces bins for various materials, iii) the location of the bin, iv) the size of the neighborhood, v) the size of the family, vi) the color of the bins, vii) the distribution of containers and recycling bins. Similarly, Bohm et al., (2010) investigated the parameters of the cost function regarding the collection of municipal solid waste. Their findings showed that municipal recycling programs that use private collection firms rather than municipal officials have a lower cost. Also, it is of high interest that as expected, both marginal and average cost of recycling systems exceed the cost collection. This can be explained due to the cost of the additional financial resources required for the separation and processing of recyclable materials. The average recycling cost is minimized at \$75.18 per community which recycles 13,200 tones per year. This quantity was produced in Rom communities with 80,000 inhabitants on average. However, this should not lead to the conclusion that all communities can minimize the cost of recycling as the total quantity of waste because it depends on external factors such as the level of the local population and income levels. Several societies follow different norms (Thomas and Sharp, 2013). Tonjes and Sreekanth (2013) also analyzed a cost–benefits analysis of collection of solid waste in the USA. They indicated that economic costs are higher than benefits. However, their

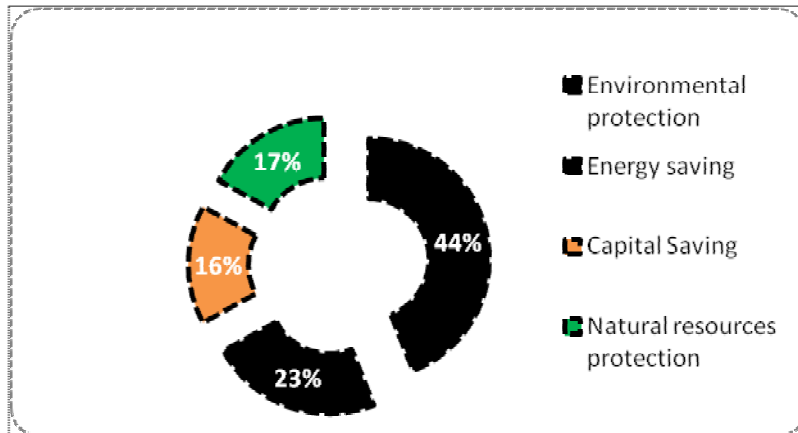
findings showed that, the interrelation among several kinds of practices like recycling and saving of waste can be a more efficient strategy for a local economy.

Furthermore, indicators such as pricing of waste disposal, expenditure on training in recycling issues and some demographic parameters have been included in econometrical research providing new information on the issue of recycling (Cole, 2013; Williams and Clark, 2006). In addition, Sidique et al., (2010) suggest that extra pricing of “waste production” increases the rate of recycling. Other variables that were estimated that they effectively enhance the recycling rate and the public acceptance (Keramitsoglou and Tsagkarakis, 2013; Van-Beukering and Bouman, 2001) are the implementation of stricter local authority regulations and educational programs related to recycling. More specifically, it has been found that the cumulative expenditure for training in recycling increases recycling rates by 10% while the cost of one US dollar per person per year will increase recycling rates by 2%. Moreover, many researchers have tried to propose for implementation of sustainable policy instruments towards a more vital waste management system (Finnveden et al., 2013; Hadjibiros et al., 2011; Koufodimos and Samaras, 2002). More interesting, Economopoulos (2010) published a survey in Greece taking into consideration the transportation, treatment and final disposal of the wastes that remain after the application of material recovery. The next section describes methodology and data.

### 3. METHODOLOGICAL ISSUES AND DATA

The present research aims to examine the aspect of sustainable development of the Saronikos municipality that is referred to recycling. The survey was conducted in March - April 2014 including 160 questionnaires that were distributed to residents of the municipality using random stratified methodology. Based on the sample, 21.9% was women while 48.1% men. Moreover, 14.4% of the responders was between 18 and 25 years old, 20.6% was 26-36 years old, 36.3% was between 36 and 45 years old while 19.9% was 46-55 years old. Also, it is of high of interest that 58.8% was married whereas the majority of the sample indicated that they are 4 members on average in their family. As far as educational attainment is concerned, 33.8% declared that they have a secondary degree while more than 1 out of 3 has completed a university degree. Furthermore, most of the responders said that their monthly income is between 701 and 100 Euros. Next, awareness issues are investigated. Generally, it is hopeful that the majority of the responders (48.1%) said that their local municipality has informed them at a high level regarding local environmental issues. More specifically, an effort was made to research the reason that the same group of people have decided to recycle. The following graph shed light on this specific question.

**GRAPH 1: REASONS FOR RECYCLING**



As it can be seen, the majority of the sample recycles supporting at the same time the protection of environment. 23% indicated that recycling leads to energy conservation while 17% and 16% have decided to recycle for natural resources protection and protection of capital savings respectively. However, in recent years many economists support that people who recycle have to get economic benefits in order to have more incentives to do this. 70% of the responders support this idea indicating that environmentally aware people will actively participate to recycling when having more economic reliefs –reduction in municipality taxes-. The next section presents econometric results regarding the level of awareness for environmental issues and the agreement for impact of getting economic reliefs for recycling are illustrated.

#### 4. EMPIRICAL RESULTS

In this section the results of the statistical and econometric analysis are presented in order to estimate the profile of an “eco-friendly” person with respect to the level of environmental awareness and the attitude to a change in waste management for improving recycling. Initially, the first model that is presented is based on an ordered logistic regression approach which shows the results regarding the determinants of the level of information for local environmental issues. The dependent variable is a Likert variable indicating the level of information on local environmental issues. On the other hand, the factors that are examined as independent variables are: gender, age, marital status, educational level, net monthly household income, applied recycling for protecting the environment, materials recycling rate in blue bins, the existence of

encouragement of family and friends to participate in recycling, the degree of agreement on whether rewarded-aware citizens with financial reliefs from municipal taxes, the number of recycling bins and finally the awareness of recycling diversification (existence of special bins).

The general form of the equation is:

$$\text{envi\_aware} = b_0 + b_1\text{gender} + b_2\text{age} + b_3\text{married} + b_4\text{univer} + b_5\text{income} + b_6\text{env\_prot} + b_7\text{freq} + b_8\text{quantity} + b_9\text{family\_friends} + b_{10}\text{reward} + b_{11}\text{more\_bins} + b_{12}\text{campaign} + e_i$$

where: *envi\_aware* is a Likert scale variable that expresses the degree of awareness of the respondent on environmental issues; *gender* is a dummy variable that expresses the gender of the respondent and takes the value 1 if the respondent is male and the value 0 otherwise; *age* is quantitative variable that expresses the age of the respondent; *married* is a dummy variable that expresses the marital status of the respondent and takes the value of 1 if the respondent is married and 0 otherwise; *univer* is a dummy variable that expresses the educational attainment of the respondent and takes the value of 1 if he/she has completed a university degree and 0 otherwise; *income* reflects the respondent's net monthly household income in euros; *env\_prot* is a dummy variable that expresses whether recycling should be applied to protect the environment (1=yes and 0=no); *freq* is a variable scale Likert which expresses the material recycling rate for the blue bin; *quantity* is a quantitative variable that expresses the approximately monthly amount of materials recycled by the respondent in blue bins; *family\_friends* is a variable Likert scale which expresses the need of family and friends to participate in recycling; *reward* is a variable Likert scale expressing the degree of agreement on whether rewarded-aware citizens, with financial reliefs from municipal taxes, will lead to more actively involved people in recycling; *more\_bins* is a dummy variable that takes the value 1 when incentive motivation of citizens to recycling is to place more recycling bins; *campaign* is a dummy variable that takes the value of 1 if the awareness of recycling in special paper bins must be done through advertising on television and  $e_i$  is the errors of the regression.

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**TABLE 2: ORDERED LOGISTIC REGRESSION FOR THE LEVEL OF ENVIRONMENTAL AWARENESS**

Regressors	Model I	Model II	Marginal effects
gender	-0.020 (-0.06)	-	-
age	-0.019 (-1.07)	-	-
married	-0.397 (-1.02)	-	-
aei	0.622* (1.79)	0.201* (1.89)	0.002
income	0.196** (2.56)	0.005** (2.09)	0.001
env_prot	1.399** (2.10)	1.472** (2.32)	0.014
freq	0.153 (1.14)		
quantity	-0.091 (-0.60)		
family_friended	0.500*** (2.66)	0.585*** (3.81)	0.003
rewarding	0.655*** (4.14)	0.663*** (4.28)	0.003
more_bins	1.154*** (2.92)	1.150*** (3.07)	0.004
campaign	0.182 (1.34)	0.208* (1.77)	0.001
Cut_1	-0.642		
Cut_2	2.732		
Cut_3	5.833		
Cut_4	8.566		

**Note:** The indications (\*\*\*) , (\*\*) and (\*) denote statistical significance at 1%, 5% and 10% respectively. Parentheses present the statistic z.

Following the general to specific approach, Model II reveals only statistically significant factors of environmental awareness while the next column contains the marginal effects for any significant variable. As we can see, the educational level of respondents is a statistically significant factor with a positive effect on the level of information on environmental issues (Sidique et al. 2010; Hadjimanolis 2013). Also, their income positively and significantly (5% level of significance) affects the level of awareness; more specifically, based on the average marginal effects, it was estimated that as income increases by 1% (income is referred in a log form) awareness for environmental issues increases by 0.1 percentage points. It was also found that the variable that indicates the inducement of family members to participate in environmental practices seems to positively affect the level of awareness for environmental issues. This result is related to information accumulation between members in a household regarding environmental protection (Cole, 2013). Also, as expected members who try to pursue other members to be environmentally active are more informed about their local environmental issues. Another statistically significant factor in the model is the degree of agreement on whether rewarded-aware citizens, with financial reliefs from municipal taxes, will lead to more environmental households involvements (Sidique et al. 2010; Halvorsen 2012). Finally, the number of “green bins” has a positive effect on the amount of information on environmental issues each respondent has (Lane and Wagner 2013).

Simultaneously, a second model was estimated aiming to analyze the profile of respondents who are proponents of the economic incentives like financial reliefs - lower municipality taxes- for higher participation of recycling. Since the dependent variable of the model is a Likert variable, an ordinal regression model was also estimated. On the other hand, independent variables that are used are: gender, age, marital status, education level, the degree of awareness of the respondent on environmental issues, whether the respondent recycles or not, the voluntary participation of other kinds of environmental practices, the change in the way of charging of households’ waste (based on the amount of waste and not on the square meters of the house), the willingness of separation of the paper in several types and the existence of public advertisement for several types of recycling. The general form of the multiple linear regression equation is:

$$\text{reward} = b_0 + b_1\text{gender} + b_2\text{age} + b_3\text{married} + b_4\text{aei} + b_5\text{envi\_aware} + b_6\text{recycl} + b_7\text{volunt} + b_8\text{info} + b_9\text{charges} + b_{10}\text{sorting} + b_{11}\text{campaign} + e_i$$

where: reward is the dependent variable that expresses the degree of agreement on whether rewarded-aware citizens getting financial reliefs will more actively participate in recycling ;gender is a dummy variable that takes the value of 1 if the respondent is male and the value 0 otherwise; age is the age of respondent; married is a dummy variable that expresses the marital status of the respondent and takes the value of 1 if



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the respondent is married and 0 otherwise; aei is a dummy variable that expresses the educational attainment of the respondent and takes the value of 1 if the respondent has completed a university degree and 0 otherwise; envi\_aware is a Likert scale variable that expresses the degree of awareness on environmental issues; recycl is a dummy variable that reflects whether the respondent recycles (yes:1 and no:0); volunt is a dummy variable that takes the value of 1 if the respondent would voluntarily participate in other local environmental practices and 0 otherwise; info is a dummy variable that reflects whether the respondent wishes to inform the public about recycling in several special paper bins be coordinated information; charges is a dummy variable that takes the value of 1 if the respondent prefers a diversification in charge of municipal taxes based on the amount of generated household waste and not based on square meters of the house; sorting is a dummy variable that takes the value of 1 if the respondent is willing to separate waste into special bins; campaign is a dummy variable that takes the value of 1 if the awareness of recycling in special paper bins must be done through advertising on television and  $e_i$  is the errors of the regression. Table 3 shows the results of second ordered logistic model.

**TABLE 3: ORDERED LOGISTIC REGRESSION FOR THE LEVEL OF AGREEMENT FOR ECONOMIC INCENTIVES IN ORDER TO RECYCLE MORE**

Regressors	Model I	Model II	Marginal effects
constant	1.193** (2.269)	0.789** (2.038)	-
gender	-0.161 (0.51)	-	-
age	0.001 (0.06)	-	-
married	-0.048 (-0.13)	-	-
aei	0.255*** (3.22)	0.252*** (2.69)	0.003
envi_aware	0.759*** (3.74)	0.789*** (4.02)	0.011
recycl	1.562** (2.38)	0.892** (2.56)	0.019
volunt	0.812*** (3.02)	0.751*** (2.86)	0.011
info	-1.353*** (-3.31)	-1.349*** (-3.39)	-0.029
charges	0.48** (2.12)	0.340* (1.89)	0.005
sorting	-0.834 (-1.33)	-	-

Campaign	-0.075 (-0.58)	-	-
Cut_1	-1.178	-	-
Cut_2	1.086	-	-
Cut_3	2.073	-	-
Cut_4	4.217	-	-

Note: The indications (\*\*\*) , (\*\*) and (\*) denote statistical significance at 1%, 5% and 10% respectively. Parentheses present statistic z.

Based on the estimated results, educational attainment is a high significant parameter that positively affects the level of agreement for economic reliefs in order for the residents of a community to participate into recycling. More specifically, their education level was estimated statistical significant at 1% level and with a positive sign. Environmental awareness is also a statistically significant factor with a positive impact on the dependent variable. More specifically, the more informed a respondent on local environmental issues is there is higher probability to agree for participation in environmental activities having at the same time economic benefits (Tonjes and Sreekanth 2013; Halvorsen 2012). Furthermore, one more statistically significant determinant is the existence of recycling in several types of bins (Lane and Wagner, 2013) while a voluntary participation in local environmental practices has also a positive effect. Finally, the variable that expresses the change in the type of charges for produced household waste is a statistically significant factor indicating that following this methodology there will exist an improvement in the level of recycling in the communities (Sidique, et al., 2010; Halvorsen, 2012).

## 5. CONCLUSIONS AND DISCUSSION

The present study consists of an attempt which aims to demonstrate the parameters that ensure the approach of sustainable development which is related to the issue of recycling. According to the empirical analysis of the data a large proportion -70%-considers that if there are financial reliefs in municipal taxes, people will be more actively involved in recycling, while 69% of the respondents also indicated that they prefer a change in the method of charging for produced waste. As expected, educational attainment and net monthly family income positively influence the degree of environmental awareness and the level of agreement for economic incentives in order for residents to recycle more. Specifically, people with higher education attainment and higher income level are more aware of environmental issues. Also, more informed people seem to recycle more too.

However, demographic determinants of consumers' recycling attitude seem to be necessary but not sufficient to clear the topic of recycling rate in a society. This suggests that it is important to carry out further research in order to achieve this interesting topic of recycling. More specifically, further research has to be done for

investigating the parameters that could lead more people to recycle acquiring also more sustainable solutions for households' waste management. Many studies have highlighted the issue of governance. Local authorities have the main and important role for guiding people to more environmental behaviors. In the recent years, households' waste is one of the most important issues with severe causes in the local environment of cities. Local government policies have to take into consideration the parameters that can lead to a high level of recycling and to the promotion of sustainable development in its cities.

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## CRITICAL EVALUATION OF THE USEFULNESS OF STRATEGIC MARKETING MODELS

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### ABSTRACT

*Marketing is a managerial concept based on which countless organizations rely on in terms of attaining their success. It is though important for any organization to comprehend the significance and utilization of the concept of Marketing. Marketing is a process which spotlights mainly customer needs and subsequently their satisfaction; a factor that eventually will bring success to any business. Based on this, the current paper attempts to evaluate some of the most important tools and models of Marketing in terms of achieving customer satisfaction and thus organization success. In more depth, it evaluates three major Marketing models; the market segmentation, the target marketing and positioning model, the Boston matrix model and Porter's five forces framework. The study attempts to illustrate their characteristics, benefits and limitations in relation mostly to the hospitality, travel and tourism sectors. Finally, the study concludes that organizations need to put their efforts in such marketing strategies, as they will help them survive. Undoubtedly, those organizations which manage to survive are those which built successful strategies and pay their greatest of attention on customers and their expectations.*

*Keywords: Evaluation; marketing models; market segmentation; target marketing; positioning; the Boston matrix model; Porter's five forces framework.*

### 1. INTRODUCTION

#### *1.1. Introduction*

In the twenty-first century's competitive marketplace and the world economic crisis, businesses should consider various techniques in their effort to triumph or even uphold their success. Marketing is one of these techniques and more specifically the development of marketing strategies. Many businesses mystify the meaning of marketing; many suppose that it is a way of selling and promotion. However, the importance of marketing primarily focuses on understanding consumer needs and wants, and afterwards to develop such products in ways that will meet or even exceed those needs. To give an actual meaning of marketing, it is defined as "a social and managerial process by which people and groups obtain what they need and want through creating and exchanging products and value with others" (Kotler, Bowen and Makens, 2006, p.30)

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Based on the above, the report, with some reference on the travel, tourism and hotel sectors, attempts primarily to evaluate the usage of three common used strategic marketing tools, as well as to discuss their possible benefits and limitations rather than just associating to describe and apply the literature to a chosen organization.

### *1.2. Aims and objectives*

The primary aim of the report is to critically evaluate and reflect the usefulness of three strategic marketing models or theories, in reference to the travel and tourism sector, through an academic literature review and to discuss their possible benefits and limitations. These models refer to market segmentation, target marketing and positioning, the Boston matrix model and finally the Porter's Five Forces framework.

## 2. MARKET SEGMENTATION, TARGET MARKETING AND POSITIONING

### *2.1. Introduction*

It is well known that it is impossible for any operation to offer everything to everyone. Consumers' demands vary and depend upon many factors; their lifestyle, needs, personality, income and many more. Thus, organizations are required to plan such marketing strategies which are useful for the analysis of the customer characteristics and the identification of their needs and wants. Among others, the report at this point makes reference to those marketing strategies related to market segmentation, targeting and positioning.

### *2.2. Market segmentation*

Market segmentation is the first stage of the customer analysis strategy. Market segmentation is the means by which the market is sub-divided into several groups that have the same or similar requirements, and thus they have similar requirements of products and services (Kotler and Armstrong, 2005). Therefore, market segmentation centers its attention on customers, the identification of their needs and demands and finally this process contributes to their satisfaction.

Market segments can be identified by grouping consumers based on their geographic, demographic, psychographic and behavioral factors (Doyle and Stern, 2006). By this way market segments are grouped based on their age, lifestyle, income, nationality, and many other factors. To give an example, wealthy people seek for more luxurious travel and hotel services, whereas in contrast people in the middle or lower class are satisfied with the basic travel and hotel services. In the same way, young people mostly look for adventurous vacations, whereas elderly people are most likely to seek for a quiet and relaxing destination.

It is understandable that there are many ways through which market segmentation can be achieved, although for effective market segmentation, some fundamental requirements need to be taken into consideration. Based on this, market segments need to be characterized by measurability, accessibility, substantiality and actionability. In a few words, marketers need to measure the segment's size and purchasing power, as some segments are difficult to be measured. Despite that, it is necessary to search the degree to which segments can be reached and served. In addition, substantiality refers to the extent at which segments are profitable enough. Finally, actionability is related to the planning of effective programs to attract and serve market segments (Kotler, Bowen and Makens, 2006).

In this way, it is possible for an organization, which applies the market segmentation strategy to be more confident and accurate that it measures the market characteristics and identifies their existent differences in the approved manner. As a final result, the organization puts its efforts on a competent strategy and then it achieves to approach its higher satisfaction.

### *2.3. Benefits and limitations*

As previously mentioned, customers' demands vary, so it is important for industries to segment the market into several groups, a factor that benefits in various ways organizations which wish to survive in a competitive marketplace.

Firstly, Bowie and Buttle (2004) support that the process of market segmentation is the starting point for operations wishing to develop an effective marketing strategy, as it is cost-ineffective to target all consumers, whereas by concentrating on key markets less money and time is required. Moreover, grouping the market into segments and knowing each segments' characteristics gives the opportunity to operations to design such offerings that will meet or even exceed customers' demands and thus satisfaction. If the operation achieves to maximize customer satisfaction, then at the same time it accomplishes improvement of profitability.

In addition, Evans, Campbell and Stonehouse (2003) agree that market segmentation is a tool that helps organizations gain competitive advantages, since organizations market their segments, concentrate on their needs and avoid mass marketing. Apart from that, through market segmentation marketers are able to increase their profits, as it is easier and achievable to raise prices to a number of customers without disappointing them, rather than to a massive number of customers at once (Doyle and Stern, 2006).

Finally, to give evidence to the process of market segmentation's usefulness, Doyle and Stern (2006) support that if an airline treated all passengers in the same way, business travelers would be unhappy with the level of service provided, as it is notably a segment with superior and extensive demands and expectations. On the

contrary, young people would be disappointed if they had been treated in the same way as business travelers and had to spend a large amount of money for traveling.

On the other hand, the process of effective segmentation strategies has some difficulties in practice, as it is actually more costly to carry out the marketing research needed for the identification of the market segments. Also, the development of separate offers for different target markets requires additional costs. Finally, market segmentation is not helpful in the long-term as consumers' behavior and demands are constantly changing (Bowie and Buttle, 2004).

To conclude, all managers within an organization work closely for the production of products and services. In this case, the process of market segmentation is limited to the fact that it is common for conflicts and disagreements to occur, as the needs of operations management differs from what marketing managers perceive as valuable (Middleton, 2001). For instance, the operational management assumes that it is most cost-effective and easy to manage a single-designed product that will appeal to the mass market; whereas the marketing management tries to invest on new customers and products.

#### *2.4. Target marketing*

The following step, after the market segmentation process where organizations differentiate customers' needs and demands, is that they need to evaluate each segment's attractiveness and decide which and how many segments to target. This strategy is known as target marketing and it refers to the desired segments that the organization wishes to serve (Kotler and Armstrong, 2005). In this case organizations view each customer as a separate target market and ideally they design different marketing programs for each target market in order to satisfy their needs.

In the context of target marketing, operations can adopt one of the three strategies of target marketing; undifferentiated (very broad markets), concentrated (very narrow markets) and differentiated marketing (somewhere in between) (Kotler and Armstrong, 2005).

In brief, undifferentiated marketing strategy focuses on what is common in the needs of consumer's rather than on what is different (Kotler and Armstrong, 2005). Operations design a product which reaches the largest number of buyers and uses mass advertising, aiming to attract the superior number of markets (Doyle and Stern, 2006). Undifferentiated marketing has the advantage of providing cost economies as limited goods are produced (Kotler, Bowen and Makens, 2006). On the contrary, most modern marketers have doubts about this strategy because it is difficult to develop a product that will satisfy all consumers and also there are heavy marketing costs. Furthermore, when several organizations aim at the largest segments, heavy competition occurs, less profitability and therefore less satisfaction results and failure (Kotler, Bowen and Makens, 2006).



Using a differentiated marketing strategy, an organization targets several market segments and designs different products for each customer (Kotler and Armstrong, 2005). For example, airlines segment their cabins into different classes of customers, providing then different offers to each class, as for example services to business travelers (Doyle and Stern, 2006). The same happens with hotels, as they are categorized in stars to satisfy any market segment, poor or rich, old or young (Kotler, Bowen and Makens, 2006). The advantage lies to the fact that by offering product variations, organizations target for higher sales, a stronger positioning and hope for repeated purchasing (Kotler and Armstrong, 2005). Furthermore, differentiated marketing lets to the design of specialized promotion programs that will appeal to each market segment separately and differently. On the other hand, by designing products to meet different market segment requirements, an operation usually finds it more expensive and requires extra marketing research, forecasting, sales analysis and promotion planning. Thus, a company must consider increased sales against increased promotion costs (Kotler and Armstrong, 2005)

Lastly, concentrated marketing appears when company resources are limited. A company goes after a large share of one or few submarkets, usually called niche market (Kotler and Armstrong, 2005). Through this strategy operations achieve a strong market position because of its greater knowledge of the segments' needs and the ability to match the product with the customer requirements (Kotler and Armstrong, 2005). The most important factor in this case is for the organization to take the best choice for its niche market segment so as to earn a high rate of return on its investment. At the same time, concentrated marketing involves high risks, as it is not beneficial and guaranteed for an organization to become depended upon a niche market, as customer demands are constantly changing.

### *2.5. Benefits and limitations*

In reference to the benefits of target marketing, the opportunity to target that group of people that is most likely to select an operations products and services is a key player. This is where success comes in reality, taking into account that the organization had selected the most efficient target markets to match with their products. Moreover, the benefit of target marketing is that it allows the use of fewer resources; it generates great returns and makes advertising easier. In conclusion, target marketing is an effective tool to optimize marketing resources, since by the time an organization does not analyze its customers then it can not be able to design further resources and marketing strategies.

The main disadvantage of this targeting approach is that it is a waste of time and money, if the strategy is not implemented correctly and if wrong decisions are taken when selecting the target market. Then the chosen target market(s) will end up to

customers that are not interested to the operation's product and as a consequence, this will lead to failure.

In the case of the hospitality industry, companies target more than one market segments at the same time; however, each one has its own marketing mix programs (Bowie and Buttle, 2004). Being that, there is a high risk for operations to mix incompatible target markets that use the premises at the same time and as a result conflicts, customer disappointments and complaints are likely to occur (Bowie and Buttle, 2004). Examples of mismatched segments include mixing business and leisure customers or older customers with families and children.

## *2.6. Positioning*

The third stage of the marketing strategy, after the evaluation of the segments that are going to be used and the targeting of one or more markets, is the strategy of market positioning. To better understand market positioning, Kotler, Bowen and Makens (2006) assume that the positioning of a product or an organization is determined by consumers and how it is placed in their minds in relation to competing products. The strategy is used for organizations to position themselves in customers' mind so as to differentiate them from competitors and convince them to use the provided offers.

In other words, through market positioning, products are being positioned in relation to how consumers perceive competitors. Thus, it is essential that marketers differentiate their products from competitors and give the competitive advantage in their target markets (Kotler & Armstrong, 2005).

An example is the Courtyard brand of the Marriott Corporation, who developed a product positioning statement which was designed to serve business travelers who wanted moderately priced hotels of consistent high quality, and pleasant travelers who wanted an affordable room. After targeting its preferable segments the company positioned itself and finally designed the framework for the product (Crawford-Welch, 1994. Quoted in: Evans, Campbell and Stonehouse, 2003 p.134)

The strategy of market positioning helps to differentiate products and services among competitors in the same product class. Its usefulness is to create a competitive advantage aiming to attract favorable target markets.

However, there are three basic risks for businesses or products to be inadequately positioned. Firstly, the selected target market might become unappealing because either of its size, or due to the fact that it is too declining, competitive or unprofitable. Secondly, the quality and features that the product offers may not match with the target segments' requirements and thirdly, the product's costs may be too high to allow it to be priced competitively (Doyle and Stern, 2006).

### 3. THE BOSTON MATRIX MODEL

#### *3.1. Introduction*

Another essential aspect of marketing is for businesses to plan such strategies that will help them become aware of where they are and where they are going. A useful tool for businesses to achieve that is the Boston Matrix Framework, known also as the Boston Consultant Group matrix.

#### *3.2. The Boston Matrix Model*

Based on, Morrison and Wensley (1991. Quoted in: Evans, Campbell and Stonehouse, 2003 p.144) the Boston matrix model is a simplified tool; “it selects one parameter, relative market share, as an indicator of the strength of the competitive position and one parameter, market growth, as indicating the potential and attractiveness of the market”.

The Boston Matrix Framework was designed primarily to show where a business is positioned, to help identify its competitors and future strategy options (Doole and Lowe, 1999). In more detail, this marketing tool allows businesses to evaluate their portfolios (information about market share and growth). It is in fact a method that organizations use to assess their portfolios in order to evaluate their strategic business units (Kotler and Armstrong, 2005).

A key point of the model is that market share and market growth provide approximations of the ability to generate profits (Evans, Campbell and Stonehouse, 2003). This is where the importance and usefulness of the model lies, as cash flow represents the most important determinant of a business’s ability to develop its product portfolio.

So based on the above, the vertical axis of the matrix shows the market growth, that indicates the growth rate of the market per year. The horizontal axis of the matrix shows the market share of the strategic business’s unit as related to that of its largest competitor (Kotler, Bowen and Makens, 2006). In this context the model, identifies four categories; stars, cash cows, dogs and question marks (problem child). The report gives below a brief overview of these categories aiming to give a clear understanding of the model and its usefulness.

Stars have a high share market in a rapidly growing market. Inevitably, they are rapidly growing their sales. However, stars require a large amount of cash spent on advertising or in product improvements (Evans, Campbell and Stonehouse, 2003), so they often need intensive investment, in order to keep up with their high market growth and avoid competition (Kotler, Bowen and Makens, 2006). However, it is reasonable for the stars to become cash cows when the market becomes low (Evans, Campbell and Stonehouse, 2003).

Cash cows are low-growth and high-share businesses or products. It is normally a profitable category thus it needs less investment (Kotler and Armstrong, 2005). The profits from the cash cows can be used to support other products that are in their development phase or to support other products within the stars and question marks categories (Evans, Campbell and Stonehouse, 2003).

Dogs represent a product with low share market in a low growth market. Typically 'dogs' do not generate enough profits. They may generate enough cash rather than large sources of cash (Kotler and Armstrong, 2005). Finally, Kotler, Bowen and Makens (2006) assume that dogs need more time than they worth to be managed.

Question marks are low-share businesses in high growth-markets (Kotler and Armstrong, 2005). In this case the organization needs to think very hard whether it is worthy to put more money into the business (Kotler, Bowen and Makens, 2006).

### *3.3. Benefits and limitations*

Since an operation chooses to apply this model and therefore to plot its businesses or products in the growth-share matrix, it then gets the opportunity to identify whether it is healthful or not; where it is located and if changes need to be come about. The model then allows managers to be more strategic about understanding the economic aspects of their business and to determine its portfolio (Kotler, Bowen and Makens, 2006).

Despite the fact that when the Boston matrix model was first developed (in 1970s) it became the most popular tool for management, as it was easy to use and appeal, it has essential weaknesses as well. Firstly, industries can not rely on the growth of the market in describing their overall attractiveness, as there are other factors that can make even high-growth markets oversupplied, price oriented and unprofitable; and those factors include low entry barriers, capital intensity and strong buyers. Similarly, market share can not sufficiently replace relative competitive strength. Other factors such as location, degree of vertical integration and capacity utilization also affect relative costs. Price and margins are also influenced by product positioning and shared marketing, distribution and brand franchises (Doyle and Stern, 2006).

Finally, the model is more complex in practice, since products and competition are likely to differ significantly from one market to another. It is reasonably difficult to compare the strength of a portfolio across various markets as the analysis is based on elements that are constantly changing (Doole and Lowe, 1999).

## 4. PORTER'S FIVE FORCES FRAMEWORK

### *4.1. Introduction*

An even more important aspect in any industry's survival is to know who its competitors are. In today's competitive marketplace, industries should work extensively so as to provide something that competitors are not and take the highest competitive advantages for their businesses. In reference to that, the report suggests the Porter's (1980. Quoted in: Evans, Campbell and Stonehouse, 2003 p.173) five forces framework of competitive analysis.

### *4.2. Porter's Five Forces Framework*

Porter's five forces is a tool which was developed to analyze how and in what extent industries compete each other. The five forces that determine the degree of competition within an industry include (Evans, Campbell and Stonehouse, 2003 p. 173):

1. the threat of new entrants to the industry
2. the threat of substitute products
3. the power of buyers or customers
4. the power of suppliers
5. rivalry among businesses in the industry

The first force refers to the difficulties to enter into an industry, such as the ability to generate profits, the chances to differentiate products, the needed capital in order to enter the industry and the accessibility to distribution channels. Secondly, substitute and competitive products are being offered, however, technological improvements are changing their potential threat. The third force refers to the position that customers have over suppliers, concerning price. The power of suppliers can easily manipulate an industry's attractiveness and profitability by increasing their prices. Then they contribute to the increasing costs and the reducing profit margins of the industry. Lastly, rivalry includes conflicts, competition, coexistence, cooperation or collusion. In this case competition depends on the number of competitors and the level of profitability, demand and capacity (Bowie and Buttle, 2004).

### *4.3. Benefits and limitations*

The five forces analysis identifies major opportunities as well as threats. Firstly, it evaluates the nature of the competitive environment in an industry (Bowie and Buttle, 2004). By using this framework of the five forces of competition, industries can

analyze current or potential competitors and afterwards identify how to position themselves in order to take competitive advantages and opportunities to overcome threats and competition (Evans, Campbell and Stonehouse, 2003).

Even if Porter's five force framework is a good starting point to understand the competitive forces and thus a valuable tool for management, it still encompasses limitations. As various organizations are successfully managed based on close working relationships with suppliers, buyers and also competitors, it is nonsense to presume that they are threats for the organization. Also the strength of suppliers or even buyers may be different from organization to organization and that makes the framework not applicable enough for all. However, major brands can not be easily influenced by substitute products or buyers' power (Evans, Campbell and Stonehouse, 2003).

## 5. CONCLUSIONS

There is no doubt that the travel and tourism sector is significantly growing. For that reason and based on the twenty-first century's increased competition and economic crisis, organizations need to put their efforts in such marketing strategies that will help them survive.

The sufficiency of the above theories are based on the assumption that operations are not able to manage their markets effectively, as they can not identify the appropriate market segments, they are not willing to take the risk and adopt new products that will consequently satisfy customer needs, and finally they do not provide uniqueness on their products, a factor that gives no value-added to the market (Perlmutter, 1995. Quoted in: Doole and Lowe, 1999 p. 32). The organizations that survive through competition are those who had built successful strategies and had paid great attention on people and their expectations.

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## THE DEMOGRAPHIC TRENDS OF THE NEW GENERATION IN RELATION TO THE TRAVEL SERVICES: THE CASE OF CYPRUS

MARIOS CHARALAMBOUS\*

### ABSTRACT

*It is widely known that the trends of consumers in relation to the travel services, in general, are constantly changing as people of all ages and especially the new generation, seek to engage in new and diversified services and experiences as well as to be provided with updated services. Taking this into consideration the current survey research focuses on examining the demographic trends of the New Generation in relation to travel services as these apply in the case of Cyprus. More exclusively, the research attempts to investigate which are the trends and most importantly, which are the demands and needs of the New Generation of Cyprus, in relation to travel services. In this case, the research aims to investigate the topic focusing on people at the age of 18-25 years old. More intensively, it obtains and exemplifies data regarding the topic through a primary survey using quantitative research. Through the integration, the research explains and highlights that indeed there are new trends arising in relation to the demands of the New Generation of Cyprus when traveling. Finally, the research concludes that, not only in Cyprus, but also worldwide, the travel services should be upgraded and improved to meet the demands of the New Generation.*

*Keywords: Demographic trends; new generation; travel services; Cyprus.*

### 1. INTRODUCTION

Travel and Tourism is a sector, which plays a significant role in the economic development of many destinations. Cyprus, a small island in the Mediterranean Sea, is one of these countries, which is highly depended on the hospitality and tourism sectors in terms of its economic growth.

The concept of the current survey research is to investigate through a primary survey the demographic trends of the new generation. More specifically, the study researches the preferences of young people in Cyprus, in the age of 18-25 years old, in relation to travel services. Through the research, not only travel operations, but also tourism organizations, locally and internationally, would be able to acknowledge this group's preferences, a group which eventually will change the nature of the travel operations and services in the future.

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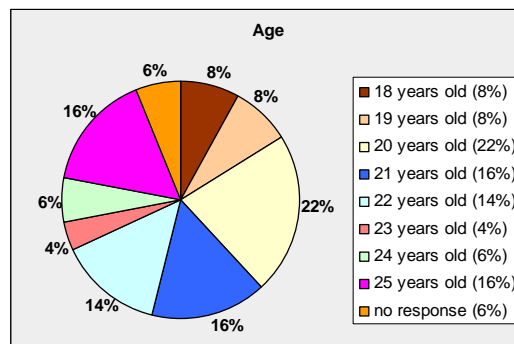
## 2. METHODOLOGY

The survey research conducts a primary data collection method, which includes mostly questionnaires. The purpose of choosing this technique is to fulfill the research's objective in terms of examining the new trends of young people in the age of 18-25 years old, in relation to the travel services, as these apply for the Cypriots. Consequently, the study addresses questionnaires at a representative sample of young people in the age of 18-25 years old. The main criterion for choosing the potential participants is their age. Finally, where necessary the research compares the primary research results with literature review. As a beginning point, the survey research illustrates the demographic characteristics of the researched population and then it shifts to the main point of the survey; investigating the new generation's preferences for Travel operation services, as these are being applied in the case of Cyprus.

## 3. GENERAL INFORMATION OF YOUNG CYPRIOTS

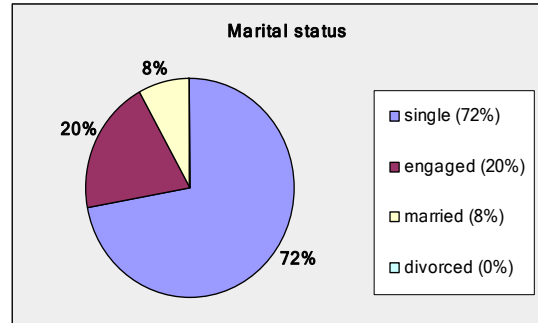
Before beginning with the main objective of the research, first it is important to refer to the demographic characteristics of the researched people. From the survey, it comes that the majority of the researched population is between the age of 20-22 years old (52%) and 25 years old (16%) (See figure 1). The rest of respondents were in the age between 18-19 years old (16%) and 24 years old (8%). Finally, the minimum percentage counts for those in the age of 23 years old (4%). It is important to look at the age of respondents in reference to their preference for travel services, as their personal characteristics, behavior, way of thinking and way of living vary from the age of 18 to the age of 25. As Eurostat reports, "as people get older, leisure time decreases as the gradual shift to working life leaves less time for leisure" (2011). In addition, as youngsters become older, they gain more knowledge, experiences, become more mature; hence, they have elevated needs.

**FIGURE 1: AGE**



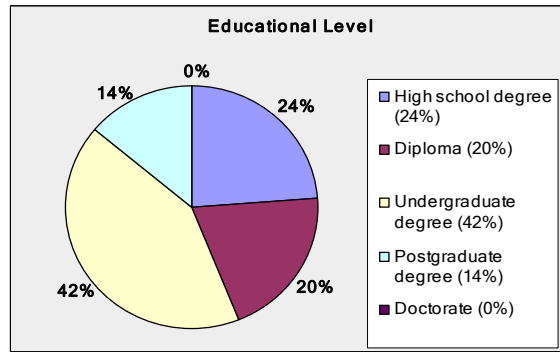
As far as the marital status is concerned, Figure 2 illustrates that the majority of respondents are single (72%) and just 20% are engaged. Further, it is noticeable the fact that a percentage of young people decide to get married (8%). Based on this factor, the research assumes that the trends of those married people in the young age may be different from those who are single in relation to their demands for travel services. There is a limitation of the research in investigating such a factor, as it is not of its major considerations, but at the same time, it gives recommendations for further research on this topic.

**FIGURE 2: MARITAL STATUS**



Continuing to the demographics of the new generation in the age of 18-25 years old and in relation to their educational level, 42% of respondents have obtained an Undergraduate degree or at least they are still following their Undergraduate studies and 20% have completed a Diploma degree. It can be assumed that the effects of these data may depend on the gender of respondents, as young women have the ability to continue their studies from High school, whereas young boys have to attend the army for an average of two years. In addition, 24% of respondents just obtained a High school degree, a fact showing that a large proportion of young people are not attending further studies. On the one hand, this allows young people to have more free time to travel and use tourism services, but on the other hand, they miss the prospect to enhance their knowledge and create a career for the future. The research can also assume that those who do not continue their studies may have chosen to find employment for additional income. Finally, it is rational that none of the respondents acquired a Doctorate degree due to the young of their age.

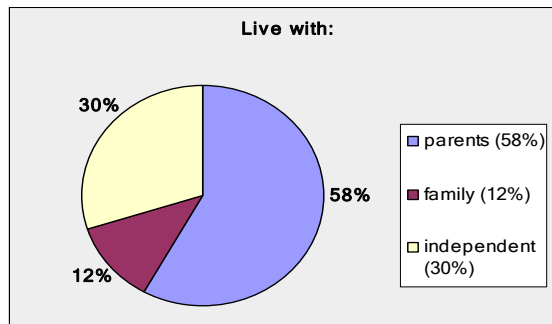
**FIGURE 3: EDUCATIONAL LEVEL**



In reference to the question “who you live with”, more than half of respondents (58%), live with their parents and a relatively high percentage (30%) are independent. This detail gives the impression that those autonomous youngsters may have more time and flexibility to travel more customarily. Finally, a decent percentage (12%) refers to those who live with their own family, as the pre-mentioned data shows that a percentage of young people are married in their young age.

The research, at this point takes the advantage to refer to those young people who have their own family. It strongly supports that it should be considered as the next group of customers that travel operations should attract as they have specific requirements regarding traveling. This issue definitely needs further and exclusive investigation.

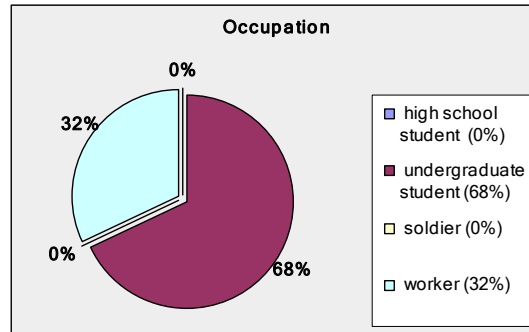
**FIGURE 4: LIVE WITH**



Looking further at the demographic characteristics of the population of Cyprus in the age of 18-25 years old, and in relation to their occupation, the majority of them (68%) are Undergraduate students and the rest are being employed (32%). Once more,

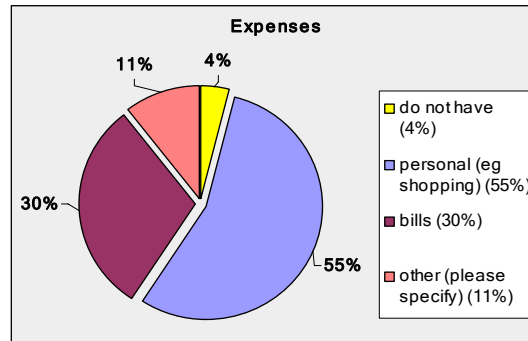
the research comes to the point where an enormous number of young people prefer to work rather than continuing their studies further. The difference between the two is that the first can get the money to travel, whereas the second are not able to do so. Young employed people can be considered another rising market group for travel operations. Finally, it is rational the fact that none of the respondents are High School students, due to the fact that at the age of 18 years old young people graduate from High School. In addition, it is worth mentioning that, by coincidence none of the respondents are soldiers.

**FIGURE 5: OCCUPATION**



In terms of the expenses that young people have, even in the age of the 18-25 years old, the highest percentage refers to personal expenses (55%). A lower percentage counts for those who have bill expenses (30%) and this is rational since there is a high percentage of young people who are independent (30% - Figure 4, page 5). Further, only 4% of the respondents do not have any expenses and 11% refer to other expenses, which eventually can be considered as personal expenses. Such expenses are for cigarettes, gas, loans, rent and medical. Generally, it is outstanding the fact that young people have a lot of expenses and despite this, they decide to be independent. Based on this, the research can justify the fact that young people prefer to be employed rather than continuing further their studies. Another arising point is the fact that there is nothing mentioned about expenses for traveling and using tourism services. Such an issue may need further investigation.

**FIGURE 6: EXPENSES**

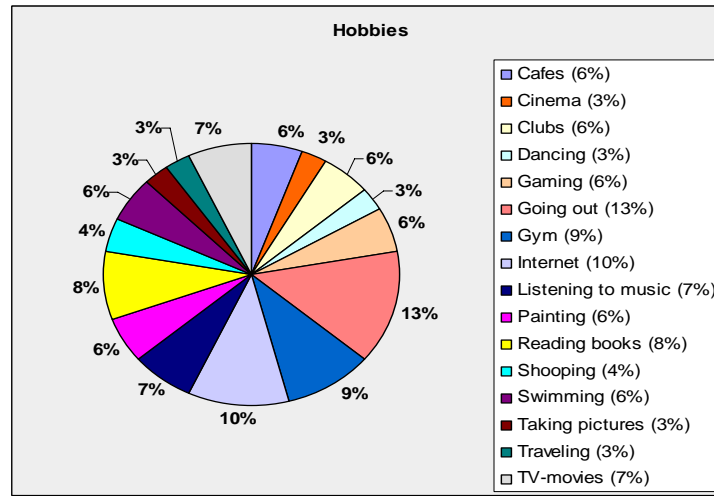


Moving deeper to the main point of the research and in the attempt to investigate the demographic trends of the new generation towards travel services, the research considers that it is important firstly to study what kind of hobbies young people undertake during their free time. At the outset, it is remarkable the fact that 88% of respondents certainly have free time, whereas only 12% do not have any free time. Unfortunately, there is not any reference to the reasons why young people do not have free time. In an attempt to justify this, the research gives the excuse to the fact that a high percentage consists of Undergraduate students, who spend a lot of time for their studies or even those who are already married and have household obligations.

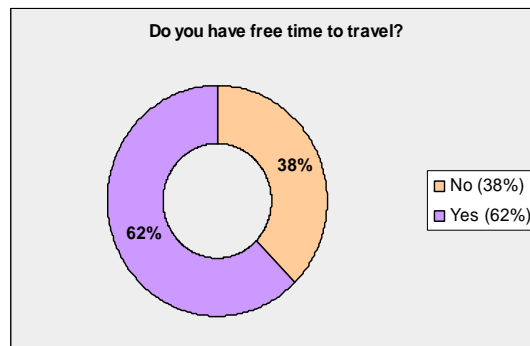
On the other hand, a variety of additional options come in surface regarding young people's hobbies; most of them prefer to go out, fewer go to the gym and explore the internet, less are listening to music and watching TV. A smaller amount of young people are reading books, go for games, swimming and visiting cafes, and the rest are undertaking other activities such as playing all kinds of sports, cooking, painting, going to the cinema, shopping, taking pictures, sleeping, dancing and visiting clubs. The number of those who are traveling is even less, a factor showing that either they stay at their country for vacations or they do not have vacations at all.

However, in the question whether they have free time to travel, more that half of the respondents answer positively (62%) regardless of the fact that there is nothing mentioned previously concerning traveling as a hobby. It can be understood that, either they do not consider traveling as a hobby or just that it is not the greatest of their hobbies. Finally, 38% of respondents do not have free time to travel. Nevertheless, in the question of whether they like traveling, all of respondents rejoin positively.

**FIGURE 7: HOBBIES**



**FIGURE 8: FREE TIME TO TRAVEL**



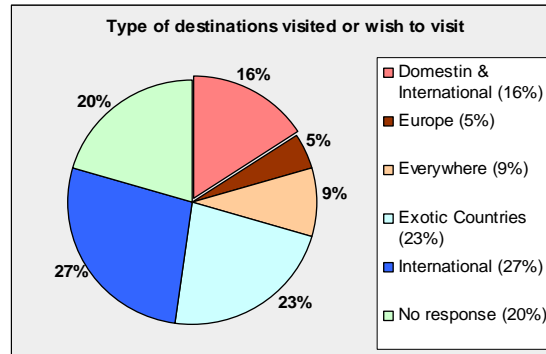
#### 4. TRAVEL DESTINATIONS

In the frames of investigating the demographic trends of the new generation in the age of 18-25 years old and in relation to travel services, participants refer to the type of destinations they choose or wish to visit. Based on Figure 9, 27% prefer international trips and fewer (23%) would rather visit exotic countries. A percentage of 16% wish to travel domestically; that means traveling in their own country and 9% reveal that they would like to travel everywhere. Additionally, only 5% wish to travel within Europe. It is remarkable the fact that 20% of respondents did not give any reply to where they do or wish to travel.

Further to the above, a small amount of statements refer to specific areas visited or wish to be visited, such as Asia and the Greek islands, whereas some others support that new and exotic places is their personal preference for traveling. Other respondents mention that the type of destination they will choose to travel to will depend on their savings. Such a factor gives the impression that young people have the need to travel and their main requirement is their economic availability. Finally, few others state that the type of traveling highly depends on demand; for summer vacations they choose beach areas, others refer to places for relaxation and others mention that they always seek for something different.

From the above results, it is obvious that the new generation has specific requirements in terms of where they travel or even wish to travel and this depends on different, personal demands. However, it's an outstanding fact that the majority of them move away from the traditional tendency of traveling domestically or even at nearby destinations, such as European countries and rather wish to travel at new, international destinations and exotic places.

**FIGURE 9: TYPE OF DESTINATIONS VISITED OR WISH TO VISIT**

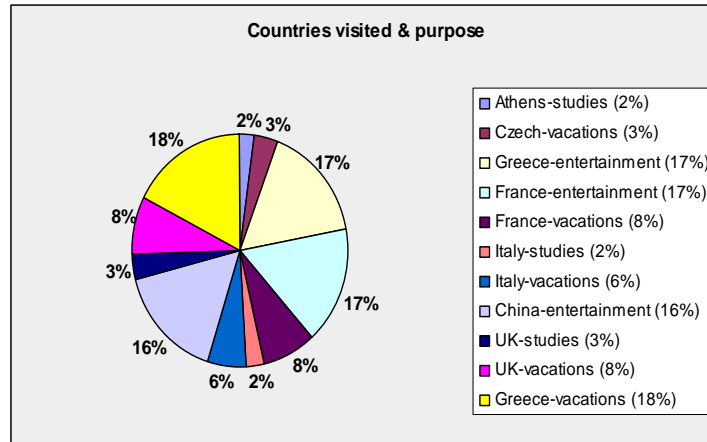


In an attempt to understand better the preferences of young people regarding traveling and to acquire specific information about where they are traveling, the research survey investigates in more depth the actual countries that young people have visited so far and for what reason. Looking at the results, the majority of them (18%) visited Greece mostly for vacations and at the same level (17%) they traveled to Greece and France for entertainment. Fewer (16%) traveled to China again for entertainment purposes. At the same degree, 8% traveled to United Kingdom and France for the same purpose, for vacations, and another 6% traveled to Italy yet again for vacations. A minimum percentage (3%), mention that they have traveled to United Kingdom for studying and at the same percent (3%) to Czech Republic for vacations. The remaining 2% traveled to Athens-Greece for studying and another 2% traveled to Italy for the same purpose.



Furthermore, few others expose further options in terms of where they have traveled and for what purpose and these are shown in Table 1. It should be noted at this time that seven respondents did not give any reply to the question “which countries have you visited so far and for what reason”.

**FIGURE 10: COUNTRIES VISITED AND PURPOSE**



**TABLE 1: COUNTRIES VISITED AND PURPOSE**

COUNTRY	PURPOSE
Spain & Ibiza	vacations
China	business
Greek islands	vacations
Egypt	vacations, cruise
U.S.A.	studies, vacations
United Kingdom	VFR (visiting friends and relatives)
Australia	wedding
Cyprus	relax
Germany	vacations
France	VFR
Italy, Thessaloniki, Crete	fun
Finland	vacations
Bulgaria	Shopping

Moving on, the research additionally refers to the countries that young people would like to visit some time in the future. As the results show, the majority of respondents (20%) wishes to visit Spain and less (16%) would like to visit U.S.A. and Italy (16%). Furthermore, U.K. and France count for 10%, Germany for 8% and Australia for 7%. The remaining percentages go for Amsterdam (5%), Hawaii (3%) and Austria (3%) and finally Ukraine (1%) and Malta (1%).

Additionally, there are few more details on the subject of this investigating point; some respondents mention explicit reasons of visiting specific countries (Table 2). Egypt and Spain are preferred for their cuisine, France for its language and sightseeing, Germany and U.S.A. for their culture, Italy and U.K. for their sightseeing and Japan for its architecture and culture.

As a last point, some other statements refer to the wish of visiting Netherlands for its coffee shops, Switzerland for experiencing the green scenery, Bahamas for its beaches, Miami because of its fame, Hawaii for exotic vacations, and finally Dubai for experiencing “rich services”. Other countries that participants mention are Africa, Argentina, Abu Dhabi, Bali, Barcelona, Czech Republic, China, Cuba, Istanbul, India, Brazil, Malaysia, Mexico, Nepal, Peru, Singapore, Thailand, Russia and New Zealand; all of them being either international, or exotic or even having something specific and unique to offer to young people. Once more, it looks like that young people are mature enough to decide of where they would like to travel and most significantly the reason why to visit a specific destination.

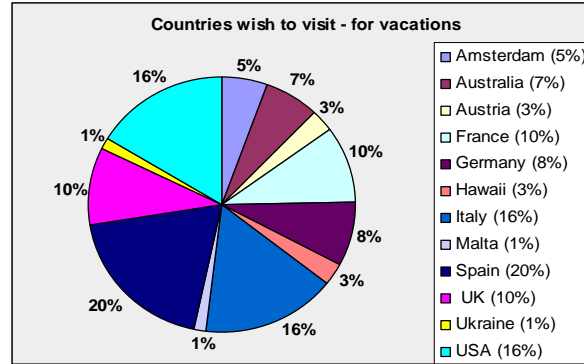
The above results give meaning to the originate results of the previous question; asking about the type of destinations that young people travel or wish to travel to. It is obvious that the new generation is well aware of the diversity of destinations worldwide. Therefore, these results show that the young population has specific demands in terms of the destination they choose to visit; they desire to find something interesting that will fulfill their traveling experience. Finally, the discussion once more proves that the new generation is fond of visiting international countries, as well as exotic and “never-before-visited” destinations.

The research at this point notes that only ten of respondents did not give any reply to the question.

Since referring to domestic traveling, the study finds the opportunity to reveal the areas that participants visited in Cyprus and the reasons of visitation. The results show that the majority went to Paphos (29%) for sightseeing, relaxation, fun, nightlife, and personal reasons. Then, 23% visited Limassol for the carnival, relaxation, business, nightlife and personal reasons. On a minimum extent, participants visited Ayia Napa (12%) mostly for the summer, nightlife and personal reasons. The rest of participants have visited Kakopertia (8%) and as someone believes “it is the perfect place to be”. The remaining percentages represent Protaras (6%), Troodos (5%), Nicosia (4%) for shopping and business or studying, Larnaca (3%) for business and personal reasons and finally Paralimni 1%. Additionally, 9% of participants have been all over Cyprus

and very few have been to Pissouri and Aphrodite Hill areas for holidays. Overall, there are few who visited some areas in the occupied Cyprus, Morfou, Kyrenia and Rizokarpaso for curiosity. Finally, twelve of respondents did not give any response.

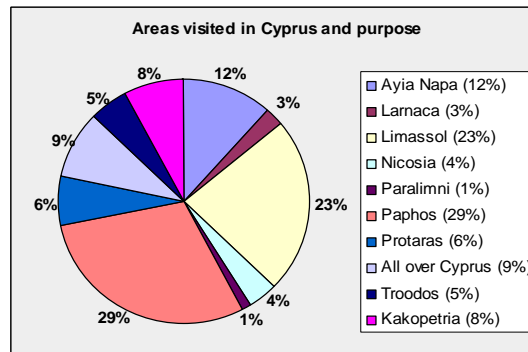
**FIGURE 11: COUNTRIES WISH TO VISIT – FOR VACATIONS**



**TABLE 2: COUNTRIES WISH TO VISIT AND PURPOSE**

	Egypt	France	Germany	Italy	Japan	Spain	UK	USA
cuisine	√					√		
language		√						
sightseeing		√		√			√	
architecture					√			
culture			√		√			√

**FIGURE 12: AREAS VISITED IN CYPRUS AND PURPOSE**



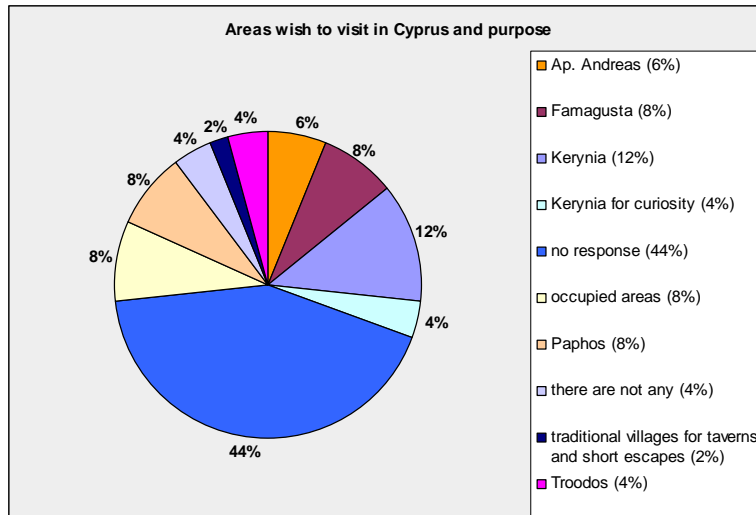
**TABLE 3: AREAS VISITED IN CYPRUS AND PURPOSE**

	<b>Nicosia</b>	<b>Larnaca</b>	<b>Limassol</b>	<b>Paphos</b>	<b>Ayia Napa</b>	<b>Troodos</b>	<b>Kakopetria</b>
shopping	√						
sightseeing				√			
carnival			√				
relaxation			√	√			
business/studying	√	√	√				
summer job					√		
fun, nightlife			√	√	√		
personal reasons		√	√	√	√		
the perfect place to be							√
with friends					√	√	√

	<b>Morfou</b>	<b>Kyrenia</b>	<b>Rizokarpaso</b>	<b>Pissouri</b>	<b>Aphrodite Hills</b>
curiosity	√	√	√		
holiday				√	√

Furthermore, the research presents the areas that young people would like to visit in Cyprus and the purpose, is mentioned. Almost half of participants did not give any response (44%). The research can justify this result as the majority of respondents already visited some areas in Cyprus. However, 8% wish to visit Paphos, 4% the Troodos area and just 2% mention that they would like to visit traditional villages for taverns and short escapes. Even though the percentage is minimum, if services are developed to attract more young people, then there are potentials for these areas to be developed in terms of tourism. Significant is the fact that 8% claim that they wish to visit the occupied areas; Kyrenia (12%), Famagusta (8%), Apostolos Andreas (6%), Kyrenia for curiosity (4%). Giving more details to their response, young people declare that they wish to visit the occupied areas because of the perception that, there are more beautiful beach areas on the other side of the island. Finally, the remaining percentage (4%) counts for those who just do not have any desire to visit any areas of Cyprus.

**FIGURE 13: AREAS WISH TO VISIT IN CYPRUS AND PURPOSE**

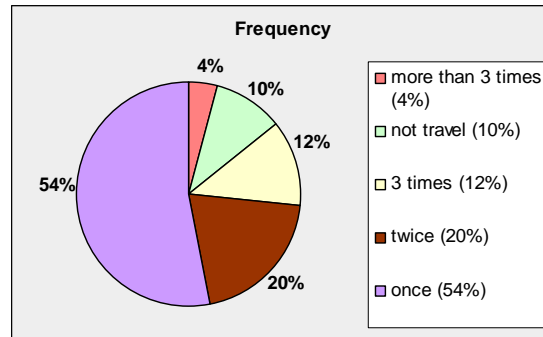


## 5. GENERAL DEMANDS FOR TRAVEL

### 5.1. Frequency

The main aim of the research is to look at the demands of participants when traveling. In this attempt, the research firstly investigates how often young people travel per year. The majority (54%) travel only once per year, less (20%) twice and 12% travel three times per year. Outstanding is the fact that 10% do not travel at all. This is reasonable as, in general, there is a proportion of people who do not feel secure to go away from their country and home, or even because they do not have the money or the time to travel. Finally, 4% mention that they travel more than three times per year. Once more, the research concludes that young people are highly motivated to travel and gain as many experiences as possible from traveling.

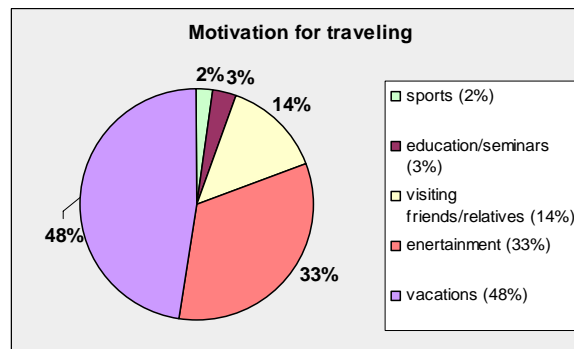
**FIGURE 14: FREQUENCY**



*5.2. Motivation*

Regarding the main motivation for young people to travel, fewer than half (48%) travel for vacations and 33% travel for the entertainment services, which the visited destinations may have available. The remaining percentages go for those who travel for visiting friends and relatives (14%), only 3% for education purposes and attending seminars and 2% travel for sport purposes.

**FIGURE 15: MOTIVATION FOR TRAVELING**

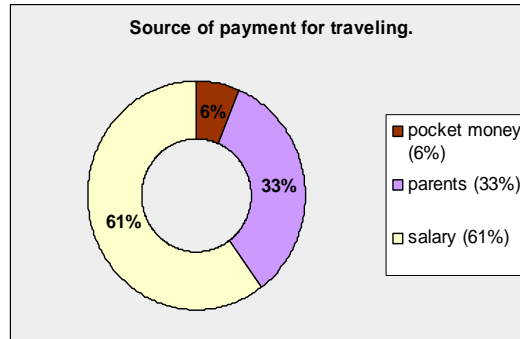


*5.3. Source of payment*

In search of the source of payment for traveling, young people mostly get the money from their own salary (61%) and this is lucid as there is a high percentage of those who are being employed (32%, see Figure 5, p.5). Another 33% states that, their parents are paying for their traveling and the remaining 6% refers to those who use as a source of payment their pocket money.

At any rate, the current research comes to the point that young people, even if they work, or they are students, staying with their parents or alone or with their own family, ultimately they make it possible and meet the expense of traveling. However, this comes in contrast to the fact that young Cypriots continue to depend on their parents' financial assistance (Daniel Gros, 2010).

**FIGURE 16: SOURCE OF PAYMENT**



#### *5.4. Source of information*

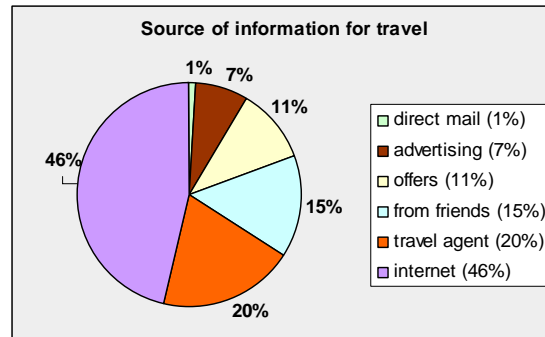
In the attempt to research what source of information young people use for booking their traveling, or even for collecting information about destinations, the internet is the most commonly used method (46%). Since previously (Figure 7, p.7), the research came to the point that not a lot of young people use the internet frequently on their daily life; at this point, it becomes useful. It is well known that, in the Travel industry, and in any other related industry, the use of internet is growing and it's upgraded dramatically in the same rate as the industry is improving. This is rational as the internet, and in general, technology is constantly upgraded and becomes part of peoples' life. Indeed this information confirms the fact that the internet is the most useful tool for collecting information and making bookings, especially for young people who have the knowledge and the time to search for any information. In contrast with elderly people, who prefer to visit travel agencies for planning for their holidays, as they do not have the knowledge, time and access to use the internet.

Further to the results, another 20% manage their traveling through travel agent services. This is something that comes in contrast to reality, as it is believed that young people cannot afford to pay for travel agent services. Nevertheless, there is a debate regarding the use of the Internet versus the use of travel agents for making bookings. However, it seems that a high percentage of young people rely on the

assistance of travel agents in terms of carefully choosing a destination that will offer the most memorable experience.

The remaining percentages count firstly for those who rely on their friends' viewpoint about travel services (15%), and then for offers (11%), advertising (7%) and finally just 1% for direct mail.

**FIGURE 17: SOURCE OF INFORMATION**



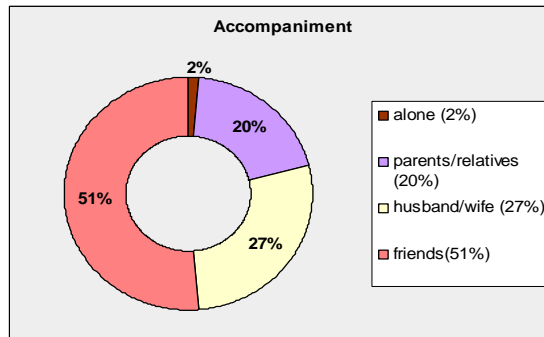
### 5.5. Accompaniment

In regards to with whom young people travel with, most of them (51%) travel with their friends and 27% travel with their spouse. A valued percentage (20%) represents those who travel with their parents or relatives. From the above results what is outstanding is the fact that young people in the age of 18-25 years old still choose to travel with their parents or relatives. The research can give the excuse that possibly young people cannot afford to pay for their vacations and so they decide to travel with their parents or relatives or even this is because the new generation supports the family bonds and wish to spend time with their parents and relatives. Furthermore, it is worth noting that those who are married in young age they choose to travel with their partner rather than with friends. Such a factor points out that young people are mature enough as they make the decision to get married and escort their other half on vacations.

There is finally a small percentage (2%) of those who travel alone. As previously mentioned, few of young people choose to undertake vacations for relaxation and thus they choose to travel alone. Even if the percentage of those traveling alone is low, still it can be seen as a potential group of travelers, which travel operations owe to associate with in terms of upgrading and offering more services for them in an attempt to attract their interest and motivate them to travel and use such services more frequently.



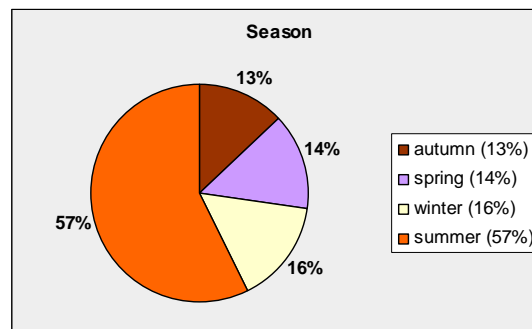
**FIGURE 18: ACCOMPANIMENT**



### 5.6. Season

Regarding the season in which young people choose to travel, more than half set off during summer time (57%). The remaining percentages go for those who go off during winter (16%), spring (14%) and autumn (13%). It is worth to discussing the fact that, even if the research proves that indeed young people mostly wish to travel during summer time for vacations and having fun, still the percentage for traveling more frequently during the off-peak season is high. As seen from the previous discussions, young people look for relaxation and wish to visit different areas. For this reason, season may not be considered as a prerequisite for traveling for the new generation. This of course will depend on the personal demand and preference of each individual. However, up to this point the study reveals that there are all sorts of demands and personal preferences regarding young people's choices when traveling.

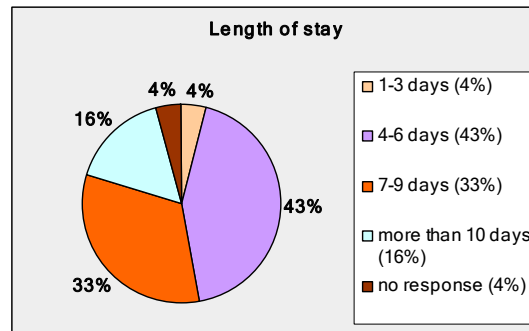
**FIGURE 19: SEASON**



5.7. Length of stay

Exploring more details about youngsters' characteristics when traveling, the research considers the length of stay at the visited destination. The results reveal that the majority of them (43%) stay for 4-6 days, a less percentage (33%) for 7-9 days and 16% stay for more than 10 days. The minimum percentage refers to those who stay at a destination for 1-3 days (4%). However, some participants mention that the length of stay highly depends on the destination visited; if they decide to visit an international destination then of course the length of staying would be longer, whereas if they are visiting a nearby country or even if they take domestic trips, then the length of stay would be shorter. Finally, from the responses, 4% did not give any answer.

**FIGURE 20: LENGTH OF STAY**



6. DEMANDS AND NEEDS FOR TRAVEL

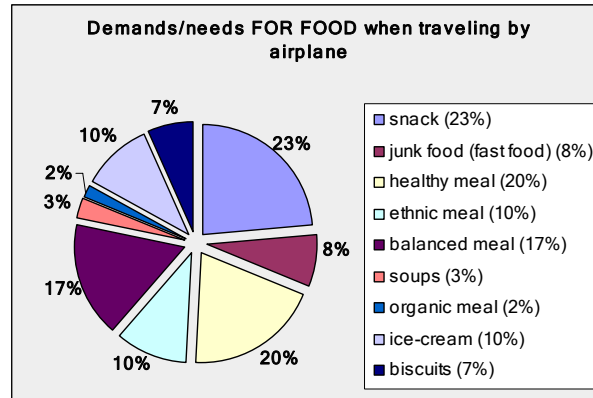
6.1. Food

Moving on to the main point of the investigation and in regards to the trends of young people in the age of 18-25, the research's main objective is to study their demands and needs in terms of the services offered when traveling. In this section the research mostly presents the data as has been collected and gives some further explanation only where it is necessary. Then, the results presented give recommendations, which travel operations can eventually use to improve their services based on the needs of the young clientele.

First, looking at the demands and needs for food when traveling by airplane, most of the respondents seek to find snacks (23%) and healthy meals (20%). An additional 17% refers to those who look for balanced meals and 10% for ethnic meals and ice cream. The remaining percentage goes for junk food (fast food) (8%), biscuits (7%), soups (3%) and organic meals (2%).

At another time, the new generation has even particular demands in terms of the food items offered when they are traveling through an airplane. It is obvious that the young generation seeks quick but still healthy food. Such a factor should alert Airline Operations in an attempt to upgrade their food services for young people.

**FIGURE 21: DEMANDS/NEEDS FOR FOOD**



### *6.2. Drinks*

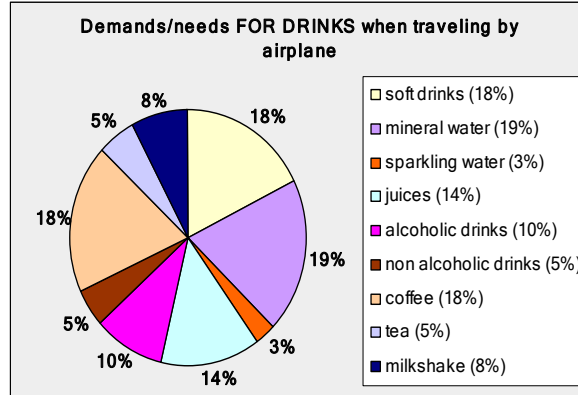
Additional to food items, participants also refer to drinks that they expect to find on an airplane. The majority of them refer to mineral water (19%) as the main drink that should be available on an airplane and then at a similar extent coffee and soft drinks (18%). Followed by, juices count for 14%, alcoholic drinks 10%, milkshake 8%, non-alcoholic drinks and tea 5% and the remaining percentage for sparkling water 3%. It is worth referring that, all mentioned drinks are already available for passengers in an airplane, except from milkshakes. Since young people refer to it, hence it can be considered an additional offering for the young clientele.

### *6.3. Entertainment*

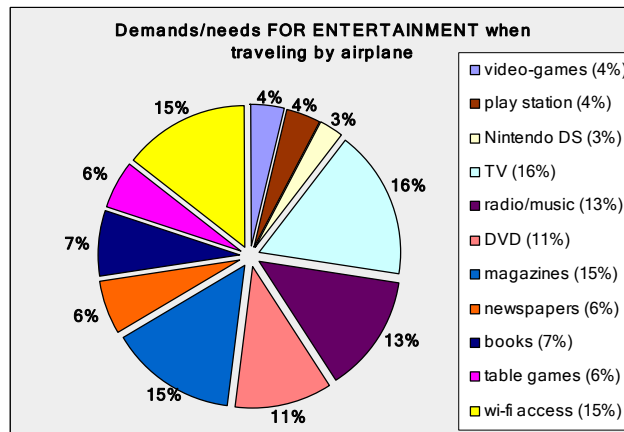
To continue, Figure 23 gives evidence for the entertainment that young people aspire to find when traveling by airplane. The majority of respondents support the option of TV services (16%). The second most demanded service concerning entertainment is Wi-Fi access and magazines, both counting for 15% of responses. The remaining shares count for radio/music (13%), DVD (11%), books (7%), table games and newspapers (6%), video games and play station (4%) and finally Nintendo DS (3%).

From the above results, the research explores new products/services for entertainment that could be available in an airplane. If Airline operations could invest in these, they can achieve a higher degree of satisfaction for the young customers.

**FIGURE 22: DRINKS**



**FIGURE 23: ENTERTAINMENT**



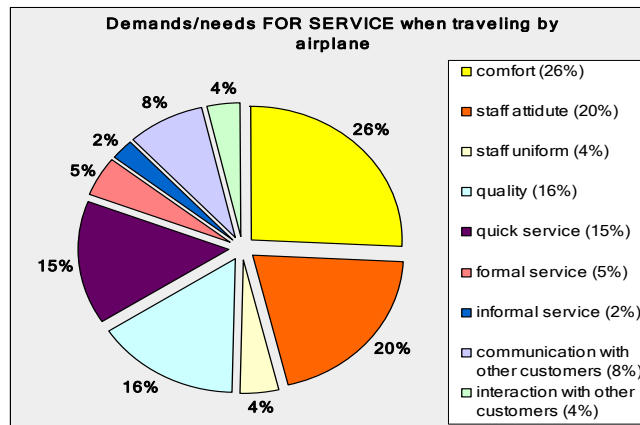
#### 6.4. Service

In terms of the general service when traveling, it appears that comfort is the most important (26%) for young people. The next most important service is the staff attitude (20%) and finally 16% seek to find quality. On the other hand, 15% of respondents prefer quick service. A minimum percentage (8%) demand to experience communication with other customers and 4% seek to be interacted with other

customers. Another 4% wants the staff to wear a uniform, only 5% seek formal service, whereas 2% support the provision of informal service.

From the results, it is obvious that the demand of young people when traveling is mostly the provision of comfort and quality, less for quick service and even less for informal service. Once more, it is apparent that the new generation is looking for the best possible experience through the services provided to them when traveling. The extend to which communication with other customers and the staff uniform are important services for young people is under additional examination to the following figures.

**FIGURE 24: SERVICE**



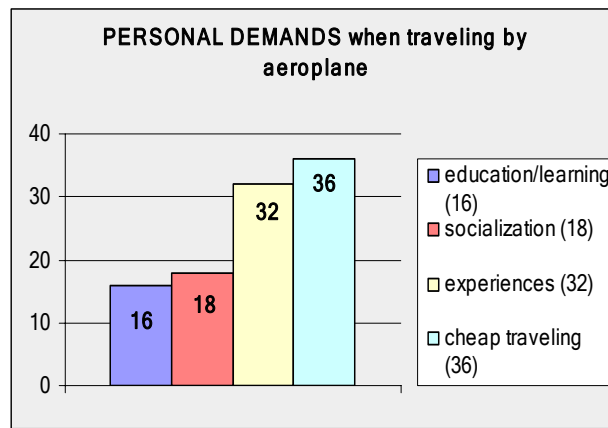
### 6.5. Personal Demands

Another important issue that the research seeks to investigate, in terms of the demands of young people when traveling, is that of their personal demands. Towards the services offered when traveling, the highest support goes on their demand to travel on low prices (36). This factor comes in contrast with the whole results, as the research so far concludes that young people are moving away from the traditional demand of cheap travel and they are now looking for quality services. However, it is rational for young people to seek for quality of services, but on a minimum expense. Daniel Gros (2010) comes to agree to this, as he supports that “the sensitivity to price varies with age: very high for students, unemployed and new workers; less strong for employed”. As a conclusion, travel operations require to decrease their prices, to give more motivation for traveling or even to provide more offers that will attract further their interest. The demand of traveling exists and is vast; subsequently, travel

operators have to take advantage of it in the most effective way by providing what is demanded.

Further to their personal demands, young people seek to expand their experiences in terms of traveling to as many destinations and places as possible (32). On a less extend young people desire to be socialized (18), meaning that they want to interact with other people and on the minimum extend they seek to be educated and enrich their knowledge in terms of traveling (16). The data collected so far provide evidence to this factor, as the research sustainably concludes that young people have an excellent knowledge of the existence of different types of destinations, the services offered and they visit the ones that meet the most of their demands.

**FIGURE 25: PERSONAL DEMANDS**



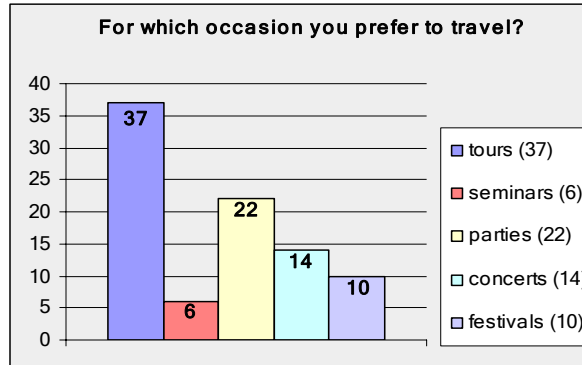
#### 6.6. Occasion

Through the whole research there is some reference regarding the motivation of young people to travel. So far, most of the conclusions show that young people are motivated to travel for vacations and entertainment (see Figure 15, p.15) and only few for education and sport purposes. In giving full meaning to this, the following data show that the greatest part of respondents choose to be part of a tour travel (37) and less to attend parties (22). Furthermore, fewer find concerts (14) and festivals (10) as an occasion to travel and finally, only 6 of respondents travel to attend seminars.

This information justifies, as mentioned before, the choice of young people to travel for entertainment. Not only this, but also Daniel Gros (2010) comes to confirm “young people like to meet other young people, entertainment, parties and festivals”. In the same way, Vasos Tsiakkiros (2004) agrees that one thing that Cypriots like to

do is to spend their money for fun such as going out in the nightclubs, for holidays and for relaxation no matter how old they are.

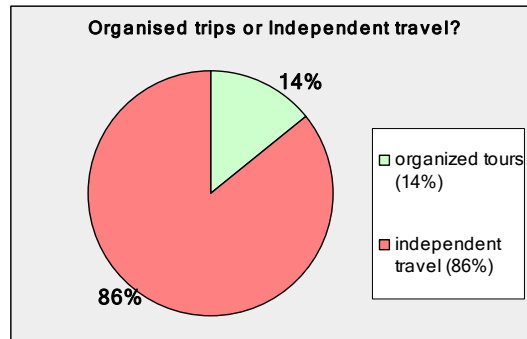
**FIGURE 26: OCCASION**



### *6.7. Organized trips or Independent Travel*

In regards to the choice of organized tours or independent travel, the majority of participants choose to take independent travel (86%), whereas the remaining support organized tours (14%). This feature comes in contrast to the previous results, as there is a high portion of young people (37) stating that they prefer tours as a traveling occasion. This is the first time that the results are controversial and the research at this point takes the opportunity to raise the interest for further investigation on this particular issue.

**FIGURE 27: ORGANIZED TRIPS OR INDEPENDENT TRAVEL**



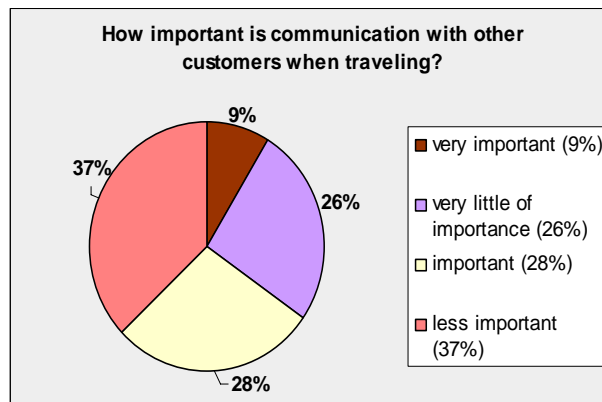
## 7. OTHER DEMANDS AND NEEDS FOR TRAVEL

### 7.1. Communication with other customers

Based on previous data, it is important for young people to communicate and interact with other customers while traveling. The current section attempts to examine to which extent this is important for the new generation. As shown, 37% support that this is of less importance while the minority (9%) believe that communication with other customers is very important. In between these two extremes, there are those who assume that this factor is of very little of importance (26%) and those who find it just important (28%).

From the above results, the research comes to a general conclusion that even if young people find it important to communicate and interact with other customers while traveling, this is not of their greatest concerns.

**FIGURE 28: COMMUNICATION WITH OTHER CUSTOMERS**

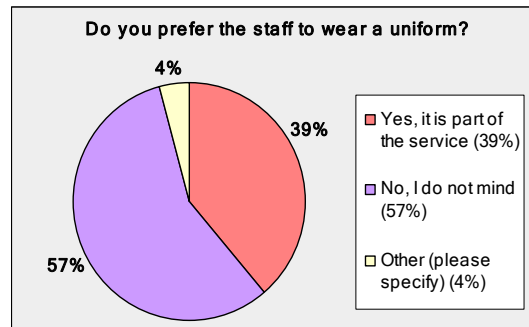


### 7.2. Staff uniform

In looking deeper to the preference of young people for the staff to wear a uniform, the majority answer that it is not important as they do not mind (57%) and 39% prefer the staff to wear a uniform, because this is part of the service. Finally, there is a 4% of participants who present a different perception; they mention that this should be applicable only in hotels and restaurants for two reasons; firstly because the staff uniform is considered to be part of the service and secondly because there is the need to distinguish the employees from the customers.



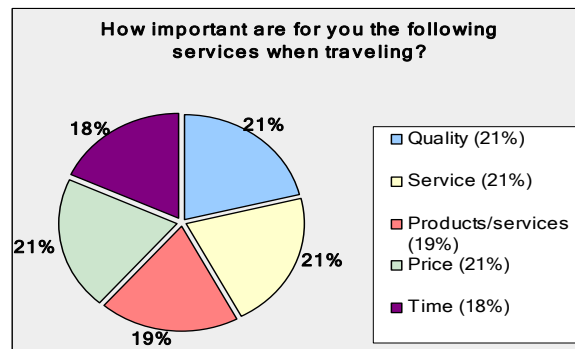
**FIGURE 29: STAFF UNIFORM**



### 7.3. Importance of services

In concluding to the whole research, young people are being asked to mention the most important services when traveling. As shown, the majority of participants has as a main concern quality, service and price (21%). The next most important point is the provision of products/services (19%) and finally they consider time the least important of the overall service provided when traveling (18%). However, it is noticeable the fact that the participants' perception about the importance of services is more or less the same.

**FIGURE 30: IMPORTANCE OF SERVICES**



## 8. TRAVEL SERVICES OF THE FUTURE

As a final point, the survey research craves to discover how young people in the age of 18-25 years old imagine the travel service of the future. In this field, there are countless options given and these give the opportunity to travel operations and

organizations, not only in Cyprus, but also worldwide, to improve their services against the demands of young people.

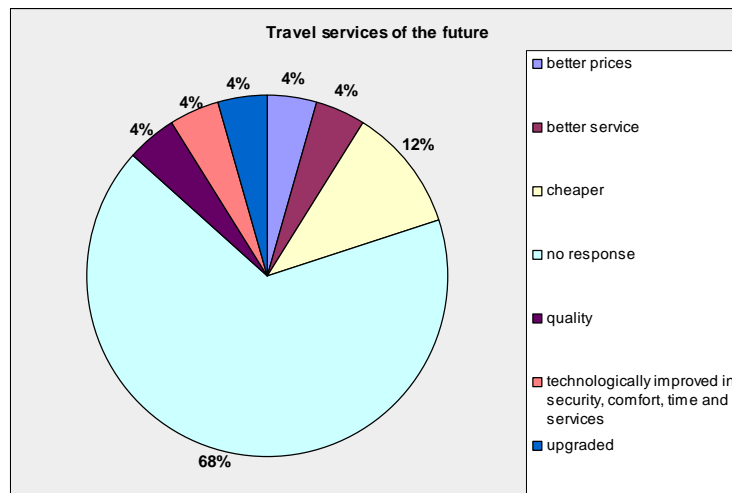
It is an outstanding fact that the majority of young people in the age of 18-25 years old did not give any response to this point (68%). However, the highest percentage of respondents refers to the prospect of undertaking cheaper vacations (12%). As previously spotted, travel expenses is not the greatest concern for young people when traveling, but still they would prefer to find cheaper options for traveling in order to travel more frequently. Their demand for travel is high, and their desire to gain as many experiences as possible is even higher.

Furthermore, on the same extent (4%), some mention that they imagine travel services to become upgraded and more luxurious, with moderated prices, and improved quality, with technologically improved services in terms of security, comfort, time and booking services.

Apart from these, some of the mentioned elements that respondents give in more details refer to more upgraded transportation services in terms of speed and the offering of more services for entertainment. For example, some participants reveal that there are all sorts of events all over the world, which they would like to participate in, but still they are not able to get aware of them soon enough. The new generation also visualizes that there are going to be more information available as regards to weather conditions, seasonality and places to visit at a destination.

On the other hand, there are those who have a different perspective regarding the travel services of the future. It is remarkable that some of the respondents strongly believe that travel services will not be better in the future and not upgraded; still, some others believe that travel service will be different, easier, and fantastic. Few others support that, in terms of travel services, there are going to be more possibilities for additional international trips and that are going to be more alternative options for traveling. The research at this point can suppose that all these mentioned elements are less of how young people imagine the travel services of the future and it is more about how they desire the travel services to be in the future.

**FIGURE 31: TRAVEL SERVICES OF THE FUTURE**



## 9. CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

As a conclusion and based on the whole survey research, the demands of young people when traveling are controversial. The research reveals various viewpoints and the concluding point is that, even if there are various demands, still there are not any typical requirements regarding the new generation's wish for traveling. The decision to travel will depend on many factors, the main one being the personal preference of each individual to travel. As seen from the investigation, there are different groups of young people and each one share specific characteristics. In general, young people in Cyprus do not have any principal preferences in terms of traveling on low costs, at nearby destinations or on specific seasons, rather they have a joint consideration; they know where they would like to travel and most significantly the reason why to visit a specific destination in terms of acquiring as many experiences as possible. In addition, they seek to be provided with such services that meet their needs on the greatest extend. This is the reason why the new generations' demands are moving away from the "traditional travel" and choose to visit places that have never visited before to boost their experiences.

Based on these factors, travel operations and organizations need to keep researching the changing demands of young people to be able through improvement of services to satisfy their "future customers". The current research gives reliable information about the demands and needs of young people especially in the age of 18-25 years old in Cyprus and travel operators should make use these for improving their services.

The first concluding section refers to the demographic characteristics of the new generation, a factor that can help travel operations target new groups of customers and classify them based on their personal characteristics. Therefore, young people who participate at the current investigation are:

- mostly single and fewer married; those should be considered as the next group of customers that travel operations should attract as they have specific requirements regarding traveling;
- mostly Undergraduates, whereas a smaller amount completes just a Higher School degree, and even fewer hold a Postgraduate degree;
- the least of young people live with their own family. This group should be taken into consideration by travel operations as this may be an arising market as they have specific requirements when traveling, thus it is easier to attract them and offer services to them;
- even if the majority of participants are Undergraduate students, still there is a high section who are workers, which is considered another market group that travel operations can attract since they are able to collect money for traveling.

Further to the concluding points, travel operations, which attract or attempt to attract young Cypriots, should adjust with their changing needs, as they:

- choose to travel more frequently; the proportion of those who do not travel is small;
- have the need to travel and their main requirement is their economic availability;
- are well aware of the different options in terms of traveling, thus they are moving away from the traditional tendency of traveling domestically or even at nearby destinations and prefer international trips and exotic countries;
- young people are mature enough to decide of where they would like to travel and most significantly the reason why to visit a specific destination;
- desire to find something interesting that will fulfill their traveling experience;
- visit mostly Paphos in Cyprus for various reasons, depending on personal demands;
- have a high demand to visit the occupied areas in Cyprus mostly because of curiosity;
- prefer to visit traditional villages for taverns and short escapes; even though the percentage is minimum, if services are developed to attract more young people, then there are potentials for these areas to be developed in terms of tourism;
- are traveling only once per year, but still there is a valued percentage of those who travel more than once;
- are traveling mostly for vacations and then for entertainment purposes;
- find the ways and the money to travel, even if they are working, or are students, staying with their parents or alone or with their own family;

- collect information or even making bookings through the internet, but still there is a proportion who uses the travel agents services to carefully choose a destination that will offer the most memorable experience;
- travel with friends mostly, but there are some who travel with their parents and a smaller segment travels with their spouse, and this group may become a rising segment;
- a small section prefers to travel alone and this can be seen as a potential group of travelers, which travel operations owe to associate with in terms of upgrading and offering more services to them in an attempt to attract their interest and motivate them to travel more frequently;
- travel all year round – seasonality is not a decision-making factor to travel;
- have specific requirements regarding food and drink items offers in an airplane when traveling, as well as regarding entertainment services;
- look mostly for comfort when traveling in an airplane;
- seek low prices in terms of offers so as to travel more;
- would like to get as many experiences from traveling as possible;
- seek communication with other customers when traveling, but at the end the results prove that this is not of their greatest concerns;
- even if the majority do not consider staff uniform as an important element, still there is a relatively high segment who consider staff uniform part of the service; and
- for the future, they are looking for more upgraded services, in lower prices in terms of motivating more travel.

All of the entire, the research finds it important not only to look at the highest percentages that the results show, but most importantly to look at the whole of the results. In this way, travel operations are able to be acquainted with new markets of the new generation and notice the exact demands of the different groups in an attempt to meet them at the highest extent.

As far as further recommendations are concerned, there is a number arising on the whole research. Such recommendations include further investigation on:

- the expenses for traveling; how much the new generation spends or is able to spend for traveling;
- the trends and demands of a rising segment, that of young people who are married and have their own family;
- the demands of young employed people, who have more assets for traveling; and
- the preference of tours versus independent traveling.

It should be noted that there is an attempt for further researching on this field, where other sectors of the Hospitality Industry are concerned. Thus, the following plans of research include:

1. The Demographic Trends of New Generation in Relation to the Accommodation Operation Services; the case of Cyprus.
2. The Demographic Trends of New Generation in Relation to the Restaurant Services; the case of Cyprus.
3. The Demographic Trends of New Generation in Relation to the Club/Bar Services; the case of Cyprus.

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CALENDAR ANOMALIES IN THE LONDON STOCK EXCHANGE:  
A RE-EXAMINATION

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ABSTRACT

*The purpose of this paper is to re-examine the evidence of market imperfection in the London Stock Exchange and to confirm the findings of other researches. The calendar anomalies that are analyzed are the January, Monthly, Holiday and the Weekend effect. Most of the previous empirical evidence examines each effect in isolation. The approach adopted within this paper is to initially test the anomalies separately and then together by embedding them into a single model. The empirical research is conducted using Ordinary Least Squares and Generalized Autoregressive Conditional Heteroscedasticity models. The results provide mixed evidence of the existence of calendar anomalies over the sample period.*

*Keywords: Asymmetric effect; January effect; GARCH; seasonal anomalies; volatility.*

1. INTRODUCTION

Despite strong evidence that the stock market is highly efficient, there have been many studies that have documented long-term historical anomalies in the stock market that seem to contradict the efficient market hypothesis. Various studies have found that asset returns are different on days of the week, months of the year, turn of the month and before holidays. While the existence of these anomalies is well accepted in developed stock markets, the question of whether or not there are calendar (profitable) anomalies in the stock markets of emerging countries is still under investigation. The objective of this study is to reexamine the evidence by investigating the presence of calendar anomalies in the London Stock Exchange.

The Efficient Market Hypothesis (EMH) was first published thirty six years ago by Fama (1970). This hypopaper speculates the idea that “stocks are priced efficiently to reflect all available information about the intrinsic value of the security” (Mehdian and Perry 2002). The EMH hypopaper comes into question primarily by what is referred to as “calendar anomalies” that is normally anticipated attitude of stocks that suitably and efficiently being exploited can be used to generate abnormal returns. In

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an efficient market there are no available opportunities to make profit. Numerous studies provide evidence on calendar anomalies in stock and equity markets, questioning the very fundamentals of the EMH. Should anomalies exist, investors can achieve abnormal returns taking advantage of expected market attitude of stock prices. This challenges the EMH.

This paper examines the existence of calendar anomalies in the London Stock Exchange (LSE). A period of fourteen years from April 1996 to July 2010 is investigated using the FTSE-Small Cap Index. Using daily stock returns, the two main methods applied for testing are the Ordinary Least Squares (OLS) and the Generalized Autoregressive Conditional Heteroscedasticity (GARCH). The models take into account the relation between the values of previous returns and prices. The GARCH models are capable of capturing the three most empirical features observed in stock return data, leptokurtosis, skewness, and volatility clustering. Initially, the anomalies are tested separately and then together by embedding them into a single model.

GARCH models have an advantage over the OLS regression in the sense that it takes into consideration of not only the mean but also the risk or volatility of return. As such, both the risk and return, which constitute the fundamentals of investment decision process, are accounted for. In this respect, a better decision may be reached if an investor has prior knowledge of whether there are variations in stock returns by the calendar effects and whether a high daily or monthly return can be attributed to the correspondingly high volatility. Moreover, revealing the specific volatility patterns in returns might also benefit investors in risk management and portfolio optimization.

This paper is divided into five sections. Section 2 briefly reviews the literature. Section 3 discusses the empirical methodology employed. Section 4 outlines the data and presents the empirical results. Finally, section 5 contains the summary of the paper and the main conclusions.

## 2. LITERATURE REVIEW

A substantial number of widely accepted studies have identified four main calendar seasonalities, which are the January, the Weekend, the Monthly and the Holiday effects, the parameters of which are explained below.

### *2.1. The January effect*

The January effect is the most well-known calendar anomaly. Historically, January has been the best month to be invested in stocks, as previous studies on several stock market indices around the world, have proven that January stock returns are, on average, higher than other months. Watchel (1942) tried to explain the January effect through a factor namely the year-end tax-loss selling. Branch (1977) and Dyl (1977) have also attempted to give an explanation to January effect through this hypopaper.



The year-end tax-loss selling hypopaper refers to the phenomenon where investors sell their common stock ‘losers’ at the end of the tax year. As a result, prices of stock that did not have a price incline during the year, face a descending pressure. Therefore, stock prices get their real market price at the start of the new tax year, under the assumption of no selling pressure beginning, as the descending pressure disappears. Evidence has proved that this hypopaper has a bigger effect on small-sized firms rather than large-sized firms (Roll 1983; Reinganum 1983).

On the other hand, there are cases where the hypopaper fails to explain the January seasonality. At the end of every economic year, new information regarding the firm is released. These announcements are usually made in January. Rozeff and Kinney (1976) claim that the release of this new information, accounting statements and financial records, might give a possible explanation for the January effect. Another explanation is referred to the ‘size effect’ where Rogalski and Tinic (1986) have proven that small-size firms are riskier in January than in the rest of the year. A more recent study by Fountas and Segredakis (2002) tested for January effect and the tax-loss selling hypopaper for 18 emerging stock markets and very little evidence has been found. As mentioned by Al-Saad and A.Moosa (2005) the above hypotheses that can explain the January effect can be grouped into three categories: hypotheses centred on measurement problems, hypotheses related to buying pressure at the beginning of the year, hypotheses related to the seasonality or the timing of information release.

## *2.2. The weekend effect*

The weekend effect, or sometimes called the day of the week effect, refers to the tendency of returns on Monday to be worst than other days of the week and returns on Friday to be the best among the other days of the week. According to Lakonishok and Smidt (1988), even though when the stock markets were open on Saturdays, Friday’s returns were higher than the returns of the rest of the days. The day of the week effect is one of the oldest finding in the stock market anomaly literature as this seasonality was first published in 1973 (Cross 1973). Following Cross (1973), French (1980) revealed significantly negative Monday mean returns and significantly positive Friday mean returns for the Standard&Poor 500 Index for a period of 24 years (1953-1977).

A possible explanation for this effect suggested by Gibbons and Hess (1981), who have proved the existence of the weekend effect in S&P 500 Index, is given by the measurement error hypopaper. After checking the individual stocks in the Dow Jones Industrial Index (DJIA), they have rejected this hypopaper since they found negative mean returns on Monday for these stocks as well. Once they have rejected the measurement hypopaper, they tested the settlement hypopaper. This hypopaper claims that, “the delay between trading and settlement favours trading on certain weekdays” (Tan and Tat 1998). Unfortunately this hypopaper also failed to explain the weekend effect, because the effect continued to appear even after adjustments for interests in

the returns. The negative and positive mean returns for Monday and Friday respectively is a world wide phenomenon.

Studies show the existence of this anomaly in the Australian, Canadian, Japanese and UK markets (Jaffe and Westerfield 1985). They suggested the time zone hypothesis, after observing in the Australian and Japanese markets that the lowest mean returns happened on Tuesdays however this was rejected. Lakonishok and Levi (1982), gave their own explanation to the effect. According to them, the key idea is behind the clearing delay. The clearing delay is that in weeks without a holiday, stocks purchased on business days other than Friday give the buyer eight calendar days before losing funds for stock purchases where stocks purchased on Friday give the buyer ten calendar days. Thus, buyers are willing to pay more on Fridays. Another possible explanation is the mood of market participants. Monday is the first working day of the week, and investors feeling a bit pessimistic are not willing to buy, whereas on Friday which is the last working day of the week, investors are happier and more optimistic and they are willing to buy.

### *2.3. The holiday effect*

The Holiday effect refers to the phenomenon of abnormal stock returns on trading days immediately before holidays and on trading days immediately after holidays. It is separated as the Preholiday effect and the Postholiday effect. Lakonishok and Smidt (1988) were the first to examine the existence of the holiday effect using returns from the DJIA for a period of 89 years (1897-1986). They showed that “the pre-holiday return is on average 0.22%, which is 23 times the return of the average day in their sample” (Marquering, Nisser and Valla 2006). Even though the returns on days after holiday were negative, not significantly different from zero, they did not provide any evidence of unusual returns. According to Pettengill (1989) using a data sample for the S&P 500 Index over the period 1962-86 also concluded that “returns for the pre-holiday trading days are unusually high regardless of weekday or year”. Kim and Park (1994) investigated the existence of the preholiday effect in the New York Stock Exchange (NYSE) and the American Stock Exchange (AMEX) from 1963 to 1986 and the National Association of Securities Dealers Automated Quotations (NASDAQ) from 1973 to 1986. They have also provided evidence of the preholiday effect in the UK and Japanese markets independently of the results in the US market. A possible explanation that Kim and Park (1994) give for the presence of the holiday effect is the good holiday mood. Research has been carried out to test for the existence of the post-holiday effect on the US, UK, Japanese, Malaysian and Singapore markets (French 1980; Pettengill 1989; Ariel 1990; Liano, Marchand and Huang 1992; Kim and Park 1994; Ziemba 1991). A more recent study on the holiday effect by Lucey and Pardo (2005) claims that one can take advantage by producing abnormal returns using Spanish and Irish indices based on the holiday effect.

#### *2.4. The monthly effect*

The monthly effect, or sometimes called the turn-of-the-month effect, refers to higher mean returns around the beginning of each month. This seasonality was first reported by Ariel (1987). Using daily US stock index returns from 1963 to 1981, Ariel discovered that in the last trading day and at the beginning of each month, positive mean returns are concentrated.<sup>1</sup> A more recent study given by Kunkel, Compton and Beyer (2003), documented evidence of the monthly effect for the period 1988-2000 for 19 countries, which provide solid foundations for the idea that the monthly effect is constant throughout the years. However, Cheung and Coutts (1999), who investigated the existence of monthly seasonalities in the Hang Seng index from 1985-97, failed to identify persistent monthly effect. In addition, Chang (1991) examined the existence of this anomaly in Hong Kong, Malaysia, Singapore and Taiwan over the period 1975-86. When testing for the whole data sample his attempt was unsuccessful, but after examining the data into small subperiods, Singapore market showed evidence of the monthly effect for the period 1979 through 1982. Ariel (1987) recommended methodical acquisition by pension funds as a possible explanation for the monthly effect. However, vindication for this incongruity, diverge from the potential suggestion given by Ariel to the psychological desire of investors to delay decisions until the turn of each month. More specifically, Ogden (1990) ascribes the effect to the temporal pattern of cash obtained by investors.

On the other hand Jacobs and Levy (1988) accredit this decision to the investors' psychological desire to defer decisions until the beginnings of periods. Hence, institutional investors, it could be claimed, gather their purchases at the end of the month in order to enhance the performances published in the specialized press, produced by this technique given that these are normally determined on the basis of end of the month prices. Marquering, Nisser and Valla (2006) conducted a study which investigates a number of stock market anomalies before and after they were published. Moreover, this study demonstrates that most of the anomalies examined diminish significantly and some even cease to exist with the passage of time.

### 3. METHODOLOGY

#### *3.1. The day of the week effect*

Many studies suggest evidence that stock market returns are not distributed equally among the days of the week. In particular, the mean return on Monday is negative and generally the lowest, while the mean return on Friday is positive and generally the highest. To test the day-of-the-week effect, the conventional methodology (French 1980, Gibbons and Hess 1981) was used. The model comprises

lag prices and lag returns to test for deviations in the form of autocorrelations, together with a set of five Dummy variables for each day of the week. The model equation is,

$$R_{it} = \alpha \ln P_{t-1} + \sum_{i=1}^{p-1} \beta_i R_{t-i} + \sum_{i=1}^5 \gamma_i D_{it} + \varepsilon_{it} \quad (1)$$

where,

$R_t$  denotes the stock return at time period  $t$ ,  $R_{t-i}$  denotes the stock return at time period  $t-i$ ,  $P_{t-1}$  denotes the stock price index at time period  $t-1$ ,  $D_{it}$  are dummy variables for each day of the week such that  $D_{it} = 1$  if that day is Monday and zero otherwise,  $\alpha$ ,  $\beta_i$  and  $\gamma_i$  are coefficients to be estimated, and  $\varepsilon_{it}$  denotes a random error term.

### 3.2. The January effect and monthly seasonality

The January effect refers to the phenomenon that January stock returns are, on average, higher than those of other months. In testing for any possible monthly seasonality, a similar methodology is employed. The regression estimated by the method of least squares is,

$$R_{it} = \alpha \ln P_{t-1} + \sum_{i=1}^{p-1} \beta_i R_{t-i} + \sum_{i=1}^{12} \delta_i D_{it} + \varepsilon_{it} \quad (2)$$

where,  $D_{it}$  are dummy variables for each month of the year such that  $D_{1t} = 1$  if day  $t$  falls in January and  $D_{2t} = D_{3t} = \dots = D_{12t} = 0$  otherwise  $\alpha$ ,  $\beta_i$  and  $\delta_i$  are coefficients to be estimated and  $\varepsilon_{it}$  is a random error term. The estimated coefficient  $\delta_1$  will be significantly positive if the January effect is present.

### 3.3. The Holiday effect

Recent studies report abnormal stock returns on the trading days immediately preceding holidays (pre-holidays) as well as those immediately following holidays (post-holidays). Following Pettengill (1989), Ariel (1990) and Tan and Tat (1998), we define a holiday as a day on which the stock market is closed as a result of a public holiday. In examining the holiday effect, we divide the trading days into three subsets:

pre-holidays, post-holidays, and the remaining (ordinary) trading days. This is to reduce the bias resulting from the dependence in returns among these subsets of trading days (Coutts and Sheikh 2002).

$$R_{it} = \alpha P_{t-1} + \sum_{i=1}^{p-1} \beta_i R_{t-i} + \sum_{i=1}^3 \lambda_i D_{it} + \varepsilon_{it} \quad (3)$$

where,  $D_{it}$  are dummy variables such that  $D_{1t}$  is a dummy variable which takes 1 if the day is a pre-holiday and zero otherwise,  $D_{2t}$  is a dummy variable which takes 1 if the day is a post-holiday and zero otherwise, and  $D_{3t}$  is a dummy variable that takes the value of 1 for all days except those prior and post to stock market vacations,  $\lambda_1$  represents the mean returns for all days except those prior to stock market vacations,  $\lambda_2$  represents the mean returns for all days except those post to stock market vacations, and  $\lambda_3$  represents the mean return on the remaining days.

#### *3.4. Relationship among calendar anomalies*

These calendar effects can be investigated simultaneously by incorporating them into a single model for daily returns. The regression equation is,

$$R_{it} = \alpha \ln P_{t-1} + \sum_{i=1}^{p-1} \beta_i R_{t-i} + \sum_{i=1}^5 \gamma_i Dwde_{it} + \sum_{i=1}^{12} \delta_i Dme_{it} + \sum_{i=1}^2 \lambda_i Dhe_{it} + \varepsilon_{it} \quad (4)$$

where,  $Dwde_{it}$  are dummy variables for each day of the week such that  $Dwde_{1t} = 1$  if that day is Monday, and zero otherwise for all other days of the week,  $Dme_{it}$  are dummy variables for each month of the year such that  $Dme_{1t} = 1$  if day  $t$  falls in January and  $Dme_{2t} = Dme_{3t} = \dots = Dme_{12t} = 0$  otherwise,  $Dhe_{it}$  are dummy variables such that  $Dhe_{1t}$  is a dummy variable which takes 1 if the day is a pre-holiday and zero otherwise,  $Dhe_{2t}$  is a dummy variable which takes 1 if the day is a post-holiday and zero otherwise,  $\alpha$ ,  $\beta_i$ ,  $\gamma_i$ ,  $\delta_i$ , and  $\lambda_i$  are coefficients to be estimated, and  $\varepsilon_{it}$  denotes a random error term. If any coefficients  $\alpha$ ,  $\beta_i$ ,  $\gamma_i$ ,  $\delta_i$  is significantly positive, it would imply that the high return for the anomaly under question is not caused by the other calendar anomalies.

### 3.5. GARCH model

To gain more insight knowledge of the different calendar anomalies, Bollerslev's (1987), Connolly's (1989) and Gregoriou *et al.* (2004) methodology was used by employing a GARCH specification for the conditional variance of daily stock returns. The Generalized Autoregressive Conditional Heteroskedastic (GARCH) model is defined as

$$y_t = h_0 + x_t^T b + \varepsilon_t \quad \varepsilon_t | \Psi_{t-1} = N(0, h_t)$$

The variance of disturbance for a GARCH ( $p, q$ ) model is,

$$h_t = \alpha_0 + \sum_{i=1}^q \alpha_i \varepsilon_{t-i}^2 + \sum_{j=1}^p \beta_j h_{t-j} \quad (5)$$

or,

$$h_t = \alpha_0 + \alpha(L)\varepsilon_t^2 + \beta(L)h_t \quad (6)$$

which is actually an Autoregressive Moving Average ( $p, q$ ) process, where,  $q$  indicates the number of the moving average components, and  $p$  the number of the autoregressive components. In the polynomial form  $L$  denotes the lag operator.

The GARCH ( $p, q$ ) is process is described by  $q + 1$  coefficients  $\alpha_i, i = 1, \dots, q, p$  coefficients  $\beta_j, j = 1, \dots, p$ , mean  $b_0, k$ , linear regression coefficients  $h_t, t = 1, \dots, k$ , endogenous/ exogenous variables  $y_t$  and  $x_t$  respectively, shocks  $\varepsilon_t$ , conditional variance  $h_t$  and the set of all information up to time  $t, \Psi_t$ .

Two of the most important empirical regularities of asset return are volatility clustering and fatter tails. As Madelbrot (1963) indicated volatility clustering implies that any significant or small changes in value are usually followed by similar changes in the opposite direction. Secondly, the distribution of returns has fatter tails (leptokurtic) than those of a normally distributed variable (mesokurtic) (Alagidede and Panagiotidis, 2006). Additionally, as Connolly argued, "Bollerslev's (1987) GARCH model offers several advantages: it incorporates heteroscedasticity in a sensible way (for a time series), it can be expanded to include other relevant variables in the conditional variance equation, and generally it offers more flexibility in robust modelling of stock returns" (Gregoriou, Kontonikas, and Tsitsianis; 2004. pp 218).

In the empirical analysis of observed data, GARCH (1, 1) or GARCH (1,2) models have often found to appropriately account for conditional heteroskedasticity (Palm

1996). Thus, a GARCH (1, 1) model is used in this study. The test involves regressing the squared OLS residuals from the conditional mean equation  $\varepsilon_{it}$  against a constant and their lagged values.

#### 4. DATA AND EMPIRICAL RESULTS

The data used in this study consist of stock index observations of daily frequency for UK and they were obtained from the DataStream database. They reflect the daily stock market prices for the Small Cap FTSE index for the trading period from the 1<sup>st</sup> of April 1996 to the 12<sup>th</sup> of July 2010. The data used are not adjusted for dividends. Although, some studies suggest that seasonalities in dividends' payoffs might induce seasonal patterns in non-dividend adjusted returns (Philips-Patrick and Schneeweis, 1988), most of the calendar anomalies literature suggests that the exclusion of dividends may not be as important as it initially seems (Gregoriou, Koutonikas and Tsitsianis, 2004). The vast majority of studies documenting anomalies in stock prices have not recorded dividend-adjusted returns (Mills and Coutts; 1995, Fische, Gosnell and Lasser 1993, Lakonishok and Smidt; 1988).

The data were transformed into continuously compounded daily returns by taking the first logarithmic difference of the index series. That is, daily returns were calculated using the standard formula,

$$r_t = \log(P_t / P_{t-1}) \quad (7)$$

where,  $r_t$  denotes the log stock return at time period  $t$ ,  $P_t$  denotes the stock price index at time period  $t$  and  $P_{t-1}$  denotes the stock price index at time period  $t-1$ . The main motivation to work with log returns is that they are usually (covariance) stationary. A second advantage of working with log returns, instead of levels, is that log returns present the behavior of the conditional volatility of the series in a more intuitive manner.

For the above-mentioned index, the sample size, sample mean of returns, sample standard deviation of returns as well as skewness and kurtosis are all reported in Table 1. The mean return of the series is marginally positive and is equal to 0.00026. Skewness is used to assess the symmetry of the distribution, and the kurtosis for peakness and fatness of the tails. If the skewness is positive, the distribution is skewed to the right, and if it is negative, the distribution is skewed to the left.

**TABLE 1: SUMMARY STATISTICS OF LOG RETURNS**

<b>FTSE-Small Cap Index</b>	
Mean Return	0.00026
Standard Deviation	0.00765
Sample Variance	0.00006
Kurtosis	4.77922
Skewness	-0.77574
Observations	2.584

There are significant departures from normality. The FTSE-Small Cap Index appears extremely nonnormal, as the series are negatively skewed and leptokurtic. A negative skewness on the FTSE series is found (-0.77574). The data also display a high degree of excess kurtosis (leptokurtic), since the kurtosis coefficient is larger than three (4.77922). Such skewness and kurtosis are common features in asset return distributions.

#### *4.1. OLS results*

Tables 2 to 5 report the results from the application of the OLS regression methodology. These tables provide estimated coefficients of the variables presented in equations (2) to (5) together with the absolute values of the t-statistic. The error terms has been tested for serial correlation up to twelfth order and heteroscedasticity using the Breusch-Godfrey Lagrange Multiplier and LM(1) tests, respectively. In cases where the error term was not white noise, the t-statistics were created using the Newey-West heteroscedasticity- and autocorrelation – adjusted standard errors (Newey and West, 1987).

##### *4.1.1. Day of the week effect*

Table 2 presents the OLS results of the day-of-the-week effect in the London Stock Exchange. The results are obtained by estimating equation 1 and the estimated coefficients along with their t-values are shown in the table. The D1 to D4 are dummy variables included to capture the effect of the outliers in the LSE data set. It is clearly evident that the day of the week effect is not present in the UK stock market. Even though the coefficient of Friday is the highest among the five coefficients of the week, indicating higher returns on Friday, it is not significantly different from zero.



Additionally the Monday returns are not significantly lower than the other days of the week. Again the coefficient is found to be insignificant.

**TABLE 2: DAY OF THE WEEK EFFECT**

<b>FTSE-Small Cap Index</b>		
<b>Regressor</b>	<b>Coefficient</b>	<b>t-value</b>
<i>LogPrice(-1)</i>	-0.0008	-1.362
<i>Retruns(-1)</i>	0.2621	13.317*
<i>Returns (-2)</i>	0.0813	4.016*
<i>Returns (-3)</i>	0.1058	5.224*
<i>Returns (-4)</i>	0.053	2.690*
<i>Monday</i>	0.0062	1.302
<i>Tuesday</i>	0.0061	1.278
<i>Wednesday</i>	0.0062	1.303
<i>Thursday</i>	0.0069	1.457
<i>Friday</i>	0.0074	1.558
<i>D1</i>	n/a	n/a
<i>D2</i>	n/a	n/a
<i>D3</i>	n/a	n/a
<i>D4</i>	n/a	n/a

*The superscripts \*, indicates significance at the 5% significance level.*

Since data concerning the last decade is used, the results are in line with the findings of Stealy (2004) where it was found that the day of the week effect in the UK started in the 1990s. Additionally, Kohers *et. al* (2004) by utilizing data from the world's largest developed equity market, had found that even though in that market the day of the week effect was prevailing during the 1980s, it appears to have faded away during the 1990s.

#### 4.1.2. The January effect and monthly seasonality

Table 3 presents the OLS results of month-of-the-year effect in the London Stock Exchange. It reports the estimated coefficients of equation (2) as well as their associated t-values. The results show the non-existence of January effect in the LSE. In fact, no dummy variables were statistically significant and none of the 12 monthly estimates (coefficients) is significantly different from zero, indicating the absence of any monthly seasonality and January effect.

**TABLE 3: JANUARY EFFECT AND MONTHLY SEASONALITY**

<b>FTSE-Small Cap Index</b>		
<b>Regressor</b>	<b>Coefficient</b>	<b>t-value</b>
<i>LogPrice(-1)</i>	-0.0008	-1.299
<i>Retruns(-1)</i>	0.2559	12.964*
<i>Returns (-2)</i>	0.069	3.403*
<i>Returns (-3)</i>	0.0949	4.675*
<i>Returns (-4)</i>	0.0513	2.596*
<i>January</i>	0.0068	1.407
<i>February</i>	0.0068	1.395
<i>March</i>	0.0062	1.263
<i>April</i>	0.0069	1.412
<i>May</i>	0.0065	1.33
<i>June</i>	0.0061	1.239
<i>July</i>	0.0059	1.209
<i>August</i>	0.0063	1.306
<i>September</i>	0.0052	1.077
<i>October</i>	0.0065	1.342
<i>November</i>	0.007	1.438
<i>December</i>	0.0067	1.386
<i>D1</i>	n/a	n/a
<i>D2</i>	n/a	n/a
<i>D3</i>	n/a	n/a
<i>D4</i>	n/a	n/a

*The superscripts \*, indicates significance at the 5% significance level.*

The results seem to be consistent with several studies that have examined this hypopaper in developed markets using data from the last two decades. Mehdian and Perry (2002) suggested that the absence of January effect in the US markets in the post crash period, might be an indication that the markets are becoming more ‘weekly efficient’. Moreover, Kamara (1997) stated that a possible reason for such an event is the significant increase in the derivative markets for equities and increased trading by institutional investors who pose information faster and at a lower transaction cost.

#### 4.1.3. Holidays effect

Table 4 presents the OLS results of a holiday’s effect in the London Stock Exchange. It reports the estimated coefficients of equation (3) and their t-values. The

results show the existence of pre-holiday and post-holiday effect. All the coefficients that capture the holiday effect are positively statistically significant, with pre-holiday effect having the highest coefficient which is in accordance with the theory, suggesting the existence of abnormal returns both before and after the holidays. Thus, the FTSE-Small Cap Index shows supportive evidence of the presence of holiday effect.

**TABLE 4: HOLIDAYS EFFECT**

<b>Regressor</b>	<b>FTSE-Small Cap Index</b>	
	<b>Coefficient</b>	<b>t-value</b>
<i>LogPrice(-1)</i>	-0.0008	-2.117*
<i>iRetruns(-1)</i>	0.2619	13.304*
<i>Returns (-2)</i>	0.0755	3.727*
<i>Returns (-3)</i>	0.1009	4.986*
<i>Returns (-4)</i>	0.0586	2.978
<i>Pre-Holiday</i>	0.0075	2.435*
<i>Post-Holiday</i>	0.0064	2.121*
<i>No-Holiday</i>	0.0064	2.138*
<i>D1</i>	n/a	n/a
<i>D2</i>	n/a	n/a
<i>D3</i>	n/a	n/a
<i>D4</i>	n/a	n/a

*The superscripts \*, indicates significance at the 5% significance level.*

The results are in line with those of Kim and Park (1994) that accepted the existence of the holiday anomaly in the US, UK and Japan stock markets. The acceptance of the holiday effect it is also evident in the Spanish stock market (Lucey and Pardo, 2005). Hudson et al. (2002) showed for S&P 500 negative returns the day prior to holidays, whereas Marquering, Nisser and Valla (2006) showed no existence of the anomaly in the Dow Jones Industrial Average.

#### *4.1.4. Relationship among calendar anomalies*

To investigate the interrelationship between the different calendar anomalies, all the calendar anomalies are put together into a single model, and surprisingly we get somewhat different results. The results of these tests are displayed in Table 5, which reports the estimated coefficients of equation (4) and their t-values.

**TABLE 5: RELATIONSHIP AMONG CALENDAR ANOMALIES**

<b>Regressor</b>	<b>FTSE-Small Cap Index</b>	
	<b>Coefficient</b>	<b>t-value</b>
<i>LogPrice(-1)</i>	-0.0008	-1.221
<i>Retruns(-1)</i>	0.2532	12.810*
<i>Returns (-2)</i>	0.0744	3.665*
<i>Returns (-3)</i>	0.0988	4.867*
<i>Returns (-4)</i>	0.0455	2.300*
<i>Monday</i>	-0.0007	-0.107
<i>Tuesday</i>	-0.0009	-0.132
<i>Wednesday</i>	-0.0007	-0.108
<i>Thursday</i>	0	0.004
<i>Friday</i>	0.0005	0.073
<i>January</i>	-0.0001	-0.255
<i>February</i>	-0.0002	-0.285
<i>March</i>	-0.0008	-1.446
<i>April</i>	-0.0001	-0.247
<i>May</i>	-0.0006	-1.047
<i>June</i>	-0.0009	-1.676
<i>July</i>	-0.0011	-1.997*
<i>August</i>	-0.0007	-1.228
<i>September</i>	-0.0017	-3.109*
<i>October</i>	-0.0005	-0.906
<i>November</i>	-0.0008	-1.654**
<i>December</i>	-0.0003	-0.495
<i>Pre-Holiday</i>	0.0073	1.777**
<i>Post-Holiday</i>	0.0071	1.774**
<i>No-Holiday</i>	0.0069	1.709**
<i>D1</i>	n/a	n/a
<i>D2</i>	n/a	n/a
<i>D3</i>	n/a	n/a
<i>D4</i>	n/a	n/a

*The superscripts \*, \*\* indicate significance at the 5% and 10% significance level.*

Specifically, the mean returns (expressed by the coefficient of dummy variables) for July, September and November are found to be negatively statistically significant. This in turn suggests monthly seasonality in the returns. Additionally, in the current model not only some of the monthly coefficients became significant but also they have changed signs. The results in table 3 show positive but insignificant mean returns,

whereas the coefficients for every month in table 5 are all negative and some of the variables are statistically significant. Lastly, the holiday effect is still present, but at 10% level of significance. A plausible explanation is that some of the calendar anomalies may actually be manifestations of other calendar anomalies.

The results obtained so far are based on the OLS method, which does not take into account the varying daily and monthly volatility in the market returns. Such volatility needs to be modeled in order to provide a clearer picture of the seasonal anomalies in the Cyprus Stock Exchange. GARCH ( $p, q$ ) models are estimated for this purpose. The objective of this analysis is to determine whether the seasonal anomalies could be due to the varying volatility in the market returns.

#### 4.2. GARCH results

Tables 6 to 9 report the results of the application of the GARCH regression methodology. The tables provide estimated coefficients of the variables presented in equations (3) to (6) together with the absolute values of the t-statistic.

##### 4.2.1. Day of the week effect

Comparing the result of table 6 with those from table 3, the GARCH (1,1) coefficients  $\alpha_0$  and  $\beta_1$  are significant suggesting that the use of the GARCH (1,1) model is highly appropriate. The  $\alpha_0$  however, although being statistically significant, one should also account for the low value associated with it.

**TABLE 6: AY OF THE WEEK EFFECT**

<b>Regressor</b>	<b>FTSE-Small Cap Index</b>	
	<b>Coefficient</b>	<b>t-value</b>
<i>LogPrice(-1)</i>	0.35713	13.20*
<i>Retruns(-1)</i>	0.08781	2.96*
<i>Returns (-2)</i>	0.12741	5.11*
<i>Returns (-3)</i>	0.00035	3.20*
<i>Monday</i>	-0.00292	-3.96*
<i>Tuesday</i>	-0.00314	-4.51*
<i>Wednesday</i>	-0.00278	-4.04*
<i>Thursday</i>	-0.00232	-3.38*
<i>Friday</i>	-0.00199	-2.92*
<i>D1</i>	n/a	n/a
<i>D2</i>	n/a	n/a

GARCH coefficients		
$\alpha_0$	1.60E-08	3.56*
$\alpha_1$	0.25406	
$\beta_1$	0.74594	26.9*

The superscripts \*, indicates significance at the 5% significance level.

The results of the mean returns and variance equations of GARCH model for day-of-the-week effect are presented in Table 6. From the results, Monday and Friday are significant in the stock returns of LSE under the GARCH estimation. The coefficients are negative and statistically significant at the 5% level or less and the results obtained are not in accordance with the application of the OLS methodology. All the daily mean returns are found to be negatively statistically significant. The Monday effect is exhibited where the theory suggests significantly lower or negative abnormal returns on that day. Nevertheless with regard to the Friday effect, even though the coefficient is statistically significant it bears the wrong sign. Unfortunately, we cannot give an adequate explanation of why these daily seasonalities occur. In summary the results are in favour of the day of the week effect and are in line with Gregoriou et al.(2004) where the GARCH methodology is also used and evidence for the day of the week effect was found in the UK stock market.

#### 4.2.2. The January effect and monthly seasonality

The results of the mean returns and variance equations of GARCH model for the January effect or monthly seasonality are presented in Table 7. Comparing the results of the OLS (table 3) and the GARCH model, there is clear evidence that these are consistent in terms of significance, meaning that there is no indication of the January effect or any monthly seasonality. The results show that all dummy variables and all 12 monthly coefficients are statistically insignificant, indicating the absence of any monthly seasonality and January effect. However, the coefficients of the GARCH model are highly significant. Nevertheless, even though the mean returns are still statistically insignificant, they become negative.

**TABLE 7: JANUARY EFFECT AND MONTHLY SEASONALITY**

<b>FTSE-Small Cap Index</b>		
<b>Regressor</b>	<b>Coefficient</b>	<b>t-value</b>
<i>LogPrice(-1)</i>	0.0003	0.544
<i>Retruns(-1)</i>	0.3544	13.4*
<i>Returns (-2)</i>	0.0693	2.34*
<i>Returns (-3)</i>	0.112	4.69*
<i>January</i>	-0.0012	-0.307
<i>February</i>	-0.0016	-0.413
<i>March</i>	-0.002	-0.513
<i>April</i>	-0.0017	-0.434
<i>May</i>	-0.002	-0.526
<i>June</i>	-0.0019	-0.482
<i>July</i>	-0.0023	-0.574
<i>August</i>	-0.0016	-0.408
<i>September</i>	-0.002	-0.517
<i>October</i>	-0.002	-0.524
<i>November</i>	-0.0017	-0.442
<i>December</i>	-0.002	-0.497
<i>D1</i>	n/a	n/a
<i>D2</i>	n/a	n/a
<b>GARCH coefficients</b>		
$\alpha_0$	1.60E-08	3.56*
$\alpha_1$	0.25406	
$\beta_1$	0.74594	26.9*

*The superscripts \*, indicates significance at the 5% significance level.*

#### 4.2.3. Holidays effect

The results of the mean returns and variance equations of GARCH model for the holidays effect are displayed in Table 8. By comparing the two models, OLS and GARCH, we get totally different results. The coefficients of the GARCH model are once again highly significant. In this case, the pre and post holiday effect disappears as the coefficients of the anomaly are positively statistically insignificant as opposed to significant coefficients obtainable from the OLS model.

**TABLE 8: HOLIDAY EFFECT**

<b>FTSE-Small Cap Index</b>		
<b>Regressor</b>	<b>Coefficient</b>	<b>t-value</b>
<i>LogPrice(-1)</i>	4.61E-06	0.223
<i>Retruns(-1)</i>	0.3595	13.700*
<i>Returns (-2)</i>	0.0747	2.530*
<i>Returns (-3)</i>	0.1189	5.040*
<i>Pre-Holiday</i>	0.0002	-0.082
<i>Post-Holiday</i>	0.0001	-0.035
<i>No-Holiday</i>	0.0004	-0.132
<i>D1</i>	n/a	n/a
<i>D2</i>	n/a	n/a
<b>GARCH coefficients</b>		
$\square_0$	8.60E-08	4.13*
$\square_1$	0.2451	
$\square_1$	0.7549	31.6*

*The superscripts \*, indicates significance at the 5% significance level.*

#### 4.2.4. Relationship among calendar anomalies

The final model reports the results of the interrelationships of the anomalies in table 9. The only difference with the model reported in table 5 is the exclusion of the test for monthly seasonality due to non convergence. Once again the coefficients of the GARCH model are highly significant. The coefficients that capture the week day effect are still negatively significant but at 10% significance level. Additionally, there is strong evidence for the January effect since the coefficient of the dummy variable in question is positively significant. Finally, there is also supportive evidence for the holiday effect. By taking into consideration the interrelationship of all the anomalies and by using the appropriate methodology it can be concluded that there is evidence of the presence of the calendar anomalies in the UK stock market. In relation to the relevant literature, these results are in accordance with Mills and Coutts (1995) and Arsad and Coutts (1997) that have both found evidence that a day of the week effect exists in the UK stock market. Kim and Park (1994) investigated the UK and Japanese markets over the period and found that the pre-holiday effect was present in those markets. Finally, studying the January effect appears consistent with the results of Gultekin and Gultekin (1983), Schwert (2003), Medhian and Perry (2002) and others.



**TABLE 9: RELATIONSHIPS AMONG CALENDAR ANOMALIES**

<b>FTSE-Small Cap Index</b>		
<b>Regressor</b>	<b>Coefficient</b>	<b>t-value</b>
<i>LogPrice(-1)</i>	0.0004	0.772
<i>Retruns(-1)</i>	0.3545	13.8*
<i>Returns (-2)</i>	0.0809	2.82*
<i>Returns (-3)</i>	0.1246	5.28*
<i>Monday</i>	-0.0132	-1.88**
<i>Tuesday</i>	-0.0135	-1.91**
<i>Wednesday</i>	-0.0131	-1.86**
<i>Thursday</i>	-0.0126	-1.79**
<i>Friday</i>	-0.0123	-1.73**
<i>January</i>	0.0006	2.25*
<i>Pre-Holiday</i>	0.0099	1.69*
<i>Post-Holiday</i>	0.0107	1.85*
<i>No-Holiday</i>	0.0101	1.73*
<i>D1</i>		
<i>D2</i>		
<b>GARCH coefficients</b>		
$\alpha_0$	9.11E-07	3.97*
$\alpha_1$	0.25492	
$\alpha_2$	0.74508	31.2*

The superscripts \*, \*\* indicate significance at the 5% and 10% significance level.

## 5. CONCLUSIONS

This paper has focused on the concept of calendar anomalies for the London Stock Exchange. The calendar seasonalities that have been tested throughout this paper are the January, Monthly, Holiday and the Weekend effect for the period 1996 to 2010 for the FTSE-Small Cap Index. The two main methods used for testing the appearance of these anomalies were the OLS and the GARCH. Initially, the anomalies were tested separately taking into account the previous values of the return and the logarithm of prices and then were tested together.

The results of the calendar seasonalities using OLS have shown that there is the pre and post holiday effect. Incorporating these into a single model shows a somewhat monthly seasonality with negative significance. Also the holiday effect is present at 10% significance. The GARCH results have exhibited the day of the week effect with

negative significance while the holiday effect present using OLS disappears. Using the single model, the day of the week effect at 10% significance level, the January effect and the Holiday effect were noted. All the above results are in accordance with all the relevant literature available.

The appearance of calendar anomalies question the EMH, thus contradicting the very principle which states that stocks must be priced correctly and efficiently. Once calendar anomalies are present, investors can generate abnormal profits by using trading strategies to take advantage of these predictable patterns of stocks behavior, that is detecting significant and different daily patterns of mean returns and their volatility in stock market terms have useful implications for trading strategies and investment decision.

#### NOTES

1. In more detail, 0.47% cumulative average return was found where on the other hand for any other four-day period a 0.061% average was calculated.

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## ENTREPRENEURSHIP ACTIVITY AND INNOVATION IN THE GREEK REGIONS

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### ABSTRACT

*The innovative SMEs can boost the local development and create sustainability. This paper focuses on the entrepreneurship activity and innovation in the Greek regions. The main parts of the study outline the relationship among SMEs, innovation and growth. More specifically the paper highlights the entrepreneurship activity in a turbulent era. The above is happening for the case of Greece and its biggest island Crete. Important tools for the achievement of these goals are the geographical distribution of the Greek SMEs, the sector analysis of innovation activities in Greece and the opportunities for the Greek regions and especially the region of Crete.*

Keywords: *Small and medium enterprise; innovation activities; local development; sustainable development; Crete; Greece.*

### 1. INTRODUCTION

In 1890 Alfred Marshall developed the theory of external factors in the business environment. These factors create the '*industrial atmosphere*'. Lamprianidis (2004) argues that this environment gives the chance to the *localized* enterprises to create and share knowledge, the function of the workforce and the specialization of the employment. The Austrian economist Schumpeter (1935) concludes that the firms are catching up the succeed innovations. However, the transfer of innovations through the *clustering of innovations* can occur only in specific industrial sectors. Furthermore, a modern theory assumes that the network of specialized micro enterprises with specialized workforce and quality production after order can replace the massive production from the multinationals (Piorse and Sabel, 1984). Finally, Porter (1988) analyses the theory of clusters. Clusters increase competition and cooperation through the enterprises-members (Korres, 2011).

Harvey (2010) focuses on the negative view of the innovation. The critical geographer argues that a lot of technological innovations and non technological innovations result not only to speculation but also to financial crisis. An example of this argument is the banking sector. In addition Massey, Quintas and Wield (1992) argue that the operations of the science parks do not really boost the local development. The development of technology in these parks aims to support the

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operation of multinational companies. According to Marx theory new technologies are eliminate the employment of the labor force.

## 2. SMEs, INNOVATION AND GROWTH

The SMEs categorization has been based on four factors (ECORYS-2012, EIM Business and Policy Research-2011, European Commission-2013a). These factors are the following:

- The competitiveness of a country
- The innovativeness of a country
- The size of the SMEs in the economy
- The intensity of the technology (high-low tech intensity)

As far as it concerns the first factor, Greek economy is the worst in the European Union. In terms of competitiveness Greek listed in the 96<sup>th</sup> position in a total of 142 countries (data for 2012) (Xirouchakis, 2013). In terms of innovation performance, Greece is characterized as a moderate innovator. The modification of the Greek economy for the size of the SMEs is a moderate cluster. The last dimension of the Greek economy is that it is a low tech country (ECORYS-2012, European Commission-2013a, European Commission-2013b).

EIM Business and Policy Research (2011) study emphasizes on the argument that the employment growth rate is positively related to the innovativeness of individual enterprises as well as the innovativeness of countries. Varum and Rocka (2013) argue that there are plenty of reasons why innovations by firms can boost the employment growth. Firstly, innovations that boost the improvement of the production process can decrease production costs. The outcome of the above increases the demand for products. In addition, product innovations can create new demand from the customers. Finally, innovations can increase the internationalization of the small and medium enterprises. The internationalization of the enterprises can support the performance of the firms. This performance has the features of the employment growth and the turnover growth. Recent study of the European Commission confirms the above assumption (EIM Business and Policy Research-2011, Fritsch-2008).

The SMEs are an important characteristic of every local development. The SMEs increase sustainable development (Storey & Greene-2011, Xirouchakis-2013). The most important arguments of the above assumption are the following:

- The SMEs support the technology transfer and the regional development. One example is the innovative Start Ups.
- The SMEs restructure industries. Furthermore they support the regional trade. The result of the above is the rise of the employment in a regional basis.
- The micro enterprises can more easily access the niche markets.

- The micro enterprises increase consumption and production. This happens with the creation of innovations that are more feasible to the consumers.
- The SMEs act as a source for competition for larger companies and multinationals.
- The SMEs accelerate structural change. Newcomers replace old-established incumbents (Fritsch-2008, Varum & Rocha-2013).

### 3. THE GEOGRAPHICAL DISTRIBUTION OF THE GREEK SMEs

The main negative features of the Greek SMEs compared to the other European SMEs are the lack of production of new knowledge and total competitiveness. The basic implications of these characteristics are the loss of profit and further development of the Greek SMEs. However, the introduction of technological innovations and process innovations are two main advantages of the Greek SMEs. In addition, the Greek SMEs are good enough in the introduction of marketing and organizational innovation (Innovators). On the other hand the Greek SMEs are not good in finance and support intellectual assets. High growth is performed in community designs. A negative change is performed in the venture capital investments and knowledge-intensive exports. Growth performance of open, excellent, attractive research systems and intellectual assets is well above the average of the E.U. The situation is clearly opposite in finance and support and economic effects (European Commission, 2013b). The Greek SMEs do not invest in R&D. In addition, they do not collaborate with other firms in order to produce innovation (European Commission, 2012).

The next three tables highlight the Greek entrepreneurship activity in a turbulent era. Table 1 illustrates the structural data for the enterprises of the manufacturing sector among 2008-2010. According to this table one of the crisis effects is the closing down of 4.765 manufacturing enterprises in four years. For the same period the amount of the total persons employed declines by 52.037. The value added declines as well by 939. The same happens with the gross production value (-5.832) and the sales of produced products (-5.848) (ELSTAT, 2013).

**TABLE 1: STRUCTURAL DATA FOR THE ENTERPRISES OF THE MANUFACTURING SECTOR (IN MILLION EUROS)**

	<b>2008</b>	<b>2009</b>	<b>2010</b>
Number of enterprises	84.103	83.565	79.338
Total persons employed	431.306	400.934	379.269
Wages and salaries	325.953	318.100	301.699
Remuneration of persons employed	6.604	6.921	6.644
Gross production value	57.913	48.601	52.081

Total consumption	39.863	30.371	34.970
Value added	18.050	18.230	17.111
Sales of produced products	53.498	44.943	47.650
Total capital formation	3.510	3.131	2.810
Labour cost	8.533	8.903	8.548

Source: ELSTAT (2013), p. 22.

Table 2 demonstrates the percentage of entrepreneurial activity of early stages for each sector in Greece 2006-2010. In general, terms the entrepreneurial activity of early stages is very strong in the consumer oriented sector. However, the percentage is low in the extractive sector. In addition, there are no big changes for both of these sectors for the years 2009-2010. More analytical the percentage of the extractive sector has increased since 2008 (0,8 %-2006 and 1,9%-2010). The same has not happened in the consumer oriented sector (63,5%-2006 and 46,3%-2010). There is a decline. The percentage of the business services sector has increased since 2008 (12,7%-2006 and 28,1%-2010). The positive change in the percentage rate of this sector has been almost double among the years 2009-2010. The percentage of the industrial activity has been almost unchanged since 2008 (23,0%-2008 and 23,7%-2009) (Ioanidis & Hatzihristou, 2012).

**TABLE 2: PERCENTAGE OF ENTREPRENEURIAL ACTIVITY OF EARLY STAGES FOR EACH SECTOR IN GREECE 2006-2010**

	<b>Extractive</b>	<b>Industrial activity</b>	<b>Business Serv</b>	<b>Consumer Orientated</b>
2006	0,8	23,0	12,7	63,5
2007	0,5	24,7	23,5	51,3
2008	3,0	23,2	15,3	58,5
2009	1,8	36,5	15,2	46,5
2010	1,9	23,7	28,1	46,3

Source: Ioanidis and Hatzihristou (2012), p.33

A basic feature of the *quality entrepreneurial activity of early stages* is the aspirations of employment for new activities. Table 3 illustrates the aspirations of employment for new activities in Greece for *the next five years* 2010-2015. The above assumption has been based on the performance of the years 2007-2010. The aspirations of these years shape the next five years 2010-2015. The first and most important factor that has been analyzed is the aspirations of employment for at least twenty new positions of employment capacity. The first factor is the so called high-growth firms (*gazelles*). The high growth firms create a lot of new jobs for a long period. The second factor is the aspirations of employment between six to nineteen new positions of employment capacity. The aspirations of employment for at least twenty new positions of employment capacity for the year 2010 were only 4,4%.



However for the year 2009 none of the domestic enterprises decided to do such an aspiration (Ioanidis & Hatzihristou, 2012). The second factor for the same years was 13,3% and 7,4%. The Greek high growth firms for the period 2008-2010 are in the bottom of the list (2,8%) in comparison with the other countries, members of the Global Entrepreneurship Monitor (GEM). From the above assumptions is clear that the forecasting of new employment in Greece is not good.

**TABLE 3: ASPIRATIONS OF EMPLOYMENT FOR NEW ACTIVITIES IN GREECE FOR THE NEXT FIVE YEARS 2010-2015 (ACCORDING TO THE PERFORMANCE OF 2007-2010)**

	<b>Aspirations of employment, at least 20 new positions of employment capacity</b>	<b>Aspirations of employment, 6-19 new positions of employment capacity</b>
2007	2,9	19,9
2008	9,9	13,8
2009	0,0	7,4
2010	4,4	13,3

*Source: Ioanidis and Hatzihristou (2012), p.36*

An important part of the study is the geographical distribution of the Greek SMEs. Table 4 highlights the number of enterprises in every region for 2013. The number of the enterprises in the Greek regions is 202.983. It is quite obvious that half of the entrepreneurship activity in Greece is based in the region of Attiki (40.28%). Afterwards, is the region of Kentriki Makedonia with a congregation of 16.53%. Third is the region of Crete with a sum of 5.98%. Finally, the region of Voreio Aigaio is the last one with a share of 1.69% (Ministry of Employment & Social Security, 2013).

Technology intensity and sector analysis of innovation activities in Greece are two big issues in order for the Greek economy to overcome the crisis. Table 5 demonstrates the main R&D indicators in BES for 2011. One of its main features the R&D intensity as percentage of the GDP is very low (0.23). The intramural R&D expenditure is 485,9 million euro. The R&D Personnel is 9.984 and the amount of the Researchers is 5.858 (Sachini, Malliou and Ieromnimon, 2014).

Table 6 illustrates the R&D expenditure in BES (in million EUR and as % of total BES) by economic activity (NACE rev2) for 2011. The section of services is first with 57.6% of total R&D expenditure in BES. Afterwards, is the section of manufacturing with 39.2% of total R&D expenditure in BES. Last but not least are the *others sections* with 3.2 % of total R&D expenditure in BES. As far as the services sector is concerned, a deeper analysis gives us the assumption that the financial and insurance activities are at the top (21.1%). Next are the professional, scientific and technical activities (15.9%). The percentage of the last sub-section (information and communication) is 14.4 % (Sachini, Malliou and Ieromnimon, 2014).

**TABLE 4: NUMBER OF ENTERPRISES IN EVERY REGION, 2013**

Region	Number of Enterprises	Amount (%)
Anatoliki Makedonia & Thraki	9.789	4,82
Kentriki Makedonia	33.547	16,53
Dytiki Makedonia	4.552	2,24
Ipeiros	5.739	2,83
Thessalia	11.757	5,79
Ionia Nisia	4.269	2,10
Dytiki Ellada	10.620	5,23
Stereia Ellada	8.331	4,10
Attiki	81.757	40,28
Peloponnisos	9.817	4,84
Voreio Aigaio	3.433	1,69
Notio Aigaio	7.225	3,56
Crete	12.147	5,98
<b>Total:</b>	<b>202.983</b>	<b>100</b>

Source: Ministry of Employment and Social Security (2013) p.18

At the manufacturing sector domination (12.5%) belongs to the economic activities of the manufacturing of fabricated metal products, computer, electronic and optical products, electrical equipments, motor vehicles, trailers and semi-trailers and other transport equipment. The activities with the biggest impact in the 12.5% of R&D expenditure in BES are the manufacturing of fabricated metal products, computer, electronic and optical products. At the same level of percentage (12.4%) is the economic activity of manufacturing basic pharmaceutical products and pharmaceutical preparations. The economic activities of manufacturing food, beverages, tobacco products contribute only with the amount of 3.5%. In the *other sections* sector domination belongs to the activities of electricity gas, steam and air conditioning supply, water supply, sewerage, waste management and remediation (1,3%). The economic activities of construction, agriculture, forestry and fishing contribute only with the amount 0,3% (Sachini, Malliou and Ieromnimon, 2014).

**TABLE 5: MAIN R&D INDICATORS IN BES<sup>3</sup>, 2011**

R&D Intensity (% GDP)	0,23
Intramural R&D Expenditure (million EUR)	485,9
R&D Personnel (Head counts)	9.984
R&D Personnel (Full-time equivalents)	6.324
Researchers (Head counts)	5.858
Researchers (Full-time equivalents)	4.021

Source: Sachini, Malliou and Ieromnimon, (2014), p.39

**TABLE 6: R&D EXPENDITURE IN BES (IN MILLION EUR AND IN PERCENTAGE OF TOTAL BES) BY ECONOMIC ACTIVITY (NACE REV2), 2011**

Main sections of economic activity and most dominant sub-sections (NACE rev2 codes)	Million EUR	% of total R&D Expenditure in BES
Services (45-82)	279,8	57,6%
Financial and insurance activities (64-66)	102,5	21,1%
Professional, scientific and technical activities (69-82)	77,3	15,9%
Information and communication (58-63)	69,9	14,4%
Manufacturing (10-33)	190,6	39,2%
Manufacture of fabricated metal products, computer, electronic and optical products, electrical equipments, motor vehicles, trailers and semi-trailers and other transport equipment (25-30)		
Manufacture of basic pharmaceutical products and pharmaceutical preparations (21)	60,7	12,5%
Manufacture of food, beverages, tobacco products (10-12)	60,3	12,4%
	16,9	3,5%
Other sections	15,4	3,2%
Electricity gas, steam and air conditioning supply, water supply, sewerage, waste management and remediation activities (35-39)	6,2	1,3%
Construction (41-43)	5,4	1,1%
Agriculture, forestry and fishing (01-03)	1,5	0,3%
<b>Total:</b>	<b>485,9</b>	<b>100%</b>

Source: Sachini, Malliou and Ieromnimon, (2014), p.43

One of the questions that an analyst has to answer is what happens next. The Greek Ministry of Development tries to create a new industrial policy. In this effort the Ministry of Development uses the consultation of a study of McKinsey & Company. McKinsey & Company (2012) suggests the development of five big sectors

of the economy. Furthermore, the study suggests the development of eight new *rising stars*. The five main and biggest sectors in terms of gross production value are tourism, energy, retail, food manufacturing and agriculture. The eight upcoming sectors that the study suggests are the medical tourism, the manufacturing of generics pharmaceuticals, the long-term and elderly care, the waste management, the regional cargo hub and logistics hub, the aquaculture, the Greek speciality foods and the classics hub. Table 7 demonstrates the predictions for gross values for the years 2016 and 2021. The comparisons are with the year 2010. The highest increase is in the tourism sector (+18 bil euros among 2010-2021). The lowest increase is in the retail sector (+7 bil euros among 2010-2021) (McKinsey & Company, 2012).

**TABLE 7: GROSS VALUES (BIL EURO IN PRICES 2010): GREECE**

Sectors	2010	2016	2021
New Stars	2	5	9
Retail	20	22	24
Agriculture	8	10	13
Food Manufacturing	13	15	19
Energy	13	18	22
Tourism	27	34	45
Total	83	104	132

Source: McKinsey and Company (2012)

From a critical perspective the McKinsey & Company study supports the development of multinational companies in Greece instead of small and medium enterprises (especially the micro-enterprises). One useful example is the manufacturing of generic pharmaceuticals. Only big (domestics and internationals) companies have the financial assets and the know how to enter the market. In addition, this congregation is going to occur in the biggest regions of Greece (Attiki, Kentriki Makedonia etc). This means inequality in terms of regional development. Another example is the development of the regional cargo hub and logistics hub. Similar arguments apply in this occasion as well. Another limitation of this study is the old national statistical data. The national statistical data that the study used is not updated. Most of the data is before the beginning of the crisis.

IOBE/EMP-EBEO (2012) study suggests nine crucial sectors. According to this study, these sectors are going to create entrepreneurship and long term employment. This entrepreneurship is called *entrepreneurship of intensive knowledge*. These sectors are going to be based in the existing human capital. Some of the sectors (energy, food) are the same with the McKinsey study. Both of them are developing sectors. However, the analyst has to mention that the two studies use different methodologies and

theoretical backgrounds (Komninos and Sefertzi, 2014). The nine sectors of the IOBE/EMP-EBEO study are the following:

- Food and Bio Agro-food
- Production of Energy
- Management-Saving of Energy
- Environmental Industry
- Health
- Packaging
- Constructions- Building products
- Technologies of information and communication
- Textile industry-Clothing

#### 4. THE SMEs IN THE REGION OF CRETE

Another important part of the paper is the development of innovative SMEs in the region of Crete. Table 8 demonstrates the number of enterprises and employees in the region of Crete (four individual regional units) for 2013. The largest amount of the entrepreneurship activity is occurs in the regional unit of Heraklion. The regional unit of Heraklion holds almost the half entrepreneurship activity in the island of Crete. The enterprises of Heraklion are 6.698 and they hold the 2,90% in the sum of Greece. Second is the regional unit of Chania in the island of Crete. The small and medium enterprises of the regional unit of Chania are 3.699. These firms hold the 1,60% in the total of Greece. The regional unit of Chania holds almost the half entrepreneurship activity in comparison with Heraklion. Third is the regional unit of Rethimno with a share of 0.83% in the sum of Greece. Last but not least is the regional unit of Lasithi with a share of 0,71% in the sum of Greece. Both of these units are similar. An important feature of these two units is that they hold the 1/3 of the entrepreneurship activity in comparison with the regional unit of Heraklion. Another feature of these units is that they hold only 1/6 in the sum of the island of Crete (Ministry of Employment & Social Security, 2013).

**TABLE 8: NUMBER OF ENTERPRISES AND EMPLOYEES IN CRETE, 2013**

Region	Regional Unit	Enterprises and subsidiaries <sup>4</sup>	Amount (%)	Number of employees <sup>5</sup>	Amount (%)
Crete	Heraklion	6.698	2,90	31.396	2,26
	Lasithi	1.642	0,71	5.885	0,42
	Rethimno	1.913	0,83	7.532	0,54
	Chania	3.699	1,60	16.151	1,16
Sum of Crete		13.952	6,04	60.964	4,38
Sum of Greece		230.888	100	1.387.925	100

*Source: Ministry of Employment & Social Security (2013) p. 22, 25*

Table 9 illustrates the statistics of innovation for every region for the period 2004-2006. The analysis of the data of this table gives us useful assumptions for the opportunities of the Greek regions and especially the region of Crete. The enterprises of the region Sterea Ellada performed better compared to all the other regions in terms of innovation activity (57.0%) and non innovation activity (80.0%). The enterprises of this region performed better as well in the co-operation for innovation activities among the innovative active firms (62.1%). On the other hand, the enterprises of this region came across a serious level of important eliminations for the innovation activities (83.3%). The same happened for the enterprises of the region of Dytiki Ellada (77.2%). The sum of the enterprises (100%) in the region of Dytiki Makedonia took an advantage of at least one important source of information for innovation activities. Almost all the enterprises (97.7%) in the region of Anatoliki Makedonia-Thraki did the same thing. The enterprises of the same region had the highest amount of profits from sales of innovative products (38.5%). The enterprises of the islands of Aegean-Crete performed better in comparison with all the others in the important effects of innovation (85.8% of innovative active enterprises). The region of Crete had a slightly good performance in the percentage of innovation activity (45.4%) (GGET - 2008 and OECD - 2010).

**TABLE 9: STATISTICS OF INNOVATION FOR EVERY REGION FOR THE PERIOD 2004-2006<sup>6,7</sup>**

Region (NUTS1 & NUTS2)	Statistics of innovation							
	1	2	3	4	5	6	7	8
Northern Greece	37.5%	22.4%	1.5%	40.0%	75.8%	56.7%	62.5%	47.1%
Anatoliki Makedonia, Thraki	37.0%	38.5%	1.4%	30.1%	97.7%	30.4%	68.3%	44.1%
Kentriki Makedonia	40.5%	20.6%	2.8%	42.1%	70.0%	59.6%	61.5%	49.2%
Dytiki Makedonia	32.7%	9.5%	0.5%	38.3%	100%	69.2%	53.5%	56.1%
Thessalia	27.5%	24.8%	0.3%	38.2%	71.9%	60.0%	67.5%	34.7%
Central Greece	39.0%	17.9%	1.0%	53.6%	62.3%	45.1%	76.2%	62.0%
Ipeiros	23.4%	8.0%	0.9%	97.1%	24.4%	97.1%	52.8%	50.0%
Ionia Nisia	58.9%	100%	1.3%	100%	100%	0.0%	58.9%	100%
Dytiki Ellada	38.0%	7.7%	1.6%	16.7%	67.4%	25.3%	77.2%	41.7%
Sterea Ellada	57.0%	17.0%	0.6%	62.1%	71.4%	42.2%	83.3%	80.0%
Peloponisos	20.0%	16.5%	2.3%	27.5%	27.5%	100%	94.5%	67.1%
Attiki	42.6%	20.6%	1.2%	29.2%	65.9%	53.7%	66.3%	52.0%
Islands of Aegean Crete	47.2%	23.9%	2.7%	36.5%	81.5%	85.8%	59.4%	61.7%
Voreio Aigaio	47.3%	20.0%	0.9%	50.0%	50.0%	100%	67.0%	67.0%

Notio Aigaio	53.7%	12.6%	0.7%	0.0%	100%	100%	21.1%	53.7%
Crete	45.4%	29.7%	2.9%	44.3%	85.2%	76.7%	67.8%	62.4%

*Source: GGET (2008), p.19*

- (1) Innovation Activity
- (2) Profits from the sales of innovative products (% of the turnover)
- (3) Innovation expenditures (% of the turnover)
- (4) Co-operation for innovation activities (% of innovative active enterprises)
- (5) Important sources of information for innovation activities (% of innovative active enterprises)
- (6) Important effects of innovation (% of innovative active enterprises)
- (7) Important eliminations for the innovation activities
- (8) Non Technological Innovation

## 5. POLICY IMPLICATIONS AND CONCLUSIONS

The paper focuses on the entrepreneurship activity and innovation in the Greek regions. The Greek entrepreneurship activity in a turbulent era has specific features. One of them is the closing down of many enterprises. In addition the forecasting of the generation of new employment is not good. Only the consumer orientated sector is still strong. At the same time the R&D intensity as percentage of GDP is very low. On the other hand, the section of services is first with 57.6% of total R&D expenditure in BES. Almost half of the entrepreneurship activity in Greece is based in the region of Attiki (40.28%). Second, is the region of Kentriki Makedonia with a congregation of 16.53%. Third is the region of Crete with a sum of 5.98%. Last is the region of Voreio Aigaio (1.69%). The region of Crete has had a slightly good performance in the feature of innovation activity. Also the region has performed incredibly well in the important effects of innovation.

The Greek government and the Greek business society should react immediately in order to decrease the results of the crisis. Main policy reforms are the following:

- The Greek entrepreneurs should boost not only the investments in R&D but also the whole culture of the production of innovation in the enterprises. This can happen with the further development of clusters in a local, regional and national level. The clusters culture should exist in all the sectors of the economy. In addition, all the firms should create a department of R&D. This is a sure way for firms to transfer and adopt new knowledge. These actions can increase the competitiveness of the Greek SMEs.
- The Greek state should support the development of innovative SMEs in all the regions (not only in the big ones). European and National regional and financial programmes should assist the above goal.

- The business sector should focus more on the cutting edge industry of knowledge intensive services and the technology intensity of the manufacturing industry.

#### NOTES

1. Analytical correspondence of the total employments-workers in Greece (happened between 15.9.2013-15.11.2013) through the information system ERGANI.
2. The Greek government bodies have developed *different interpretations* for the *counting* of the Greek SMEs in this period. The researcher has chosen to show all the available data. Special focus has given to the interpretation of the current situation.
3. BES-Business Enterprise Sector
4. There are different results among table 4 and table 8. This is happening because table 8 is accounting the number of enterprises and subsidiaries. Table 8 includes among others and enterprises that operate economic activity in more than one regions.
5. Some of the employees are working at the same time in more than one regional unit
6. The new Greek innovation survey (6<sup>th</sup>) is going to occur in the summer of 2014
7. The regions of Peloponisos, Ionia Nisia, Voreio Aigaio and Notio Aigaio contribute with 10 or less enterprises in the final sample. The interpretation of the results in these regions should occur very carefully.

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## ANALYSING HOUSING SUBMARKETS FROM A DEMOGRAPHIC PERSPECTIVE: A REVIEW ON THE CURRENT LITERATURE

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### ABSTRACT

*Europe is undergoing a profound demographic change. Decreasing fertility, population ageing, and net migration are some demographic events that attract a lot of attention in current literature. Special attention was given to the relationship between demographic change and housing prices. However, these studies assume that the housing market is coherent, while reality is quite different. The existence of housing submarkets has been established by many studies but, the main goal was the definition process. Knowledge on housing submarkets is considered important, because they help in the understanding of different social phenomena. This paper is an attempt to review the relationship between housing prices and demographic change and reveal the theoretical gap in relation to the effect of demographic variables on prices of housing submarkets.*

*Keywords: Real estate; demography; housing submarkets; literature review; housing prices; spatial planning; demographic boom.*

### 1. INTRODUCTION

A large volume of studies has been conducted in relation to the future demographic development of the European continent. Researchers do not look very optimistic, while at the same time all of them agree that by the year 2050 the total European population will decline (Kröhnert., 2008; Bermingham, 2001; McMorro and Roegers, 2004). Although there is some agreement regarding the impact in economy and in general to society, there is also some disagreement regarding the nature of these demographic changes. Most studies<sup>1</sup>, focus on the negative impact of the economy, the social security system and public health. They propose at the same time policies that should be adopted by governments to overcome the negative impact as effectively as possible. On the other hand, there are those who support the idea that Europe's demographic change will not be as intense as it is described by other researchers in the field (Coleman, 2006). They suggest that when the Baby Boom cohort was born, a great demographic challenge started. This demographic challenge ends now with the entrance of this cohort into the retirement age and signifies the beginning of the European population back to stability.

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Demographic variables such as total population, birth and fertility rates and immigration inflow are expected to be affected significantly in the near future and as a result they will affect the economic performance of many European countries. Due to these demographic developments, the pension, health and nursing care systems will feel the burden. To that direction numerous studies have been conducted. However, the effect of future demographic changes to the real estate market on the regional level has attracted little attention while their positive relationship has been established. The study conducted by Mankiw and Weil (1989) was the first attempt in the investigation of the above relationship.

Housing prices differ considerably between countries and regions<sup>2</sup>. The reason for such a difference is economic and the general condition of the country. But still, housing prices are different between municipalities, cities or even neighbourhoods that share the same boundaries. In these instances, the reasons for these differences are income, demographics, governmental policies, house quality and living standards. On the regional level, price differences have been attributed to travel distance, travel costs, the transportation system etc. However, based on the current literature, in all of the above studies the real estate market was assumed to be coherent. In reality, the real estate market is composed from a set of different housing submarkets (Pryce, 2005).

To the author's knowledge, and based on the available literature, there are studies that attempt to investigate the relationship between socio-economic variables and the real estate market, or studies that investigate housing prices and housing characteristics ending up in the definition of housing submarkets. What all of these studies have in common is that they assume that the housing market is unitary, but on the other hand they highlight the existence of housing submarkets. Furthermore, the importance of socio-economic variables as significant controlling factors in the interpretation of housing price variations could not be clearer.

In this paper, we assume that the market is not coherent and unitary. We argue that the housing market is composed of a set of smaller submarkets with different dynamics and characteristics. Indicators of the housing market tend to be more meaningful when highly aggregated, and they are least reliable when disaggregated at the local level. At the highest level, the indices suffer from aggregation bias related with pooling prices from different markets. At the lowest level (e.g. local or neighbourhood) where sample sizes are smaller, price changes are often a result of differences in what has been sold between reporting periods rather than any substantive change in underlying market conditions. This practice exemplifies a more general problem in housing market analysis.

Talking about the housing market is actually rather unhelpful because it masks the fact that, even in a buoyant market, there are some neighbourhoods where prices remained flat or decreased, and there are neighbourhoods in some parts of the country that prices continue to rise. In reality there are many markets and the geography of the housing market (markets) is extremely complex. We make an attempt to review all the

known bibliography related to the relationship between changing demographics and the housing market as well as to the definition of submarkets.

## 2. ONE HOUSING MARKET OR MANY HOUSING MARKETS?

In order for researchers to investigate different socio-economic phenomena, the definition of housing submarkets was always the starting point of their investigation (Lees, 2008). Social inclusion or exclusion, neighbourhood regeneration, neighbourhoods attitude with people from varying ethnic background and neighbourhood dynamics are only some of the social phenomena which can be better analysed when the theory and investigation of housing submarkets is applied. But the most important thing is that these studies and empirical works provided a basic framework for the adoption of policies from local governments (Lees, 2008; Lupton and Tunstall, 2008). If one considers that neighbourhoods and cities are constantly changing, then it can be easily understood why studies that investigate housing prices in relation to the economy and studies that investigate the socio-economic impact on housing prices are so important for the understanding of the market<sup>3</sup>.

Taking a closer look in the early international bibliography, it can be easily seen that the relationship between real estate prices and social – demographic change is well established (Grigsby et al., 1963; Rothenburg et al., 1991 etc.). Still, housing submarkets need to be defined in order to better understand social phenomena because they provide a strong framework based on which researchers and policy makers can better understand the processes that lead to segmentation and shape the fundamental structure of modern cities (Maclennan, 1982; Meen and Meen, 2003; Galster et al., 2000).

## 3. THEORETICAL BACKGROUND

Two prevailing theories exist in relation to housing submarket existence. The first theory suggests that submarkets exist because the real estate market exhibits multiple states of equilibrium (Goodman, 1978). In other words, each submarket is located at a specific time, which is different from that of another submarket, at its equilibrium state. The assumption goes along with the mainstream and dominant economic approach. The second theory suggests exactly the opposite. Housing submarkets exhibit different disequilibrium stages (Maclennan et al., 1987). The importance of the variables search and information costs have been acknowledge as important and have been indicated in some studies that attempt to investigate housing submarkets. But these variables make the idea of equilibrium inappropriate to be assumed. In addition, the hypothesis regarding the state of equilibrium wants the housing market to “clear” but this does not occur for different reasons. The market does not “clear”, because of the durability of the characteristics of housing units which make the process really

slow. The financial and psychological costs that are created from households when they decide to relocate is another reason due to which the market does not clear quickly. More specifically, households tend to relocate near friends, schools, jobs, and this brings costs associated with the collection of information and time since comparing residencies is a very time consuming task. As a result, individuality, which is one of the basic characteristics of households, prevents the market from clearing quickly (Pryce, 2005).

Housing prices are affected by a large number of different factors, which in return shape housing submarkets. Each one of these factors has a different effect on housing prices, and results in the creation of residencies that respond in the same way to the attribute change (because of heterogeneity) (Bourassa et al., 1999). For every group of residencies there is a corresponding group of households that share common characteristics. Similarly, segmentation of residencies is achieved based on the characteristics and attributes of each house. The housing stock is then categorized into groups of residencies, which based on the households notion are considered close substitutes.

According to the theory of access-space and supply and demand, every house gathers a set of attributes that make the residence more or less desirable among households. It is not the house itself but the set of attributes that gathers, the reason that makes it more or less desirable (Muth, 1969; Jonet et al., 2005a; Pryce, 2005). Maclellan et al., (1987) stated “the housing stock is subdivided into different product-groups”. Still, these housing groups although are assumed to gather homogeneous residencies, in reality, are quite different. Grigsby (1963) found the above difficulty in one of his studies and specifically when he attempted to identify housing submarkets based on spatial boundaries.

In addition, other constraints exist in relation to the market adjustment. Neighbourhood attachment is one of these constraints as Munro and Lamont (1985) noted. Jones et al., (2005a) analysed the intra urban relocation trends in the city of Glasgow. They found out that households tend to relocate in the same submarket they used to live. Only the area of the city centre had buyers that came from outside, and this is because it gathers “executive” flats. This is one of the basic characteristics of housing submarkets and its attractiveness to buyers who are new to the city. More importantly, the study gave evidence of housing submarkets based on the resale market.

To all the above, we have to add the constraint created from buyers that always try to benefit from lower prices (Kauko, 2001). When a household buys a residence, they consume capital but at the same time they invest. As a result, households have future capital expectations from their investment on a residence. But because of the transaction, information and search costs the adjustment is difficult to be achieved. When buying a residence, buyers are poorly informed in relation to the dynamic of the market and even less informed regarding the other options they have in dwellings. A

way to overcome this barrier is to attempt to gather information about the market but this will have a significant cost in time and it is very expensive (Maclennan et al., 1987). For that reason, households avoid to relocate to another submarket and prefer to stay in the submarket they already know. The role of agents who are responsible to distribute information for residencies, is significant here and as a result they contribute to the segmentation of the housing market (Palm, 1978). Another contribution of agents is that they plan pricing strategies for sellers and consumption strategies for buyers (Smith et al., 2006). However, agent's contribution in the definition process of housing submarkets has not been analysed extensively in the academic literature (Evans, 1995).

Administrative boundaries, is another way based on which the housing market can be divided into submarkets. Two distinctive boundaries have been identified according to the international literature and these are "hard" and "soft" boundaries (Clapp and Wang, 2006; Maclennan et al., 2006). "Hard" boundaries are boundaries that have been set based on political and administrative boundaries and in that way they help in gaining knowledge about the quality of public services and their effect on housing dynamics (Cheshire and Sheppard, 2004a). "Soft" boundaries are set by market interactions and they reflect the influence of search costs and agent activity as well as of other economic shifters to housing prices (Clapp and Wang, 2006).

In conclusion, all the difficulties presented above show how complex the understanding and the definition process of housing submarkets is. Basic assumptions of the mainstream housing theory are halted by social, cultural and institutional factors. Cities, neighbourhoods and whole societies are changing constantly. This results in housing submarket changing. This brings new challenges to be further explored. Submarkets can reveal information regarding the asymmetries in adjustment to local shocks (migration, environmental shocks etc.), interact with variables such as employment, transportation and criminality and provide information regarding the value of amenities and consumer behaviour (Bates, 2006; Pryce, 2005). For all the above reasons, the definition of submarkets is considered important and a valuable tool in policy maker's hands.

#### 4. HOW ARE SUBMARKETS DEFINED

Despite the numerous models and techniques, the tests and the theories developed for the analysis of housing submarkets, there is no clear definition of what a submarket denotes. In the academic literature, no such definition to the authors' knowledge exists, but still it is evident that there must be one solid – coherent definition. This is probably the reason why there are so many techniques and models developed. Moreover, this is also the basic reason why there are so many contradicting

results regarding the submarkets even when these submarkets are investigated for the same city (Rothenberg et al., 1991; Goodman and Thibodeau, 2007).

The term submarket has its origins in the sciences of marketing and economics. More specifically, in marketing the term is also stated as 'market segmentation'. A market segmentation is groups of a product and it includes people organized in groups that share common interest for one or more similar products or services. The basic assumption is that each segment is independent from another segment. People in a segment are homogeneous (that is they share same interests) and finally the sets respond similarly to market changes. In some instances, the term market segmentation is used only to classify groups of people with their needs (McDonald and Dunbar, 2010)<sup>4</sup>.

Based on the definition and the assumptions given above, housing submarkets in order to exist, they require groups of people with different needs and characteristics and a product with different characteristics as well. However, this is not enough. Submarkets need the interaction between the groups of the supplied product and the groups of the different consumers (demanders) to reveal price differences. The analysis of housing submarkets must be based on the fact that there are a number of different consumers grouped together and have a specific interest for a product which in turn has been previously grouped based on the needs, characteristics and the resources of the consumers (Grigsby et al., 1987; Rothenberg et al., 1991).

The above statement regarding the existence of housing submarkets can be traced to the Columbia 'institutional school'. This school mainly investigated the processes that create a unitary equilibrium in urban housing markets. For that reason they employed the concept of substitutability as an analytical approach. Early findings regarding substitutability can be traced in the works of Rapkin et al (1953) and in Fisher and Fisher (1954). The substitutability concept needs consumers which are in some way indifferent concerning the quality, the characteristics, the area or even the neighbourhood of the housing stock. They are just interested in purchasing a dwelling. However, they are highly interested in structural characteristics of the dwellings since these characteristics are those that differentiate the housing stock and group it. Spatial characteristics are of no importance except for characteristics regarding the location of the dwelling, like for example accessibility attributes.

Housing submarkets can also exist when a sufficient number of buyers are interested in purchasing a dwelling on a specific geographic area, but in this specific area there are restrictions regarding the total number of buyers and sellers (Ball and Kirwan, 1977). Such restrictions can be the housing affordability, planning constraints and mortgage availability. Based on general trends and traditional areas, the real estate market can also be segmented. There are certain buyers that will only consider purchasing a dwelling in a 'traditional' area. Such areas can be defined based on search costs, racial discrimination, or even areas that are located near to the city centre and as a result near to the workplace (Grigsby, 1981). Others also support the notion



that only the property type attract a specific group of people which are interested in buying a dwelling of a specific type (detached, semi-detached, terraced etc.) ignoring at the same time the location of the dwelling (Adair, 1995).

In conclusion, there are a number of different views regarding the definition of housing submarkets as well as their genesis. All of them have been applied and are established in a number of different papers in the academic literature. However, the view of the researcher is also of major importance since it is up to him which method, process and tests will employ to prove the theory and define the market.

## 5. THE EFFECT OF A DEMOGRAPHIC CHANGE TO HOUSING SUBMARKET PRICES

“Capitalism has never flourished except when accompanied by population growth and it is now languishing in these parts of the world where population is stagnant” (Longman P., 2004). Studies that investigated the relationship between housing prices and demographic variables have attracted a lot of interest in the past. A strong and positive correlation has been found between specific age cohorts and real housing prices in the U.S. with the use of time series data (Engelhardt and Poterba, 1991). At the same time, Bergantino (1998) confirmed the previous findings using data from the survey of Consumer Finances. More specifically, he established the relationship between real stock prices and aggregate demand for financial assets. Same conclusions were presented by Brooks (1998) between stocks, bonds and people that were currently at middle age.

In relation to housing demand, Ermisch (1996) found a strong correlation between demographics and the housing services demanded while Lee et al., (2001) concluded that for Austria demand is affected by demographic variables. Neuteboom and Brounen (2007) in their study, predicted that housing demand is strongly correlated to the household age variable, results that were also confirmed in the study of Eicholtz and Lindenthal (2007). The investigation was conducted on English households and revealed the positive correlation of human capital to housing demand. Their study also showed that education affects significantly housing demand while variables such as chronic illnesses have a negative effect.

Soon, and following the studies mentioned earlier, the questions born, were how future housing prices can be estimated, how prices are affected by demographic changes, in what direction and of course what other factors must be taken into account for such an analysis. In reality, housing prices are shaped by the willingness of households to pay for a quality house to the willingness of suppliers to supply the same quality house (Green and Henedrshot, 1996).

A milestone study in the analysis of housing prices is the seminar work conducted by Mankiw and Weil (1989). The two researchers from Harvard University studied the relationship between housing prices and age cohorts based on the households of age

25-40. These households are considered to be the basic variable that shapes the owner-occupied housing. The two researchers predicted that after 1990 the U.S. housing demand will be affected negatively because the total population in U.S. is ageing and as a result, housing prices will drop as well. Unfortunately, the predictions of Mankiw and Weil didn't occur but the two researchers created a big debate among researchers which continues till today.

Some suggested that other factors that affected the model appeared that could not be foreseen, while others suggested that a model so strictly defined, has as a result the age construction variable to disappear. The second argument was mainly supported by Engelhardt and Poterba (1991). Peek and Wilcox (1991) in their study suggested that interest rates and construction costs are more dynamic variables than income and population, although there is an obvious correlation with housing prices. Others suggested that with a few adjustments the predictions could be quite descent. Swan (1995) was one of the researchers that attempted to adjust the model proposed by Mankiw and Weil, and this because he supported the idea that the variable of demographic demand of the model is problematic because it does not count housing demand, but instead double counts the U.S. population. In addition, the Mankiw and Weil model ignores the real income growth.

In 2001 Wallace in his study found similar trends for the UK housing market in the late 1990s. Similarly, the housing market in UK recovered showing that despite the ageing population there are other factors that should be considered for the extraction of more reliable results. Same year with Wallace, the Barclay's Capital report for the U.S. interest rates showed that interest rates are affected positively by demographic change and specific age cohorts. But Booth et al. (2000) criticized the Barclay's model because it assumes that an increase in interest rates will occur.

Numerous models have been developed in order to assist researchers in the analysis of the housing market prices, which in return shows the complexity of the market itself. These models were also the starting point for numerous debates such as the Barclay's and the Mankiw and Weil debate. In addition, based on the current literature it has been found that numerous variables affect housing prices while each variable importance depends upon the results and the researcher's point of view. The housing market in overall has been extensively investigated on the local and country level. On the other hand, studies for housing submarket prices are absent from the international literature.

The international literature suggests that demographic changes will affect housing prices negatively. Myers (1987) suggested that the Baby Boom cohort will push housing values to lower levels. He based his study on the assumption that real housing prices are highly correlated with the existence of a sufficient number of bidders to support prices. Myers (1987) also suggested that a decrease in housing prices will occur but this is not a certainty. He was certain though that lower demand would occur and this will probably lead to lower housing prices. On the topic of real housing

prices, Braus (1995) noticed that there was an increase during the '70s and '80s due to the Baby Boom generation. Hendershott (1991) a little later suggested that real housing prices due to the expected demographic changes will decrease significantly. For the Japanese housing market, Ohtake and Shintani (1996) suggested that in the long term the ageing population will affect negatively the housing stock and not the housing prices, while in the short term housing prices will be affected until the market starts its mechanism to stabilize the impact.

Similarly, Hamilton (1991) suggested that population ageing is capable to affect only rental prices and not real prices. He concluded that rental prices and housing prices tend to move to opposite directions because housing prices depend on user costs and future capital gains while rental prices depend only on user costs. Last but not least, income is strongly correlated to housing values and must be thoroughly investigated. Only Swan (1995) denied the importance of income and suggested in his study that demand is not calculated as it was supposed to, and that when using total population numbers that are highly correlated with adult population, it leads researchers in establishing a connection with income as a determinant factor.

## 6. CONCLUSIONS

From all the above, it can be easily seen that theoretically, housing submarkets based on the international literature exist, while at the same time a large amount of techniques have been developed to assist us in the definition process. On the other hand, in the international literature and to the author's knowledge the relationship between demographic and geographic variables on housing submarket prices is absent. In some cases, it is reported that the impact of demographic change in housing prices has been conducted for detached houses which can be considered as a housing submarket. Still, and taking into account the benefits from such an analysis, we argue that the effect of demographic change in housing submarket prices should be further explored. In order to be more specific, the housing market should not be considered as one coherent and unitary market but as groups of different housing markets that gather a similar set of attributes. As a result, it is considered important these housing market segments to be further analysed, especially in relation to price variations. According to the international literature, economic, demographic and geographic variables affect price variations significantly and the question born now is how and to what degree the same variables affect prices of housing submarkets. Following again the current literature, a small number of studies currently exist that have attempted to investigate this relationship. These studies however, have been conducted in single-family houses or detached houses (e.g. Maenning and Dust (2008); Allen et al., (1995); Atkinson and Kintrea (2000)). The type of the house, that is detached, semi-detached, terraced and apartments, has been considered a way based on which a housing market could be divided into segments for a long time (Palm, 1978). However, in the available

literature we did not manage to find any studies for other housing property types like apartments or terraced houses. A good start could be the investigation of the effect of demographic change in the prices of different housing types and compare the result. Such an investigation can possibly lead to better appraisal models, better planning of housing policies and of course better understanding of different social phenomena.

#### NOTES

1. For more information see Tosun, 2003; Nickel, et al., (2008); Bloom et al., (2008) and Razin et al., (2001).
2. Housing prices differ more than prices of commodities (see for example Tabuchi (2001) for Japan). A considerably big volume of studies has investigated price disparities and concluded that in recent years these disparities tend to become larger (Ley and Tutchener, 2001).
3. For more information on these aspects see Kaplan, 2009 and Lindh and Malberg, 2005.
4. For more information on market segmentation its application and the basic theoretical approaches see Gupta S. (2005), “*Managing Customers as Investments*”.

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