INVESTIGATING SERVICE QUALITY
IN GREEK CITIZENS SERVICE CENTERS

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Abstract

Purpose – A Citizens' Service Center (CSC) is a front-end delivery public point which aims to reduce bureaucratic procedures of the public sector and improve citizens' services. The present study, based on the Greek citizens' perceptions, aims to explore the level of the CSCs service quality and citizen satisfaction, the inter-relationships among the dimensions of service quality and their impact on citizens' satisfaction. To determine whether there are any significant differences with regard to the service quality dimensions and citizen satisfaction among different groups of citizens is also an aim of the present study.

Design/methodology/approach – A questionnaire survey was carried out based on the five dimensions of the SERVQUAL model (tangibles, reliability, responsiveness, empathy, assurance). A random sampling procedure was used to acquire a representative and reliable sample of citizens. A total of 1,226 citizens responded and fully completed the questionnaire. Groups of citizens were created on the basis of their demographic profile. Descriptive statistics, correlation analysis, multiple linear regression analysis, t-test and ANOVA are applied to analyze the data.

Findings – According to the citizens' perceptions, the level of the service quality dimensions varies from medium to high. The citizens do not seem to be extremely satisfied with the services of CSCs. The service quality dimensions are highly inter-related, while all of them have a statistically significant impact on citizens' satisfaction. Statistically significant differences are observed among groups of citizens in terms of the service quality dimensions and citizen satisfaction.

Research limitations/implications – The present study evaluates service quality based solely on the perceived service quality from the citizens' perspective, while the evaluation of the expected service quality by citizens was excluded from the research design.

Practical implications – This study guides managers and policy makers of CSCs to pursue quality and improve citizens' satisfaction.

Originality/value – This is the first research study that deals with the service quality of the Greek CSCs and citizens' satisfaction at the end of the financial crisis.

Keywords: Service quality; citizen satisfaction; Citizens' Service Centers

1. Introduction

Intense global competition, market liberalization, the emergence of new technologies and rapid economic development have intensively forced public organizations to modernize their functions and work more efficiently and effectively (Pal and Ireland, 2009; Martinovic *et al.,* 2017). For this purpose, the New Public Management (NPM) approach has been adopted by public organizations in most developed countries, including Greece, since the early 1990's (Chatzoglou *et al.,* 2013). The main purpose of NPM is to improve the quality of public services through the adoption of a customer-oriented approach focusing on performance and measurement (Gutierrez *et al.,* 2009). Such approaches are in line with the principles of a Quality Management System (QMS), the necessity of which public organizations have already acknowledged (Vilke and Vilkas, 2018).

Previous studies on the public sector have shown that the implementation of NPM and QMS principles improves facility management and staff motivation, reduces bureaucracy, increases citizens' confidence, morale and satisfaction, and improves overall organizational performance (Gutierrez *et al.,* 2009; Wright and Pandey, 2010; Park and Rainey, 2012; Chatzoglou *et al.,* 2013). On the other hand, some researchers have expressed pessimism with regard to the efficacy of these approaches (Lapsley, 2009; Perry *et al.,* 2009; Kuhlmann, 2010) and the effects of the improvement and reform efforts of public organizations (Ashraf and Uddin, 2016).

Thus, the issue of public service management remains largely under examination (Pimentel and Major, 2015; Psomas *et al.,* 2017). Few empirical studies have been carried out in this field, which seems surprising considering the emphasis arising from NPM on evidence, measuring and evaluating performance (Lee, 2012; Chatzoglou *et al.,* 2013). Based on the literature gap identified, researchers suggest that future research should focus on exploring the quality of the services provided by public organizations (Kontogeorgos *et al.,* 2014; Chatzoglou *et al.,* 2014). Specifically, Chatzoglou *et al.* (2013) recommend that the quality of public services should be evaluated by their customers via the use of a reliable instrument, and their needs should always be taken into account.

Stimulated by the principles of the NPM approach and QMS, the Greek government established the Citizens' Service Centers (CSCs) in 2002. These centers are located all over Greece and operate as one-stop shops aiming at providing valuable assistance to citizens in order for them to effectively accomplish a large variety of administrative processes which involve almost all bodies of the public sector. According to Chatzoglou *et al.* (2013), the CSCs, as innovative public service organizations in Greece, constitute a fertile ground for measuring the quality of the services. Taking this into consideration they carried out such a research study at the

beginning of the financial crisis in Greece. However, five years later, at a time when Greece is trying to recover from the financial crisis (OECD, 2018), there are still questions that arise. More specifically, whether the services provided by the CSCs remain consistently qualitative and whether any improvements have affected the perceptions of citizens with regard to service quality and their satisfaction over time, are questions that the present study will try to answer.

In other words, the present study, based on the SERVQUAL model, aims at evaluating the quality of the services provided by the Greek CSCs as well as the citizens' satisfaction. Determining the inter-relationships among the dimensions of service quality and the impact of these dimensions on citizen satisfaction is also an aim of the present study. Finally, the present study intends to find out whether there are any significant differences regarding the dimensions of service quality and citizen satisfaction among groups of citizens. It is worth noting that Chatzoglou *et al.* (2013) suggest additional studies replicate all or parts of the methodology they used in their study of service quality in CSCs. Thus, it is necessary to continue studying and evaluating service quality in the public sector (Al-Borie and Damanhouri, 2013; Qiao and Feng, 2013) and more specifically in CSCs (Chatzoglou *et al.*, 2013) as it is hard to find empirical studies on service quality in CSCs, except for the study of Chatzoglou *et al.* (2013).

The structure of the paper is as follows. In the following section the literature is reviewed focusing on service quality in the public sector. In so doing, the research questions of the present study are formulated. The methodology of the research study is then presented as well as the results of the study. In the next section, the results are discussed and the practical implications of the study are presented. Finally, the limitations of the present study and the suggestions of the authors for further research are presented.

2. Literature review

2.1 The measurement of service quality

In the domain literature, the quality of public services is evaluated using one prominent model, the SERVQUAL model. It is undoubtedly the most widely acceptable measurement tool of service quality in both the business and public sectors (Ocampo *et al.,* 2017; Gupta and Kaushik, 2018). It is a diagnostic technique that reveals the strengths and weaknesses of service quality of organizations (Parasuraman *et al.*, 1985; Zeithaml *et al.,* 1990; Martinovic *et. al.*, 2017).

The SERVQUAL model was originally created in 1985 by Parasuraman, Berry and Zeithaml and included in its final version the following dimensions: Tangibles, Reliability, Responsiveness, Assurance, Empathy. Numerous researchers have confirmed the application of the SERVQUAL model, in different sectors and within different countries. Despite the extensive utilization of the SERVQUAL model there have been theoretical, operational, conceptual, and empirical criticisms about it (Ocampo *et al.,* 2017). Despite these criticisms, the SERVQUAL model has been used as the research instrument for evaluating the service quality of public organizations such as the CSCs (Chatzoglou *et al.,* 2013), universities (Cheruiyot and Maru, 2013), post offices (Azizzadeh *et al.,* 2013; Chatzoglou *et al.,* 2014), the Ministry of Agriculture (Kontogeorgos *et al.,* 2014), a housing authority (Khan *et al.,* 2015), public enterprises (Iyikal and Celebi, 2016), healthcare organizations (Kalaja *et al.,* 2016; Aman and Abbas, 2016; Shafiq

et al., 2017), banks (Kant *et al.,* 2017; Hennayake, 2017), local government authorities (Martinovic *et al.,* 2017; Tumiwa *et al.,* 2018), or bus transport organizations (Sam *et al.,* 2018).

2.2 *The level of service quality*

Based on the research instrument provided by the SERVQUAL model, the level of service quality of several public sector organizations has been determined worldwide so far. More specifically, in the study of Kalaja *et al.* (2016), the patients considered that they receive a high level of service quality from public hospitals in Albania, while in the study of Tumiwa *et al.* (2018) in Indonesia, the quality of the services provided by local government agencies was evaluated by citizens as good or high. Similarly, the service quality level of the CSCs in Greece was evaluated by citizens at the beginning of the crisis as being well above average (Chatzoglou *et al.,* 2013). However, the patients participating in the study of Keramidou and Triantafyllopoulos (2018), revealed that the service quality of the Greek public hospitals was at a medium level over 2007–2014, representing a decreasing trend during the recession.

Contrary to the above mentioned studies where services were evaluated as high quality, the quality of the services provided by the post offices in Iran was evaluated by customers as low (Azizzadeh et al., 2013), similarly to the customers of the Greek post office (Chatzoglou et al., 2014). In Greece also, the farmers studied by Kontogeorgos *et al.* (2014) revealed that the service quality provided by the Ministry of Agriculture was low. The study of Martinovic *et al.* (2017) also showed that the local public service quality was low, according to the perceptions of the residents of Dubrovnik, Croatia. As far as healthcare organizations are concerned, the service quality level of the Brazilian public health clinics studied by Campos *et al.* (2017), and the service quality level of the hospitals of Pakistan studied by Shafiq *et al.* (2017), was, according to the perceptions of patients, low.

Bearing in mind the purpose of the present study and the above review of the literature, the following research question is formulated in order to be answered based on citizens' perceptions:

RQ1. What is the level of the service quality in the Greek CSCs?

2.3 *The level of customer satisfaction*

As far as customer satisfaction from the services provided by public organizations is concerned, there are many different findings from research studies. Kalaja *et al.* (2016) examining patients of Albanian public hospitals found that the majority of them were satisfied or very satisfied with the overall hospital services, which was reflected in their willingness to come back when necessary to the same hospital. Similarly, the study of Tumiwa *et al.* (2018) in Indonesia indicated that the people of Manado city had a good or high perception of their satisfaction with the services provided by the local government agencies. However, the study of Chatzoglou *et al.* (2014) revealed that the overall customer satisfaction from the services of the Greek Post branches was just above average. Contrary to the above mentioned studies, the customers of the public enterprises of the Turkish Republic of Northern Cyprus studied by Iyikal and Celebi (2016), stated that they were dissatisfied with the quality of the services they receive.

Taking into consideration the above review of the literature, the following research question is formulated in order to be answered based on citizens' perceptions:

2.4 Inter-relationships among the dimensions of service quality

Studies on public service organizations reveal that the service quality dimensions are inter-related. Zafiropoulos and Vrana (2008) analyzing the service quality construct in a Greek higher education institute found that all the SERVQUAL dimensions are inter-correlated having not only statistically significant but also high correlation coefficients. Similarly, Kant *et al.* (2017) studying Indian public banks found that there is a significant correlation among the service quality dimensions. Chatzoglou *et al.* (2013) also supported the view that there is a high degree of inter-relationship among the five dimensions of service quality. As far as the specific relationships between pairs of service quality dimensions are concerned, Shafiq *et al.* (2017), assessing the quality of hospital services in Pakistan found that the highest correlation exists between reliability and responsiveness and the weakest between assurance and empathy. The same level of correlations was also supported by the findings of the study by Aman and Abbas (2016) in the public hospitals of Pakistan.

Bearing in mind the purpose of the present study and the above review of the literature, the following research question is formulated in order to be answered based on citizens' perceptions:

RQ3. Which are the inter-relationships among the dimensions of service quality in the Greek CSCs?

2.5 The impact of the service quality dimensions on customer satisfaction

Many authors through their research studies have supported the significant positive impact of the public service quality dimensions on customer satisfaction. Khan *et al.* (2015), carrying out a research study in a public housing authority in Pakistan, revealed that the overall service quality has a positive and strong correlation with customer satisfaction. As far as the influence of the individual dimensions of service quality is concerned, Tumiwa *et al.* (2018), studying the services provided by the local government agencies in Indonesia, found that all the five service quality dimensions (tangible, responsiveness, reliability, assurance and empathy) have a positive significant effect on citizen satisfaction. Similarly, Kant *et al.* (2017) focusing on the Indian banking context, confirmed that all the five dimensions of service quality have a significant relationship with customer satisfaction, while Kalaja *et al.* (2016) focusing on the Albanian public hospitals also found that all the service quality dimensions affect the overall patient satisfaction, with a higher impact assigned to the dimension of empathy.

However, there are authors supporting the view that not all the dimensions of service quality affect customer satisfaction in the same manner. More specifically, Chatzoglou *et al.* (2014) based on a study of Greek post office customers, determined four service quality dimensions that have a statistically significant effect on customer satisfaction, namely (in descending order) reliability, assurance, effectiveness and scope of services. Hennayake (2017) studying public commercial banks in Sri Lanka, revealed that the human related factors of service quality (reliability, responsiveness, assurance and empathy) have a greater impact on customer satisfaction than the non-human related factors (tangibles). Iyikal and Celebi (2016), investigating the quality of services of the public sector in the Turkish Republic of Northern Cyprus revealed that only the dimensions of reliability and assurance exert positive and significant effects on overall customer satisfaction, while, Shafiq *et al.* (2017), assessing the

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quality of hospital services in Pakistan found that among the quality dimensions, only assurance has a significant impact on patient satisfaction.

Bearing in mind the purpose of the present study and the above review of the literature, the following research question is formulated in order to be answered based on citizens' perceptions:

RQ4. What is the impact of the dimensions of service quality on the citizens' satisfaction with the services provided by the Greek CSCs?

2.6 Differences on the perceived service quality and customer satisfaction

Research studies on public service quality reveal that there are differences among groups of customers which were determined based on their demographic profile, with regard to the dimensions of the perceived service quality and customer satisfaction. Zafiropoulos and Vrana (2008) studying a Greek higher education institution revealed that student gender had a minor impact on the perceived quality of education. It affected only assurance since male students presented lower scores and so they were more dissatisfied than female students. Moreover, age affected nearly all the service quality dimensions and the overall SERVQUAL score as well. Students who were closer to graduation were less satisfied in all the service quality dimensions and in the overall score, except for responsiveness. Shuv-Ami and Shalom (2017) investigating demographic differences of the perceived service quality in emergency rooms of hospital organizations showed that female patients were perceived as receiving significantly lower service quality than males. More specifically, the differences with regard to empathy were the highest, with the mean score for females lower than that for males. The differences with regard to assurance and responsiveness were significant but not as high as with empathy.

Dimitriades and Maroudas (2007) investigating demographic predictors of service satisfaction in public tax agencies in Northern Greece illustrated that gender and age significantly affected customer satisfaction. Specifically, the data showed that male and older individuals tended to evaluate differently and to rate higher the level of satisfaction experienced, compared with female and younger citizens. Bouranta *et al.* (2015) evaluating the service quality and citizen satisfaction in the Greek Police observed a higher level of satisfaction among women, who appeared to be slightly more demanding compared with men. Moreover, it was observed that people with lower levels of education had higher levels of satisfaction. Dewan and Mahajan (2014) exploring customer satisfaction from the public sector banks of India observed that there was a significant difference in customer satisfaction on the basis of gender, marital status, age, occupation and frequency of visiting the bank. More specifically, the male customers were more delighted and pleased with the service of banks as compared to the female customers. Mitropoulos *et al.* (2018) investigating patient satisfaction in Greek public hospitals showed that the elderly patients tended to report higher satisfaction scores for the services received than the younger ones. Regarding gender and nationality, neither of them were significant predictors of inpatient satisfaction.

Bearing in mind the purpose of the present study and the above review of the literature, the following research question is formulated in order to be answered based on citizens' perceptions:

RQ5. Are there significant differences among groups of citizens which are determined based on their demographic profile, with regard to the service quality dimensions and citizen satisfaction?

3. Research methodology

3.1 Sampling process

In order to answer the above formulated research questions, a questionnaire survey was conducted using a sample of citizens - customers of the Greek CSCs. Respondents were approached by well-trained interviewers, who were stationed at CSCs entry/exit points, during selected times of the day throughout a two month period (November - December 2019). The only condition for the inclusion of respondents was their having just received a service from the CSCs and being an adult (over 18 years of age). Respondents were selected randomly (one in every five). This random probability sampling method produces results that represent the general population. The same methodology was also used by Koutsothanassi et al. (2017) in order to approach customers of banks in Greece.

Out of the more than 2,000 citizens that were approached, 1,350 gave their consent to participate. The purpose of this academic study was explained to the respondents, and they were assured of total confidentiality and anonymity. Completed questionnaires were checked to exclude obvious incompleteness or extreme answers. In so doing, 124 questionnaires were rejected. Hence, the total usable sample for analysis consisted of 1,226 questionnaires. The respondents of the first and second month of the survey were compared in terms of their profile (Mann Whitney Test) and the questionnaire items (T-test) and no statistically significant differences were found. So, from the above, it is apparent that non-response bias is not a cause for concern in this study.

The demographic profile of the respondents is detailed in Table 1. It is apparent that an equal percentage of males and females participated in the survey. About half of the respondents are middle aged (36-55), a percentage of 35% are younger in age (<35), while only 13% of the respondents were over 56 years old. A percentage of about 88% of the respondents is equally distributed to all education levels, while only a rate of 4.4% holds a master's degree in science or a PhD. It is worth noting that a percentage of 7.7% of the respondents are not educated at all.

Table 1: The profile of the respondents (n=1226)

Gender	Frequency	Percentage (%)
Male	605	49.3
Female	621	50.7
Age		
18-25	170	13.9
26-35	260	21.2
36-45	319	26.0
46-55	317	25.9
56-65	100	8.2
66 and above	60	4.9
Education	**Frequency**	**Percentage (%)**
Without education	94	7.7

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Elementary/high school	286	23.3
Vocational school	260	21.2
Senior high school	280	22.8
University	252	20.6
Master's degree & PhD	54	4.4

3.2 Questionnaire development

A structured questionnaire was administered to the sample of the citizens. The questionnaire was developed based on the SERVQUAL model. The service quality latent construct was evaluated indirectly through its five dimensions that have been extensively used in the literature, namely tangibles, reliability, responsiveness, assurance and empathy. These dimensions were also evaluated indirectly through 29 measured variables which were drawn from the studies of Chatzoglou *et al.* (2013), Cheruiyot and Maru (2013), Chatzoglou *et al.* (2014), Aman and Abbas (2016), Iyikal and Celebi (2016), Shafiq *et al.* (2017), Kant *et al.* (2017), Martinovic *et al.* (2017), Hennayake (2017), Sam *et al.* (2018), Hennayake (2017) and Tumiwa *et al.* (2018) in the public sector. Measured variables reflecting citizen satisfaction were also included in the questionnaire. These variables were drawn from the studies of Chatzoglou *et al.* (2014), Kant *et al.* (2017) and Hennayake, (2017). A draft of the questionnaire was reviewed by academics and professionals proving its appropriateness and achieving the content validity of the questionnaire items. The questionnaire was also subjected to a pilot test by 20 citizens, who were asked to ensure that all items could be clearly understood with no ambiguity. Based on their feedback, a few improvements were made in terms of the clarity of the questions.

The final version of the questionnaire consists of three parts. In the first part, the respondents were asked to state their perceptions with regard to specific items of the five dimensions of CSCs service quality. In the second part, the respondents expressed their satisfaction with the services provided by the CSCs. Finally, the third part of the questionnaire was associated with respondents' personal and demographic characteristics such as gender, age and education level. A five-point Likert scale (1 represented "strongly disagree" and 5 represented "strongly agree") was used in order to elicit citizens' perceptions with regard to specific statements reflecting the service quality dimensions and their satisfaction.

4. Results

4.1 Descriptive statistics

The mean values and standard deviations of the service quality dimensions and citizen satisfaction are calculated based on the measured variables of each latent factor (Table 2). According to citizens' perceptions, the level of the service quality dimensions is deemed medium to high (mean values from 3.39 to 3.67). As a result, citizens' satisfaction is not extremely high (mean value of 3.50). Reliability analysis is also applied by the internal consistency method calculating the Cronbach's α coefficient. All the Cronbach's α coefficients are above 0.79 indicating that the selected measured variables reliably estimate the latent factors (Sadikoglu and Zehir, 2010).

Table 2: Descriptive statistics of the service quality dimensions and citizen satisfaction

Latent factors	Mean Value	Std. Deviation	Cronbach's Alpha
Assurance	3.67	0.88	0.910
Reliability	3.66	0.79	0.904
Empathy	3.49	0.89	0.892
Tangibles	3.42	0.72	0.794
Responsiveness	3.39	0.58	0.869
Citizen satisfaction	3.50	0.58	0.801

4.2 Correlation analysis

The Pearson correlation coefficients are calculated in order to determine the inter-relationships among the dimensions of service quality. Table 3 shows that the correlation coefficients between all the pairs of service quality dimensions are statistically significant and above 0.5. The highest coefficients are between reliability and empathy (0.812), reliability and assurance (0.796) and empathy and assurance (0.796). However, the lowest coefficients are between tangibles and responsiveness (0.544) and tangibles and assurance (0.603).

Table 3: Correlation analysis

Service quality dimensions	Reliability	Responsiveness	Empathy	Assurance
Tangibles	0.659**	0.544**	0.621**	0.603**
Reliability		0.787**	0.812**	0.796**
Responsiveness			0.749**	0.721**
Empathy				0.796**

**: Correlation is significant at the 0.01 level

4.3 Multiple liner regression analysis

The impact of the service quality dimensions (independent variables) on the dependent variable citizen satisfaction is determined through multiple linear regression analysis (Table 4). The regression analysis is applied based on the summated scales of the independent variables and dependent variable. Using the studentized residuals, the assumptions required for the regression analysis and more specifically the linearity, homoscedasticity, independence and normality are tested. Based on the recommendations of Hair *et al*. (2005), specific tests are carried out for each assumption to check for violations. The results show that these assumptions are not violated. Furthermore, the multicollinearity among the independent variables is checked and not confirmed. According to the results, the regression is statistically significant (p-value = 0.00 and adjusted R^2=0.509). Estimating the regression model, the results show that citizen satisfaction is directly affected by assurance (p=0.000, b standardized coefficient = 0.257), empathy (p=0.000, b standardized coefficient = 0.157), reliability (p=0.001, b standardized coefficient = 0.139), tangibles (p=0.00, b standardized coefficient = 0.130), and finally responsiveness (p=0.00, b standardized coefficient = 0.126).

Table 4: Multiple Regression Analysis

Multiple Regression Analysis			Adjusted R Square = 0.509	
Dependent variable	**Independent variables**	**Standardized Coefficients**	**F value**	**Sig.**
Citizen satisfaction	Service quality dimensions	Beta	254.691	0.000
	Tangibles	0.130		0.000
	Reliability	0.139		0.001
	Responsiveness	0.126		0.000
	Empathy	0.157		0.000
	Assurance	0.257		0.000

4.4 Independent samples T-test and ANOVA

The independent samples T-test is applied in order to determine the differences, if any, between the perceptions of men and women, with regard to the five service quality dimensions and citizen satisfaction from CSCs (Table 5). No statistically significant differences are observed with regard to any of the service quality dimensions and citizen satisfaction. Both men and women evaluate all dimensions of service quality at the same level while their satisfaction is almost identical.

Table 5: Independent samples T-test between men and women

Latent factors		Men	Women
	Sig.	$n_1 = 605$	$n_2 = 621$
Tangibles	nss	3.40[1]	3.43
Reliability	nss	3.63	3.68
Responsiveness	nss	3.37	3.40
Empathy	nss	3.46	3.53
Assurance	nss	3.67	3.67
Citizen satisfaction	nss	3.49	3.51

nss: non statistically significant (Independent samples T-test), [1]: 1 represents "strongly disagree" and 5 represents "strongly agree".

ANOVA is applied in order to detect, based on the citizens' perceptions, whether there are statistically significant differences in the dimensions of service quality and citizen satisfaction among groups of citizens of different ages (Table 6). Statistically significant differences are observed with regard to citizen satisfaction and all the service quality dimensions except for responsiveness. The highest mean values for almost all the service quality dimensions are observed for the ages of 36-45 and over 65. The highest mean values for citizen satisfaction are observed for the ages of 56-65 and over 65.

Table 6: ANOVA between sub-samples developed based on citizens' age

		Age of citizens					
Latent factors		18-25	26-35	36-45	46-55	56-65	>65
	Sig	$n_1=170$	$n_2=260$	$n_3=319$	$n_4=317$	$n_5=100$	$n_6=60$
Tangibles	**	3.17[1]	3.46	3.49	3.40	3.54	3.42

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Reliability	**	3.38	3.64	3.76	3.69	3.67	3.76
Responsiveness	nss	3.28	3.38	3.43	3.43	3.36	3.39
Empathy	**	3.22	3.52	3.58	3.50	3.57	3.58
Assurance	**	3.37	3.69	3.76	3.67	3.69	3.87
Citizen satisfaction	**	3.34	3.53	3.52	3.53	3.54	3.54

**: Statistical significance at $p < 0.01$ (F-test), nss: non statistically significant, [1]: 1 represents "strongly disagree" and 5 represents "strongly agree".

ANOVA is also applied in order to detect, based on citizens' perceptions, whether there are statistically significant differences in the dimensions of service quality and citizen satisfaction, among groups of citizens with different levels of education (Table 7). Statistically significant differences are observed regarding all the service quality dimensions and citizen satisfaction. The citizens without education and those who have finished elementary/high school are the most satisfied with the services provided by the CSCs. Moreover, these groups of citizens evaluate all the service quality dimensions at higher levels than the citizens of the other education groups.

Table 7: ANOVA between sub-samples developed based on education level

		Education level					
Latent factors		**Without education**	**Elementary/ high school**	**Vocational school**	**Senior high school**	**University**	**Master's degree & PhD**
	Sig	n_1=94	n_2=286	n_3=260	n_4=280	n_5=252	n_6=54
Tangibles	**	3.65[1]	3.59	3.45	3.31	3.27	3.20
Reliability	**	3.93	3.90	3.62	3.61	3.40	3.45
Responsiveness	**	3.52	3.53	3.38	3.38	3.23	3.25
Empathy	**	3.76	3.79	3.49	3.43	3.20	3.23
Assurance	**	3.92	3.94	3.64	3.59	3.41	3.60
Citizen satisfaction	**	3.67	3.65	3.52	3.43	3.38	3.31

**: Statistical significance at $p < 0.01$ (F-test), [1]: 1 represents "strongly disagree" and 5 represents "strongly agree".

5. Discussion

The authors of the present study have been stimulated to carry out a research study on the Greek CSCs. Although a study on the Greek CSCs with regard to service quality and citizen satisfaction was previously carried out a few years ago (Chatzoglou *et al.*, 2013), a literature gap still exists making many authors suggest future studies on the service quality of public organizations including the Greek CSCs. The present study is substantially different from previous studies and contributes to the literature by determining, based on the perceptions of citizens in a period which is characterized by the end of the financial crisis in Greece, the level of service quality dimensions and citizen satisfaction, the inter-relationships among the service quality dimensions, their impact on citizen satisfaction, and finally, the differences in the level of service quality dimensions and citizen satisfaction among several groups of citizens created based on their demographic profile.

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According to the findings, the respondents are not very satisfied with the quality of the services they receive from the CSCs, since all the dimensions of service quality are evaluated by them as of medium to high level. The present study findings conducted at the end of the crisis, are in line with the findings of the study of Chatzoglou *et al.* (2013) on the service quality of CSCs which was conducted at the beginning of the crisis. This means that the citizens' perceptions with regard to the dimensions of service quality and their satisfaction have not changed during the crisis. The financial crisis and the economic downturn which dominated in Greece during 2010-2018 (Psomas *et al.*, 2017) may be the reasons why the situations under which the services are provided by the CSCs have not actually improved. However, according to the perceptions of the citizens participating in the present study, these situations which reflect the service quality dimensions have not deteriorated, a finding that seems to be optimistic.

Confirming similar studies in the public sector (Khan *et al.*, 2015; Kalaja *et al.,* 2016; Kant *et al.,* 2017; Tumiwa *et al.,* 2018), the present study reveals that all the service quality dimensions significantly and positively affect citizen satisfaction with the services provided by CSCs. The high percentage of variance (50.9%) of the dependent latent variable (citizen satisfaction) that is explained by the independent latent variables (service quality dimensions) is worth highlighting. This means that a high degree of citizen satisfaction can only be achieved if the service quality dimensions are improved. Thus, significant priority should be given to the improvement of all the service quality dimensions in order to significantly increase citizen satisfaction. However, according to the present study findings which are in line with the findings of the study of Hennayake (2017) in public commercial banks in Sri Lanka, the human related dimensions of service quality which influence the citizen satisfaction more than the non-human related dimensions (e.g. tangibles), deserve higher priority as improvement initiatives. It is also worth noting that the present study findings are not in accordance with the findings of the study of Iyikal and Celebi (2016) and Shafiq *et al.* (2017), according to which not all the service quality dimensions are significant predictors of citizen satisfaction.

The significant and high inter-relationships among all the dimensions of service quality demonstrate that in the context of the CSCs developed in Greece, the improvement of individual dimensions of service quality can lead to the improvement of other dimensions. High inter-relationships among the service quality dimensions were also revealed from the study of Chatzoglou *et al.* (2013) in CSCs and the study of Zafiropoulos and Vrana (2008) in a Greek higher education institute.

The differences with regard to the service quality dimensions and citizen satisfaction among different groups of citizens are worth discussing. According to the present study findings, gender is not a variable which influences the perceptions of citizens with regard to the service quality dimensions and their satisfaction. In other words, the perceptions of both men and women with regard to the service quality dimensions and citizen satisfaction are the same. This finding is in line with the minor impact of gender on the perceived education quality revealed in the study of Zafiropoulos and Vrana (2008) as well as the non significant influence of gender on inpatient satisfaction revealed in the study of Mitropoulos *et al.* (2018). By contrast, the studies of Dimitriades and Maroudas (2007), Dewan and Mahajan (2014), Bouranta *et al.* (2015) determined a significant difference in customer satisfaction on the basis of gender.

Contrary to the variable of gender, the variable of age does seem to influence the perceptions of the citizens with regard to the service quality dimensions and their satisfaction. The fact that the middle aged and the elderly citizens evaluate higher the service quality dimensions and their satisfaction means that they may actually need the help the CSCs provide to them and consequently are highly appreciative of these services. Similarly, in the studies of Dimitriades and Maroudas (2007) and Mitropoulos *et al.* (2018), the older individuals tended to rate higher the level of satisfaction experienced from the services they receive. A significant difference in the customer satisfaction on the basis of age, similar to the present study, is also revealed from the studies of Zafiropoulos and Vrana (2008) and Dewan and Mahajan (2014).

Similar to the variable of age, the education level seems to differentiate the perceptions of citizens regarding the service quality dimensions and their satisfaction. The lower the education level is, the higher the perception of the citizens is with regard to the level of the service quality dimensions. Moreover, the lower the education level is, the more satisfied the citizens are with the services provided by the CSCs. The low level of education seems to make citizens feel more positive towards the service quality dimensions and highly appreciate them. Hence, they feel more satisfied even with no high quality levels of the services they receive. The high level of satisfaction felt by people with lower levels of education is also determined by Bouranta *et al.* (2015) studying citizen satisfaction with the services provided by the Greek Police.

Managers and policy makers of CSCs can grasp the message revealed from the present study and identify opportunities for quality improvement of the services of CSCs. Significant room for increasing all the service quality dimensions and citizen satisfaction exists not only as far as the population of the citizens is concerned but also as regards specific clusters of citizens created based on their demographic profile. The present study findings reveal that the CSCs should focus more intensely on specific groups of citizens in order to improve the service quality dimensions they receive and their satisfaction. Thus, for the purpose of service quality improvement, suitable decisions should be made for quality initiatives such as the establishment of a quality management system according to the ISO 9001:2015 standard or the Common Assessment Framework. In order for these initiatives to be successfully implemented, training programs and seminars should be organized in the internal environment of CSCs, inviting the participation of external experts in the field and benchmarking successful organizations that have already followed such initiatives.

6. Limitations and future research agenda

The present study suffers from some limitations. The most important one concerns the fact that the present study was based only on the perceived service quality from the citizens' perspective, while the evaluation of the expected service quality by citizens was excluded from the research design. Given that for the purpose of the present study several groups of citizens were created according to their profile, the sample size of some of them was not large enough. Moreover, not all the CSCs operating all over Greece were approached, while managers of CSCs were excluded from the survey.

The above mentioned limitations give rise to suggestions for future research. It is worth replicating the present study and approaching the vast majority of the CSCs operating all over Greece, including more citizens with different demographic characteristics and more significantly eliciting also the citizens' perceptions with regard to the expected service quality. Eliciting also managers' perceptions with regard to the service quality the CSCs provide would increase the value of the study. The suggested future studies on CSCs should be carried out in a post crisis period.

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