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The case of the Division of Transportation and Communications of the
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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

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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 defined 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.

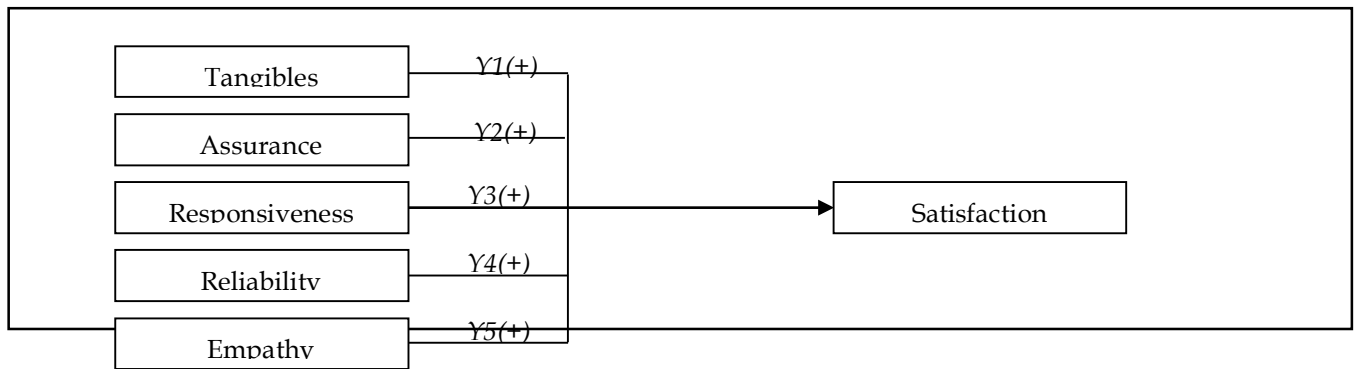


Figure 1. The proposed conceptual framework

4. Research Methodology

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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 <i>et al.</i> , 2011, El-Bassiouni <i>et al.</i> , 2012, Longbottom and Hilton 2011, Rodrigues <i>et al.</i> , 2011, Saraei and Amini 2012, Parasuraman <i>et al.</i> , 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 <i>et al.</i> , 2012, Ibrahim <i>et al.</i> , 2006, Ismail <i>et al.</i> , 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 X ₂	C.R.	V.E	RMR	CFI	GFI
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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 Likert 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).

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.

Table 7. Hypothesis testing (initial results)

Effects			r	p	Results
Y1	Tangibles	→	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

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).

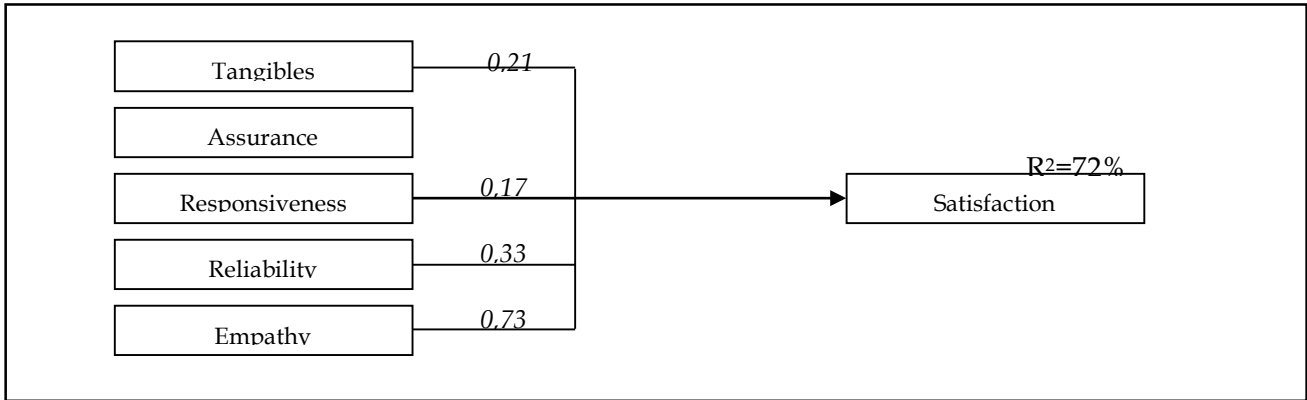


Figure 2. Initial structural model (initial results)

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

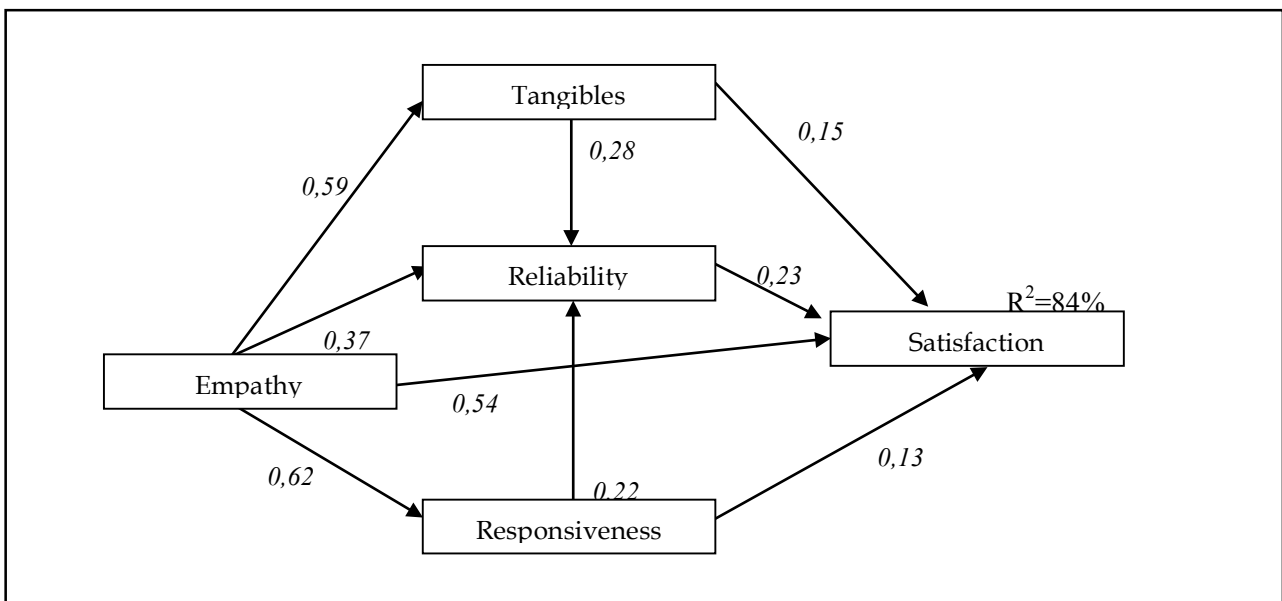


Figure 3. The modified structural model (all paths are statistically significant)

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:

- Empathy (total effect: 0,874).
- Reliability (total effect: 0,233).
- Tangible (total effect: 0,216).
- 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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