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Service quality in local government and its effect on citizen satisfaction: The case of the Division of Transportation and Communications of the Regional Unit of Kavala in the region of Eastern Macedonia and Thrace, Greece

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ABSTRACT

Purpose
This study aims to assess the degree of satisfaction regarding service quality provided by the Transportation and Communications Division of the Regional Unit of Kavala, Greece. The main purpose of the study is accomplished through the development and the empirical testing of a conceptual framework

Design/methodology/approach
The present study adopted the SERVQUAL approach (model). The proposed conceptual framework was tested on a random sample of citizens visiting the Transportation and Communications Division of the Regional Unit of Kavala, Greece for personal affairs. The final sample consisted of 302 citizens. The reliability and the validity of the questionnaire were thoroughly examined. Empirical data were analyzed using the "Structural Equation Modelling" (SEM) technique. The present study is empirical, explanatory, deductive and, mainly quantitative.

Findings
Empirical results indicate a moderate performance of service quality for the division in all dimensions of the SERVQUAL model. This does not appear to cause discontent among citizens, but certainly, it also does not provide any satisfaction. Regarding the examination of the conceptual framework, all dimensions impact citizen satisfaction with the exception of Reliability. Empathy seems to be a crucial factor in satisfaction. A revised conceptual framework is proposed with new indirect relationships. The explanatory power of the revised research model is extremely satisfying, quite accurately describing the determinants of citizen satisfaction regarding the services offered by the Division of Transportation and Communications of the Regional Unit of Kavala, Greece. In the revised conceptual framework, the dimensions of SERVQUAL model are not independent, since the four dimensions that have a statistically significant effect on Satisfaction (Empathy, Responsiveness, Tangibles and Reliability) form a network of relations and interdependencies.

Research limitations/implications
A limitation stemming from the implemented methodology is the use of self-reported scales for the measurement of the six research factors. Moreover, the empirical research (survey) is focused on one organization and, therefore, offers relatively limited generalizability.

Originality/value
Very few studies have utilized the SERVQUAL approach in the context of an explanatory research in the public sector or public services

1. Introduction

In the midst of an economic and financial crisis, service quality provided by the local government to citizens is undoubtedly a highly important issue. Despite the strong social and economic interest, there are not enough studies examining citizen satisfaction in regards to service quality offered by the local government. Service quality is define as a measure of how well the service level delivered by an organisation matches the overall expectations of its customers (Parasuraman et al., 1985).

Wisniewski (2010), recognizing the problem of a reliable evaluation of service quality provided by the public sector, suggested the SERVQUAL model as the most appropriate tool for public administration. According to Orel and Kara (2014), previous research has extensively studied the impact of service quality on customer satisfaction, using established measurement scales, such as SERVQUAL. Despite that, very few of these studies have examined the concepts of service quality and customer satisfaction in the context of public services.

The main purpose of this study is to identify and analyze the factors affecting the service quality of public services and therefore the degree of satisfaction of citizens. The research specifically assesses service quality in the Transportation and Communications Division of the Regional Unit of Kavala, Greece.

2. The Transportation and Communications Division of the Regional Unit of Kavala

The Transportation and Communications Division of the Regional Unit of Kavala is one of six regional

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divisions in Eastern Macedonia - Thrace and one of the seventy-seven similar divisions across the country. It consists of five departments: Technical Department, Vehicle Licensing Department, Driver Licensing Department, the Secretariat and the Vehicle Inspection Centre, each with different responsibilities that are directly linked. It has twenty-five employees, technicians and directors. The Division serves the public daily from 8:00 a.m. to 14:00 except on Friday, when written examinations for driving licenses of various types and classes are conducted. It also addresses citizen requests arriving by mail service, e-mail, etc.

3. Research model and hypotheses

The purpose of this research is carried out through the empirical testing of a conceptual/research model. The proposed conceptual framework consists of five independent factors (five dimensions of the SERVQUAL model: Tangibles, Assurance, Responsiveness, Reliability, Empathy and a dependent factor (Satisfaction).

3.1. Tangibles and Satisfaction

Tangibles includes items such as the appearance of physical facilities and equipment. According to previous studies (eg. Akbaba 2006, Clow and Vorhies 1993, Culiberg and Rojšek 2010, Fabrigar and Wegener 2011), consumers (citizens in the case of this study) use various services with utilitarian criteria. They rarely spend much time inside the business premises, and do not come close or in direct contact with their equipment. However, the appearance and functionality of the various installations, the use of modern equipment, decoration, colouring and general equipment play an important role in evaluating the perceived service quality (Ismail et al, 2006, Longbottom and Hilton 2011, Minazzi 2008). Previous studies have shown the importance of "tangible evidence" of a company in consumer satisfaction (Saraei and Amini 2012, Wisniewski 2010). Thus, the following hypothesis is proposed:

Hypothesis 1: Tangibles have a positive impact on citizen satisfaction.

3.2. Assurance and Satisfaction

Assurance includes knowledge held by employees or the organisation, regarding the provided services, as well as the kindness and the ability of staff to convey trust and confidence to customers. While there are multiple previous studies that have empirically confirmed the direct and positive relationship between assurance and customer satisfaction, various authors argue that the increased knowledge of the staff leads to higher service quality and enhances, customer satisfaction (Akbaba 2006, Armano 2008, Culiberg and Rojšek 2010). In fact, in the context of this research (Transportation and Communications Division of the Regional Unit of Kavala), which is characterized by complex legal and technical requirements, the presence of trained employees to communicate effectively with citizens and solve their problems is very likely to be a key factor significantly affecting satisfaction. Thus, the following hypothesis is proposed:

Hypothesis 2: Assurance has a positive impact on citizen satisfaction.

3.3. Responsiveness and Satisfaction

The dimension of "responsiveness" measures the disposition of a company's staff to respond quickly to customer needs and provide prompt service. According to Smith et al. (1999) and Andaleeb and Conway (2006), responding to problems and customer complaints significantly enhances the customer satisfaction. Thus, the following hypothesis is proposed:

Hypothesis 3: Responsiveness has a positive impact on citizen satisfaction.

3.4. Reliability and Satisfaction

Reliability refers to the ability of an organization to provide a service reliably and accurately. More specifically, reliability is related to service accuracy, and the ability to maintain proper records for various clients. According to several previous studies (Mamilla et al., 2013, Omar et al., 2015), Reliability is a key determinant of satisfaction. In the context of this research, the division, which is visited by citizens and professionals, reliable services is likely to be a decisive factor that significantly affects satisfaction. Thus, the following hypothesis is proposed:

Hypothesis 4: Reliability has a positive impact on citizen satisfaction

3.5. Empathy and Satisfaction

Empathy refers to caring and the individualized attention provided to customers. In short, Empathy could be perceived as the consideration of things through the customers' eyes (Saraei and Amini 2012). Understanding customer needs and addressing different situations through their own point of view has been found to significantly contribute to increased satisfaction (Herson 2011, Min et al., 2014). Therefore, it is reasonable to assume that in the case of the Transportation and Communications Division, Empathy will lead to increased customer satisfaction. Thus, the following hypothesis is proposed:

Hypothesis 5: Empathy has a positive impact on citizen satisfaction

4.1. Population of the study

The population of the study consists of people who deal with the Transportation and Communications Division of Kavala in any way. These are citizens/individuals, motorists (drivers, truck and taxi owners), professionals responsible for examining cases on behalf of others, car dealers, driving schools, "Taxi" joint ventures, transport companies, etc. They can also be internal customers like employees of the Regional Unit of Kavala services, officials of the Municipality of Kavala, etc.

4.2. Data collection

Data were collected using random sampling techniques. Systematic sampling was undertaken at a step of n = 3. A total of 315 questionnaire responses were collected, but 13 were discarded from the final sample because of their extreme values. Therefore, the final sample of this research consists of 302 questionnaires. The majority of the questionnaires were filled in in-person outside the Transportation and Communications Division of the Regional Unit of Kavala, after participants had just left the premises, having just received their services. The citizen response rate was approximately 50%. Table 1

includes some basic information about the demographic characteristics of the sample. In general, it seems that the sample is representative of the population of the population of the study.

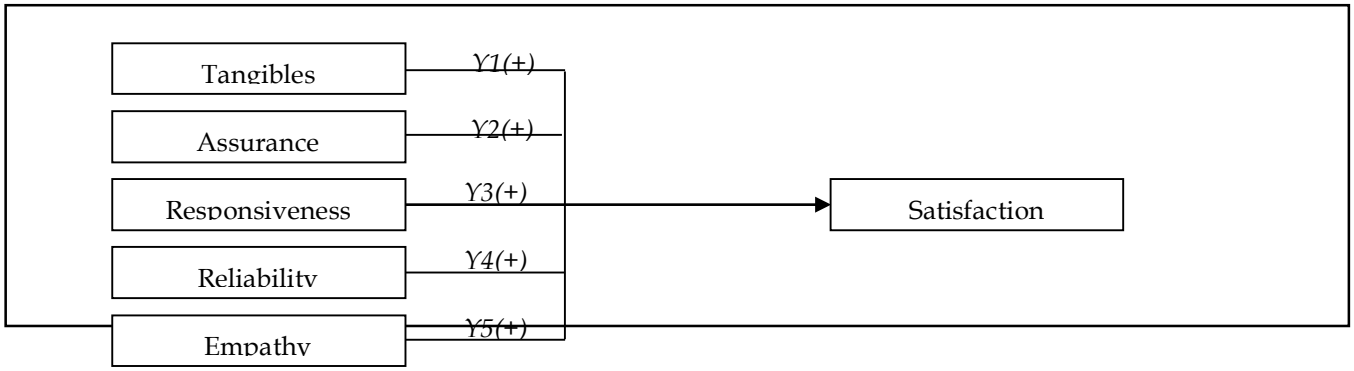

Figure 1. The proposed conceptual framework

4. Research Methodology

4.1. Population of the study

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Table 1. Sample demographics

Question		Frequency	Percentage
Genre	Men	214	70,9%
	Women	88	23,1%
	Total	302	100%
Age	20 – 30 years old	71	23,5%
	31 - 40 years old	65	21,5%
	41 - 50 years old	83	27,5%
	51 - 60 years old	46	15,2%
	61 – 70 years old	37	12,3%
	Total	302	100,0%
Education	Elementary	31	10,3%
	High School	91	30,1%
	Technical	78	25,8%
	University/College	49	16,2%
	Postgraduate	53	17,5%
	Total	302	100,0%
Profession	Unemployed	33	10,9%
	Private Employee	55	18,2%
	Civil Servant	49	16,2%
	Freelancer	103	34,1%
	Pension	42	13,9%
	Other	20	6,6%
	Total	302	100,0%

4.3. Measurement

A structured questionnaire was used to collect the appropriate primary data. The questionnaire included three different sections: (a) Demographic information (b) Measurement of service quality (SERVQUAL instrument): Tangibles, Assurance, Responsiveness, Reliability, Empathy (twenty-four items), (c) Measurement of "customer satisfaction" (four items). The following table summarizes the items and the studies that each item was adapted from.

Table 2. Measurement of factors

Construct / Factor	**Sources**	**No of questions**
Independent factors:		
A. Tangibles	Abili *et al.*, 2011, El-Bassiouni *et al.*, 2012, Longbottom and Hilton 2011, Rodrigues *et al.*, 2011, Saraei and Amini 2012, Parasuraman *et al.*, 1988	5
B. Assurance		5
C. Responsiveness		4
D. Reliability		5
E. Empathy		5
Dependent Factor:		
F. Satisfaction	Anand and Selvaraj 2012, Culiberg and Rojšek 2010, El-Bassiouni *et al.*, 2012, Ibrahim *et al.*, 2006, Ismail *et al.*, 2006	4
Total:		**28**

4.4. Validity and reliability

The instrument (questionnaire) that was used in the present study was tested for both its content and construct validity. The control for the content validity was conducted prior to the commencement of the survey and included. The estimation of the unidimensionality of each of the six factors was conducted using Explanatory Factor Analysis with the method of Principal Component Analysis. Moreover, the statistical measure Cronbach Alpha was used to estimate the reliability of the research factors (see Table 3 above for main results). Furthermore, the goodness of fit of each the research factor was evaluated using Confirmatory Factor Analysis (CFA). All tests produced satisfactory results (see Table 4 above for the main results).

Table 3.: Construct validity and Reliability.

Construct/ Factor	**Items**	**Factor loadings**	**Cronbach Alpha**	**K.M.O**	**Bartlett's Test Sig.**	**TVE**	**Eigenvalue**
Tangible dimension	5	0,730-0,707 0,691- 0,731- 0,735	0,766	0,769	0,00	51,686 %	2,584
Security	5	0,852-0,871 0,882-0,881 -0,692	0,892	0,854	0,00	70,310%	3,516
Responsiveness	4	0,869-0,909 0,902-0,642	0,852	0,777	0,00	70,150	2,806
Reliability	5	0,833-0,873 0,843-0,808 0,894	0,904	0,858	0,00	72,428	3,621
Understanding	5	0,906-0,910 0,848-0,892 0,678	0,897	0,869	0,00	72,469	3,623
Satisfaction	4	0,925-0,872 0,937-0,861	0,920	0,840	0,00	80,894	3,236

Table 4: Estimation of the goodness of fit

Construct/ Factor	**Items**	**Factor loadings**	**Normed X2**	**C.R.**	**V.E**	**RMR**	**CFI**	**GFI**

Tangible dimension	5	0,51-0,65 0,75-0,88 0,86	0,636	0,856	55,181%	0,035	1,00	0,997
Security	5	0,63-0,84 0,81-0,91 0,88	1,899	0,910	67,222 %	0,032	0,998	0,993
Responsiveness	4	0,82-0,81 0,86-0,80	8,844	0,893	67,703 %	0,076	0,978	0,969
Reliability	5	0,84-0,98 0,91-0,91 0,79	1,010	0,939	75,560 %	0,015	1,00	0,995
Understanding	5	0,53-0,84 0,91-0,80 0,92	1,853	0,904	66,020 %	0,045	0,997	0,991
Satisfaction	4	0,91-0,81 0,94-0,79	1,927	0,922	74,798 %	0,025	0,998	0,994

5. Empirical Results

5.1. Mean scores

Table 5 shows the mean scores for every research factor while Table 6 presents the mean scores for every item on the questionnaire. The mean scores of all five dimensions of the SERVQUAL tool are slightly above the average (average of five SERVQUAL dimensions = 4.18702). The best performance comes from the Reliability dimension (mean = 4.4722), while the worst one from the Empathy (mean = 4.0231

Table 5. Mean factor scores.

Construct / factor	Mean	Standard deviation
A. Tangibles	4,2022	1,19523
B. Assurance	4,1863	1,50522
C. Responsiveness	4,0513	1,49368
D. Reliability	4,4722	1,49321
E. Empathy	4,0231	1,46433
Average SERVQUAL	**4,18702**	**1,430334**
F. Satisfaction	4,3998	1,57973

Table 6. SERVQUAL mean scores/ Customer satisfaction mean scores.

Item	Mean	Std Deviation
Tangibles item 4 - Access to service is easy.	4,98	1,790
Tangibles item 3 - Employees - (administrative and technical staff) - are well-dressed, clean and presentable.	4,86	1,559
Assurance item 5 – The department safely maintains transaction records with accurate information relating to vehicle registration and driving ability.	4,79	1,814
Reliability item 1- The administrative and technical staff of the Division of Transportation and Communications are trustworthy.	4,71	1,743
Satisfaction item 2- The services provided was what they just needed.	4,68	1,700
Reliability item 2- Feeling safe while interacting with officials of the Division of Transportation and Communications	4,63	1,814
Reliability item 3- The administrative and technical staff are polite.	4,63	1,841
Satisfaction item 3 - Generally I was satisfied with the service of the service staff.	4,55	1,819
Tangibles item 5 - Forms of the Division of Transportation and Communications are clear and easily understood.	4,47	1,763
Satisfaction item 1- Overall I was pleased with my transaction with the Division of Transportation and Communications.	4,42	1,694
Assurance item 3 - The Division of Transportation and Communications is reliable and does what it promises.	4,35	1,774
Responsiveness item 2 - Usually the response from the administrative and technical staff of the Division of Transportation and Communications is immediate.	4,26	1,800
Responsiveness item 3 - The administrative and technical staff are always ready to serve.	4,26	1,863
Responsiveness item 1 - The administrative and technical staff of the Division of Transportation and Communications informs people directly, clearly and accurately in regards to the process and the time of completion of any administrative act.	4,24	1,754

Reliability item 4- All the staff of the Division of Transportation and Communications has the necessary knowledge and skills for the completion of administrative acts relating to the functions of the department.	4,21	1,743
Reliability item 5- The administrative and technical staff has a direct response to the needs and requirements of citizens.	4,18	1,642
Empathy item 2-, The administrative and technical staff acknowledge and fully understands the needs of citizens.	4,12	1,684
Empathy item 1- The Division of Transportation and Communications gives special attention to each individual citizen.	4,11	1,811
Empathy item 3- The administrative and technical staff of the Division of Transportation and Communications provide personalized services covering the specific needs of every citizen.	4,07	1,522
Assurance item 3 - When encountering a problem, the Division of Transportation and Communications shows understanding and interest in solving it.	4,06	1,835
Empathy item 4-, The top priority of the Division of Transportation and Communications is securing the interests of and serving citizens.	4,06	1,690
Assurance item 4 - The Division of Transportation and Communications provides services in the time promised.	3,95	1,740
Satisfaction item 4- The Transportations and Communications Division meets modern requirements and needs of the citizens.	3,93	1,810
Assurance item 1 - When the Division of Transportation and Communications undertakes to carry out an administrative act during a specific period, it does so.	3,81	1,861
Empathy item 5- The Division of Transportation and Communications offers public service hours that suit citizens.	3,77	1,946
Tangibles item 1 - The Transportation and Communications Division has modern equipment.	3,72	1,601
Responsiveness item 4 - Continuous workload of the administrative and technical staff does not prevent employees to respond quickly to requirements.	3,45	1,777
Tangibles item2 - The facilities (service waiting areas and offices) are attractive.	2,99	1,576

** The seven-point Liker scale has been used: 1= totally disagree, 7=totally agree*

The two questions with the best performance relate to a) accessing the department and b) the appearance of its employees, while those with the worst performance are related to the premises and equipment and the responsiveness of the staff.

5.2. Structural Equation Modelling

The examination of the proposed conceptual framework was conducted with the use of the Structural Equation Modelling technique (Anderson and Gerbing, 1988; Kelloway, 1998). The estimation of the structural model was conducted with the Maximum Likelihood Estimation method. The Covariance Matrix was used as the table of entry and the extraction of the Standardized Completely Solution was requested (Hair et al., 1995).

Table 7. Hypothesis testing (initial results)

Effects				r	p	Results
Y1	Tangibles	→	Satisfaction	0,206	0,000	Supported
Y2	Assurance	→		-,047	0,056	Rejected
Y3	Response	→		0,174	0,000	Supported
Y4	Reliability	→		0,329	0,000	Supported
Y5	Empathy	→		0,734	0,000	Supported

In more detail, the (modified) structural model fitted the data well, while the factors that were included can explain 84% of the variance of the dependent factor, i.e. Satisfaction from the provided services. It must be stressed that various new paths were added to the model, based on modification indexes function of AMOS. This resulted in a structural model with improved fit and explanatory power.

As shown in Table 8 and in Figure 3, the modified model includes both direct and indirect relationships. For example, Empathy affects Satisfaction in two ways: (a) directly (r = 0,54), (b) indirectly (through the other three factors of the SERVQUAL tool Tangibles Reliability and Responsiveness). The same applies to the Responsiveness factor. It affects Satisfaction, in two ways: (a) directly (r = 0,13), (b) indirectly (through Reliability). In addition, Tangibles affect "satisfaction": (a) directly (r = 0.15), (b) indirectly (through Reliability). Moreover, it appears that Reliability is a central component of the conceptual framework since it mediates the effects of Tangibles, Empathy and Responsiveness to Satisfaction

As presented in Table 7 and in Figure 2 below, only one research hypothesis was not supported by the empirical data (Y2). In contrast, the remaining four hypotheses are supported**.**

In general, the following observations can be made:

- The revised structural model has improved fit and explanatory power (Figure 3). The revised research model seems to describe very precisely the determinants of citizen satisfaction in the services offered by the Division of Transportation and Communications of the Regional Unit of Kavala.
- Assurance does not appear to be a factor affecting Satisfaction. This factor was removed from the revised conceptual framework of the research.
- The modified conceptual framework (Figure 3) changes the logic by which this empirical research was designed in the initial stage. Apparently, the dimensions of SERVQUAL model are not independent, since the four dimensions that have a statistically significant effect on Satisfaction (Empathy, Responsiveness, Tangibles and

Reliability) form a network of relations and interdependencies. In other words, each factor reinforces the others and is needed for the final improvement of Satisfaction felt by citizens from a service. Therefore, any service should focus on supporting all these four dimensions of the SERVQUAL model.

- Empathy is the most important factor in this research. As shown in Table 9, Empathy has an extremely strong influence on the overall Satisfaction (r = 0,874). Credibility follows with r = 0,233, followed by Tangibles with r = 0,216, and finally, Responsiveness with r = 0,185. As presented in Figure 3, Empathy affects all other factors of the conceptual framework: it directly affects Satisfaction (direct link), but also indirectly through the remaining three factors of the SERVQUAL model (Tangibles, Reliability and Responsiveness).

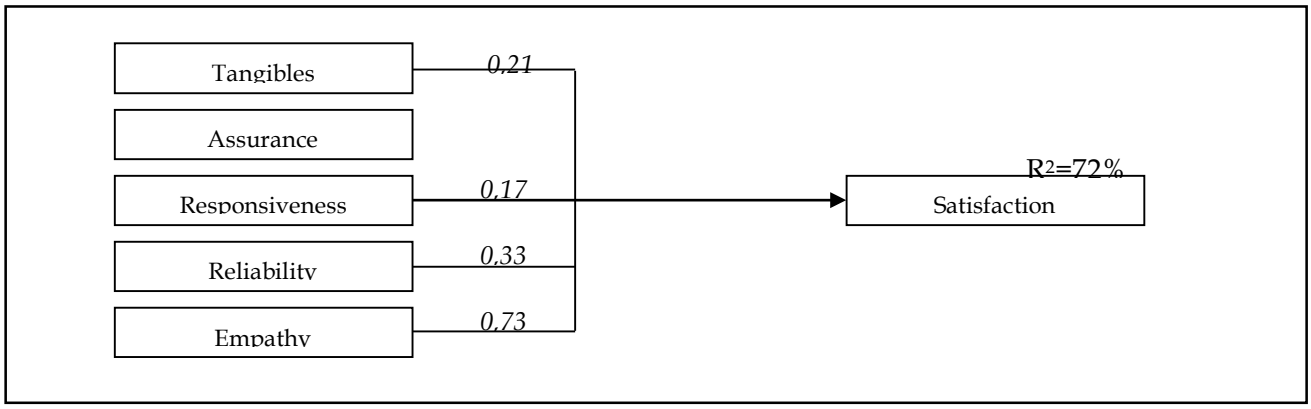

Figure 2. Initial structural model (initial results)

Table 8. Final results (modified model / significant paths only)

Research hypotheses			**Estimate (r)**	**p**
Tangibles	→	Satisfaction	0,151	0,000
Responsiveness	→		0,134	0,000
Reliability	→		0,233	0,000
Empathy	→		0,545	0,000
suggested paths			**Estimate (r)**	**p**
Empathy	→	Responsiveness	0,619	0,000
Empathy	→	Tangibles	0,589	0,000
Empathy	→	Reliability	0,374	0,000
Responsiveness	→	Reliability	0,221	0,000
Tangibles	→	Reliability	0,281	0,000

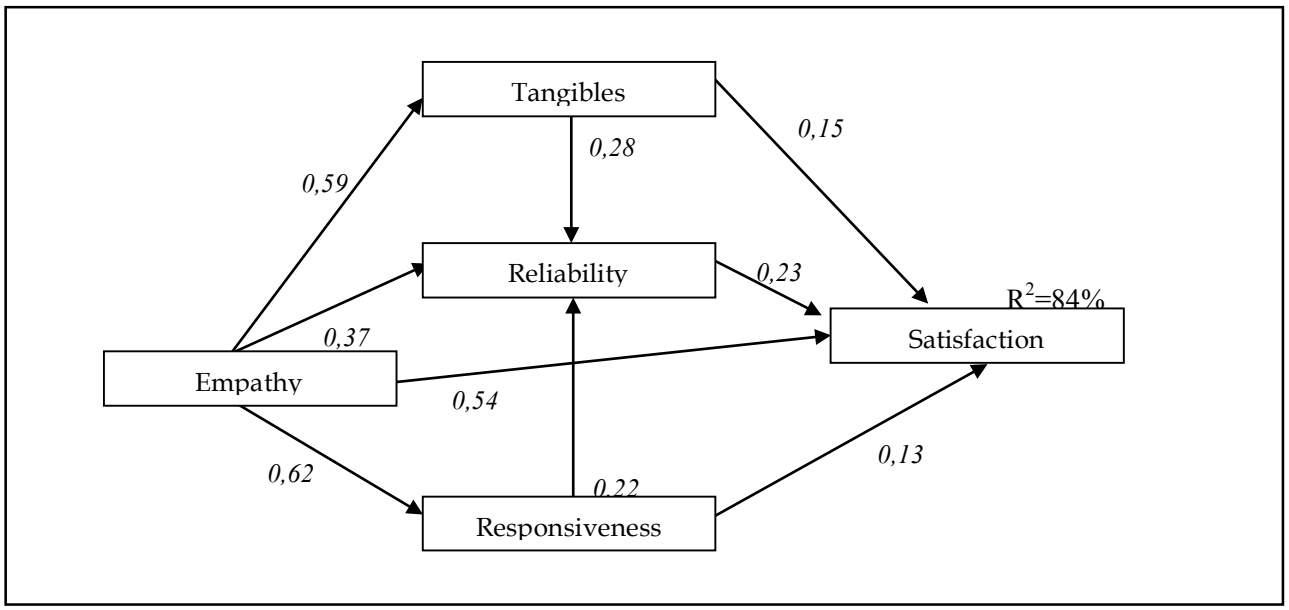

Figure 3. The modified structural model (all paths are statistically significant)

Table 9. Direct, indirect and total effects of factors.

Direct effects				
	Understanding	Responsiveness	Tangible Dimension	Reliability
Responsiveness	,619	,000	,000	,000
Tangible Dimension	,589	,000	,000	,000
Reliability	,374	,221	,281	,000
Satisfaction	,545	,134	,151	,233
Indirect effects				
	Understanding	Responsiveness	Tangible Dimension	Reliability
Responsiveness	,000	,000	,000	,000
Tangible Dimension	,000	,000	,000	,000
Reliability	,303	,000	,000	,000
Satisfaction	,329	,052	,066	,000
	Understanding	Responsiveness	Tangible Dimension	Reliability
Responsiveness	,619	,000	,000	,000
Tangible Dimension	,589	,000	,000	,000
Reliability	,676	,221	,281	,000
Satisfaction	,874	,185	,216	,233

6. Conclusions.

The empirical data emphasized that the performance of the Division of Transportation and Communications in two of the five dimensions of the SERVQUAL model, Responsiveness and Empathy, is absolutely mediocre. On the other hand, the best performance was found in the dimension of Reliability, followed by the dimensions of Tangibles and Security. However, the scores on these dimensions are slightly above the average 7-point Likert scale. Finally, the average of all five dimensions of the SERVQUAL model is slightly above the average of the same scale. The empirical results show that the department's performance is mediocre. This does not appear to create discontent among citizens but certainly, it does not create any satisfaction either.

The empirical results indicate that the Division of Transportation and Communications should focus on improving the following dimensions:

- Attractiveness of facilities.
- Response of the administrative and technical staff to citizen requirements.
- Equipment.
- Public service hours.
- Maintaining a schedule of administrative acts.
- Responding to modern demands and needs of citizens.

In terms of the initial five research hypotheses, only one was not supported by empirical data, while the modified model, based on modification indexes function of AMOS, led to the addition of five new relationships between research factors.

The revised structural model has improved fit and explanatory power (see Figure 3). The factors that were included can explain 84% of the variance of the dependent factor, i.e. Satisfaction from the provided services. The value of the revised research model is associated with the causal relationship established between its factors. The empirical results show that the improvement of Satisfaction will come through the synergistic enhancement of the following four dimensions of the SERVQUAL model:

(a) Empathy (total effect: 0,874).
(b) Reliability (total effect: 0,233).
(c) Tangible (total effect: 0,216).
(d) Responsiveness (total effect: 0,185).

Empathy and Reliability have the strongest overall influence on Satisfaction. So, if an agency, in this case the Division of Transportation and Communications of Kavala, Greece, has limited resources, they should focus to these two dimensions of the SERVQUAL model. Therefore, the following actions are proposed:

- The department should pay special attention to each citizen individually.
- The administrative and technical staff should recognize and fully understand the needs of citizens.
- The administrative and technical staff should provide personalized services, meeting the specific needs of every citizen.
- The interests of citizens should become a priority.
- The working hours should be convenient for citizens.
- The administrative and technical staff should always be polite.
- The administrative and technical staff should respond immediately to the needs and requirements of citizens.
- The administrative and technical staff should be able to create a sense of security to the citizens.
- The administrative and technical staff must have the necessary knowledge and skills for the completion of administrative acts relating to the functions of the service.

Finally, the demographic characteristics of the results pinpoint the following:

- Younger people report being less satisfied with the Department's services.
- People with higher education seem to be less satisfied with the services provided.
- Retirees are more satisfied by the dimensions of Reliability and Empathy while unemployed citizens appear as the least satisfied in the above dimensions.

Limitations of this study include:

- The empirical survey was focused on the Division of Transportation and Communications Department of Kavala, Greece and, therefore, the generalizability of the results is limited.
- The use of self-reported scales for the measurement of the six research factors is an inherent limitation of the employed methodology. Moreover, the paper lacks a longitudinal approach.
- The study has evaluated service quality by measuring customer perceptions. Customer expectations were not included in this study, due to the nature of the services.

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The Determinants of Small and Family Owned Hotel Room Rates

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ABSTRACT
Purpose
Research explores the price determinants of the small and family owned hotels, as a specific segment of the overall hotel industry.
Design/methodology/approach
Hedonic pricing model has been designed to analyse the impact of 19 price determinants on 140 small and family owned hotels in Croatia, leading destination in Southeastern /Mediterranean Europe. The choice of variables follows recent literature, while data have been obtained from an official catalogue of small hotel and family hotel association.
Findings
Findings suggest that (1) the highest impact on small hotel prices is generated by hotel core facilities and attributes (category, wellness facilities, inner pool, elevator, mini bar, internet connection); (2) location same as following variables (children day-care and pets allowed) does not have significant impact on small hotel prices. Additionally, research results demonstrate that there are differences, considering price determinants, between small and family hotels and regular size hotels.
Research limitations/implications
The main limitations of this study are reliance on catalogue data and mostly dummy variables. Despite those shortcomings, findings provide valid and encouraging starting point for any future analysis of differences between hotels market segments. Results are beneficial to researchers and practitioners especially those involved in the strategic planning process in the hotel industry
Originality/value
Despite they are a specific segment of the overall industry, the price determinants of small and family-owned hotels have not been addressed in research literature sufficiently. This research addresses those shortcomings and provides the basis for their future analysis. Furthermore, it explores the impact of two variables, which to our knowledge have not been discussed so far.

1. Introduction

Hotel product is a complex compendium of different public and private attributes that generate potentially uncontrolled impact on its price (Rigall-I-Torrent et al. 2011). Research on price determinants consequently decrease market uncertainty and provide investiture with the desired sense of control. The concept of hotel product and price determinants has been widely explored. Some of the researchers focus more on public (Rigall-I-Torrent and Fluvia, 2007; Chen and Rothschild, 2010; Rigall-I-Torrenta et al. 2011; Schläpfer et al. 2015), while others on private determinants influencing hotel prices (Espinet et al. 2003; Monty and Skidmore, 2003; Thrane, 2005; Hasegawa, 2009). Small and family-owned hotels (S&F), mostly initiated and managed by entrepreneurs who are owner-managers and families who play the significant role in modifying hospitality opportunities, as a predominant in emerging sectors in developing countries, are not widely explored (Getz and Petersen, 2004; Chang, 2011; Banki and Ismail, 2015). This research aims to address that research gap. With the application of hedonic regression model, the influence of 19 different variables on prices of 140 S&F hotels in Croatia has been tested. Following the analysis of the comprehensive set of price determinants, the obtained coefficients have been compared with previously conducted research results for regular size hotels to analyse if there are differences between these two hotel segments. After careful consideration, S&F hotels in Croatia have been chosen since Croatia is leading tourism destination in South-eastern/Mediterranean

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Europe (UNWTO, 2016).

2. Literature review

In spite of the relatively large body of literature, most of the research focuses on experimentation with sample and method rather than with different segment of hotel industry including small and family-owned enterprises. Most recently, Sainaghi (2016) explores the factors influencing hotels performances. He has demonstrated how in Milan, hotel prices are mostly affected by number of rooms, number of employees, number of employees per room, and years since the last refurbishment. Location is proved as a critical determinant of hotel price with potential to compensate disadvantages in the strategic positioning. Pawlicz and Napierala (2016) have made similar conclusions regarding location (vicinity of the city centre and international airport). They are motivating hotel managers to use spatial analysis of room rates when setting up competitive hotel prices. Falk and Hagsten (2015) deliver a new perspective to hotel price – location study. In their research, the nonlinear relationship has proved how the growth of establishments is significantly higher for smaller and younger hotels, while hotels located near city centre exhibit substantially higher growth rates and prices. Lee (2011) explored changes in hotel prices concerning significant indicators of overall economic and tourism development.

With the application of volatile clustering on time series data in Singapur, he establishes evident positive interrelation between hotel prices and total inbound tourism and national economic performance; concluding how neighbouring countries terrorist activities generate potentially harmful, while the volatility of rates positive impacts on hotel room rates. Hung et al. (2010) focus on different price segments with the application of quantile regression analysis. In case of Taiwan, they proved how a number of employees and hotel age significantly influences only high price quantile hotels. In case of New York hotels, Zhang et al. (2011) verify hotel location and room quality as price determinants and highlight variety of attributes that differ significantly among hotel segments. Guizzardi et al. (2017) focus on price trajectories in Milan to show how price levels are explained by a variety of structural determinants, including booking, room quality, service, competition, seasonality and events. Assaf et al. (2017), Masiero et al. (2015) and Corgel et al. (2013) give the shift away from "standard" price determinant analysis. Assaf et al. (2017) focus on identification of critical external forces influencing hotel performances and consequently revenues and prices. By quantifying linkage between education, governmental support, disposable income and tourism arrivals with hotel performances, they have stressed out the need for hotel providers to develop strategies to take cognisance of the key drivers and barriers to enhance hotel performances in changing global tourism sector. Masiero et al. (2015) focus on establishing interrelations between fundamental travel characteristics and price paid to book room. This relatively sociological approach to price determinants in recent literature is followed by emerging papers on other types of accommodation like listings on Airbnb.com in Wang and Nicolau (2017), exploration of methodological approaches like geographically weighted regression in Zhang et al. (2011), and impacts of different macroeconomic aggregates like currency exchange rates in Corgel et al. (2013).

3. Research

3.1. Data and Variables

The data for this study have been taken from official Catalogue published by National Association (2017) of small and family-owned hotels in Croatia. The Catalogue is structured in sixteen paragraphs, containing a list of 140 hotels– all included in this research. Hotels in catalogue represent the homogenous group, which is a precondition for application of hedonic pricing method (HPM) (Thrane, 2005). Most of the hotels in the sample are three or four stars rated; however, differences in categories in contests of S&F hotels are not that substantial. S&F hotels do not have a large number of bedrooms, therefore; they usually focus on service quality by providing some of the facilities that hotels in upper class have. It is expected that only those variables that provide a significant impact on overall hotel service by changing it substantially will be recognised as price determinants. Concerning the variable selection we follow previous studies: Hung et al. (2010) regarding the price and price treatment; Israeli (2002), Chung and Kalnins (2001) and Soler and Gemar (2016) regarding hotel characteristics and their expected impacts; and Thrane (2005) and Schamel (2012) regarding hotel essential characteristics. Considering specifics of S&F offer, the differences between the effect of the indoor and outdoor swimming pool and additional services like children day care and pets allowed in the hotel have been included in this analysis. To our knowledge, latter two variables have not been addressed in research literature so far.

Table 1. Variable and brief descriptions

ATTRIBUTION – CODE	Variable	Description
TEL	Telephone in bedroom	Dummy variable (No=0, Yes=1)
INT	Internet connection	Dummy variable (No=0, Yes=1)
TV	TV in bedroom	Dummy variable (No=0, Yes=1)
SAT TV	Satellite TV in the bedroom	Dummy variable (No=0, Yes=1)
CH	Central heating	Dummy variable (No=0, Yes=1)
AC	Air conditioning	Dummy variable (No=0, Yes=1)
MB	Mini bar in the bedroom	Dummy variable (No=0, Yes=1)
E	Elevator	Dummy variable (No=0, Yes=1)
REST	Restaurant a la carte	Dummy variable (No=0, Yes=1)

CONF	Conference facilities	Dummy variable (No=0, Yes=1)
CHIL	Children day-care	Dummy variable (No=0, Yes=1)
ISWIM	Inner swimming pool	Dummy variable (No=0, Yes=1)
OSWIM	Outside swimming pool	Dummy variable (No=0, Yes=1)
WELLNESS	Wellness centre	Dummy variable (No=0, Yes=1)
PP	Private parking	Dummy variable (No=0, Yes=1)
GP	Garage parking	Dummy variable (No=0, Yes=1)
PET	Pets allowed	Dummy variable (No=0, Yes=1)
BEACH	Hotel beach	Dummy variable (No=0, Yes=1)
CAT	Hotel category	Number of stars
PRICE	Room price	Average room rate for a double bedroom
LnPRICE	lnRoom price	Log price
*LOCATION	Hotel location (region 1-10)	Regions: (1= Istria, 2= Kvarner, 3= Zadar, 4=Šibenik, 5= Split, 6= Dubrovnik, 7= Lika and Karlovac, 8= Zagreb, 9= Central Croatia, 10= Slavonia

3.2 Methodology

HPM – Hedonic Pricing Model for small and family-owned hotels

HPM is revealed preference method seen as a foremost technique for measurement of the effects of different individual characteristics (determinants) on hotel price (Kuminoff et al. 2010; Mandić, 2017). HPM is based on Lancasters (1966) new approach to consumer theory and has been inaugurated by Rosen (1974). Last decade, we witnessed its application in the context of the tourism industry (Thrane, 2005; Rigall-I-Torrent and Fluvia, 2007; Fu Chen and Rothschild, 2010; Kuminoff et al. 2010; Juaneda et al. 2011; Schläpfer et al. 2015).

An appropriate functional form of the regression model has received a lot of attention in the HPM literature (Espinet et al. 2003; Thrane, 2005; Zhang et al. 2011). Most of the researchers use the log-linear form that requires the dependent variable to be logarithm (hotel price). This approach enhances coefficient interpretation as a percentage change in the dependent variable associated with one unit increase in the independent variable (Rigall-I-Torrent et al. 2011; Zhang et al. 2011; Schläpfer et al. 2015). Dummy coefficients do not permit this straightforward interpretation (Thrane, 2005). Therefore, the percentage difference between the analysed variables and the reference category is obtained by taking the antilog of the coefficient minus one (Palmquist, 2005).

The basic hedonic log-linear model to be estimated, incorporating all independent variable is as follow (Baranzinietal. 2010; Schläpfer et al., 2015):

$$(1)\ \ln(P) = \alpha + \beta_1 TEL + \beta_2 INT + \beta_3 TV + \beta_4 SAT\,TV + \beta_5 CH + \beta_6 AC + \beta_7 MB + \beta_8 ELE + \beta_9 REST + \beta_{10} CONF + \beta_{11} CHIL + \beta_{12} ISWIM + \beta_{13} OSWIM + \beta_{14} WELLNESS + \beta_{15} PP + \beta_{16} GP + \beta_{17} PET + \beta_{18} BEACH + \beta_{19} CAT + \varepsilon$$

In this model hotel price (LOGPRICE) is seen as the dependent variable, while all the other variables in Table 1 are independent. The model has been estimated in STATA 13.0.

3. Results

Considering the heterogeneity of a tourism product, it is reasonable to question the impact of different variables on its price. Table 2 lists the log-linear hedonic price model analytical results. The variables *phone (PH)* and *television (TV)* have been excluded from the sample (all hotels have them; therefore they cannot be seen as variables in the econometric sense). Mean VIF value of model with two excluded variables was 1.33, indicating that multicollinearity can be eliminated as a problem (Hung et al. 2010; Schläpfer, et al. 2015). Visual inspection of rvf-plot, Breusch-Pagan (Prob> chi2=0.2247) and White's test (Prob> chi2=0.4810) results eliminate heteroscedasticity as a problem in this regression model (Williams, 2015). *R-squared* (R=0, 44) value suggest that model is well fitted, while *p*-value indicates that model is significant (p =, 000).

Table 2. Log-linear Hedonic price model estimate for a small hotel room price

Ln Room price	Coefficients	Interpretation (signif. variable)	Standard Error	t	P>t
Hotel location	-0.013		.014169	-0.94	0.349
Hotel category	**0.284**	**32.90 %**	**.0587225**	**4.84**	**0.000**
Internet connection	**0.248**	**28.24%**	**.1293113**	**1.92**	**0.056**
Satellite TV in bedroom	0.231		.2424667	0.96	0.341
Central heating	0.019		.1058059	0.19	0.853
Air conditioning	0.192		.1340962	1.44	0.153
Mini bar in bedroom	**0.342**	**40.78%**	**.0889516**	**3.85**	0.**000**
Elevator	**0.250**	**28.49%**	**.0786191**	**3.19**	0.**002**
Restaurant a la carte	-0.008		.1075324	-0.08	0.938
Conference facilities	0.061		.0821079	0.75	0.456

Children day-care	0.026		.1093545	0.24	0.812
Inner swimming pool	**0.215**	**24.08%**	**.1196775**	**1.80**	**0.074**
Outside swimming pool	0.145		.1050962	1.38	0.170
Wellness centre	**0.350**	**41.97%**	**.0869336**	**4.03**	**0.000**
Private parking	**-0.200**	**-18.00%**	**.1145583**	**-1.75**	**0.083**
Garage parking	-0.007		.1058172	-0.07	0.942
Pets allowed	-0.041		.0818185	-0.51	0.610
Hotel beach	0.029		.0918754	0.32	0.747
_cons	3.609		.3398714	10.62	0.000
Location: reg. Dalmatia	0.0742		.1083254	0.69	0.494
Location: region Istria	0.098		.1189711	0.83	0.409
_cons	4.352		.0923802	47.11	0.000

Source: Conducted research in STATA 13.0.

Results presented in Table 2 indicate that seven variables generate the significant impact on S&F hotel prices. Four variables influence hotel prices within a confidence level of 5% (*hotel category*, *mini bar in a bedroom*, *elevator*, *wellness centre*), additionally, three variables influence within a confidence level of 10% (*internet connection*, *inner swimming pool*, *private parking*). All variables, except *private parking*, have a positive coefficient. Variables are tested individually, while constant is given for model in which all variables have been tested together. Interpretation of significant factors considers the calculation of its antilogarithmic value $\left(e^{\beta coef} - 1\right) \cdot 100$ (Rigall-I-Torrent et al. 2011).

Research results suggest that in case of small and family-owned hotels, the most substantial impact is generated by hotel core facilities that potentially determinate whole hotel product including *category* (32,90%) and *wellness facilities* (41,97%). Hotel category has previously been proved as *regular size hotel* price determinate (Thrane, 2005; Schmel, 2012). In that manner, Thrane (2005) indicate how hotel category mediates the effects of the other variables, while in a case of Schmel (2012) it accounts for 29,9% of the hotel price. Current findings support those conclusions, i.e. additional hotel star means hotels can charge up to 32,9% higher rates. *Wellness facilities*, same as variable *inner pool* both significantly influence S&F hotel prices.

Currently, there are no available coefficients on those variables for regular hotels for proper comparisons. Findings suggest that S&F hotels with *wellness centre* can charge up to 42% higher prices while those with *an inner pool* up to 24,08% higher hotel price. The results for variable *outside swimming pool* were not significant in case of S&F hotels, same as in a matter of regular size hotels (Chen and Rothschild, 2010). Latter supports the conclusions how in a case of S&F hotels; the price is primary driven by those services and facilities which make hotel unique and distinguished on the market. *The minibar* seems to be significant price determinant in a case of both hotel segments (Chen and Rothschild, 2010; Schmel, 2012), however, coefficient significantly diverse. In that manner, S&F hotels with mini bar can charge up to 40,78% higher prices, while regular size hotel can charge up to 18,64% higher prices (Schmel, 2012).

4. Conclusion

Provision of stable *internet connection* significantly and almost equally influences prices in case of both hotel segments (regular hotels, i.e. 23% - Chen and Rothschild, 2010; Schmel, 2012. The *elevator* in an S&F hotel allows, on average, hotel managers to charge 28,49% higher prices, while the coefficient for regular hotels could not be obtained.

Hotel *location*, *regarding the region* where the hotel is located, has not proved to be price determinant in this sample. However, reasons for that can be numerous. In this research, we have tested if there are differences in hotel prices depending on a region in which hotel is located, while results may be different if the hotel's location regarding its distance to town centre was analysed. In a case of regular size hotels, numerous studies have identified the position as one of the significant determinants of hotel price (Israeli, 2002; Chen and Rothschild, 2010). Finally, new variables that have not been previously addressed in the research literature (*children day-care*, *pets allowed)* have not proved to have the significant impact on S&F hotel prices.

Despite the limited number of hotels included in this research (n=140), findings provide valid conclusions regarding small and family owned hotel price determinants. Moreover, study additionally explores and analyses the differences between small and family owned hotels and regular size hotels by comparing the empirical research results with previously published research results. Empirical findings have demonstrated how there are differences in the impact of statistically significant variables between S&F and regular size hotels. Moreover, the coefficient for some of the significant variables in case of S&F hotels (inner swimming pool and wellness) could not be obtained for regular size hotels to conduct the comparison.

Additionally, in this research, new variables have been included, that to our knowledge has not been addressed so far. In that manner, research provides valid and encouraging starting point for any future analysis of differences between hotel market segments.

The main limitations of this study are reliance on (1) catalogue data and (2) mostly used dummy variables. Catalogue data may be a most convenient way of gathering information, but due to continuous changes in the market especially in the context of hotel price it is recommended, if possible, to collect real-time data from global distribution systems like Booking.com or Expedia.com.

Concerning dummy variables, there is space for improvement especially in the context of treatment of location and other specific elements of hotel offer that differentiate small hotels from other segments in Industry (like a wine cellar, aspects of cultural heritage etc.). Finally, any future research should focus on: (1) Determining more specific attributes of location, (2) Capturing real-time data on hotels and prices, and (2) Expanding the number of hotels included in the sample.

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Confronting Pharmaceutical Products Selection Criteria: A comparative survey of consumers in Greece, France and Bulgaria

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ABSTRACT

Purpose

The survey at hand explores the factors describing the consumers' profile in the pharmaceutical markets of three European nations

Design/methodology/approach

A primary research was carried out using questionnaires with a sample of citizens (pharmacy customers) in the capital of each nation and aiming to to determine the criteria motivating the customer/patient to purchase particular pharmaceutical preparations and the ultimate goal is to get an objective picture of the buying behavior of Greek, French and Bulgarian consumers

Findings

Behavioral motives appear to be affected by health scientists, price, advertising, alternative available options and "public opinion". Moreover, it appears that customers differ from one nation to the other but also between themselves, both with respect to their choices, as well as their special mode of action. Such individuality mainly results from the different levels of education and basic income of each pharmaceutical products consumer. Comparative study reveals that Frenchmen, Greeks and Bulgarians tend to agree in some common behavioral trends, yet substantially differ in issues of major importance

Research limitations/implications

Any research on the quantitative measurement of perceptions has inherent limitations as it rests on the subjective views and attitudes of the respondents. Additionally, some obstacles emerged in the course of the survey and in regard to the filling-out of the questionnaires in all three countries, thus account must be taken of the following limitations when interpreting the findings: (1) lack of detailed knowledge of the legislative framework for the supply of pharmaceutical products in Bulgaria and France; (2) rapid changes in external factors (legal-political-social) in the case of Greece; (3) inability of personal contact with every respondent in order to get a first-hand view of their "pharmaceutical behavior" and education, and (4) time and resources limitations dictated that the survey be carried out with respect to a very limited and small sample compared to the total population of Athens, Paris and Sofia.

Originality/value

This research effort was motivated by former researches relating to the consumers of pharmaceutical products, the knowledge gap that was created with respect to this issue during the years of the financial and more general crisis and the continuous changes in the health system of Greece. The idea for a comparative survey then rested on the practical and substantial comparison of consumers from Greece and those from the two other nations. It was simultaneously reinforced by the fact that no other similar research effort (for Greece-France-Bulgaria) has been published in recent years

1. Introduction

The final demand for products and services is shaped by consumers as they attempt to cater for and cover various needs and desires on a set and given budget. Consequently, consumers differ both with respect to their purchasing abilities and preferences, as well as their purchasing decisions and behaviors. Especially in the medical-pharmaceutical field, customers/patients are

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those who determine the success or failure of the health system by virtue of their demands and attitudes. At the same time, the pharmaceutical sector faces major issues and difficulties as the executives of the sector strive to demonstrate the real value of their products to potential buyers (Gardner, 2009). According to a survey by the Economist Intelligence-Unit Limited and the relevant report of Quintiles 2012 "*The value challenge*", with the participation of 399 senior executives from the field of biosciences, the bio-pharmaceutical industry has fallen victim of its own success, since the effectiveness of existing pharmaceutical treatments make the effective introduction of newer technology medicines very difficult. According to the aforementioned survey, there are three pillars that call for attention by means of the changes to the pharmaceutical sector (The Economist, 2012):

- Understanding market needs: Insurance firms, the pharmaceutical industry, patients and regulatory authorities all interpret the value of a medicine differently. The pharmaceutical sector must establish a collaboration and dialogue framework with the other key actors of the market so as to be able to collect all necessary information and shape new strategies that will address the new needs.
- A Research and Development – R&D department oriented towards value: The intra-company collaboration between marketing and R&D must become closer. The key concern of all departments is to address the needs of patients and their deeply-rooted desires. The marketing department must collect and analyze data and offer findings and inferred knowledge to the R&D department, so that the latter may steer research in the right direction.
- A market-focused marketing strategy: The value of a medicine is not what we used to allude to until now, namely that it is "an effective medicine that has been clinically tested". The real value of a medicine is shaped where the product meets patients' needs.

Pharmaceutical marketing is a business activity where advertising or some other means of promotion are aimed to boost the sales of pharmaceutical products or medicines (Finlayson and Mullner, 2005). It is defined as the set of activities that target the selection, circulation, prescription and proper use of pharmaceutical products destined for human use. Marketing of pharmaceutical products has a social nature (distribution of preparations suitable to treat diseases) and in recent years has seen great amounts of money being invested towards its development (Smith, 1991; Rollins and Perri, 2014). The authors of this paper feel that due to its two key characteristics cited above and since it regards and involves specialized scientists, there is an imperative need for a deeper exploration and investigation; a need that is fast becoming pressing in recent years, since the sector does not simply undergo a transitional stage, but faces a major crisis.

The sales attained by pharmaceutical marketing are indirect to third parties, –thus, they do not intervene in their choice– through the prescription and/or

The objective of this paper is to determine the criteria that motivate a customer/patient to purchase specific pharmaceutical preparations with the ultimate objective being to furnish an objective picture of the purchasing behavior of Greek, French and Bulgarian consumers. The selected countries are developed ones – all being members of the European Union–, still with different living standards and a different UN Human Development Index. With the aim to deduct these criteria a primary research was carried out using questionnaires with a sample of citizens (pharmacy customers) in the capital of each nation and aiming to answer the following research questions:

- What constitutes the basis (financial, medical, etc.) for a modern European consumer's selection of pharmaceutical products?
- What is the profile of Greek, Bulgarian and French consumers in the medicine market and how do these profiles differ from one another?
- What affects a consumer's final decision for choosing pharmaceutical products?
- Which are the purchase-use intentions of consumers with respect to the products of a pharmacy, based on possible financial and technological developments?

This research effort was motivated by previous research relating to consumers of pharmaceutical products, the knowledge gap that was created with respect to this issue during the years of the financial, as well as the more general crisis in Greece and continuous changes to the latter's health system. The idea for a comparative survey then rested on the practical and substantial comparison of consumers from Greece and those from the two other countries. It was simultaneously reinforced by the fact that no other similar research effort (for Greece-France-Bulgaria) has been published in recent years.

2. Pharmaceutical marketing

Pharmaceutical marketing is shaped and practiced exclusively by pharmaceutical companies (Rollins and Perri, 2014) and is addressed to the medical field and the scientists who are legally authorized to prescribe or administer pharmaceutical products and to the consumers of such products. It satisfies the real, present and pressing needs for reliable and well documented scientific informing, offering precise knowledge aimed to sell pharmaceutical products (Dickov and Kuzman, 2011). It is principally practiced by means of human communication and contact. Those authorized to prescribe and administer medicines are briefed by pharmaceutical representatives (pharma reps), individuals who are adequately trained and skilled to provide such information. Other means of communication may be auxiliary employed, depending on the resourcefulness of each pharmaceutical company, under the condition, however, that they do not run against the Code of Conduct of pharmaceutical marketing and the relevant provisions in the Law.
administration of the pharmaceutical products by authorized professionals. To attain the sales in question, pharmaceutical marketing does not employ methods for

the creation of needs, but, in an ideal environment, will exclusively and solely address the satisfaction of real and material needs relating to human health. To succeed in this objective, pharmaceutical marketing addresses the motive of scientific research and inquiry that distinguishes the medical world and the other scientists participating in the distribution of pharmaceutical products. To this end, it utilizes the documented scientific information available for and about the products (Rollins and Perri, 2014).

2.1 Pharmaceutical marketing mix

The marketing mix comprises of a set of decisions that must be taken in order for the pharmaceutical marketing strategy and, consequently, the placement strategy for the product to be implemented and for the objectives to be attained. In the basic pharmaceutical marketing mix, the 4Ps (Product, Price, Place, Promotion) can be construed as follows (Gardner, 2009):

- Product: all pharmaceutical preparations must respond to the needs and desires of their end consumers/users. This regards and relates to characteristics such as brand name, the preparation's effectiveness, the product's features, packaging, size, colour, taste and smell.
- Price: the product prices must be competitive in order to for them to make the medicines' lists or hospital supplies and to be at a price consumers are prepared to pay, when the medicines are not covered by health insurance organizations. Pricing of pharmaceutical preparations is not flexible, since it is usually legislated. The designation of the price for medicines depends on the business strategy of the enterprise, government policy in the health sector, the compensation policy of the insurance funds and the regulative framework of EU.
- Place: The distribution process must ensure adequate stocking of the market with medicines, so that any citizen will be able to procure the medicines they may need at the time they need them, from easily accessible points of sale. It needs an ever-increasing number of doctors who will prescribe the preparations from locations that are easily accessible by the users of said products. In this respect the pharmaceutical sector is inflexible due to the regulative framework for the prescription and distribution of the products at specialized points: hospitals, health centers and country practices.
- Promotion: the media employed for the promotion of medicines to doctors are: scientific journals, advertising leaflets, the internet, mass media. Until recently, scientific conferences and meetings were a reference point for the informing and promotion of pharmaceutical products. However, this role has now been taken over by e-detailing, that is the form of medical informing and simultaneously promotion realized via the internet or with the help of other modern digital media (Giareniou, 2012).

2.2 Investigation of behavior per country

In broad lines, one can identify roughly four different pharmacy systems on the global scale. The Scandinavian type of pharmacies regards large pharmacies serving 10,000-18,000 people and focusing on the sale of medicines. In Southern Europe and in France and Belgium one finds very small pharmacies, serving approximately 2,000-2,500 customers and also selling parapharmaceutical products and cosmetics. Chemists, or Anglo-American pharmacies are common in the UK, Ireland as well as the US and Australia and sell a wide range of non-medical products while serving approximately 3,500 people. Finally, there are the pharmacies one finds in Central and Eastern Europe that focus on the sale of all goods for health treatment and serve approximately 3,000-5,000 people.

In Europe the notion of a pharmacy as a shop exclusively for medicines is uncommon, save for Great Britain (Grund and Vartdal, 2000; Hepler and Strand, 1990). With respect to consumer behavior and the special characteristics of demand, these are shaped by different factors. A common denominator is the human factor. The increased demands of pharmaceutical marketing with respect to the reliability and accuracy of the handling of scientific information and data impose the need for the Human Resources performing this adopt and be subject to commensurate requirements. The personnel that designs and implements pharmaceutical marketing must possess scientific training in the field of medical-pharmaceutical (health) sciences, a fact considered self-evident in the case of similar scientific sectors. These professionals must, however, besides their formal qualifications, which are in many cases further consolidated by relevant legislative provisions, also possess professional skillfulness and exhibit responsibility and dedication to moral values (EEFAM, 2014).

Besides the knowledge secured by their scientific education, pharmaceutical representatives are also called to continuously attend to their training, especially in the field of their professional activities, something which is also a fixed and standing obligation of the Pharma Company for which they work. Communication between pharma reps and those scientists who prescribe or/and administer pharmaceutical products must be limited to the context dictated by their mutually accepted moral principles, as well as the need to protect public health. The transfer of scientific information from pharma reps to the aforementioned professionals needs to be performed with accuracy and responsibility, without exaggeration or distortions of the truth and with arguments that are strictly based on the data derived from the literature. It is prohibited for a pharma rep to make insinuations or defamatory remarks against other companies, scientists, state officials, institutions, etc.

The executives of pharmaceutical marketing (chief product managers, marketing directors, etc.) need to possess or acquire specialized knowledge in order to plan the activities of the Pharmaceutical Company so

that it will comply with the principles of the Code of Ethics and the relevant provisions in the Law (EEFAM, 2014). The table below outlines the principal characteristics that shape demand in the market of each one of the countries in our survey.

Table 1. Characteristics of the demand for pharmaceutical products in the three countries under assessment

Country	Characteristics of demand
Bulgaria	It has one of the highest shares of pharmaceutical expenses in Europe as a percentage of the total health cost (Rohova et al. 2013). This is a common characteristic amongst EU countries with lower incomes, due to the high levels of prices. Local businesses appear to have a greater say in the establishment of the list of medicines. Producers frequently establish a distribution of medicines using multiple distribution channels. Additionally, exclusive distribution rights are offered as consideration to wholesalers promising to include the preparations by specific manufacturers on central pharmacy lists and across all hospitals (Andreev, 2004). It is evident that the course to full accession to the EU is expected to intensify the competitive pressure from local and multi-national pharmaceutical industries (Meagher et al. 2005).
Greece	The drug and health sectors exhibit particularities. Due to the imperfections of the pharmaceutical products market, demand is not driven by the patient (end user), information between doctors and patients is asymmetrical, while the percentage of participation of the patient towards the cost of the medicine renders the patient impervious to price concerns. The dominant negotiating role in the medicines sector is played by doctors, while the role of pharmacists and pharmaceutical wholesalers is intermediary and implementary (Platis et al., 2009).
France	France's population ranks amongst the largest consumers of pharmaceutical products. This fact is further reinforced by the high level of health expenses, especially in an era where the public system is challenged by long-term deficit which are expected to further rise due to the current economic recession. The French health system can be characterized as the most liberal health system in the world, with respect to the autonomy of patients, as well as doctors, but especially the first ones to drive demand to a major extend (Couffinhal and Perronnin, 2004). A series of measures have been adopted in the last decade to improve and limit doctor prescription practices, as well as the patient consuming habits (Smart Pharma Consulting, 2014).

3. Synthesizing the literature review for the research questions

In this section we discuss the literature review for the four research questions.

Which is the basis (financial, medical, etc.) for a contemporary European consumer to select any pharmaceutical product?

The financial state of consumers plays a key role in the selection of a pharmaceutical product, principally affecting the
selection of pharmaceutical preparations. Those with low to medium incomes will chose the cheapest option and the lowest possible quantity. Others with high incomes are mostly interested in the quantity of their purchases. With respect to customer education and access to direct and immediate information, the more educated customers act rationally and seek the best possible solution (based on other factors as well), while they can more easily detect "targeted product promotion", are more open to generic drugs, more accepting of newly entrant cosmetics brands.

Moreover, the perceived value of a preparation (reputation, image, effectiveness, advertising) is also of major importance for such a choice. According to the research by company Scott Levin Ass, it was ascertained that consumers who can choose between a multitude of products can more easily procure those manufactured by better-known pharmaceutical companies. Thus, they trust the experience, reputation and course over time of the preparations marketed by the "giants" of the sector. At the same time, a small percentage of respondents to a survey suggested that they choose based on the effectiveness of each product and not the reputation of the manufacturing company (Fill and Dimopoulou, 1999). As a general point, it has been proven that good corporate image positively affects consumer habits. Simultaneously, the packaging of the drug is not deemed to be as important by consumers.

They believe that information cited on the external packaging of pharmaceutical preparations mainly exist for reasons relating to legislation and not to facilitate them (Padisson and Olsen, 2008). With respect to the demographic factors, the findings of the surveys carried out by Stephens and Johnson (2000) have shown that younger people base their decision to buy an OTC drug, on the information offered by their friends and family, due to their lack of experience in using and purchasing drugs. Parallel to this, family status affects the kind of products someone procures. Thus, a bachelor will choose differently from a single woman (with respect to beauty products, food supplements and metabolism improvements), while both will make different choices than those by parents (that mainly

relate to baby-children products). Finally, sex is associated with the footfall for pharmacies, with women being more frequent customers, a fact manifest across age groups, while men are not as frequent although they too are consumers of pharmaceutical products (Campo et al. 2005; Smith, 2009; Degeratu et al. 2000).

What is the profile of Greek, Bulgarian and French consumers in the medicine market and how different are these profiles?

Consumers in Greece in recent years are better informed on issues relating to their health. The use of the internet has greatly contributed towards this, as they devote considerable time surfing the relevant sites. The continuous search for new healing methods that go beyond chemical preparations may lead them, on the one hand, to consult their physician, but also to listen to the view of the pharmacist or views shared on the benefits of organic-based treatments. They are driven to nature by the economic crisis and their inability to pay frequent visits to the physician for minor ailments.

With respect to France, a survey carried out in the country has shown that consumers need advice and guidance, but the pharmacists themselves are frequently in need of updating their knowledge and even their habits (Ragot et al., 2005; Foppe and Schulz, 2006). More specifically and with respect to generic products, in a survey carried out in autumn 2014 for the National Union of Health Professionals, 85% of Frenchmen stated that they are ready to change their custom and start taking generic drugs. It is generally noted that they observe their doctor's orders to the letter and pay much attention to their good health and good looks. Thus, they purchase several high quality and high end medicines, parapharmaceutical products and cosmetics. However, due to the redistribution of wealth, there is a seven-year gap in the life expectancy of the lower, compared to the upper income groups in France, which may be negatively affected by the economic recession (Elbaum, 2007a). Higher income individuals are three times less likely to be in very bad health compared to those of lower and lowest income (Elbaum, 2007b; De Looper and Lafortune, 2009). There is already a concern that the amounts not covered by the VHI and which relate to visits to doctors, auxiliary care, transfer and prescription of medicines act determinatively to the principle of universal access to health care (Chevreul et al., 2010).

Due to the economic recession plaguing their nation, Bulgarian consumers exclusively rest on their centralized insurance system to cover part of the expenditure for the purchase of medicines. They even need someone to facilitate (as a contact – connection and against some form of consideration) their being monitored by contracted doctors. This renders treatment even more time and resource consuming for the patient. One must, therefore, not be surprised by the high tendency for self-healing and alternative medicine (Delcheva, 2006; Balabanova, 2001; Ensor and Savelyeva, 1998; Delcheva 1999; Balabano and McKee, 2002). In recent years and with the evolution of the internet and their close relations with Greeks, Bulgarians have become better informed and begin to form a semblance of a consuming attitude towards pharmaceutical products. Consumers in all three nations are principally briefed by their physician with respect to the products they purchase from a pharmacy. They are also informed, to a major extend, by the pharmacist. Advertisements do not appear to affect their choices, while French consumers, against both Greeks and Bulgarians, exhibit a tendency to take into account information from various sources and mainly from friends and family on alternative treatments. Bulgarians and Greeks place little weight on such, as well as advertisements and other sources. The criteria for choosing pharmaceutical products by modern age consumers appear to fall under the term medical more than any other categoty.

Who affect a consumer's final decision for selecting pharmaceutical products?

The information being taken into account by consumers before they proceed with the purchase of a pharmaceutical product originate from various sources (Padisson and Olsen, 2008), both internal and external. *Internal sources of information* originate from the past experience of using a particular medicine and the general knowledge with respect to them that consumers have. The acquired experience has a materially significant effect on the preference for certain brands. *External sources* comprise of: Pharmacists, Doctors, interpersonal relations (friends, family), Information on the reputation of pharmaceutical companies (image, packaging), Advertising, Internet (pharma companies' websites, on-line drugstores) and Demographics.

Despite the fact that some consumers rest on their experience from past use of pharmacy products, it is the pharmacists themselves who play a key role in offering advice and information useful for the proper selection and use of pharmaceutical products. Their advice is deemed most useful by their customers. In accordance with a research carried out, following the pharmacist's intervention several consumers purchased a different product than the one they intended to purchase (Nichol et al., 1992; Wazaify et al., 2005).

Although clearly unreliable sources of information, as they lack the required knowledge, friends and family are always the most "directly accessible source of trust" for their medical-pharmaceutical views. The findings of the research by Stephens and Johnson (2000) have shown that young people base their decision to buy an OTC drug, on the information offered by their friends and family, due to their lack of experience in using and purchasing drugs.

According to the research by company Scott Levin Ass, it was ascertained that consumers who can choose between a multitude of products, can more easily procure those manufactured by better known pharmaceutical companies. (Fill and Dimopoulou, 1999). According to Holden, author of the book *Marketing Communications in the Pharmaceutical Industry* (1992), "competition in the industry is intense and no-one objects that many of the drugs are unique".

Consumers are informed on most of the pharmaceutical products by the mass media. In the research by Paddison and Olsen (2008), respondents

suggested that advertising did not affect their choice in one category of drugs, *painkillers*, while its contribution was limited to the reinforcement of their purchasing choice. Additionally, the survey by Stephens and Johnson (2000) has shown that TV ads have a minimal effect on consumer behavior, both young and old, and even less so today where the TV has been replaced by the PC. Some researchers (Kanavoor et al., 1997) stress the value of advertisement as a source of information for pharmaceutical products, while others (Singler et al., 2000) advocate that advertising contributes more to the reinforcement of consumers' decision than their briefing. In the model, however, developed by Milgrom and Robert (1986), the reputation of a product with respect to its quality, may be transmitted to consumers using price, initially, and then advertising as media.

Internet is for the medical-pharmaceutical world, a medium for communication, interaction, informing and customers support, as much as it is a medium for direct sales or the facilitation thereof. Its use by the pharmaceutical companies principally focuses on the establishment and maintenance of relations with patients and health professionals. In addition, pharma companies have created websites that cater, besides advertising, also for the informing of the public.

Overall, as Eysenbach (2001) cites, the internet constitutes, in general, of a new way of thinking, a new attitude and the commitment of individuals and organizations for networking activities aimed to the overall improvement of health care by utilizing new IT and communication technologies. In practice, Paddison and Olsen (2008) distinguished those patients who reported that they visited the websites of pharma companies to seek more information on various pharmaceutical products. However, respondents testified that they faced difficulties in understanding all the information provided and have doubts as to the objectivity of said information. It is in general reported that 80% of adult Internet users search for health-related information and offers on-line.

Finally, with respect to their demographic features, consumer age differentiates the sources of information that affect them and the characteristics they take into account for evaluating medicines (prescribed or not), cosmetics and food supplements. Older consumers place more trust on health professionals and do not themselves decide on choosing any of these products. What is more of interest to them is the reliability and safety of the drug. Young people, on the other hand, rest on the information they are given by their friends and family, since they lack experience from using similar products. Price is the determinant factor for them (especially for today's youth who are plagued by unemployment), while advertising does not appear to influence the decision of both the young and the old (Stephens and Johnson, 2000). With respect to the demographic factor of income, in recent years an unprecedented decrease of income took place, especially in Greece, to the extent that the inflexibility for pharmaceutical products abnormally decreased. Consumers on low to medium incomes choose the cheapest option and lowest possible quantity of pharmaceutical product. With respect to the education and access to informing, the better educated customers act rationally, search for the best possible option (based on other factors as well), can more easily detect "targeted product promotion", are more open to generic medicines, more accepting of new entrants in the cosmetics field. Family status affect the type of products brought, same as in the case of sex, while the latter also relates to the frequency of visits, with women being more frequent customers, while men pay less visits to the pharmacy (Campo et al., 2005; Smith, 2009; Degeratu et al., 2000).

Which are the purchase-use intentions of consumers with respect to the products of a pharmacy, based on possible financial and technological developments?

As represented, consumer health in most of the developing countries in Europe is usually interwoven with their financial status. Based on economic developments, it is certain that the quality of their health, and consequently their quality of life, will improve if the economy of the country improves. Then, consumers will no longer be forced to strictly buy generics, while with respect to parapharmaceutical and cosmetic products, consumer will use what they deem to be good and what is recommended to them without cost factoring in the equation. Should, however, a greater recession ensue, as it did in Greece, preparations will continue to be prescribed based on their active ingredient and then customers will choose only the cheapest product while they may stray away from making the choice at all.

Consumption of parapharmaceutical and cosmetic products will further decrease, while the sales of 'natural' products increase. Technological developments act in parallel to this general climate, since an increasing number of pharmacies appear to also have an internet presence, with many exclusive specials and offers, due to the intense competition. In any case, consumer will attempt to exploit the advent of technology for their benefit, choosing to make on-line purchases where they can immediately compare prices, preparations and be exhaustively informed. Their orders of pharmacy products are thus facilitated and direct and, depending on the economic climate, will focus on higher or lower price levels.

4. Research methodology

This paper aims to investigate the factors outlining the profile of consumers in the pharmaceutical markets of three countries. A primary research was undertaken, using questionnaires filled out by a sample of pharmacy customers in the capitals of the countries. Regarding the sample of the survey, it was a convenience sample that comprised of the customers of the pharmacies who agreed to fill the questionnaire in the presence of a researcher. Sampling was carried out during normal business hours. The acceptable number of answers, as well as the target for each nation was set to 50 respondents (with a 95% confidence level and 14% range

of standard error, for 1,000 residents at a commercial distance from the selected pharmacies). The total sample, therefore, comprised of 450 European citizens, customers of pharmacies. The pharmacies were randomly selected in the three capitals (Athens, Paris, Sofia) where sampling took place. The questionnaire was handed out with the necessary clarifications by the researchers, after the pharmacist has given his/her consent for the research to be carried out on their premises.

A preliminary research was initially carried out, by distributing 10 questionnaires in Greece. After they were collected, ambiguities, unclear points that confused respondents, omissions and errors in the formulation and wording of the questions were ascertained and, following their correction, the final questionnaires were translated to Bulgarian and French.

The proposed method is as follows: An individual fluent in Bulgarian translates the questionnaire to this language. A second individual, from Bulgaria, is given the translated text and translates it back to Greek. In case there are divergences in the translation, a third stage takes place, where such discrepancies are surveyed and addressed, the opinion and views of each contributing side being taken into account. The same procedure is followed for French. This process begun in November 2016 and was completed in January 2017, with a total of 150 questionnaires being filled and collected for each country.

The questionnaire for this survey comprises of two parts. The first part includes 7 questions describing the qualitative characteristics of the respondents, which are grouped as demographic data, while the second part includes 10 questions on the consumer profile of the respondent. Pairwise Comparisons were also employed in the descriptive statistical analysis, to investigate statistical differences per country.

4.1 Analysis of the answers to the first part: Demographic Characteristics

The table below outlines the sample's Demographic Characteristics:

Table 2. Profile – demographic characteristics of the sample

	Bulgaria	**France**	**Greece**
Sex (%)			
Female	52	66	68
Male	48	34	32
Age (%)			
19-34	26	26	22
35-49	34	10	24
50-64	28	32	28
>65	12	32	26
Education (%)			
Secondary	54	28	42
Tertiary	46	72	58
Employment (%)			
Private sector	30	40	52
Public sector	30	18	10
Pensioner	10	36	24
Unemployed	30	6	14
Annual Income (%)			
>10,000 Euro	52	27	52
10,000-20,000	48	23	44
>20,000		50	4
Family Status (%)			
Single	44	46	46
Married	54	42	30
With underage children	12	12	14
Long-term pharmaceutical treatment (%)			
Yes	60	72	60
No	40	28	40

4. 2 Answers to the second part: Behavior Analysis

Source of informing

Initially and with respect to the source of the information for the medicine market, the overwhelming majority (Greece – 56%, Bulgaria – 66%, France – 42%) of customers are informed by their doctor and then by their pharmacist for the products bought there. Advertising scores very low with respect to their influence (2%-8%-2% respectively). The parameter of "source of information" exhibits statistically significant differences (p=0,026), attributable, to a large extent, to the differences between France and Bulgaria, while there are no differences between Bulgaria and Greece in this respect. French consumers exhibit the greatest

variability in their responses, covering all available options, a particularity that is not reducible to their educational or financial level, but may, rather, be indicative of their idiosyncrasy.

Frequency of visits
In the question relating to the number of visits, to make purchases, per month, i.e. the frequency by which customers visit the pharmacy, 1 in 2 French consumers visits a pharmacy 1-2 times a month, while for Greece the rate is 8-10 times (a very high rate), and Bulgarian consumers visit their pharmacy 2-6 times. Generally, the overall frequency is statistically significant (p = 0.000).

Amount of money spend
The amount of money spent by customers at the pharmacy for purchases per month exhibits extreme values for Greece (upper extreme values ranging between 150 and 260 €) and Bulgaria (lowest value 10 and highest 75 €, the frequency of visits is also taken into account) while overall the difference between the countries is statistically significant (p=0,002). Bulgarian consumers exhibit a different behavior than their French and Greek peers, spending more money per month in the pharmacy for various purchases (the analysis does not take account of extreme values).
In all three countries, the majority of consumers appear to spend from 0-50€/month at the pharmacy. More specifically, with respect to the frequency of visits and the amount of money spent on average in a month, we may observe (excluding extreme values) that: Greek and French consumers visit the pharmacy two times per month on average, while Bulgarians visit it three times on average. Consumers in Bulgaria spend the most (33€) followed by those in Greece (26€) and, lastly, the ones in France (21€). Nevertheless, if one looks at the average expenditure per visit to the pharmacy this ranking is reversed. That being said, Greek consumers spend an average of 13€ per visit, with Bulgarians ranking second at 11€ while Frenchmen are third with an average of 10,5€ spend per visit.

Type of medicine (prescribed or not)
The vast majority in all three countries purchases medicines on prescription. This parameter does not exhibit statistically significant differences between countries (p=0,517). Ninety percent of Greek consumers stated that they purchase prescribed medicines, with French consumers ranking second (86%) and Bulgarians third (82%). With respect to the choices made by consumers for medicines treating the same ailment, no statistically significant difference was observed for the factor that affects it (p=0,760). The overwhelming majority of consumers in all three countries (73,33% for Greece, 86,05% for Bulgaria and 79,07% for France) buys the medicine recommended to them (prescribed by the doctor). A second factor quantitatively affecting the choice of Greek consumers is the manufacturing company, the product's reputation for Bulgarian ones and price for French consumers. Product advertising does not appear to have any effect, with zero percentages across all countries. In parallel, the company does not enter the equation in Bulgaria, and the same holds for reputation and French consumers.

Vitamins and /or food supplements
The majority of respondents in all three countries answered that they do not purchase vitamins and/or food supplements. This parameter does not exhibit statistically significant differences between countries (p=0,089). In Greece, 44% answered that they buy such products, with French consumers ranking second with a percentage of 40% while Bulgarians are last with a percentage of just 24%. Although few Bulgarians purchase vitamins and/or food supplements, when they do so, it happens fairly frequently in a month (up to 10 times) in contrast to Greek and French consumers who, as a rule, buy these products in one visit to the pharmacy, while this parameter also exhibits statistically significant differences (p=0,000). Expenses for the purchase of vitamins and/or food supplements by consumers do not exhibit statistically significant differences (p=0,699). The price range segments from €5 to €15 accumulates the largest percentages for all three countries. Greek and French consumers, however, also fall in the <€20 group, while Bulgarian consumers spend up to €20.

Cosmetics and/or other care products
Satisfactory percentages of roughly 60% of pharmacy customers (56% of Greek, 64% of Bulgarian and 66% of French ones) purchase cosmetics and/or other care products, without any statistically significant differences between consumers across all three countries (p=0,554). There seems to be great divergences and statistical significance with respect to the frequency of purchasing cosmetics and/or other care products from the pharmacy per month between the consumers in the three countries. Bulgarian consumers are significantly differentiated from Greek and French ones, since they stated, at a percentage of 90%, that they make such purchases up to 5 times per month, in sharp contrast to the large percentages of Greek and French consumers who make less than one purchase per month (75% and 80% correspondingly). A small percentage of French consumers (18%) and slightly larger of Greek ones (21%) stated that they will make up to 5 purchases per month. The group of 6-10 purchases per month scored low across all three countries. The differences observed are statistically significant (p=0,000) with Greek consumers being differentiated compared to both French and Bulgarian ones. More specifically, Greek consumers do not appear in the group <€5, exhibit close percentages in the intermediate groups, while they exhibit the largest percentage, 40%, in the group that spends > €20 per month towards the purchase of cosmetics and/or other care products.

Impulse buying
Impulse buying, the phenomenon that somebody buys a product without this being the reason he/she is in the pharmacy is a parameter that exhibits statistically significant differences between consumers (p=0,000). Greek and French consumers appear to avoid impulse buying, while Bulgarian ones seem to succumb to it more

frequently, with 70% answering that they do so sometimes. On the contrary, against the percentage of 20% who answer that they would never impulse buy anything or very rarely do so, this percentage raises to 40% for French consumers and as high as 50% for Greek ones. As a whole, however, consumers in all three countries that purchase pharmaceutical products are infrequent impulse buyers, since only a percentage of 1.6% stated that they would very frequently make an unplanned purchase at the pharmacy. More specifically, Greek consumers usually buy cosmetics (32%) or care and hygiene products (22%) this way, while the great majority of Bulgarians purchase pain-killers (46%) and care and hygiene products (40%) and, finally, French consumers do so for a great number of products with care and hygiene products (44%) and pain-killers (28%) being at the top of the list.

Financial status

In the question "*If your financial status was better what/how much would you purchase?*", an improvement in the consumers' financial status does not seem to affect French consumers, who for the most part answer, by a percentage of 66%, that they would not change their choices or purchase more products (24%). Greek and Bulgarian consumers exhibit split tendencies between maintaining their choices (46% and 36% respectively) and purchasing more expensive (34% and 26% respectively) or more products (28% in both countries). The percentages relating to the purchase of greater quantities of the same products are small, independent of the country. In the case where financial status worsens, Greek and French consumers state that they would stop buying cosmetics and care products at a percentage of roughly 60%, as well as vitamins and food supplements to a lesser degree (36% of Greeks, 22% of Bulgarians and 38% of French consumers).

Customer loyalty

Customer loyalty is an important parameter for businesses, pharmacies in the case at hand, but one that exhibits statistically significant differences between consumers in the three countries of study (p=0,034). In general, Greek and French consumers/customers exhibit over 70% for choosing one particular pharmacy for their purchases compared to Bulgarian consumers who exhibit an almost evenly-distributed (50-50) percentage between a fixed or not pharmacy. The majority of Greeks visiting and making purchases from one given pharmacy for all products does so since they trust the pharmacist (54%), while the proximity of the pharmacy is the second priority (18%), followed by range of products (16%) and ease of payment (buying on credit). French consumers exhibit more scattered percentages for these reasons. Over 40% trusts the pharmacist, but no one chooses a pharmacy for reasons relating to possible arrangements of payment. Finally, Bulgarian consumers appear to place greater weight to the proximity of the pharmacy (28%) and the range of products (20%) and to a lesser extent on the trustworthiness of the pharmacist (18%) or the ease of payment (8%). Greek and French consumers responded in much smaller percentages that they do not have a particular reason for choosing a pharmacy.

On the contrary, those consumers who are not loyal to one pharmacy do so for various reasons. Bulgarians choose the first open pharmacy they will find (22%) when they wish to make purchases for no specific reason, while they may simply change pharmacies based on the products they wish to purchase (12%). A similar trend is exhibited also by Greeks (16% for the first open pharmacy and 10% for a different pharmacy for some products), while the percentages of the answer relating to non-specific reasons was minimal (2%). Finally, French consumers appear to be equally affected by the first open pharmacy (random choice) (10%) and making a choice for no particular reason.

Internet-based purchases

The last question deals with new technologies and the existence of "*digital pharmacies*", as well as the ability to purchase pharmaceutical products online. It exhibits statistically significant differences (p= 0,000) while it is ascertained that French consumers (almost universally-98%) would not buy pharmaceutical products over the internet, compared to Bulgarian ones, who are split (50% YES, 50% NO) and Greek ones, who exhibit a less positive trend (34% YES and 66% NO).

5. Conclusions

The goal of this work was to identify and study the behavior of the contemporary pharmaceutical products consumer. Three particular countries were chosen to be surveyed, since France's pharmaceutical-medical system is one of the most sophisticated, as was accentuated from the literature review, in sharp contrast to the Bulgarian one which is under development and admitting of many improvements and the Greek system which ranks somewhere in the middle, exhibiting a downward trend amidst the prolonged economic crisis climate. The project of exploring the attitudes of a Greek consumer compared to one from France and from Bulgaria is, thus, very interesting. From an academic standpoint, this paper is deemed significant since this subject has not been explored by the scientific-pharmaceutical field of marketing in 2014. The authors feel that the findings of this survey will assist in outlining the consumer's profile during a period of economic crisis and help in subsequent legislative changes with respect to the pharmaceutical industry. From a practical standpoint, this profile would be useful for the companies of the sector and, more specifically, for smaller private pharmacies especially if complemented by a more targeted survey of their localities.

Findings are expected to shed light to an aspect of pharmaceutical marketing which is useful for the development of small or even large enterprises in Greece. More specifically, businessmen will be facilitated in making more targeted sales in their localities, while larger enterprises will decrease or increase their production volumes for cheap or expensive medicines and the corresponding state bodies will better assess the state of affairs with respect to the consuming public at a given time.

Initially, with respect to the sample's profile, results showed that women constitute a pharmacy's most frequent customer. With respect to the age, almost every group makes purchases from a pharmacy, with a slight trend for more senior citizens exhibited by the French. With respect to their employment, small differentiations are observed in the urban environment of each capital (unemployed, pensioners, employees in the public and the private sectors). Family status does not appear to exhibit any variability that ought to be considered. These five demographic parameters do not contribute towards any significant differentiation of the sample for the countries under survey. On the contrary, significant statistical differentiation was observed with respect to the level of education and the financial status and these constitute the parameters from which differentiation of choice ensues for the customers in each nation. Thus, they shape their consumer profile and it is on them that the interpretation of the divergences-differences presented rests.

With respect to the consumer profile, results have shown:

- Consumers in all three countries are principally informed by their doctor with respect to the products they buy from a pharmacy. To an important extent they are also informed by their pharmacists. Advertisements do not appear to significantly affect their choices. In contrast to Greeks and Bulgarians, the French exhibit a tendency to place weight in information originating from various sources, especially from friends and family, while such sources are of little importance for Greeks and Bulgarians, as are advertisements and other sources. One can safely assert that the selection criteria by present day consumers fall under the term 'medical' more than any other category.
- Bulgarian consumers visit the pharmacy more frequently (2-6 times/month), compared to Greeks and the French, who make all monthly purchases for the most part in two visits. Furthermore, Bulgarian consumers spend the most on a monthly basis.
- The overwhelming majority of consumers across all three countries buy prescribed medicines, with Greeks exhibiting the highest percentages. With respect to vitamins and food supplements, most pharmacy customers do not purchase such with Bulgarians choosing them less frequently than the others. Finally, the percentages of pharmacy customers purchasing cosmetics or other care products are satisfactory.
- In conclusion, save for medicines, customers in all three countries purchase cosmetics and care products from pharmacies with a satisfactory frequency. This fact underlines a similarity in the consumer profile and with respect to the consumer habit to attend to their care independently of external factors (socio-political-economic).
- With respect to selection of prescribed medicines for the same ailment, the overwhelming majority of consumers in all three countries purchases the preparation recommended by their doctor, while the other significant factor is the manufacturing company for Greek consumers, product reputation for Bulgarians and price for the French. Product advertising bears no effect, while the company is of no importance in Bulgaria, as is reputation in France. Even for similar vitamins or/and food supplements, consumers trust and purchase that which is recommended to them, while their decision is affected to a lesser degree by the company and the price of the product. Advertising appears to have a minimal effect and indeed only with respect to Greek consumers, while product reputation appears to be of more significance for Bulgarian and French consumers.
- Customer choice of cosmetics and/or other care products is interesting, since Greek consumers principally select based on "what is recommended to them" and the reputation of the company, French based on the reputation, "what is recommended to them" and other factors, while Bulgarians base their choice on "reputation" and the company. In general, one observes great divergences in the consumer behavior across pharmacy customers in each nation with respect to what influences them when they make the final choice to purchase products intended for such use, especially when they are not medicines.
- As a rule, Greeks and French avoid making impulsive purchases, while Bulgarians may succumb to them occasionally. It can be observed that Greek consumers usually buy cosmetics or care and hygiene products impulsively, Bulgarians pain-killers and care and hygiene products and, finally, the French various products and principally care and hygiene products and pain-killers.
- Improvement in consumer financial status does not appear to affect French consumers who, for the most part, state that they would not change their selection or purchase additional products. Greek and Bulgarian consumers are divided between maintaining their selections or purchasing more expensive or additional products. On the other hand, in the case of a worse economic climate, Greek and French consumers stated that they would stop purchasing cosmetics and care products and to a lesser degree (for respondents in all three countries) vitamins and food supplements.
- Greek and French consumers/customers appear as a majority to fixedly choose one pharmacy for their purchases compared to Bulgarian consumers. With respect to Greek consumers who exhibit customer loyalty, they initially do so on account of the trust they show towards

the pharmacist, then due to the locality of the pharmacy, the range of products and, finally, the facilitation of payment. The French select the pharmacy based on the trust they show to the pharmacist, while it is interesting to observe that ease of payment does not constitute the basis for selecting the pharmacy in any nation. Finally, Bulgarian consumers appear to place greater importance to the proximity of the pharmacy and to a lesser extent on the trustworthiness of the pharmacist or ease of payment. Therefore, it appears that the pharmacist is most important for Greeks, the pharmacist and the proximity of the pharmacy for the French, while for Bulgarians the most important factors is proximity and the range of products.

- Many Frenchmen state that they have paid no attention to any advertisement for pharmaceutical products and few notice them on TV or in magazines. On the contrary, Greeks and Bulgarians notice such advertisements on TV, in pharmacies, leaflets, on the internet and in magazines, while the latter are the only ones that noticed such advertisements on the radio.
- With respect to new technologies, the existence of "internet-based pharmacies" and the ability to purchase pharmaceutical products over the internet, the French would universally shy away from making such purchases, compared to Bulgarians who exhibit both positive and negative attitudes towards this and Greeks who exhibit a less positive attitude, compared to Bulgarians.

Overall, one could suggest that by virtue of the comparative analysis, it is observed that French, Greek and Bulgarian consumers tend to agree to some common behavioral trends, but materially differ in matters of major importance. According to the results, behavioral motives appear to be affected by health professionals, price, advertisement, alternatives and "public opinion". Additionally, it appears that customers differ across countries but also within a country with respect to their choices and their particular mode of operation. This particularity principally ensues from the different levels of education and basic income for each pharmaceutical product consumer.

Any research on the quantitative measurement of perception has inherent limitations as it rests on the subjective views and attitudes of the respondents. Additionally, some obstacles emerged in the course of the survey and in regard to the filling-out of the questionnaires in all three countries, thus account must be taken of the following limitations when interpreting the findings: (1) lack of detailed knowledge of the legislative framework for the supply of pharmaceutical products in Bulgaria and France; (2) rapid changes in external factors (legal-political-social) in the case of Greece; (3) inability of personal contact with every respondent in order to get a first-hand view of their "pharmaceutical behavior" and education, and (4) time and resources limitations dictated that the survey be carried out with respect to a very limited and small sample compared to the total population of Athens, Paris and Sofia.

It is recommended that more surveys exploring the views of patients-consumers are carried out in the future in developing countries, where cost-effectiveness is more fundamental than in developed ones, and also to utilize constructive comparisons. However, the need to repeat the survey at regular intervals (establishment of a permanent satisfaction barometer) must be noted, since customer demand changes with the passage of time. This is principally due to rapid advances in technology, economy, legislation and policy in every nation, the creation and introduction of new services, changes in the competitive field and to social factors.

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Investigating the Efficiency of Senior Secondary Schools: Evidence from Schools in the Greek region of Central Macedonia

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ABSTRACT

Purpose
This study examines the efficiency of Senior Secondary Schools, in the Region of Central Macedonia in Greece, using input-oriented Data Envelopment Analysis, with three inputs and two outputs variables. Data concern schools in urban, semi-urban/rural, for the school years 2007-08 (before the economic crisis) and 2010-11 (during the economic crisis).

Design/methodology/approach
In this study, Data Envelopment Analysis is applied under the Constant Returns to Scale (CRS) or Variable Returns to Scale (VRS) hypotheses. The study used a Senior Secondary Schools sample with stratified proportional sampling. This study's data collection has been accomplished with the help of the information systems and the databases maintained in every school

Findings
The empirical analysis revealed that the majority of schools were inefficient. The technical efficiency under constant returns to scale varies in interval [0.510-1] and [0.511-1], with average score being 0.729 and 0.827, for the school years 2007-08 and 2010-11, respectively. Under variable returns to scale varies in interval [0.521-1] and [0.516-1], with average efficiency score being 0.815 and 0.834, for the school years 2007-08 and 2010-11, respectively. The scale efficiency for 2007-08 varies in interval [0.673-1], for 2010-11 varies in interval [0.939-1], with average efficiency score being 0.897 and 0.991, respectively. During the economic crisis the performance of schools improved. Additionally, the schools in semi-urban/rural areas had on average higher efficiency than those in urban areas.

Research limitations/implications
Further research can extend this study. For instance, future studies could introduce additional input and output variables. Moreover, researchers might use a combination of available techniques such as bootstrapping to estimate the efficiency of schools over a longer period of time and after the economic crisis

Originality/value
To the best of our knowledge, this is the first study of the aforementioned issue for a region on the European Union's periphery one year before and one year during the economic crisis. The results are expected to provide insightful information for policymakers in order to better understand the performance of the schools and seek more appropriate solutions aiming at moving the sector forward. The proposal of this study is the establishment of an Observatory, authored by the Greek Ministry of Education, monitoring the diachronic data and measurements of the schools' efficiency.

1. Introduction

Over recent decades, a few methods have been developed to estimate the relative efficiency of production systems because their efficiency is crucial to the economic growth of countries or regions. The concept of efficiency (both technical and scale) is relative rather than absolute.

In the last few years, the two dominant approaches that have arisen are Data Envelopment Analysis (DEA) and Stochastic Frontier Analysis (SFA). Both assess the performance of decision-making units (DMUs) (Lee, 2011; Sav, 2012; McMillan and Chan, 2006; Kempekes and Pohl, 2006). SFA is a stochastic and parametric technique, and DEA is a deterministic and non-parametric technique. Both are considered frontier methodologies. This approach assumes a function for the relationship between inputs and outputs. DEA constructs

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the production-possibility curve frontier function from available data using linear programming.

The two methods differ in their underlying assumptions. There are two ways to measure relative efficiency in terms of mathematical programming: The input-oriented (IO) model concerns input minimization while maintaining the levels of output, whereas the output-oriented (OO) model focuses on output maximization with the same quantity of inputs. According to the economics literature, *educational units* are systems that produce, accumulate, and diffuse human capital. They play an important role in socioeconomic development, employment, and social cohesion in the age of a knowledge society. Moreover, they use limited resources from the economy. DEA is considered a more appropriate method to evaluate the relative efficiencies of schools/DMUs (Cooper et al., 2011). The main framework of this method is to treat schools as production units that use multiple inputs and outputs. The method produces measures of schools' relative efficiency by deriving a frontier production function (efficiency frontier) and measuring the distance of observations to the frontier to obtain their efficiency scores.

In Greece, secondary education was established in the 19th century, and since then, it has become a field of successive legislative reforms. In the last four decades, it has been divided into the following two stages: a) compulsory, that is, "gymnasium" or middle or junior high school and b) non-compulsory, meaning "lyceum" or senior secondary school (SSS). Central Macedonia is one of the 13 regions of Greece, with an area of 18.811 km^2 (largest area in Greece) and the second in population with 1.874.590 residents (Hellenic Statistical Authority, 2011). It consists of the following seven prefectures: Thessaloniki, Serres, Kilkis, Chalkidiki, Pella, Pieria, and Imathia. It has a large urban center (Thessaloniki, with 622.240 residents) and six other cities that are capitals of the other prefectures. It also has many smaller cities and villages. It is the most representative region throughout Greece, because it has big urban centers, semi-urban and rural regions, and tourist and frontier regions.

In terms of education, Central Macedonia has 165 SSSs. There are two main types of SSS: the General Lyceum (60% of total schools) and the Vocational Lyceum (30% of total schools). However, there are also a few church, minority, intercultural, experimental, music, and evening schools (Regional Administration of Education of Central Macedonia, 2011).

The schools in our sample were all public. The Hellenic Data Protection Authority and the Ministry of Education prohibit public schools from keeping official data relevant to the financial, educational, and social level of the students' parents, as well as other sensitive student data, for example, health problems. Consequently, within the framework of the Greek educational system, is very difficult to assess the potential endogeneity of educational quality or overcome issues stemming from this fact (e.g., isolating the quality of specific public schools or estimating "value-added" models that allow students' initial ability and socioeconomic background, their school socioeconomic composition, or the gender of the students and their ethnicity. Hence, in public schools, all students are Greek and practically anonymous.

To obtain access to tertiary education, students must take national exams in pre-defined courses. The period 2007–2011 was chosen primarily because it was when Greece became a full member of the Eurozone (since 2001) and because in 2010, due to an economic crisis, it entered the Support Mechanism (European Commission, European Central Bank, International Monetary Fund). Thereafter, publicly funded sectors have been under pressure to use resources efficiently. A strict fiscal policy has been pursued, with a strong impact on school financing.

The purpose of this paper is to measure the relative efficiencies (technical and scale) of SSSs in Greece's Central Macedonian region. Furthermore, this study aims to classify the SSSs into groups of similar characteristics—that is, area of operation (urban, suburban, or rural), before or during the financial crisis—and to compare the results of the groups. To the best of our knowledge, this is the first study of the aforementioned issue for a region on the European Union's periphery for one year before and one year during the economic crisis.

The results of this paper are expected to provide more understanding of the efficiency of SSSs for educational managers and policymakers to find possible solutions to improve the performance of SSSs in Central Macedonia.

The rest of the paper is structured as follows: The next section offers a brief overview of various empirical studies. Section 3 applies DEA to measure the relative efficiency of each school. Based on efficiency measures, a cluster analysis is conducted. Finally, Section 4 presents concluding remarks and policy implications.

2. Review of Empirical Studies

In the empirical economic literature, a few studies have examined the efficiency of secondary education schools. In most of them, the DEA methodology is used. A few have used SFA methodology. The empirical studies use the following sets of inputs and outputs (see Table 1).

Inputs: X_1: the ratio of teachers to students, X_2: educational level of teachers, X_3: the type and size of the school, X_4: teaching hours per week, X_5: educational or economic level of students' parents, X_6: the cost of the school, X_7: the number of students per school, X_8: students' performance in specific courses, X_9: the percentage of students studying more than 10 hours per week, X_{10}: the number of permanent teachers, X_{11}: quality management, X_{12}: school facilities, X_{13}: the number of assistants and administrative staff, X_{14}: cost per teacher or per person, X_{15}: students' features, X_{16}: transfer students, X_{17}: buildings and civil engineering structures, and X_{18}: plants and machinery.

Outputs: Y_1: the performance of students in specific courses, Y_2: the number of graduate students per school, Y_3: test performance on basic courses for accessing tertiary education, Y_4: the percentage of senior graduates, Y_5: the proportion of successful students to those who were enrolled at the beginning of the school year, Y_6: each school's average classification on national exams and the percentage of students with good scores, Y_7: the percentage of high school students who graduated and entered tertiary education, Y_8: the number of registered

students, Y_9: selection of educational fields and Y_{10}: residence services.

The research papers from the empirical literature are presented in Table 1.

Table 1. Empirical studies that measure the efficiencies of secondary schools

	Authors	*Country*	*Years of reference*	*Sample of schools*	*Methodology*	*Inputs*	*Outputs*
1	Kirjavainen and Loikkanen (1998)	Finland	1997	291	DEA	X_2, X_3, X_4, X_5	Y_2,Y_3
2	Steve Bradley, Geraint Johnes, and Jim Millington (2001)	England	1993–98	All the schools	DEA	X_3, X_6, X_7	Y_1
3	Muñiz (2002)	Spain	1996–97	60	DEA	X_5, X_9, X_{14}	Y_5,Y_6
4	Mante and O'Brien (2001)	Australia	1998–99	250	DEA	X_1	Y_6
5	Ngee Kiong et al. (2004)	Malaysia	2002	16	DEA	X_{11}, X_{12}, X_{15}	Y_3
6	Primont and Domazlicky (2006)	Missouri USA	2001	120	DEA	X_{19}, X_{16}	Y_6
7	Waldo (2007)	Sweden	2000	287	DEA	X_1, X_6, X_7	Y_1
8	W. Robert J. Alexander, Alfred A. Haug, and Mohammad Jaforullah (2007)	New Zealand	2001–02	324	DEA	X_6, X_7, X_{10}, X_{13}	Y_6
10	Barnett et al. (2010)	United Kingdom	1994–96	152	DEA	X_6	Y_1
11	Lassibille and Tan (2010)	Tanzania	1994–96	150	DEA	X_2, X_3	Y_1
12	Masood Badri et al. (2011)	Abu Dhabi	2008–09	22	DEA	X_3, X_{14}	Y_6
13	Gronberga et al. (2012)	Texas, USA	2004–09	50	DEA, SFA	X_2, X_{10}	Y_1, Y_3
14	Essid et al. (2013)	Tunisia	2005–06	332	DEA	X_{10}, X_{12}, X_{13}	Y_6, Y_{10}
15	Rzadzinski L. and Sworowska A. (2016)	Poland	2009–11	27	DEA, SFA	X_6, X_{17}, X_{18}	Y_2, Y_8,
			Greece				
1	Maragos and Despotis (2003)	Greece	2001–02	60	DEA	X_1, X_{10}	Y_4,Y_7

Notes: DEA = Data Envelopment Analysis, SFA = Stochastic Frontier Analysis.

The empirical literature revealed that DEA was the most frequently used method for analyzing efficiency in the context of secondary education, although other methods such as SFA, though less popular, have also been used. In most research studies, two or three inputs with a respective one or two outputs were utilized. In such empirical studies, either the IO or the OO is used. The model could have an IO framework, which refers to the determination of minimum inputs for producing a given level of output or an OO framework by focusing on the maximization of outputs with given levels of inputs. Summarizing the results from past research, some main points can be highlighted: Schools generally presented satisfactory efficiency scores, even though there was evidence that a further improvement and advancement in certain areas is applicable.

The correlation between efficiency and student satisfactory achievements seemed to be positive. The number of students was not a critical indicator of school efficiency, unlike the cost indicator per teacher/student. The school type, either private or public, had a significant impact on school efficiency, whereas the impact of the school location, in urban vs. semi-urban/rural areas, was less important. The specific features of the students' families, such as the parents' socioeconomic level, probably played a vital role in the expected educational outcome (Kirjavainen and Loikkanen, 1998). In Greece, only one study (Maragos and Despotis, 2003) has been conducted with a small sample. It focused on 60 schools in Attiki municipalities. According to the researchers, during the second school year of their study, schools were more efficient, even though the input and output data were approximately identical. Some studies (Katharaki and Katharakis, 2010; Giannias and Sfakianaki, 2011; Tsamadias and Kyratzi, 2014; Kyratzi, Tsamadias and

Giokas, 2015) have been published regarding tertiary institutions.

3. Empirical Analysis

The empirical study of this research uses DEA with the input-oriented model (IO). Moreover, IO was selected because it was hypothesized, at least from a longer-term perspective, that outputs had fewer SSS choice variables than inputs for our SSS, so input choices were assumed to predominate (Millan and Chan, 2006).

3.1 Methodology

The DEA method has its origins in the work of Charnes et al. (1978), who reformulated Farrell's (1957) seminal work. The aim of DEA is to estimate the relative efficiency among homogeneous SSS/DMUs that have the same technology to pursue similar objectives (outputs) by using similar resources (inputs). DEA forms a line of optimal production (a frontier) with efficient DMUs and spreads all other (inefficient) DMUs below that line, commonly referred to as the *envelope*. The efficiency of individual DMUs is then calculated relative to that frontier/envelope (Tajnikar and Debevec, 2008).

Efficiency scores range from zero to one. DMUs on the frontier obtain efficiency scores equal to one, which means that they are efficient. It is worth mentioning that those DMUs indicated as efficient are only efficient in relation to other DMUs included in the examined sample. A DMU with an efficiency score of less than 1 is considered to be relatively inefficient. Consequently, DEA constitutes a good evaluation technique for the relative efficiency of a DMU, but it is not the most appropriate measure of absolute efficiency, as there is no comparison with what is regarded as maximal (Cooper et al., 2006). A technical problem is that there is some empirical evidence that suggests that the results of DEA are sensitive to assumptions made about the returns to scale in education production (Kirjavainen and Loikkanen, 1998).

As the DEA method is non-parametric, there are no statistical tests to assess such assumptions. In this study, DEA is applied under the Constant Returns to Scale (CRS) or Variable Returns to Scale (VRS) hypotheses. The CRS hypothesis assumes that there is no significant relationship between the scale of operation and efficiency. On the other hand, VRS's underlying assumption is that a rise in inputs is expected to result in a disproportionate rise in outputs (Joumady and Ris, 2005). In our analysis, we computed both CRS and VRS efficiency scores. The IO models are developed as follows (Cunha and Rocha, 2012):

Input-Oriented—CRS

$$\min_{\theta,\lambda} \theta$$

s.t.

$$\begin{aligned} &Y\lambda \geq Y_i \\ &X\lambda \leq \theta X_i \\ &\lambda \geq 0 \end{aligned} \qquad (1)$$

and

Input-Oriented—VRS

$$\min_{\theta,\lambda} \theta$$

s.t.

$$\begin{aligned} &Y\lambda \geq Y_i \\ &X\lambda \leq \theta X_i \\ &N1'\lambda = 1 \\ &\lambda \geq 0 \end{aligned} \qquad (2)$$

where λ is the vector of relative weights $(N \times 1)$ given to each DMU and N is the number of DMUs. Assuming that there is available data on I inputs and O outputs, X represents the matrix of inputs $(I \times N)$, and Y, the matrix of outputs $(O \times N)$. For the i-th DMU, the inputs are represented by the column vectors X_i, and the outputs by Y_i, respectively. This framework is consistent with the CRS model. The CRS assumption is avoided in the VRS model (Banker et al., 1984) by the introduction of an additional constraint on the λ, allowing returns to scale (i.e., $N1'\lambda = 1$, where N1′ is a vector of ones). This restriction imposes convexity on the frontier. Finally, the efficiency score (ϑ) is a scalar that estimates the technical efficiency (known as managerial efficiency) by assuming values between 0 and 1, with a value of 1 indicating a point on the frontier and, hence, a technically efficient school (Farell, 1957). The ratio of CRS/VRS was also interpreted as the Scale Efficiency (SE), which refers to the ability of each unit to operate at, its best scale of functions. In the present study, the DEA was accomplished with the Data Envelopment Analysis Program (DEAP), Version 2.1 software package (Coelli, 1996).

3.2 Variables' Sampling, Sources, and Data

To develop and estimate the models applicable to the present analysis, three input variables were used for each SSS: X1: the number of students, X2: the number of teachers, and X3: the public expenditures and two output variables, Y1: the number of students who achieved admission to higher educational institutions through national exams and Y2: the average score in the third-grade courses of SSS students.

The abovementioned variables were the most commonly used in the relevant research (see Table 1). For these variables, there is official data from the Ministry of Education, while no completed measurements exist for the rest.

The study used an SSS sample with stratified proportional sampling. To determine the minimum sample size, the following procedure was adopted; the minimum required sample size was estimated according

to equation (1), and was based on the following parameters and assumptions (Lohr, 1999): From a pilot survey in 17 schools (n^*=17, 10% of the target population N=165), the standard deviations (s) of the most important variables (CRS and VRS) were estimated, and the greatest of these standard deviations (s=0.02 for VRS values) was entered in equation (1).

1. The confidence level was predetermined at 95%. Therefore, a value of Z=1.96 was utilized, based on the standard normal distribution function.
2. The acceptable margin of error (d) was predetermined at ± 10% of the range (0.99–0.95) of the VRS values recorded from the pilot sample. Therefore, the margin of error was set equal to d=0.10×0.04=0.004.
3. The population of SSS in Central Macedonia was 165 (see Table 2).
4. From equation (1):

$$n = (1 - \frac{n^*}{N})(\frac{Z \cdot s}{d})^2 \quad (1)$$

for n^*=17, N=165, s=0.02, d=0.04, and Z=1.96, it was found that $n \approx 87$. The final minimum required sample was increased by 5% to reach the value n=92.

5. It was assumed that the minimum sample size needed for the simple random sampling scheme is an upper bound for the minimum required sample size for all other well-established designs based on random sampling.

Afterwards, the proportional stratified sampling was used where the school population was divided into two layers (strata), and then sub-samples were selected by simple random sampling from each stratum. One stratum was a) the city schools (urban), and the second was b) the suburban/rural schools, as shown in Table 2 below. A sample of proportionate stratified sampling in each layer was selected so the ratio of the sample size in the layer to the total sample size would be approximately equal to the proportion of the population size of the layer to the size of the total population. Thus, the total sample is a miniature proportional population (Psarrou and Zafiropoulos, 2001).

Table 2: Total number of Senior Secondary Schools (SSSs) in Central Macedonia by area and counties; also the stratified population and sample of SSSs in Central Macedonia

Counties of Central Macedonia	*Population*			*Sample*		
	Total number	*In urban areas*	*In semi-urban /rural areas*	*Sample number*	*In urban areas*	*In semi-urban /rural areas*
Imathia	12	5	7	7	3	4
Thessaloniki	92	58	34	51	33	18
Kilkis	10	2	8	6	1	5
Pella	11	2	9	6	1	5
Pieria	12	5	7	6	3	3
Serres	18	5	13	10	3	7
Chalkidiki	10	2	8	6	1	5
Total	**165**	**79**	**86**	**92**	**45**	**47**

Source: The population according to the Regional Education Department of Central Macedonia
Note: The sizes of the sample strata are from the author's calculations

The mechanism of school financing is the same all over the country and comes from the Ministry of Education for the payroll of teachers and from the municipalities for schools' functional expenses. The total amount of financing by the municipalities depends mainly on the number of students and much less from each school's area. This study's data collection has been accomplished with the help of the information systems and the databases that every school maintains.

3.3 Statistical Analysis

To summarize the available data minimum (min) and maximum (max) values, the means and standard deviations (SD) were calculated for the technical efficiency (TE) by using the CRS and VRS hypotheses/specifications and scale efficiency (SE) indicators. The ANOVA method was employed to investigate the effect of the school year and the region on the CRS, VRS, and SE values. ANOVA was performed according to the general linear model that involves one factor between the school units (factor "the two-level region": urban and semi-urban/rural) and one factor within the school units (factor "2007–08 and 2010–11 school years") with repeated measures (Girden, 1992; Kirk, 1995). Furthermore, the Least Significant Difference (LSD) criterion was used to compare the mean values (Toothaker, 1993). In all the statistical tests conducted, the significance level was pre-set at α=0.05. The SPSS v15.0 statistical software was used for all the statistical analyses.

4. Results and Discussion

Table 3 below presents summary statistics of input and output variables for SSSs.

Table 3. Descriptive statistics of input and output variables for SSSs

Variables	*Inputs*[1]			*Outputs*[2]	
Statistics	X_1	X_2	X_3	Y_1	Y_2
			School year 2007–08		
Mean	219.4	25.7	735015.8	60.1	14.4
SD	21.0	5.0	42082.3	16.0	0.8
Max	544.0	62.0	1577674.5	144.0	16.6
Min	30.0	7.0	192618.0	6.0	12.8

School year 2010–11					
Mean	233.5	28.2	750039.4	58.8	14.3
SD	16.0	1.0	73904.5	12.0	0.6
Max	513.0	58.0	1760500.4	146.0	16.5
Min	44.0	8.0	183867.4	5.0	12.8

Source: Authors' calculation

[1]X_1: number of students, X_2: number of teachers, X_3: public expenditures

[2]Y_1: number of students who achieved admission to higher educational institutions through national exams, Y_2: average score in third-grade courses of SSS students.

In Table 3, for both years, we can see that there are some schools with a very small student population and others with a very big one (X_1). The students who attend large schools tend to have better average scores (Y_2) in the third-year courses than the students at small schools. It is noteworthy that in the school year 2007–08 the average size of SSS was 219.4 students, whereas in the 2010–11 school year, it was 233.5. Data from official records showed that, for the year 2008, the student–teacher ratio for senior secondary education in Central Macedonia was 1:8.5. In Greece, it was 1:7.9; in the EU, it was 1:11.4. Last, in the OECD it was 1:12.5 (OECD, 2009b). For the year 2011 in Central Macedonia, the student–teacher ratio was 1:8.3. In Greece, it was 1:8.2, and in the EU, it was 1:12.7. In the OECD, it was 1:13.9 (OECD, 2013). When the model-oriented technique is used to reduce input weight on the volume outflow (IO), the results obtained are shown in Table 4.

For CRS, ANOVA showed that the main effect of the school years was statistically significant (P<0.001). On the contrary, the main effect of the region was not (P=0.331). The interaction "school year × region" was also not statistically significant (P=0.145). Table 4 shows that, in urban areas, there was a statistically significant difference between the two school years (P<0.001), something that is also valid in the case of the rural areas (P=0.001). The effect of the second school year (2010–11) was statistically higher than that of the first year (2007–2008). The same findings also apply to the entire sample. For VRS, ANOVA showed that neither the effect of the school years (P=0.254) nor that of the region (P=0.686) was statistically significant. The interaction "school year × region" was also not statistically significant (P=0.748). For SE, ANOVA revealed that the effect of the school year was statistically significant (P<0.001). The same result was valid in the case of the regional effect (P<0.001) as well as regarding the interaction "school year × region" (P<0.001). Table 4 shows that in urban and semi-urban/rural areas there was current evidence to support considerable difference between the two school years (P<0.001 in both comparisons). However, in school year 2010–11 there were no statistically significant differences between urban and semi-urban/rural schools (P=0.977).

Table 4. Technical and scale efficiency of the total SSS sample for the stratified sample of SSSs in urban and semi-urban/rural areas in Central Macedonia for the school years 2007–08 and 2010–11

D.m.u		*School year 2007–08*			*School year 2010–11*		
		Technical		*Scale*	*Technical*		*Scale*
		crs	*vrs*	*se*	*crs*	*vrs*	*se*
UA	Mean	0.707b*	0.823a*	0.864b*	0.828a*	0.836a*	0.991a*
	Max	1	1	1	1	1	1
	Min	0.548	0.601	0.673	0.511	0.516	0.939
SUA	Mean	0.750b*	0.809a*	0.928b*	0.825a*	0.832a*	0.991a*
	Max	1	1	1	1	1	1
	Min	0.510	0.521	0.792	0.580	0.583	0.964
Total schools	Mean	0.729b*	0.815a*	0.897b*	0.827a*	0.834a*	0.991a*
	Max	1	1	1	1	1	1
	Min	0.510	0.521	0.673	0.511	0.516	0.939

Source: Author's calculation

Notes: SSS: Senior Secondary School, UA: schools in urban areas, SUA: schools in semi-urban/rural areas, CRS: Constant Returns to Scale, VRS: Variable Returns to Scale, SE: Scale Efficiency, *: for the total sample of SSSs and within each area (UA and SUA), mean values of the same index (crs, vrs, and se) followed by different letters are statistically significantly different, at α=0.05, according to the LSD criterion.

From Table 4, it is evident that, on average, with regard to technical efficiency (TE) via the CRS hypothesis, we can count on a decreased 27.1% need for inputs for 2007–08 by keeping the same outputs, while for 2010–11, we can rely on a decreased 17.3% need, respectively. For the TE via VRS hypothesis, we can count on a decreased 18.5% need for inputs for 2007–08 by keeping the same outputs, while for 2010–11, we can rely on a decreased 16.6% need for inputs.

The scale efficiency (SE) is equal to CRS/VRS and refers to the ability of each unit to function at the maximal operating range. Deconstructing the efficiency scores from the CRS DEA into scale (in)efficiency and "pure" technical efficiency shows that, on average, for the school year 2010–11, schools operated close to the optimal scale 1 (0.991). This result shows that schools functioned 0.009 (0.9%) from the optimal scale. SE is very high (>0.9), which would imply that schools have a good operations output regarding their own dimension. However, as far as the school year 2007–08 was concerned, the result showed that schools operated 0.103 (10.3%) from the optimal scale. Schools needed more input reduction in the school year 2010–11.

Table 4 demonstrated that, for the schools in our sample included in urban areas, the CRS could produce the same outputs using a 29.3% decreased pool of resources for 2007–08; for the school year 2010–11, the

percentage was 17.2%. The VRS can produce the same outputs decreased by 17.7% and 16.4% for 2007–08 and 2010–11, respectively. We observed that, with regard to the SE, which is maximal at 1, the schools located in the urban centers of Central Macedonia, on average, were 0.136 (13.6%) from the optimal scale for the school year 2007–08 and only 0.009 (0.9%) respectively for the 2010–11 school year. The average efficiency of schools was very close to the maximum in the 2010–11 school year during the economic crisis.

As far as the schools in semi-urban/rural areas are concerned, we had the following results. For TE via the CRS hypothesis, we can produce the same outputs by utilizing a set of resources decreased by 25% for 2007–08 and by 17.5% for 2010–11. With regard to TE via the VRS hypothesis, we can achieve the same outputs while decreasing the inputs by 19.1% for 2007–08 and by 16.8% for 2010–11.

We have noticed that, for the SE, the schools located in the semi-urban/rural areas of Central Macedonia, on average, were 0.072 (7.2%) from the optimal scale for the school year 2007–08 and only 0.009 (0.9%), respectively, for the 2010–11 school year. The results of the present research on the IO model show that the average technical efficiency during the school year 2010–11 was better than the respective one during the school year 2007–08. Within the same year, the technical efficiency of the semi-urban/rural SSS was slightly lower than the one of urban centers. The results regarding the location of schools during 2010–11 are similar to previous studies (Mante and O'Brien, 2001; Ngee Kiong et al., 2004; Masood Badri et al., 2011; Gronberga et al., 2012).

We see that schools were not terribly efficient in 2007–08, while in 2010–11, during the crisis, they functioned more efficiently. This is due to schools' better management of resources, not the likely threat of professors' redundancy or any other extreme measurements that the Greek government took.

5. Conclusion

Secondary education plays a key role in each country or region in this age of the knowledge society. The resources received from the government must be used more efficiently to meet the increasing demand for education. Hence, an educational authority should investigate not only the educational outputs produced by the school, but also the resources utilized in producing the outputs. This paper applied the DEA (input-oriented) methodology to evaluate the relative efficiency of senior secondary schools in the Central Macedonian region in Greece. It used three inputs and two outputs. The efficiency (technical or scale) scores indicate which schools need improvement, which can be achieved by decreasing the inputs.

The results revealed that:

First, the majority of the studied schools were found to be inefficient.

Second, in the school year 2010–11 (during the economic crisis in Greece), the technical and scale efficiencies of senior secondary schools were on average higher than those of the 2007–08 school year (before the crisis).

Third, in the school year 2007–08, the scale efficiency (SE) of schools in urban areas was lower than the examined efficiency of schools in semi-urban/rural areas.

Fourth, in the school year 2010–11, the scale efficiency (SE) for the total sample of schools was the same for the schools in urban and semi-urban/rural areas.

Our findings are expected not only to offer useful insights for policymakers to enable them to consider possible solutions for improving the performance of senior secondary schools, but also to provide a significant benchmark for the following comparative studies on the performance of secondary education in Greece. We propose that policymakers establish an observation post on the periphery and throughout the country to observe the performance of SSSs annually and whenever they find it necessary to intervene to make improvements. Moreover, the suitable reallocation of resources would increase the efficiency scores of inefficient schools.

The observatory will be a collaborative effort between European and international education institutions. It will advance the development of innovative mechanisms for the distribution of resources which are very little during an economic crisis, according to school records.

Further research can extend this study. For instance, future studies could introduce additional input and output variables. Moreover, researchers might use a combination of available techniques such as bootstrapping to estimate the efficiency of schools over a longer period of time and after the economic crisis.

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"The value relevance of dividend announcement: An empirical study of the Greek Stock Market"

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ABSTRACT

Purpose
Dividend policy and its impact on share pricing, has been an issue of great concern for the academic society. Over the years, many theories evolved in an effort to explain dividend policy impact on corporate value. A widely accepted approach is the signaling effect theory. The purpose of this paper is to assess the value relevance of dividend announcement.
Design/methodology/approach
Our empirical work uses Greek stock market data. We adopt the event study methodology and incorporate in our research elements that differentiate Greek stock market from other developing markets.
Findings
Our empirical results tend to support the theory. Decisions on dividend policy seem to affect corporate value. Investors perceive incremented dividend payments as an indication of positive future prospect and vice versa
Research limitations/implications
Different results between large and medium capitalization shares comprise an interesting element for future research.

1. Introduction

Dividend policy and its impact on share pricing remains a controversial issue among economists. While many theories have evolved in an effort to explain dividend impact on firm value, still much of the research supports dividend irrelevance. The purpose of this work is to shed some light on the issue using contemporary Greek stock market data.

Initially, dividend policy theories are reviewed. Signaling effect theory states that dividends carry informational content and therefore affect share price. This theory is tested using empirical data, derived from the Athens Stock Exchange. Greek stock market has a differentiating element from other developed or emerging markets; company boards are imposed –by Greek law- to distribute a minimum dividend. We apply two different criteria to our data and assemble two samples. The first criterion is dividend change compared to previous annual equivalent (naive model). The second criterion derives from the Greek law provision for minimum dividend distribution. Respectively, the second sample derives from the comparison of dividend paid against the minimum legitimate.

Section 3 describes the data and methodology applied. We adopted an event study methodology and tested the occurrence of abnormal returns in a (+,-) twenty day window from dividend announcement. Empirical results are presented in section 4, while section 5 summarizes the findings of this work and suggests points for future research.

2. Literature Review

Unquestionably, the most influential work entailing dividend policy and its impact on firm value belongs to Modigliani & Miller (1961). Based on perfect competition assumptions, they supported the dividend irrelevance theory. Modigliani & Miller supported that firm value is influenced solely on its investment plan, while dividend policy proves neutral when estimating firm value.

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Nevertheless, empirical results do not comply with these conclusions.

Earlier, Lintner (1956) suggested a "partial adjustment" model, where current dividends are dependent to current profits and last year's dividend. Lintner argued that dividend policy conveys information from corporate management to shareholders, concerning company's future prospects. Dividend increase leads to incremented share returns, while a decrease unveils negative influence on them. The "partial adjustment" model was validated by many researchers (Fama & Babiak, 1968; Darling, 1957; Turnovsky, 1967).

Contemporary research indicates that finance managers a) address a pivotal role to constant dividend flow, regardless of profit volume and b) assume that share price highly depends on the adopted dividend policy (Baker & Farrely, 1988). Allen (1992) verified Lintner's suggestion regarding the occurrence of a target payout ratio.

An alternative approach, relates dividend policy to income volume and tax burden. In many developed capital markets (US, UK) dividends are taxed as ordinary income, whereas capital gains are treated favorably with a much lower tax rate. According to this perspective, high income investors prefer low dividends, in an effort to avoid tax burden and realize gains on share sale. The opposite applies to low income investors. The preceding discrimination implies different dividend clienteles for each share, as proposed by Miller & Modigliani (1961) and Elton & Gruber (1970). Many other researchers have reached the same conclusions by opposing the present value of tax liability against the present value of the capital gains' tax (Litzenberger & Ramaswamy, 1982; Miller & Scholes, 1982).

The uncertainty of future cash flows formed another group of thought. The "Bird in Hand" theory supported by Gordon (1959) and Lintner (1962) confronted Miller and Modiglianni. The ultimate argument is that investors value dividends and capital gains differently. Consequently, they favour the most recent cash flow, provided by dividends (Al-Malkawi, 2007).

Nowadays, dividend policy theories are discriminated by the quantity of information that is available in the market (full information vs information asymmetries), as well as by the influence of psychological factors (behavioral models) (Frankfurter & Wood, 2002).

Much of the research work favours behavioural models, whereas it is generally accepted these are the most challenging to develop. Mass investor psychology may influence market returns (Shiller, 1984). Some also argue that dividends are considered to be a tradition, as well as a means to confront investor fear on their investment outcome (Frankfurter & Lane, 1992). Others support that management executives are influenced by their rivals in other companies, when they decide dividend volume (Michel, 1979).

Alternative dividend policy theories base their arguments on the different interests between management and investors. These theories are known as agency cost theories. Feldstein & Green (1983) suggested that dividends serve as a mean for agency cost reduction. Within this category falls the free cash flow hypothesis (Jensen, 1986). Free cash flow is the remainder cash, after financing all positive net present value investments. This cash challenges management to pursue inappropriate –non-efficient- investments (Berle & Means, 1932). Consequently, incremented dividend payments absorb free cash flow and protect investors.

A considerable number of researchers argue that dividends are conveying information to the market (signaling effect theory). Consequently, dividend policy, when properly used, adds qualitative features to shares. It is considered to be the most economical alternative to support and enhance investors' confidence (Ambarish, John, & Williams, 1987; Bar-Yosef & Huffman, 1986; Bhattacharya, 1979,1980; Hakansson, 1982; John & Williams, 1985; Kale & Noe, 1990; Kumar, 1988; Makhija & Thompson, 1986; Miller & Rock, 1985; Ofer & Thakor, 1987; Rodriguez, 1992; Talmor, 1981).

The current study challenges signaling effect theory. Similar research work was undertaken by many other academics, presenting however, contradicting conclusions. Dividend irrelevance initially supported by Miller & Modigliani (1961) is also validated by Papaioannou et al. (2000) and Asimakopoulos (2007). On the opposite strand, empirical results derived also from the Greek stock market, support that dividend policy decisions cause abnormal returns, indicative of information content in share prices (Travlos et al., 2001; Dasilas, 2007; Dasilas et al., 2008; Dasilas, 2011; Vazakidis & Athianos, 2010; Kosmidis et al., 2012).

3. Data & Methodology

The sample comprises 45 listed companies under the FTSE Large Cap Index (25) and the FTSE Mid Cap Index (20). The listing criterion is capitalization value, subsequently the sample consists the largest –in terms of capitalization- companies listed in the Athens Stock Exchange. The companies included in each index are presented in the appendix.

Event study methodology was adopted. The event study window included 20 days before and 20 days after the event, as well as the event day. The event day was defined as the public announcement for ordinary shareholders general meeting, set to decide on dividend payout policy. This provided a sub-sample of 41 (the event day included) daily returns for each share. Time horizon lies between years 2009-2013, which implies dividend payments, or retained earnings, accomplished during fiscal years 2008-2012. In addition to this sample, daily corresponding returns of the General Athens Stock Exchange Index were selected.

For the purpose of this research, we analyzed the annual reports and extracted i) the annual dividend payment ii) the minimum dividend payment that should be paid to shareholders according to Greek law provision. The latter element requires the extraction of profits, share capital and retained earnings figures. From 2008 and onwards, Greek companies that record profits are imposed a) to accumulate reserves, by retaining 5% of net profits. This provision is valid until accumulated reserves reach 1/3 of share capital in value b) distribute 35% of net profits, after subtracting the amount of accumulated reserves, to shareholders. Deviations from these provisions can only occur, if they are approved from an incremented majority of shareholders.

Some companies were excluded from the sample because they did not manage to achieve profits in the 5-year period examined. Those companies are the five banks included in the initial sample (Alpha Bank, National Bank of Greece, Piraeus Bank, Eurobank, Attica Bank), Chalkor S.A. and Intrakom Holdings S.A.. Finally, Coca Cola Hellenic Bottling Company S.A. was also excluded from the sample, due to lack of primary data (company board decided to withdraw from the Greek Stock Exchange).

All numerical data was derived from www.naftemporiki.gr (Greek Financial Newspaper), whereas all annual reports were made available from www.helex.gr (Hellenic Exchanges).

As already stated above, the event study methodology was adopted Two criteria were applied to fashion our sample data – same criteria and methodology was applied by Dasilas (2011)-.

a) Annual dividend change (naive model). This model depicts three categories for share returns, according to dividend change for each financial year. Subsequently, we ended up with three groups of share returns, corresponding to all possible annual changes (increase, decrease, stable).
b) Annual dividend payment was compared to the minimum equivalent, required by the Greek law. This comparison provided three groups of share returns, corresponding to all possible comparison outcomes. The groups comprised share returns for shares paying dividend more, less or equal to the minimum required.

In an effort to test the signaling effect theory, we tested the existence of abnormal returns in the event window (-20 days, +20 days). The market adjusted model was applied for this testing procedure:

$$AR_i = R_i - R_m$$

where AR is the abnormal return of share i, R_i is the realized return of share i and R_m is the market return. Market return is approximated by the return of ASE General Index. Both share and index returns were continuous and derived from the following formula:

$$R = \ln(P_t) - \ln(P_{t-1})$$

Minitab software was employed to calculate average abnormal returns for the event window, as well as to estimate the statistical significance of these returns. The following hypotheses were tested, using t-test methodology.

H_0 (Average Ar_i) = 0 with H_a (Average Ar_i) > 0 (1)
H_0 (Average Ar_i) = 0 with H_a (Average Ar_i) < 0 (2)
H_0 (Average Ar_i) = 0 with H_a (Average Ar_i) ≠ 0 (3)

The first hypothesis was tested i) for those companies that paid incremented dividend compared to their last payment and also ii) for those companies that paid more than the minimum required dividend. The second hypothesis was tested i) for those companies that paid less dividend compared to their last payment and also ii) for those companies that paid less than the minimum required dividend. Finally, the third hypothesis was tested i) for those companies that paid the same dividend compared to their last payment and ii) for those companies that paid the minimum required dividend.

In all cases, rejection of the null hypothesis implies the existence of abnormal returns. Returns that over- or under-perform market equivalents, carry informational content and influence firm value. This actually implies that signaling effect theory is supported by empirical data.

4. Results and Discussion

We adopted a two-stage process for our hypothesis testing. We created six sub-samples for each index. Initially, share returns from listed companies that participate in the FTSE Large Cap Index were discriminated in accordance with the aforementioned criteria. The same procedure was followed for the FTSE Mid Cap shares and eventually these samples were merged to be tested on a unified basis. This discrete testing enabled us to record significantly greater –in absolute values- average abnormal returns for the FTSE Mid Cap samples compared to the FTSE Large Cap equivalents.

1st Criterion – Naive Model (Dividend annual changes)

The processing of the samples that included positive annual changes in dividend payments provided some supportive results of the signaling effect theory. Null hypothesis was rejected in many cases; positive overreaction occurred in 6 cases (for the merged sample) with an overall average of 0.99%.

Table 1. Dividend Increase – Statistically significant observations

	FTSE Large Cap	FTSE Mid Cap	Total
Days	-16**, 13**	-17**,-15***,-4**, 3**, 7**, 9***, 12**, 16**	-19***, -16**, -15***, -4**, 9**, 12**
Average AR%	1.208%	1.46%	0.99%

* 1%, ** 5%, *** 10% significance level

FTSE Large Cap provided only two statistically significant observations, sixteen days before and thirteen days after the event. The average abnormal return for Large Cap shares is less than the FTSE Mid Cap equivalent. As we can observe, table 1 depicts many cases where the anticipated positive reaction is validated by our data.

The opposite pattern of results occurred for the dividend decrease share sample.

Table 2 Dividend Decrease - Statistically significant observations

	FTSE Large Cap	FTSE Mid Cap	Total
Days	-18***, 2***, 15**, 16***	-16*, -12**, 4***, 5**, 11*, 14**, 19**	-19***, -16***, 4**, 11***, 15**, 19**
Average AR%	-0,62875%	-1,08%	-0,5051%

Average abnormal return is less for the FTSE Large Cap shares, albeit the merged sample provided a more moderate percentage change. Table 2 depicts six cases of abnormal returns. The results of the two tables imply that dividend increase has a positive impact on share returns and vice versa. Investors seem to be influenced by dividend change, which is assumed to carry some information on the company's future performance.

Finally, the stable dividend sample also provided some supportive results to the signaling effect theory. Statistically significant observations are fewer. Additionally, cases of abnormal returns are less in absolute value, compared to the respective ones from previous samples.

Table 3 Stable Dividend - Statistically significant observations

	FTSE Large Cap	FTSE Mid Cap	Total
Days	-11**, -10***, 15*, 20**	-20**, -9***	-20**, -10**, -9***, 13***
Average AR%	-1,073425%	-0,1915%	-0,11075%

Summarizing the above results, we conclude the following:

- More statistically significant observations are depicted before the event, i.e. the call for Annual General Meeting with dividend payment on its agenda.
- Results change as the sample merges. FTSE Large Cap, which includes heavily traded shares with law levels of concentration, yields more moderate results both in abnormal return value, as well as in absolute number of statistical observations.

2nd Criterion – Actual Dividend Payment vs Minimum Required by Greek Law

The sample this time was segmented to three sub-samples; shares that paid dividend more, less or equal to the minimum required by the Greek law.

The application of the second criterion did not alter previous empirical findings. Table 1 presents statistically significant observations for both indices, as well as for the merged sample.

Table 4 Dividend greater than the minimum required

	FTSE Large Cap	FTSE Mid Cap	Total
Days	1**, 5***, 8**, 11**, 17***	-17***, -15***, -8***, -6**, -4**, 3***, 16***	-17***, -13***, -6*, -4*, -1**, 5**, 8***, 17***
Average AR%	0,662%	1,302%	0,6573%

FTSE Mid Cap shares record much greater abnormal returns, compared to FTSE Large Cap and the Total sample equivalents. Investors perceive the allocation of a dividend greater than the minimum, as a good prospect for the company's performance. Therefore, when the company decides to pay more dividends, it is believed to be indicative of improved future prospects. Signaling effect theory seems to be supported by these results.

The opposite applies to companies paying fewer dividends than the minimum required. Nevertheless, observations are significantly fewer; only day 2, day 3 and day 5 after the event, record negative abnormal returns.

Table 5 Dividend less than the minimum required

	FTSE Large Cap	FTSE Mid Cap	Total
Days	-11**, 14**, 15**	-7**, 3**, 5**, 10**, 17***	3***, 15**
Average AR%	-0.924%	-0.715%	-0.6245%

Finally, the sample with shares paying dividend equal to the minimum required yielded also supportive results. When the company pays dividend equal to the minimum required, no abnormal return should occur. Nevertheless, our sample yielded marginally positive abnormal returns.

Table 6 Dividend equal to the minimum required

	FTSE Large Cap	FTSE Mid Cap	Total
Days	-20**, -11**, 8***, 12***	-17*, -10***, -8***, -4**, -1***, 2**,14***	-20***, -17*, -15***, -9***, -1**, 2**, 8***, 14**
Average AR%	+0,55%	+0,76%	+0,0795%

Papaioannou et al. (2000) studied the existence of abnormal returns on the day of the dividend announcement, as well as the next day of the event. Results were not supportive to signalling effect theory, since no abnormal returns were recorded. They supported that these findings stem from the Greek legal framework, which imposes a minimum required dividend. This provision absorbs any informational content on the announcement day. Additionally, they studied traded volume and recorded a significant decrease on the dividend announcement day. Our findings contradict the overall conclusion, albeit agree on the absence of abnormal returns for the event window (-1,+1). The widening of the event window revealed supportive cases for the theory, mainly before, but also after the event.

Travlos et al. (2001) studied the existence of positive abnormal returns, after the dividend announcement day. Their study included shares traded on the Cypriot stock market, for the period 1985-1995. They concentrated on the dividend increase case and recorded abnormal returns for the (-2,+2) event window. They supported that abnormal returns derive from the absence of specialized financial information, a phenomenon met in emerging markets. If we compare our samples either for dividend increase or dividend payment greater to the minimum required, we tend to agree with Travlos et al. empirical findings. Although, the abnormal returns in our case occur in a wider time frame. We have to bear in mind that Greek stock market is considered to be more developed, compared to the Cypriot.

Asimakopoulos et al (2007) studied share returns in the Greek stock market, for the period 2000-2004. They adopted the criterion of the minimum required dividend according to Greek law provision. They split the sample to shares paying more or equal to the minimum. The event window adopted, was an eleven day interval (-5,+5). No significant abnormal returns were found for shares paying dividend equal to the minimum required. Nevertheless, shares paying more dividend than the minimum, recorded negative abnormal returns. These findings also support the signaling effect theory, even though they contradict to our results in respect to the sign of change, since we witnessed positive abnormal returns for shares paying dividend more than the minimum required.

Vazakidis & Athianos (2010) research framework was widely adopted for the purpose of our survey. This study focused on the 60 largest shares –in terms of capitalization- for a period covering years 2004-2008. The event window was 41 days long (-20,+20), while the event is determined as the call for shareholders meeting with the dividend payment on the agenda. This research does not apply any criterion to split the sample. The common characteristics with our work relate to the same methodology applied when abnormal returns are measured. They also found supporting evidence of the signaling effect theory, taking the form of abnormal returns mainly before, as well as after, the event. Shares listed under FTSE/ATHEX Mid index yielded more –in absolute figures- statistically important observations; same phenomenon occurred in our sample for the FTSE Mid Cap share index.

Finally, we are going to compare our empirical findings to those of Dasilas (2011). Dasilas studied the 2000-2004 periods, while our study extends the time horizon adding years 2008-2012. The results are quite similar. Firstly, the informational content of the dividend announcement is confirmed for annual dividend changes. The only contradicting element in our work is the behavior of share returns when dividends remain stable. Dasilas finds no abnormal returns for this case, whereas we find significant negative observations. The sample split according to the minimum required dividend criterion, also provided supportive results. However, the case of dividends equal to the minimum required, also presented some differences. In contradiction to the absence of abnormal returns found by Dasilas, we found, abnormal returns marginally above zero (+0.08%). The non-symmetrical market reaction to dividend increases and decreases appears in both works.

6. Conclusions

The aim of this empirical work is to assess the value relevance of dividend announcement. For this purpose, we used data from the Greek stock market, covering a five-year period between 2009 and 2013. We concentrated on forty-five (45) shares participating in the FTSE Large and Mid Cap indices. This provided a sample with the most important –in terms of capitalization- Greek companies. We adopted the event study methodology to find statistically significant abnormal returns for a period of 41 days around the event (-20,+20). We defined the event as the annual shareholders meeting responsible for a company's dividend policy.

Firstly, we focused on the annual change in dividend value. We fashioned three samples of share returns. Each sample was grouped based on possible sign change (positive, negative, and stable). These samples were identified for each index and observed individually, as well as on a merged basis. Our t-tests supported the case of the signaling effect theory. Abnormal returns were observed mainly before, as well as after the event. Increased dividends led to increased share returns and vice versa. Stable dividends also affected share returns negatively.

An interesting, non-symmetrical, market reaction was also observed. Positive market reaction –due to dividend increase- was greater in magnitude than the negative equivalent, caused by dividend decrease. Non-symmetrical reaction may be rooted to a) special reasons led to dividend decrease, like the adoption of an investment plan b) investment opportunities caused by share price decline. Apart from the non-symmetrical market reactions, we also witnessed greater abnormal returns -in absolute value terms- for the FTSE Mid Cap shares, against FTSE Large Cap equivalents.

The second criterion adopted for sample split, was the comparison of dividend paid against the minimum, required by Greek law. The results were quite similar. Companies paid dividends greater than the minimum required, witnessed positive abnormal share returns. This finding supports the signaling effect theory. Non-symmetrical market reactions were also observed for these samples. To be concise, positive reactions were more intense, compared to negative equivalents. Greater returns -in absolute value terms- were also recorded for the FTSE Mid Cap shares, compared to FTSE Large Cap equivalents. Lastly, it is worth mentioning that no significant observations occurred one day before, on the event day, or a day after the event (-1,+1), irrespective of the criterion applied for sample splitting.

Future research should focus on the testing procedure, trade volume and share concentration variables. This is confirmed by the differences in the absolute number of significant observations, as well as in abnormal returns values between FTSE Large and Mid Cap shares.

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Annex

Table 1 Index – FTSE Large Cap (25)

Motor Oil	Frigoglass
Hellenic Petroleum Company	Piraeus Port Authority
Mitilineos Holdings	Coca Cola Hellenic Bottling Company AG
Corinthos Pipelines	JUMBO
Titan	Folli Follie
Ellaktor	Intralot
GEK –TERNA	OPAP
METKA	National Telecommunications Company
Greek Stock Exchanges	Public Power Company
EYDAP	Alpha Bank
National Bank of Greece	Piraeus Bank
EUROBANK PROPERTIES	MIG
Terna Energean	

Table 2 Index – FTSE Mid Cap (20)

J-P AVAX S.A.	MLS Software S.A.
Attica Bank	ELVAL S.A.
AUTOHELLAS - HERTZ	Thessaloniki Port Authority
Greek Sugar Industry S.A.	Thrace Plastic S.A.
CABLEL S.A.	PLAISIO COMPUTERS S.A.
EYATH S.A.	Sarantis S.A.
Eurobank S.A.	Sidenor S.A.
Athens Medical Group S.A.	Hygeia S.A.
Iktinos Hellas S.A.	Fourlis Holdings S.A.
Intrakom Holdings S.A.	HALCOR S.A.

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A Greek Evaluation Of The Course Experience Questionnaire: Students' Conceptions Of The Teaching Quality Of Higher Education Accounting Studies

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ABSTRACT

Purpose
This study reveals the results of the validation of the Course Experience Questionnaire (CEQ) within the Greek accounting context. The specific instrument has been used extensively in other contexts to investigate the teaching-learning environment in Higher Education Institutions (HEIs).

Design/methodology/approach
A convenience sample of 268 students from 3 Higher Technological Educational Institutions (ATEIs) participated in this study during the 2016-2017 academic year. The validity and reliability of the CEQ were investigated through exploratory factor analysis and the Cronbach alpha coefficient. The overall course satisfaction was used as an external criterion in order to strengthen the instrument's validity. Additionally, students' experience from their accounting studies was explored in relation to a number of demographic characteristics; gender, age, intention to attend postgraduate and professional studies, internship scheme and intention to follow the accounting profession.

Findings
The exploratory factor analysis identified four constructs reflecting good teaching, generic skills, appropriate assessment and clear goals and standards. Age, internship scheme and intention to attend postgraduate studies were revealed as predictors of CEQ subscales

Research limitations/implications
The research population is limited and data was collected only from ATEIs students, so the generalization of findings needs attention

Originality/value
To the best of our knowledge the present study is the first attempt to adapt the CEQ in accounting studies in Greece.

1. Introduction

There are many reasons why the teaching quality in HEIs should be constantly investigated and monitored. From the students' perspective, curriculum, teaching and assessment are the key determinants of students' approaches to learning and their learning outcomes, which in turn affect students' employability rates (Lizzio, et al., 2002; EU, 2009a, b). Additionally, students need accurate information about educational quality to help them choose between different courses of study. From the academics and university administrators' standpoint, they need information to help them monitor and improve their courses and programs, to raise institutional performance.

For an academic institution, high institutional performance can reinforce its position, can support it in developing strategies that will reach students' expectations, and can raise its fame and status for the

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benefit of students and staff (Elliot & Shin, 2002; De Shields et al., 2005). Additionally, institutions need information about quality to help them benchmark and market their performance. Governments and other bodies need information to assist in decisions on funding, policy development and accountability. Knowing the level of the teaching quality and students' satisfaction rate will help the country align with other European countries in the framework of the Bologna Agreement.

Academics have widely explored teaching quality and effectiveness (Entwistle and Ramsden, 1983; Spencer & Schmelkin, 2002; Onwuegbuzie et al., 2007; Scarboro, 2012; De Jager and Gbadamosi, 2013; Milton-Wildey et al., 2014), mostly through the students' eyes of individual and environmental factors such as teacher enthusiasm and passion, course interest, teacher preparation and availability, concern for students, clear communication, assessment type, work load, and fair grading (Sheehan, 1999; Crumbley et al., 2001; Greimel-Fuhrmann and Geyer, 2003; Okpala and Ellis, 2005; Gerkin and Kierkus, 2011; Alhija, 2016). The design and use of ratios to provide insight on teaching quality is a difficult undertaking (Papadimitriou, 2011); on the contrary, survey instruments administered to students provide accurate, valid, multidimensional and relatively unbiased results (March, 1987; Wachtel, 1998).

CEQ was developed by Ramsden (1991) and amended by other researchers (Eley, 2001; Griffin et al., 2003; Ginns et al., 2007; Wilson et al., 1997). Marton and Saljo (1976) and Entwistle and Ramsden (1983) provided the theoretical foundations on teaching and learning concepts, for the development of CEQ, which is also used in conjunction with the students' approaches to learning tools (Ramsden, 1991; Trigwell & Prosser, 1991; Biggs, 1989; Lizzio et al., 2002). The CEQ is intended to assess whole degree programs, not specific courses or units of studies or the teachers themselves. Its extensive use and validation include many Western academic contexts and Anglo-Saxon countries like Australia (Ramsden, 1991), UK (Richardson, 1994), Canada (Kreber, 2003), the Netherlands (Jansen et al., 2013), Ireland (Byrne & Flood, 2003), Italy (Barattucci & Zuffo, 2012) and others. CEQ has been partially validated in non-European academic environments, such as Malaysia (Thien & Ong, 2016), China (Law & Meyer, 2011), Chile (González, et al., 2012), Nigeria (Andrew, 2010) and India (Chakrabartya, et al., 2016).

Byrne and Flood (2003) have evaluated the 23-item version of CEQ and have confirmed its use in the Irish accounting educational setting. We are unaware of any attempts to adapt the CEQ in accounting studies in Greece. It is noted, however, that the CEQ was validated in tourism industry studies in Greece (Stergiou and Airey, 2012), using the 31-item instrument of Möller (2002). Since various studies confirm that the CEQ validity and reliability is equally related to the field of study and the culture and tradition of the academic setting (Richardson, 2005; Barattucci and Zuffo, 2012; Parpala et al., 2011), we investigated its use in Greek accounting studies.

The first aim of this study is to explore the validity and reliability of the CEQ and its psychometric properties for the accounting degree programs in Greece. The second aim is to investigate the relationships between the teaching and learning environment (CEQ subscales) in relation to demographic and local educational system characteristics; gender, internship scheme, students' intentions for post-graduate or professional studies and overall course satisfaction.

With respect to the structure of this publication, the sections following this introduction will present: the background to the study (section 2); the methodology and the data collection methods of the study (section 3); the data analyses (section 4); the discussion of the results (section 5); and, finally, the conclusions reached and suggestions for further research on the topic (section 6).

2. Background to the study

2.1 Literature Review

Higher education institutions have been striving in the last decades to improve student satisfaction of their learning experience. Informed HEIs can intervene, if necessary, to make their curriculum more responsive to the needs of a changing marketplace (Eyck et al., 2009; Witowski, 2008).

The Course Experience Questionnaire (CEQ) is one of the most established instruments for assessing student experiences and obtaining feedback on teaching quality. The CEQ has evolved from the Course Perceptions Questionnaire (CPQ) used at a British University (Ramsden, 1979). In that study Ramsden found that students in different departments had different perceptions of their learning context and that their perceptions were associated with their approaches to study. Ramsden amended and developed the CEQ in Australia (1991) and since then it is used as a national graduate survey instrument. The original CEQ contained 30 items (CEQ30) based on five scales, involving good teaching (8 items), clear goals and standards (5 items), appropriate workload (5 items), appropriate assessment (6 items) and emphasis on independence (6 items). The emphasis on Independence scale was later abandoned and the Generic Skills Scale was included in order to reflect the necessity to measure the development of generic competences of graduates within a complex globalized work environment (Ainley & Long, 1994).

The most widely used version is the short form (CEQ23) which comprises the following scales: Good Teaching (6 items), Clear Goals and Standards (4 items), Appropriate Workload (4 items), Appropriate Assessment (3 items) and Generic Skills Scale (6 items). Long and short versions of the instrument (CEQ36, CEQ30 and CEQ23) have been validated by Wilson et al., (1997) using large multidisciplinary samples in Australia. Further evidence of all versions of CEQ is provided by examining the relationship between CEQ scores and an external criterion such as the overall student satisfaction from the quality of the course.

CEQ has been criticized for not including other major aspects of the teaching-learning environment (Yorke, 1995, 1996). Researchers attempted to improve the original instrument either by altering question format and phrasing (Eley, 2001) or including new scales in order to capture broader features of the learning context. For example Griffin et al., (2003) added the following scales: student support, learning resources, learning community,

graduate qualities and intellectual motivation while Ginns et al., (2007) revised the instrument so that it can be used for currently enrolled students (SCEQ). Grace et al. (2012) examined SEC dimensions in conjunction with a global student satisfaction measure developed specifically for that study.

Richardson (1994), using the 30-item CEQ, broadly identified the five factor scales reported by Ramsden (1991), however he mentioned problems with the composition of appropriate assessment sub-scale and its low alpha coefficient (0.47). Despite this problem, Richardson concluded that the instrument could be used in the British educational environment. Wilson et al. (1997), who investigated and validated both the 36 and the 23-item CEQ, in their Australian survey, referred to items cross-loading, indicating the potential for further improvement in sub-scales. In their study involving UK medical students, Broomfield and Bligh (1998) reported satisfactory construct validity and reliability. Factor analysis yielded 6 factors (the good teaching was split into two factors), with alpha values ranging from 0.37 (clear goals and standards scale) to 0.78 (good teaching scale). In Ireland, Byrne and Flood (2003) surveyed an accounting group of students, using the 23–item CEQ, resulting in items loading in the intended factors except the one item; *'my course helped to develop the ability to plan my own work'*, and Cronbach alpha values ranging from 0.66 to 0.78. In the Netherlands, Jansen et al. (2013) used the 23–item CEQ to survey 956 students across nine faculties. They reported satisfactory alpha coefficients ranged from 0.75 to 0.87, while the original five factor structure of CEQ was confirmed. In Italy, Barattucci & Zuffo (2012) used the 30-item SCEQ with a sample of 622 students from different faculties. In the original 30-item version, the SCEQ did not provide satisfactory results, however after the elimination of the Clear Goals and Standards Scale which presented unsatisfactory reliability (0.51), the 23-item SCEQ version was found to be a reliable measure of the respective constructs. The authors concluded that despite the clear differences between the Italian context with the British and Australian ones, and although in need of further improvement, these instruments can be useful in the Italian academic environment. In Greece, Stergiou and Airey (2012), used a 31-item CEQ, comprising six scales and adapted by Möller (2002) for hospitality degree students in the UK. The CEQ exhibited a five-factor structure and satisfactory internal consistency.

Non-European countries like Nigeria validated the Student CEQ (SCEQ) with alpha coefficients ranging from 0.61 to 0.88 but with items cross-loading on scales other than intended (the good teaching scale), a pattern seen also in Wilson et al. (1997). Authors concluded that the modified SCEQ is applicable for use with Nigerian undergraduate students (Andrew, 2010). In Japan, Fryer et al.'s (2011) study resulted in 4 scales (good teaching, generic skills, appropriate workload, and appropriate assessment). However, the authors took into consideration other findings which concluded that the student learning theory (associations between students' approaches to learning and their perceptions of the learning environment) constructs may be constituted differently in the Japanese context and therefore further research was recommended.

A study in mainland China (Price et al., 2011) using the 36-item CEQ concluded in two-factor dimensions with regards to academic quality: perceptions of student support (a=0.92) and perception of course demands (a=0.88). Another study by Law and Meyer (2011) used the 36 item CEQ to investigate post-secondary students. Their study explicitly indicated a four-factor structure and a high degree of overlap among the items. Lower Cronbach alpha values were measured than in other studies (good teaching 0.77, clear goals 0.23, appropriate workload 0.56, appropriate assessment 0.60, generic skills, 0.78, independence scale 0.47). The authors proposed further development of CEQ for application in Hong-Kong. Yin et al. (2014) used the 36-item CEQ to reveal acceptable construct validity after deleting item 19; *'we are generally given enough time to understand things we have to learn'* and Cronbach alpha remained lower than 0.60 in three CEQ factors (clear goals and standards, emphasis on independence, appropriate assessment). The authors suggested two possible reasons: firstly, the negative-coded items and secondly, the influence of cultural context on the psychometric qualities of CEQ in a non-Western context. Yin & Wang (2015) conducted a study using the 36-item CEQ and 3 more scales: university level environment, overall satisfaction scale and academic efficacy scale, and found an acceptable level of internal consistency ratings (a=0.60). Their study confirmed construct validity of the intended six factors for CEQ.

In Pakistan, Ullah, Richardson and Hafeez (2011) and Ullah et al. (2016) used the 36-item CEQ in conjunction with other scales to measure student perception of teaching quality. The studies confirmed only four factors while clear goals and the role of independence were not identified by the student responses, supporting the notion these ideas are not (yet) part of the discourse on non-Western countries. It should be mentioned that the negative worded items were reworded in a positive form since the negative format caused difficulties to the Pakistani students. The 36-item CEQ was distributed to West Bengal students (Chakrabarty et al., 2016) and identified four constructs (good teaching, generic skills, student support and appropriate workload) with Cronbach alpha values ranging from 0.53 (appropriate workload) to 0.81 (good teaching) and as authors suggested the reduced version of CEQ can be recommended as a measure of student perception of the academic quality of programs. Finally, in Malaysia, Thien & Ong (2016) attempted to validate the 23-item CEQ that was distributed to 190 students. Their findings raised serious questions regarding the reliability and construct validity of the CEQ for a Malaysian public university. Only two out of the five scales showed satisfactory level of reliability with scales of clear goals and standards, appropriate workload and appropriate assessment showing very low reliability while six items failed to load on the intended scales. Serious overlapping of the factor structures indicated the absence of construct validity. Overall the short form of CEQ was not applicable to the Malaysian context and the extended version of CEQ should also be considered.

The CEQ instrument is also broadly used in parallel to learning approach tools in order to explore relations between student approaches to learning and

experiences of the teaching–learning environment. Relative researches in Western contexts indicate that a positive experience is associated with a deep approach and negatively related to a surface approach to learning (Kreber, 2003; Parpala et al., 2010; Karagiannopoulou & Christodoulides, 2005).

Richardson in his review (2005) argued that the CEQ in general was a reliable and valid instrument for evaluating student perceptions of academic quality. Ramsden (1991) suggested that the CEQ offers a reliable tool for determining the perceived teaching quality of academic units "in systems of higher education that are based on British models" (p. 129). In the above non-Western country studies evidence was provided that concepts settled in Western environment such as clear goals and standards, appropriate assessment, student independence, appropriate workload, are not yet developed in those countries therefore the CEQ instrument may not adequately reflect the local academic culture.

2.2. The Greek Educational context

Greece has no a nationwide instrument to measure teaching quality as part of a quality assurance framework such as happens in other countries (CEQ in Australia and New Zealand, NSSE in USA, National Student Survey in UK) (Jansen et al., 2013). Each University is free to adapt its own instrument from an original questionnaire provided by the Hellenic Quality and Accreditation Agency (HQAA). The digitalized form of the questionnaires has resulted in limited student participation in the evaluation procedure, making it impossible to retrieve reliable and adequate data from these tools. Students themselves have little or no faith in these surveys because they do not believe that their opinion is considered. Therefore, there is no way to benchmark teaching quality or student satisfaction among Greek HEIs.

There are two types of Higher Education in Greece: Universities and Higher Technological Educational Institutes (ATEI). The basic differences with regards to students' learning between the two types of institutions concern the work placement and the workshops. Students at ATEIs undertake a mandatory 6-month work placements in the last semester of studies. Additionally, students have to attend related workshops for many of their courses. University students have an optional work placement, typically for a 2-4 month period, while workshops comprise a small proportion of overall studies. The present research applied the instrument to three ATEIs Accounting and Finance departments.

The Greek academic system is mainly teacher-centered, the accounting studies are especially focused on information and technical regulation reproduction with little effort to develop higher order thinking skills (Asonitou, 2015a, b; Asonitou & Vitouladiti, 2015). Although systematic collection and processing of evaluative data is well-established in most Australian and UK universities, the educational environment in Greece is quite different. However, Greek Law 3374 (2005) established the Hellenic Quality Assurance and Accreditation Agency for Higher Education (http://www.adip.gr) in order to evaluate Greek higher education (Asonitou & Tromaridis, 2015). To the best our knowledge there is no integrated program to evaluate procedures for teaching effectiveness in Greek higher education, but individual professors may voluntarily measure student satisfaction in order to obtain feedback on their teaching. There is therefore scope for validating an instrument to assess teaching quality for purposes of accountability, comparison between institutions and benchmarking with similar academic units abroad.

3. Methods

Participants: This cross-sectional study was conducted in 3 out of 10 Technical Educational Institutes (TEI) that offer accounting and financial studies in Greece. The sample consisted of undergraduate students at the Departments of Accounting and Finance in the TEIs of Piraeus, Epirus, and Eastern Macedonia and Thrace. A higher percentage (56.6%) of students enrolled in the seventh semester; 43.4% of study participants were attending an eight or higher semester. Data collection was conducted during the 2016-2017 academic year and was based on convenience sampling. Students in Piraeus voluntarily participated in the study and were asked to complete a self-completion and anonymous questionnaire on their learning experience. Questionnaires were distributed by the researchers during class hours, following the assent of the class instructor. Before submission, students were given general instructions on the questionnaire. Students in Epirus and Eastern Macedonia and Thrace received an online questionnaire, sent by researchers to their email addresses. A follow-up letter was sent two weeks later to maximize the received responses.

Measures: The CEQ23 instrument was used in this study and an agreement/disagreement 5-point scale from 1 (strongly disagree) to 5 (strongly agree) was used. Based on previous literature on the questionnaire, five scales were included. The Good teaching scale (GTS), consisted of six items measuring lecturer efforts to increase student interest and provide feedback to students in order to motivate and guide them toward success. The Clear goals and standards scale (CGSS), consisted of four items on the students' perceived degree of clarity in relation to graduation requirements. The Appropriate assessment scale (AAS) consisted of three items capturing student perceptions of the assessment methods' adequacy. The Appropriate workload scale (AWS) included four items assessing the perceptions of sustainability of the overall academic workload. Finally, the Generic skills scale (GSS) comprised six items measuring the level of development of student analytic, problem-solving and communication skills. The coding of seven negatively worded items was reversed so that higher scores corresponded to more positive ratings. It is important to mention that an external criterion was used to examine the relationships with CEQ scores in order to empower the validity of the instrument (Wilson et al., 1997). Specifically, overall course satisfaction (1 =*not all* to 5 = *extremely satisfied*) has been used as a criterion as done in previous studies (Ramsden, 1991; Wilson et al., 1997).

Cultural adaptation: The original CEQ tool was written in UK English (Ramsden, 1991) while, in our case, the target version was in Greek. The translation process was based on Brislin's back-translation model, which consists of four techniques: 1) back-translation, 2)

bilingual technique, 3) committee approach, and 4) pre-test procedure (Brislin 1970). In achieving cross-cultural equivalence, the comparability of language, similarity of comprehensibility and similarity of interpretation between the back and original versions of CEQ were rigorously analyzed.

A first phase involved two independent researchers fluent in the English language. One was a professor of public university specializing in accounting education and the other was a research fellow specializing in instrumentation. The researchers had studied the literature review on the CEQ questionnaire and they made some changes in the wording in order to fit the local-response context. Subsequently, the two translations of CEQ were compared, and a draft of the first agreed version was produced. The next stage (2nd phase) involved the back-translation of the Greek version to English, performed by a professional translator, with the original version of the questionnaire concealed. The back-translated and the original version of the questionnaire were compared by the researchers, and subsequent discrepancies relating the comparability of the used language, similarity of interpretation and the degree of comprehensibility were resolved via teleconference. In the third phase, the content of the second version was reviewed by a group of researchers (committee approach) also fluent in Greek and English. The goal was to convey the conceptual meaning of the original while rendering it culturally explicable in the Greek context, rather than seeking linguistic equivalence. In the fourth phase, a pilot study with 40 students was conducted to test whether items were understandable. The pilot study used a test-pretest technique to measure the validity of the Greek version. The current researchers reviewed the comments by members of the pilot sample and adapted the questionnaire accordingly. Some items of the CEQ, investigating students' perceptions of the education system had notable cultural, institutional, and organizational specificity related to the British university system, and not matching the Greek system, therefore the wording of propositions had to change accordingly.

Data analysis: Statistical analysis was performed with descriptive statistics and bivariate analysis. The results are presented as absolute (n) and relative (%) frequencies for the nominal and ordinal variables and as mean values for the quantitative variables.

The present study adopted a conservative approach to the validation process. The focus, in particular, was on the psychometric properties of its constituent scales as revealed by the standard application of item-correlation analyses and exploratory factor analysis. In order to test the compatibility of the data for factor analysis, Kaiser-Meyer-Olkin (KMO) and Barlett Sphericity tests were used. According to bibliography, the accepted KMO statistic variables should be greater than 0.50. Moreover, KMO values between 0.8 and 1 indicate the sampling is adequate, values less than 0.6 indicate the sampling is not adequate and that remedial action should be taken, values close to zero means that there are large partial correlations compared to the sum of correlations. In other words, there are widespread correlations that are a large problem for factor analysis (Hutcheson, Sofroniou, 1999). For these data, the value of Kaiser-Meyer-Olkin test statistics was 0.858, which shows the very good suitability assessment. Additionally, Bartlett's test of sphericity (1954) was implemented and showed statistical significance (x^2 = 1410,443; p<0.01). The data follow the normal distribution.

In order to reveal the factor design of the scale, Principal Components Analysis and Oblique Rotated Component Matrix was chosen as the factor analysis (Cattell, 1978). Analysis showed that 23 items with the eigenvalue above value 1, has the same factor distribution as the original scale. A factor loading for a variable is a measure of how much the variable contributes to the factor; thus, high factor loading scores indicate that the dimensions of the factors are better accounted for by the variables. According to a rule of thumb, using an alpha level of .01 (two-tailed), a rotated factor loading would need to be at least .32 to be considered statistically meaningful (Tabachnick & Fidell, 2007). A factor loading of .32 gives approximately 10% of the overlapping variance.

For the assessment of the questionnaire's internal consistency, the coefficient alpha Cronbach was used (Cronbach, 1951). The relationship between CEQ scales was explored via a correlation analysis with Pearson product-moment correlation. Student's *t*-test has been performed in order to determine the significant differences between the CEQ scales and characteristics of the sample and overall satisfaction from accounting studies as well.

Multiple regression analyses using the backward method were conducted to investigate: a) the associations of CEQ scales (dependent variables) and characteristics of the sample (independent variables), b) the associations of overall satisfaction from accounting studies (dependent variables) and CEQ scales (independent variables). The SPSS 21.0 software was used for statistical analyses.

4. Results

Sample profile: The majority of the sample is female (58.6%). The mean age is 23.7 (S.D. 4.5). 35.4% of students had finished their internship obligation. A high percentage (69.4%) has decided to follow the accounting profession, but a low percentage (26.1%) has decided to attend a postgraduate program, while 38.4% has not yet arrived at a decision. Additionally, 35.1% of the sample stated that they will continue studying for a professional qualification and 32.8% has not yet decided on that. The mean study hours per week are 5 hours (S.D.5.2) and the mean grade score until now is 6.6 points out of 10 (S.D. 0.8) with range from 5 to 9.4 points.

Factor and Reliability Analyses: Exploratory factor analysis was applied to the 23 items of the Greek Course Experience Questionnaire. Values of sampling appropriateness (KMO = .837) and Bartlett test of sphericity (x^2 = 1602,993, p < .001) showed the adequacy of the sample.

Six factors were extracted, explaining 55.8% of the variance. Items from the generic skills scale (items 2, 5, 9, 10, 11, 21) were loaded on the 1 factor (explained variance = 25.2%). This factor reflects the development of student employability-related skills through their studies. Factor 2 (explained variance = 9.08%) showed salient loadings on three of the six items from the good teaching scale (items 7, 16, 15) one item from the appropriate workload

scale (item20). The composition of the second factor suggested that the students associated lecturer teaching quality with the pressure of teaching staff in order to do well in courses. Factor 3 (explained variance = 6.8%) showed salient loadings on one item from the appropriate workload scale (item14), one item from the good teaching scale (item3) and one item from the clear goals and standards scale (item1). Reviewing these items suggested that the third factor involved student perceptions as far as the motivation, the standard of work expected and the time to understand things. Factor 4 (explained variance = 5.2%) showed salient loadings on all three items from the assessment scale (items 18, 12, 8) and one item from good teaching (item19).

This factor reflects the interpretation factual knowledge associated with the interesting lesson of teaching staff. Factor 5 (explained variance = 4.9%) showed salient loadings on one item from the appropriate workload scale (item22) and one item from the clear goals and standards scale (item13). The composition of the fifth factor suggested that the students associated the understanding of accounting studies with the sheer volume and the teaching staff's expectations. The last factor (explained variance = 4.5%) showed salient loadings on one item from the appropriate workload scale (item4), two items from the clear goals and standards scale (items 6, 23) and one item from good teaching scale (item17). The composition of the sixth factor suggested that the students associated the workload with teaching staff expectations and good teaching. From the above analysis is understood that items of scales are not fitted correctly based on instructions of CEQ instrument. However, the Cronbach's alpha of overall questionnaire met the criterion of 0.781, which means adequate reliability, but except from good teaching scale (Cronbach's alpha = 0.803) and the generic skills scale (Cronbach's alpha = 0.784) all the others scales were poor, with range from 0.418 to 0.124. Due to the issues highlighted by exploratory factor analysis and reliability analysis, items of the appropriate workload scale were excluded from analyses.

A new exploratory factor analysis of the 19 items and the four scales of the Greek CEQ were carried out. Table 1 shows factor loadings of the CEQ items. Four factors were obtained accounting for 52.18% of the variance. Factor loadings lower than .35 are not reported. Factor analysis showed that the 19 CEQ items represented the expected four-factor structure. The extracted factors were named, respectively: Factor 1, good teaching scale (explained variance = 29.56%; five items) and the range of factor loadings are between 0.762 and 0.550; Factor 2, appropriate assessment scale (explained variance = 9.39%; four items) and the range of factor loadings are between 0.720 and 0.479; Factor 3, generic skills scale (explained variance = 7.61%; six items) and the range of factor loadings are between -0.806 and -0.530; Factor 4, clear goals and standards scale (explained variance = 5.62%; four items) and the range of factor loadings are between -0.815 and -0.561.

Table 1: Factor structure of CEQ item scores

	Components			
	***GTS* (1st factor)**	***AAS* (2nd factor)**	***GSS* (3rd factor)**	***CGSS* (4th factor)**
The staff made a real effort to understand difficulties I might be having with my work	0,762			
The staff put a lot of time into commenting on my work	0,749			
The teaching staff normally gave me helpful feedback on how I was going	0,698			
The teaching staff worked hard to make their subjects interesting	0,572			
The teaching staff of this course motivated me to do my best work	0,550			
The staff seemed more interested in testing what I had memorised than what I had understood		0,720		
It was often hard to discover what was expected of me in that course		0,670		
Too many staff asked me questions just about facts		0,628		
To do well in this course all you really needed was a good memory		0,479		
My course helped me to develop the ability to plan my own work			-0,806	
The course developed my problem solving skills			-0,787	
The course sharpened my analytical skills			-0,729	
The course improved my skills in written communication			-0,695	
The course helped me develop my ability to work as a team member			-0,582	

As a result of my course I feel confident about tackling unfamiliar problems			-0,530	
I usually had a clear idea of where I was going and what was expected of me in this course				-0,815
It was always easy to know the standard of work expected				-0,674
The staff made it clear right from the start what they expected from students				-0,670
My lecturers were extremely good at explaining things				-0,561

CEQ, Course Experience Questionnaire; GTS, Good Teaching Scale; AAS, Appropriate Assessment Scale; GSS, Generic Skills Scale; CGSS, Clear Goals and Standards Scale

Cronbach's alpha coefficient and the Pearson product moment correlation analysis were applied in order to determine the internal consistency reliability for survey instrument (table 2). All scales were positively correlated with each other. Cronbach's alpha value for the total scale is 0.817; GTS is 0.781, AAS is 0.535, GSS is 0.784, and CGSS is 0.688. As far as the low reliability of assessment scale is concerned, we find this as not surprising, since it was also the scale containing the fewest items, and it is well known that the value of coefficient alpha tends to vary directly with the number of items (Cronbach, 1951). Additionally, based on instructions of Nunnally (1979) for the coefficient of internal reliability, values such as 0.5 and 0.6 are considered acceptable for the initial stages of a survey.

Table 2: Reliability and Correlation Analysis

	Cronbach alfa	**Correlation Analysis**		
		ASS	GSS	CGSS
GTS	0.781	0.109*	0,563**	0,609**
AAS	0.535		0,145*	0,195**
GSS	0.784			0,487**
CGSS	0.688			

**. Correlation is significant at the 0.05 level (2-tailed); **. Correlation is significant at the 0.01 level (2-tailed); GTS, Good Teaching Scale; AAS, Appropriate Assessment Scale; GSS, Generic Skills Scale; CGSS, Clear Goals and Standards Scale*

CEQ, Students' Characteristics and Overall Course Satisfaction; This section presents the analysis of CEQ scales associated with the characteristics of the sample and the overall course satisfaction. Concerning the mean score of CEQ, results show that students have a positive perception of their studies (M=3.3, S.D= 0.5). Specifically, the mean score of good teaching was 3.05 (S.D. 0.77), which showed that there are good practices in studies. The mean score of assessment scale was 3.33 (S.D. 0.67) highlighting a positive perception about the extent to which assessment promotes intellectual skills rather than the recall of information. The mean score of generic skills scale was 3.43 (S.D. 0.69), indicating that the development of these skills was satisfactorily achieved during their studies. Finally, the mean score of clear goals and standards scale was 3.55 (S.D. 0.65) demonstrating a positive respondents' perceptions of the clarity with which teaching staff communicated expected academic standards and program goals.

Internship: Statistically-significant differences were found between students having finished their internship obligation and scales of good teaching, generic skills and clear goals and standards. The mean score of good teaching scale for students that had finished their internship was 3.20 while for those that had not finished was 2.97 (p value = 0.024). Similar were the results for generic skills scale and for clear goals and standards scale. Students that had finished their internship scored 3.66 and 3.69, while students that had not participated in internship had a mean score of 3.30 and 3.50 respectively (p value ≤ 0.001 and p value = 0.022).

Career in accounting: Students who responded as determined to follow the accounting career scored higher in appropriate assessment scale, in clear goals and standards and in generic skills scale. Table 3 below presents the significant differences for the above group of students.

Table 3: Intention to follow career in accounting and CEQ subscales

	Yes	No	*P value*
Appropriate Assessment Scale	3.24	2.88	*0.003*
Clear Goals and Standards Scale	3.43	3.16	*0.001*
Generic Skills Scale	3.57	3.10	*0.002*

Intention to attend postgraduate studies: Students that had decided to attend a postgraduate program scored

significantly higher in the appropriate assessment scale, clear goals and standards scale and generic skills scale (table 4).

Table 4: Intention to attend postgraduate program and CEQ subscales

	Yes	No	*P value*
Appropriate Assessment Scale	3.41	3.11	*0.009*
Clear Goals and Standards Scale	3.74	3.43	*0.005*
Generic Skills Scale	3.58	3.29	*0.012*

Intention to acquire professional qualifications: Students that had decided to acquire a professional qualification (i.e. ACCA) are more likely to score higher in clear goals and standards scale (3.67, p = 0.010) and generic skills scale (3.56, p = 0.006) than the other students (3.39 and 3.27 respectively).

Regression analyses: Multiple linear regression analyses using the backward method was conducted in order to determine whether CEQ subscales can be predicted, based on sample characteristics (table 5). Four models are realized where the dependent variable is each CEQ subscale and the independent variables are: gender, age, internship, career in accounting, intention to attend a postgraduate program or a professional qualification program.

Table 5: Models of linear regression analyses in CEQ subscales and characteristics of sample

Dependent variables	**Independent variables**	**Unstandardized Coefficients**		**P value**
		B	**Std. Error**	
Good Teaching Scale	(Constant)	2,321	0,270	*0,001*
	age	0,031	0,011	*0,006*
Assessment Scale	(Constant)	3,141	0,064	*0,001*
	Postgraduate Programme	0,187	0,047	*0,001*
Generic Skills Scale	(Constant)	3,309	0,052	*0,001*
	Internship scheme	0,356	0,086	*0,001*
Clear Goals and Standard Scale	(Constant)	3,418	0,071	*0,001*
	Internship scheme	0,170	0,083	*0,043*

B, beta; Std. Error., Standard error

Satisfaction: 53.4% of students declared very/extremely satisfied and 32.8% moderately satisfied in accounting studies. Correlation analysis was conducted between CEQ subscales and overall course satisfaction and showed that all scales are correlated with the satisfaction criterion (table 6).

Table 6: Correlation Analysis between CEQ scales and overall course satisfaction

	Overall course satisfaction
Good Teaching Scale	0,479**
Appropriate Assessment Scale	0,252**
Generic Skills Scale	0,473**
Clear Goals and Standards Scale	0,416**

***. Correlation is significant at the 0.01 level (2-tailed).*

In order to determine the impact of CEQ scales on overall course satisfaction, multiple linear regression analysis was performed. The findings are showed in table 5.

Table 7: Model of linear regression analyses in CEQ scales and overall course satisfaction

	Unstandardized Coefficients		**Sig.**
	B	**Std. Error**	
(Constant)	0,332	0,318	0,298
Good Teaching Scale	0,363	0,074	0,001
Assessment Scale	0,248	0,071	0,001
Generic Skills Scale	0,370	0,083	0,001

B, beta; Std. Error., Standard error

5. Discussion

The teaching quality and the subsequent student satisfaction is a major interest in most countries. In Greece, despite repeated calls for improving the teaching quality in Higher Education from various sources, there is no nationwide instrument for evaluation, accountability and benchmarking. This study evaluated the accounting courses teaching quality using the 23-item CEQ.

The study reached a four–factor structure after eliminating the workload scale due to its low reliability and the cross-loadings of factors. Item 13 (*'It was often hard to discover what was expected of me in that course'*) loaded in the Appropriate Assessment Factor while item 17 (*'My lecturers were extremely good at explaining things'*) loaded in the Clear Goals and Standards Factor indicating that students considered that teachers were good at explaining the goals and expectations from the course. The "appropriate workload" factor was not identified by

the student responses, which is a result not usually met in similar studies. Low reliability ratings for certain scales and the inability to reach the intended five-scale or six-scale structure (depending on the long or short form of CEQ) is met in the study of Barattucci & Zuffo (2012) in Italy, the studies of Price et al. (2011), and Yin et al. (2014) in China, the studies of Ullah, et al. (2011) and Ullah et al. (2016) in Pakistan, and the study by Chakrabarty et al. (2016) in West Bengal.

Students were not able to identify the "appropriate workload" factor. This may be due to the negative wording of 3 out 4 appropriate workload items as indicated in other studies (see Yin et al., 2014; Ullah et al., 2011). Another reason for this may be the high rate of absenteeism and the prolonged duration of studies noted in HEIs in Greece (Katsikas & Panagiotides, 2011). Absenteeism, especially in the later years of (accounting) study, may render students incapable of estimating the workload; there were cases where students would attend class a few times in the whole semester since they focus solely on final exams. Absenteeism is a widespread phenomenon and occasionally it can reach 90% (Psacharopoulos, 1988), while the number of students that complete studies at the expected length of degrees range from 12% to 27% (Katsikas and Katranides, 2006). Absenteeism from classes lead students to lose contact with the material and the workload they have to manage. Usually students do not balance the workload during the semester period and try to catch up on the material during the examination period at the end of the semester. The prolonged years of study causes alienation and dissociates students from the academic environment.

The examination of course experience for accounting students shows that they rated moderately their overall satisfaction (M=3.3), while they rated fairly higher their perceptions about clear goals and standards (M=3.55) followed by the generic skills (M=3.43), the proper assessment (M=3.33) and good teaching (M=3.05). These results may mirror the teacher-centered academic system, in which clear goals represent the "one book manual", the specific pages and exercises to study and the information reproduction system. We examined two groups of students; those who have finished their 6 month internship obligation and those who have not. Results demonstrate that student perception of teaching-learning environment is influenced by age, internship, intention to become accountants, intention for further studies in accounting while gender does not seem to affect student perception.

Evidence of the validity of the Greek CEQ is provided by examining the relationships between CEQ scores and external criteria, such as overall course satisfaction (Ramsden, 1991). All the Greek CEQ scales showed a significant positive correlation with overall satisfaction, strengthening the instrument's validity for use with Greek accounting students. Regression analysis revealed that the Generic Skills scale had the higher impact on student satisfaction, perhaps due to the strong professional orientation of accounting courses followed by good teaching and the assessment scale.

A limitation of this study has been the convenience sample and the relatively small number of students (268). Given that the study did not include accounting students from universities but only students from ATEIs, the generalizability of the results needs to be examined in future work.

In response to the above empirical findings we propose the need for more research in order to confirm these results for Greek accounting student experience and further validation of CEQ. If the same findings persist, supplementary research should examine the impact that arises from the difficulty in assessing workload on the learning outcomes of students, since these are interconnected with the learning approaches (deep - surface approach). A revised translation of the workload scale could provide better results, as would an evaluation of how reforming negative items to positive assists students in their answers, as done in other studies (Yin et al., 2014; Ullah et al., 2011; Ullah et al., 2016). Future research should also examine how students from different disciplines evaluate teaching quality (Parpala et al., 2011; Barattucci & Zuffo, 2012).

6. Conclusions

Evaluations of the teaching quality should be an imperative for the Greek academic community. CEQ quantitative results should be supplemented with more qualitative data on rate of attendance and duration of studies that may seriously affect the learning process and perception of the teaching and learning environment. Greece signed the Bologna Agreement in 1999 and initiated education reform to harmonize the Greek education system in line with those requirements, mainly following the British academic system (Asonitou & Tromaridis, 2015). Within this framework, the ECTS system was established, which is closely related to learning outcomes and the associated workload, intimately linked to the assessment and assessment criteria (European Commission/EACEA/Eurydice, 2015). These issues are integral to the correct application of a credit system. The results from the present study not only shows that the Greek CEQ could possibly be used in other cases, but may also reveal a lag in the proper implementation of the EU requirements for the modernization of Higher Education in Greece, which subsequently has implications on teaching quality in those same institutions.

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Accounting rules resources impact on Jordan Islamic bank

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ABSTRACT

Purpose
Jordan Islamic bank faces choices to apply accounting data in its statements. There is need to explain the choice impact based on its resource in order to promoting its results to customers and sharers. This paper aims to propose exploring deference between Shari'ha accounting rule, government accounting rule, and IFRS, also shows the deference impacts on Jordan Islamic bank accounting data as practically case to promoting its results

Design/methodology/approach
Comparing between Shari'ah accounting data resource and law accounting resource practically by analysis Jordan Islamic bank (SSB) report and external auditor report, also analysis its financial statements accounting rules from 2010 -2016 in order to find managing choice of accounting data

Findings
Jordan Islamic bank managing has choice to apply assets by market price as fixed standard in order to meet Law and Shari'ha. When it used other law choices, it will get some advantages as use asset value based on depreciation to reduce tax, and use choice of historical price to avoid reducing of assets value by market pricing in future, also policies of accounting profit and distributing are impacted by manager choice to meet the bank continuous than common shareholders returns and customers returns.

Originality/value
- It explained problem of Islamic banks accounting based on deference of accounting data resources and showed the Figh Shai'ha accounting rules to meet the real needs of disclosure in Islamic banks.

1. Introduction

Accounting standard is a rule to show operation accounting value in suitable amount, suitable time and suitable accounting item in organization financial table. Accounting standards become a rule to show value of organization assets, liabilities, equities, sales, costs, net profit after tax. When accounting standards and policies are difference between governments, international, organization and Shari'ha there will be different accounting evaluation. Ex: assets as machine may have three data. It may equal 100 because of historical price or equal 150 because of its market price or equal 96 because of reducing 4% as deprecation. When market price shows growth of assets deprecation show reduce of asset. This deference of asset is done by deferent accounting policies. Jordan government gives bank right to reduce tax by deprecation of asset. International accounting standards give bank rights to show assets by maket price or historical price. This needs investigating and showing impact on Islamic banks. Drury, (2000) explained that depreciation failure value will cause internal failure cost which reduce quality standard of working to produce product reduce company reputation.

Some Islamic banks apply International Financial Report Standards (IFRS) because it is suitable to there ways of accounting and unit way of evaluation round the world as in Europe and Kuwait but countries as Bahrain apply Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) which apply

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(IFRS) and adds Zakat accounting standards (Amin, 2011). Some countries apply its local accounting standards as law based to government aims.

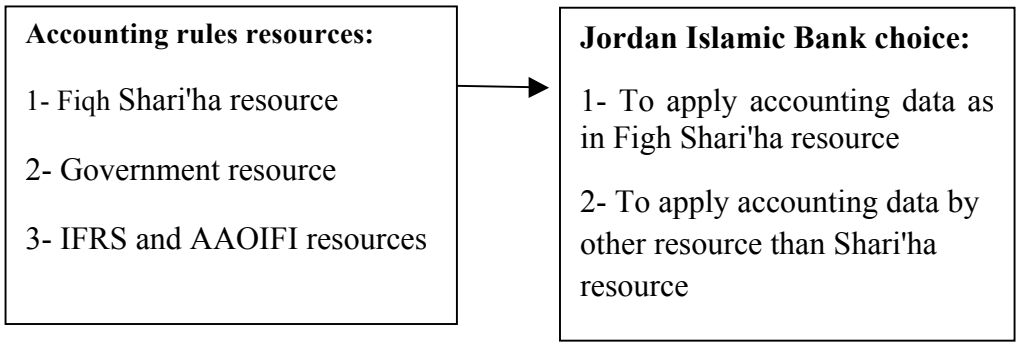
There are problem of choosing account data based on it resource and problem of changing in this resource. "Accounting data standards can change from year to year. There are no limit standards ruling government companies, international companies and local companies" (IFAC, 2010:388).

1.1 Literature Review:

Rahal, (2009) had compared between international auditing standards and Islamic auditing standards. He found that Islamic standards are general and not classified in groups or covers all aspects of audit which make auditing weak and Islamic standards must cover the international standards with other standards as Zakat. Macintosh and Quattrone, (2010) explained that external auditor needs imagination to understand behavior of agents involved by ask the questions: What the reason of apply depreciation type and what is the incredible relationship between reason and managers, customers, creditors, governments, employees, and suppliers?

Atmeh and Serdaneh, (2012) tried to show the different depreciation rates affect in (Ijara Mountahia Betamleek contract) between AAOIFI (FAS 8) and theoretically studied to show different lease rates to transfer lease asset to lessee. Lucouw, (2013) suggested model to increase disclosure by recalculates financial statement items to what it could have been. Elsiefy, (2013) found the differences between Islamic banks and Traditional banks based on financial ratios as: liquidity, credit, risks, profitability and solvency which made impact of crises in different affection. Atma and Alzabi, (2014) found that discloser has problem because standards of international financial reports follow Principles – based more than rules- based which directs accounting data by manager rules . Jaber and Nazal (2016) discuss relationship between Sharia Supervisory Board internal auditor and external Auditor in Islamic banks in Jordan. They found possibility of gap as result to auditor misunderstanding Islamic rules and Sharia Supervisory board misunderstanding of auditing.

1.2 Model of study



2. Discuss accounting rules resources in Islamic banks

Islamic bank faces problem of difference between applying account data based on Shari'ah accounting data by Fiqh resource and law accounting data based on tax accounting by government resource or international accounting by IFRS resource or AAOIFI resource which cause different valuation.

Al Khaiat, (2000) was one of Supervisory Shari'ha Boards members in Jordan Islamic Bank. He canceled the contract that did not meet Islamic rules even the employee said he did not know Fiqh Shari'ha, and canceled returns because Islamic rules face ignorance, and harm. AS Shari'ha accept contract it impacts the bank operations success by profitability in order to proof that it can cover lose and risk, liquidity to buy liabilities at suitable time, Insurance trust dealing with customer, and sharing in economic developing (Ramadan, 1997). Atmeh and Abu Serdaneh (2012) concentrated on Islamic bank operations and found that misunderstanding of Islamic rules will give different accounting data.

Supervisory Shari, ha Board (SSB) members in Islamic banks are responsible **on** Fatwa and auditing. Fatwa rules acceptance of each service contract, steps, and procedures based on Fiqh al-Shari'ha. It shows acceptance of current services, improving service, and developing services. (SSB) members are responsible on auditing of services accounting. Mashal (2011) studied governance of (SSB) to find its efficiency. He found (SSB) challenges to rule every service by Shari'ha rules and Shari'ha accounting. Challenges come because of difference Fatwa from Islamic bank to other. Fatwa was responsible to accept some services in some Islamic banks while it was refused these services in other Islamic bank. He found that competitions ability depend on choosing fatwa acceptance not on service quality. Bosaha et.at (2016) explained important of (SSB) as insurance to apply Islamic rules practically. Qatan (2008) explained needs to unit agree between Islamic banks (SSB) in order to get international services model. Al Saifi, et.at (2014) explained gap between (SSB) Fatwa and applying fatwa practically by Islamic bank staff. Jaber and Nazal (2016) explained the impact of shari'ha on accepting of service accounting. (SSB) responsible to accept accounting standards and policies as first step before external auditor start auditing.

2.1 Discuss the impact of different accounting rules resources

There are different opinions to apply (IFRS) in Islamic banks. Opinion of Asian Oceanian Standards Setter Group (AOSSG) is to separate of Islamic accounting standards from international accounting standards because some items not accepted in Shari'ha (AOSSG, 2010). Some efforts was done to make Islamic accounting standards up to Islamic selling contracts, sharing contracts, working contracts, renting contracts as(Accounting and Auditing Controls for Islamic Financial Institutions Standards, 2000). Atma and Ziad (2014) Said that there is problem of discloser because standards of international financial reports follow Principles – based more than rules- based which leads to apply the manager rules on accounting data. Jarhi, (2003) explained that different between Islamic banks and traditional banks are reason to apply different standards, also (Risk Management in Islamic Banking Conference, 2004) explained the problem of applying Basel of the difference between Islamic banks services and traditional banks.

Other opinions agree to apply (IFRS) because it units accounting standards round the world. (AAOIFI) accepts (IFRS) and added Zakat accounting standard (Amin, 2011).

Practically, Islamic bank accounting rules based on the following resources:

1- Fiqh Shari'ha accounting rules (Ahmed, 2002).

2- Local law (Civil Jordanian Law Explanatory Notes, 1992).

3- Leader aims of disclosure based on accounting policies choosing (Jackson. et at, 2010).

4- Traditional International accounting standards as (IFRS).

The different resources aims cause ignorance of accounting because every resource will direct account data to meet his aim. This will cause different accounting data in financial statement. Financial statement will be disclosure based on resource of account. There will be same financial statement but in different accounting data disclosure. Amount, date, and type of accounting data will be different based on the rule resource of accounting, see (table1):

Table1: Inventory accounting resources

	inventory accounting resource	**Aim**	**Disclosure**	**Disclosure ignorance**
Auditing inventory accounting rules	Fiqh Shari'ha accounting rules	To apply Shari'ha rules and prove Islamic bank inventory value to give rights as profit	Just Market price at time of evaluation and make financial statement	Disclosure based on giving al sharers right to get profit or get in lose based on fair price at time of evaluation. Disclosure account data is fixed in time of evaluation to distribute profit or get lose. The contract of sharing profit is depended on Mosharaka contract.
	IFRS	To choose accounting policy that give the aim, as using market price to show raising of assets as growth when market price is increasing or aim to limit decrease of inventory market price by use cost price to show decrease of possibility return for tax or try to balance between market price and cost price by take the average between it. Or use the fewer prices between market price and cost price in order to face risk of loses.	Can choose one of these ways as follow: 1-inventory cost price 2- inventory market price 3- (inventory cost price + inventory market price)/2 4- the less between cost price and market price	There are many accounting data of inventory. Disclosure has ignorance based on many choices which will give different amounts.
	Government accounting rules	Aim to raise getting tax based on evaluating inventory selling, or aim to reduce tax	Disclosure depend on financial leverage rule	Ignorance of applying tax has ways: To get tax as percentage from operation profit or to get tax as percentage from profit after interest

Resource: by authors

Ex: Suppose company has liabilities equal 300000 $ which apply to by 30000 $yearly, also it has equities equal 700000$ which has been used to buy inventory in commercial organization. It has the prices as follow:
1- Cost price =1000000$
2-market price at time of evaluation = 1200000$

Impact of inventory accounting resources in balance sheet will show different asset and different equities, see figure1:

First: Organization balance sheet accounting after owning inventory

Assets 1000000$	**liabilities 300000$**
	Equities 700000$

Second: Shari'ha accounting at time of evaluation to get sharers profit or lose

Assets 1200000$	**liabilities 300000$**
	Equities 900000$

There is profit = 200000 which increased the equities

Third: IFRS accounting at time of evaluation give manager choices which show different equities with ignorance

Choice 1:

Assets 1200000$	**liabilities 300000$**
	Equities 900000$

There is profit = 200000 which increased the equities

Choice 2 and 3:

Assets 1000000$	**liabilities 300000$**
	Equities 700000$

Because inventory equal cost t or equal the less between market price and cost price, there is no profit

Choice 4:

Assets 1100000$	**liabilities 300000$**
	Equities 800000$

Because inventory equal (market price + cost price)/2, there is profit= 100000$

Fourth: Government accounting rules based on financial leverage based on selling inventory
Suppose: It has to buy tax 10%

Choice 1: **Government choice to get tax from profit before interest**	**Choice 2:** **Government choice to get tax from profit after interest**
Sales by market price 1200000$ **-** **Costs 100000**	**Sales by market price 1200000$** **-** **Costs 100000**
profit before interest 200000 **-** **Interest 30000**	**profit before interest 200000** **-** **Interest 30000**
Profit after interest = 160000	**Profit after interest = 160000**
Tax will be 10% from profit before interest **Tax = 20000**	**Tax will be 10% from profit after interest** **Tax = 16000**

***Figure1*:** Impact of inventory accounting resources in balance sheet at time of evaluation

By comparing between resources of accounting, Project of selling goods or commercial organization that sells goods will make different inventory value. It reduces or decrease equities based on the resource of accounting aim. The problem is appeared when the resource accounting give different value of inventory to reduce sharers rights in equities, also reduce expect selling of inventory which will reduce net profit. This case impacts Islamic bank results on its shares market price, expect net profit, value of asset, and value of equities. Islamic bank customers and shareholders need fair to get real return within the time of sharing.

Shareholders and customers have reaction. The negative reaction comes in case of decreasing return, losing wealth, increasing cost of covering needs and not added economic value to markets sectors types. This case will cause low dealing in financial market and cause wealth immigration.

Rules of applying reserves and tax are negative affect on Shareholders and customers. It helps to protect wealth but it will not give fair return to courage investors to be shareholder or investing account customer.

2.2Accounting of producing service cost in Jordan Islamic bank

There are government rules of accounting impact Jordan Islamic bank contracts as selling and leasing financing (Ijara Muntahia Bittamleek). The rules obligates to get Stamps fees, transfer owning tax, and commission for every contract Also, there is universities fees, fees of provision for scientific research and vocational training, beside fees of education and vocation training support fund (Jordan Islamic Bank annual report, 2005:30). These fees decrease profit of shareholders and customer of investing accounts.

2.3 Accounting of distributed profit in Jordan Islamic Bank

After Jordan Islamic bank calculate the net profit in the Income statement, it has to distribute net profit after tax based on government accounting rules by the leader Jordan Center Bank. These rules concentrate on tax and reserves. Tax and reserve will be gotten partly after calculate Sharing Accounts net profit. It will by tax 35% to 40% then it will get 10% - 15% as Provision for cover the box of facing sharing investment account risk.

On other hand, Tax and reserve will be gotten generally from of income statement net profit. Tax equal 35% and it may increase to reach 40%. Reserves equal about 50% of net profit after tax, as 10% for obligatory reserve, 10% - 20% for voluntary reserve. By developing reserves, there are other reserves as adjusted profit reserve. Jordan Islamic bank has to limit distributed profit by reduces part of it as undistributed profit to increase equities.

Practically, there is expect that reserves will reduce risk and increase market price of Jordan Islamic bank shares yearly because of increasing reserves every year, also it will reach capital adequacy standard ratio (Jordan Islamic Bank annual report, 2005:29)

Government accounting rules impact applying Shari'ha accounting rules. shari'ha accounting rules is limited by investing time. Any project or company which has profit must be divided on sharers and customer investors. Therefore, if there is reserves from sharer profit or from investing customer account profit , it must be backed to them in case they ended there contract of sharing as customer investing close his account or share holder sell his shares in market.

Table 2: Factors that impact negatively Jordan Islamic bank shareholders and investing customers profit (millions)

Factors	2004	2005	2011	2012	2013	2014	2015	2016
Investment reserves and fair value reserve from unrestricted investment accounts	16.6	20.5	8.2	11.2	14.8	22.8	16.1	25.5
Box of facing investing	3.6	8	7.3	14.4	7.9	17.2	19.9	29.6

account risk								
Obligatory reserve	9.3	11.3	34.5	39.6	46.1	52.5	59.98	68.3
Voluntary reserve	2.5	4.6	13.8	8.9	15.4	6.8	14.2	22.6
Other reserves	3.0	3.0	3	-	-	-	-	-
The bank Investing reserve	-	0.1	0.7	0.7	0.7	0.7	0.7	1
The bank Investing fair value reserve	0/16	0.20	0.057	0.161	0.467	0.84	0.562	0.608
Retained Earning	1.3	10.3	54.0	54.3	67.7	71.33	85.63	100.1
Jordan universities fees	0.047	0.201	Was collected in general With difficult to understand because of merge it with tax					
Scientific research and vocational training fees	0.047	0.201						
Box Fees of vocational education and technical training	0.028	0.111						
Per Share profit	0.082	0.327	0.22	0.29	0.361	0.3	0.32	0.36

Resources: (Jordan Islamic Bank annual report, 2005: 56-57), : (Jordan Islamic Bank annual report, 2012: 88-89 and 139), (Jordan Islamic Bank annual report,2015:90 and 140) (Jordan Islamic Bank annual report, 2016:94-95)

Millions had been gotten from shareholders profit and customers of investing accounts profit because of government accounting rules. The negative reaction of shareholders and investing account customers comes because of low profit as result to government law accounting of reserves. There is need to discuss reserves in shari'ha accounting.

3. Discuss accepting Shari'ha accounting in Islamic banks

Islamic bank and its companies have challenges of accounting based on different accounting resources. It is obligated to follow government accounting rules for local aims as taxes or commissions also it has to follow IFRS for international aims as classified risk . Shari'ha rules is voluntary accounting resource because of law obligated. The only way to apply shari'ha accounting is to choose is as rule for international accounting and law accounting principles.

Islamic bank is profitability organization. It uses shareholders capital in projects as sharing in Mousharaka contract also uses customers investing deposit in projects as sharing in Modarabah contract or Merge part of shareholders capital with customer investing deposits as Mousharaka contract. All Islamic bank projects is depend on selling contracts, leasing contracts, working contracts, and sharing contracts. It not deals by loan with interest as traditional banks. In theoretically studies, Islamic Bank projects are obligated by shari'ah accounting but practically, Government accounting law is the obligated. (SSB) members are responsible of applying Shari'ha accounting and cooperate with external auditor to give financial statements.

Practically, applying Shari'ah accounting rules for each project just happen in case IFRS and government accounting law accept Shari'ha accounting. In case Shari'ha accounting is not meet IFRS and government accounting, the financial tables will not give rights and duties fairly. Difference will cause different financial statement for same Islamic bank in same time or Shari'ha accounting will be voluntary use but government accounting law will be obligated as local legal and IFRS will be obligated as international; legal.

3.1. Impact of Islamic rule factors on Islamic banks accounting

Islamic banks have to apply the Islamic accounting standards as result to apply Islamic rules but not against the government law of accounting. Islamic bank has to show fair of Islamic accounting or it will loss the shareholders and customers support.

Fiqh is way of analysis contract to apply Islamic condition which rule accounting. Fiqh rule: "to rule something you have to imaginable it" this means ruling any contract has to understand its condition, procedures, and steps. Services in Islamic bank have two types as follow:

1- First type is to apply same service as in the Traditional bank because its contract, procedures, and steps is accepted by Fiqh Shari'ha, as transfer local currency service It is service depend on work of transfer local currency from place to other and get fixed commission, also current account service to protect deposit is same ruled. Way of meeting accept between Islamic bank and Traditional bank is depend on same aim, same procedures to open the account, and same rules of documented the account, therefore accounting rules will be same by (IFRS), government law, and Fiqh Shari'ha. This means accounting of duties and rights gives same result and controller can apply ratios and standards in Islamic bank as in traditional bank.

2- Second type to apply different service than Traditional bank because its contract, procedures, and steps are not accepted by Fiqh Shari'ha, as Sharing in Modarabah and Mosharakah. Result of sharing must be divided on sharers based on the accept percentage of profit they had agreed at time of sign the sharing contract. When any sharer decides to leave sharing as result to sell his assets or ended the contract, there will be shari'ha rule direct accounting by the condition:" Assets must be evaluated in sharing to find profit and lose when there is profit it must be divided based on the accept percentage of profit in the sharing contract". Sharer has right to get profit from reserves because it get part of his profit. Developing or improving Islamic bank contracts of services must meet Fiqh Shari'ha conditions. Fiqh Shari'ha obligate fixed rule is responsible to avoid harm. It relates to fair as give fair

value for assets. Fairness of value has just accepted by accepting sales price from market experts as ruler.

The flexibility condition based on sharer advantages as increase percentage of distributed profit from 40% to 50% but it must be fixed 50% at time of sign contract. Shares can not ask for salary because it is fixed rule to get return just fro profit. Flexibility conditions must not be against fixed condition. In this case it will cause terminates of the contract and cancels dealing. Flexibility is responsible on different data accounting in Islamic organization.

3.2 Comparing Sharing types between Islamic banks and traditional banks

There are some sharing types between Islamic banks and traditional banks but it is different as result to apply Islamic rules as avoid loan with interest from investing and returns. Some sharing types are different because it deals with real assets as goods. Sharing types is shown in the figure 2:

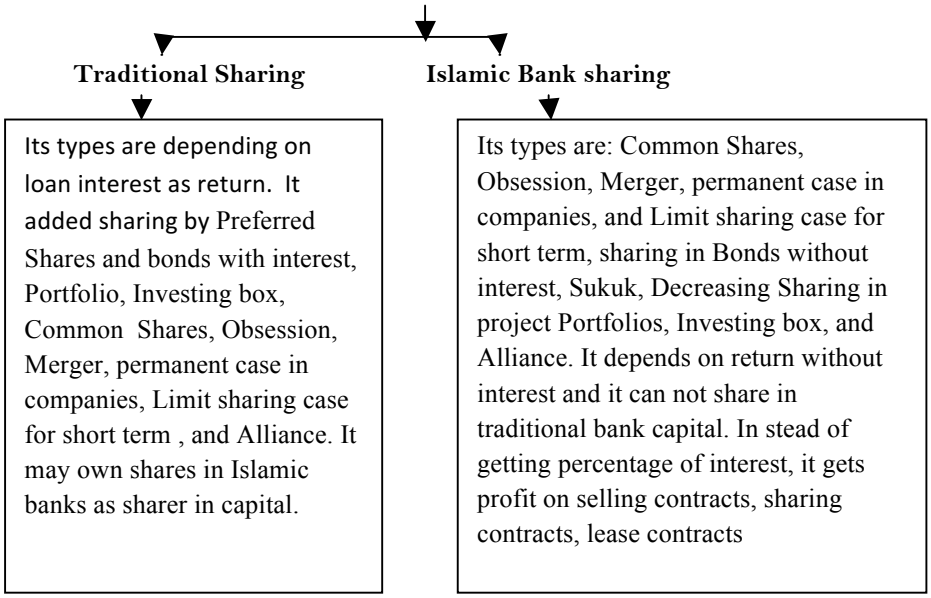


Figure 2: Sharing contracts types

3.3 Shar'ha original sharing types in Jordan Islamic bank

By developing sharing contract in Jordan Islamic bank, there are many sharing contracts in assets and equities. Equities include the capital to finance assets. Fusfos (2010) explained type of mixing portfolios in Islamic banks. Mixing is depending on the management decision to make portfolio from investment accounts or make portfolio from shareholders capital and investment accounts customer. Sharing in Jordan Islamic bank has many ways:

1- Sharing between sharers capital
2- Sharing between investing account s deposits as limited sharing and unlimited sharing.
3- Sharing between sharers capital and investing accounts deposits
4- Sharing between Sukuk owners.

There types of sharing appear in balance sheet as in the table3:

Table 3: Sharing contracts in Jordan Islamic bank (millions)

Sharing services	Sharing types	2016	2015
Investment accounts in banks and banking institutes	Depend on the way of managing portfolio. It may be financed by Mosharakah between investors and shareholders or it may be financed by Modarabah between investment account customers and the bank. Mosharakah can make Modarabah contracts, selling, and lease.	41.7	46.3
Investments in companies by owning shares but less than 50% of capital shares		7.6	15
Building investment		110	108
Capital of equities		150	150
Limited investment		28	29
Moarada (Modarabah) Sukuk		368	338
Investment accounts with authorized		3	6

Resource: (Jordan Islamic bank annual report, 2016: 94-95)

The table explains Mosharakah contracts between the bank shareholders and investment accounts customers. All shareholders are sharer by capital to finance part of assets as sharer in sharing contract between each other. They authorized managers to work with their capital of sharing. Some shareholders sold their sharers as speculators but other shareholders own the shareholders for long term to get part of distributed profit.

Practically, Shari'ha accounting gives shareholders profit after evaluate assets based on condition:

1- (Kamal, 1986) said that price of service must be fixed in contract after signing and must not be changed by time or default to meet Shari'ha accounting rules.
2- Return of sharing is calculated based on return – cost.

2- Return is return of assets based on assets value growth by market price and return of using assets as using sharing capital in lease, selling, and small sharing to get return.
3- Sharers return depend on percentage of profit that accepted at sharing contract sign time.
4- Sharing return depend on time of sharing as year, therefore calculated of sharer profit percentage must be based on all return within this year as from 1/1/ 2017- 1/1 2018. Sharer in this case is not responsible about loss before 1/1/2017, also sharer is not responsible on loss which may happen after 1/1/2018.
5- In loss case Shari'ha account has rules to accept loss. It must be come with out tricks. Shari'ha applies rule of loss based on the sharing of capital as follow:

Loss ×(Sharer capital / all sharers capitals)

Mosharah is sharing by capital from all sharers and apply that ways of accounting based on size of capital. Modarabah is sharing between capitals from some sharers but other sharers will use it in investing as expert of business. He will be share by efforts. Modarabah profit case is applying same as in Mosharakah. In case of lose Modarabah sharers by capital will get the lose but sharer by effort just lose his effort

6- Reserves come from sharers profit in order to increase investing or cover loss. Shari'ha accounting explained that reserves is own to sharers because it is part of their profit. Sharer accepts to transfer some of their profit to reserve but they still own his part of reserve. Shar'ha account obligates auditor to give sharer his part of reserve in case of selling his shares.

3.4 (SSB) report

(SSB) report include acceptance of sharing and distributed profit. The form in 2016 was announced that:"Jordan Islamic bank contracts, operations and dealings which were done during the last year in 31/12/2016 and depend on our control were accepted by principles of Shari'ha Islamic rules. Distributed profit and reduce lose on investment accounts profits and Box of Facing investment risk is accepted with the basis that we depend to meet principles of Shari'ha Islamic rules acceptance'. (SSB) report is way to proof applying Shari'ha rules. Practically there is gap Because all (SSB)are members in Fiqh but not in accounting, also they are giving Fatwa as explain accept contract and its condition but they do not control every contract in Jordan Islamic bank. Because the members of (SSB) are just four persons and their control is limited by limit contracts (Jordan Islamic bank annual report, 2016: 82-63)

Ex: accounting problem of depreciation: (IFRS) shows that International accounting standards no: 16, Item 37: depreciation evaluation has different ways affect on machines, equipments and other subject's. This will cause problem of real return as result to reduce depreciation. Jordan Islamic Bank income statement show reduces depreciation. (SSB) members have to apply depreciation based on assets market value in case of price was reduced but in case market price increased there will not be depreciation to be reduced. See table 4:

Table 4: Depreciation of equipments and owning (millions)

	2012	2013	2014	2015	2016
Depreciation of equipments and owning	3.3	3.7	4.25	6.67	6.87

Resource: Jordan Islamic Bank annual reports, 2016

Shari'ha accounting obligates market price as way to evaluate sharing. It will not accept any way of depreciation to make fair return from assets value and profit.

4. Conclusions

There are choices for the Manager to use accounting policies. Managing of Jordan Islamic bank has choice to apply assets by market price to meet Law and Shari'ha, besides giving fixed standard in order to avoid problem of standards changing by other resources than Shari'ha. When Managing of Islamic bank uses other choices it will get some advantages as use asset value based on depreciation to reduce tax and use choice of historical price (cost of asset) to avoid reducing value by market pricing in the future. The problem of this research directs Islamic bank to give two types of financial statements. One of them, based on Shari'ha accounting for shari'ha reasons, and the other is based on financial statements for International reasons. The problem of this research directs Islamic bank to give two types of financial statements. One of them, based on Shari'ha accounting for shari'ha reasons, and the other is based on financial statements for International reasons. In case Shari'ha accounting is not meet IFRS and government accounting, the financial tables will not give rights and duties fairly. Difference will cause different financial statement for same Islamic bank in same time or Shari'ha accounting will be voluntary use but government accounting law will be obligated as local legal and IFRS will be obligated as international legal. Jordan Islamic bank shareholders and customers of investing accounts did not get fair return because of applying government accounting rules which transfer return to reserves and increase costs.

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