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**Evaluating citizens' actual perceptions and expectations and assessing e-Service
Quality Gap in Public Sector related to e-Government Services**

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Abstract

Purpose - The main purpose of this article is to explore the inter-relationships of major constructs related to citizens' satisfaction regarding e-Service Quality in Public Sector. The plan of the document is to evaluate the e-Service Quality in Public Sector of Greece. The paper examines the relationship or the Gap between the perceived and expected levels of e-Service Quality in public sector with respect to its dimensions, namely Tangibility related to Web site design, Reliability, Responsiveness, Security and Confidentiality and Personal Handling or Personalization and Privacy.

Design/ Methodology/ Approach- The study intends to disclose the sources supporting the satisfaction of citizens as well as those holding back it. The instrument employed to assess citizens' satisfaction regarding e-Service Quality in Public Sector related to e-Government Services, is the SEVQUAL.

Findings- The research findings draw our attention to the significant effects of Web site design/Tangibility, Reliability, Responsiveness, Security/Confidentiality, and Personalization/Privacy on service quality related to Public Sector related to e-Government Services. Adding, it places of interest citizens' negative attitudes and obstacles or positive behaviors toward e-Government Services.

Volume: 1 - Issue: 1 February 2019

Research limitations/ implications- The study was refereeing to Greek public sector citizens' satisfaction related to e-Government Services. Future research could supply new empirical results in relation to the current new high tech area.

Originality/ value- The document adds a total new situation' presentation, e-Service Quality Gap in public sector related to e-Government Services.

Key words: e-Service Quality, Gap Analysis, Public Sector, e-Government Services.

Theoretical Framework

Societies ask for highly educated citizens. According to Anastasiadou (2018) Education, training and culture of the youth is of the utmost importance for people, nations, and economies and cultures (Anastasiadou, 2016, Anastasiadou et al., 2016). In the era of technological revolution e-Government is well defined. According to Bardi & Alshare (2008) e-Government is highly used as a tool for prompting economic development due to the fact that it facilitates organization to effectively carry out in a more efficient conduct with the government. IT and Internet have opened new possibilities for government and governed (Moon, 2002). Melitski (2003) argued that e-Government has become a significant strategic tool for the Public Sector. e-Government success related to e-Service Quality (Anastasiadou 2015; 2018b, 2018c). Service Quality and e-Service Quality in the high tech era can be evaluated in terms of the Gaps between customers' expectations and perceptions (Hoffman and Bateson, 2006), while Parasuraman et al. (1985) recommend that customers' assessment of service quality taken as a whole depends on the Gaps between the expected and the perceived service.

Parasuraman et al. (1985) and Zeithaml et al. (1990) have recognized five separate Gaps between customers' expectations and perceptions. These five Gaps are illustrated below (Figure 1).

(a) Gap 1: The Knowledge Gap, which refers to the difference between what customers expect of a service and what management perceives that customers expect (Musaba et al., 2014). Gap 1 assigned as Positioning Gap, is strongly related both to managers'

perceptions regarding customers' expectations and the importance customers connect with the quality dimensions comparatively (Zeithaml et al. 1990; Anastasiadou, 2018a). Mohammad and Moghadam, (2016) argued that management might have an erroneous perception of customers' actual perception. In addition they pointed out that this Gap has its pedigree in deficient in focus on customers or the market (Mohammad and Moghadam, 2016);

(b) Gap 2: The Standards Sap, which refers to the difference between what managers perceives that customers expect and the quality and specifications set for service delivery (Musaba et al., 2014). Gap 2 assigned as Specification Gap, points out the actual difference between what the management believes regarding customers want and what is expected by customers related to the organization will provide (Zeithaml et al. 1990; Anastasiadou, 2018a). Mohammad and Moghadam, (2016) argued that the organization might not be capable of translating customers' expectations into service specifications/ features. This Gap relates with aspects of service design (Mohammad and Moghadam, 2016);

(c) Gap 3: The Delivery Dap, referring to the difference between the quality specifications set for a service delivery and the actual quality of service delivery. Gap 3 assigned as Delivery Gap points out the actual difference between the service made available by the organization employee and the specification that are allocated by the managers (Zeithaml et al. 1990; Zeithaml et al. 1996; Zeithaml et al. 1990; Zeithaml et al. 2000; Anastasiadou, 2018a). (Mohammad and Moghadam, (2016) argued that, with respect to services rendered; organizations do not offer high quality services. According to Anastasiadou (2018a) they argued that the organization might be faced with, personnel and communication problems, the unpredictability of frontline personnel and shortcomings regarding processes;

(d) Gap 4: The Communications Cap refers to the difference between the actual quality of service delivered and the quality of service described in the firm's external communications, such as brochures and mass media advertising (Musaba et al., 2014). Gap 4, assigned as Communication Gap points out the given promises by the

organization to its customers but not truly be in a line with the expectations related to the external promises made by customers (Zeithaml et al. 1990; Anastasiadou, 2018a). Mohammad and Moghadam, (2016) argued that customers' expectation might be strongly predisposed by the external relations of the organization. This Gap relates to unrealistic expectations formed by the encouragement of positive perceptions that the organization is not capable of supporting (Mohammad and Moghadam, 2016);

- (e) Gap 5: The Service Gap which summarizes all the other Gaps and describes the difference between customers' expectations and their perceptions of the service they receive (Musaba et al., 2014). Gap 5, assigned as Perception Gap, points out the difference between the anticipation of the services and customers internal perceptions (Zeithaml et al. 1990; Anastasiadou, 2018a). Perceived quality of the service relates to difference between expectation and perception. A negative difference between customer's perceptions and expectations shows a level of service quality below customers' expectations (Mohammad and Moghadam, 2016).

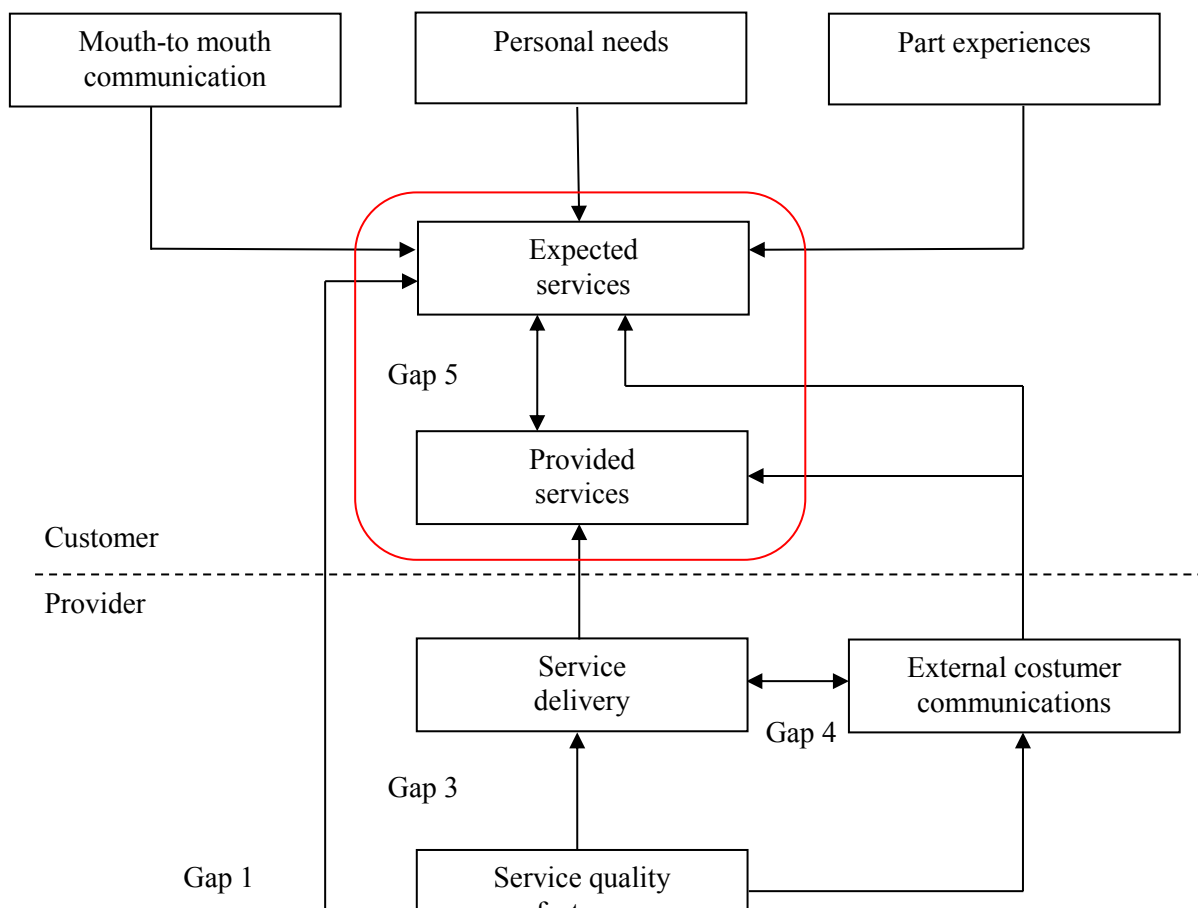


Figure 1: Gap model

(Source: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4963340/figure/Fig1/>)

Gap 5 between the expected and the perceived service is considered to be the most significant one (Katler and Armstrong, 2000; Musaba et al., 2014).

According to Kumar et al., (2009), SERVQUAL instrument dimensions named Tangibility, Reliability, Responsiveness, Assurance and Empathy are strongly connected quality measurement (Zeitham, 1988; Parasuraman, Berry and Zeitham, 1988; 1990.). According to Grönroos (1982) SERVQUAL has been the predominant method used to measure consumers' perceptions relating to Service Quality. The connection presented in the Figure 2 below.

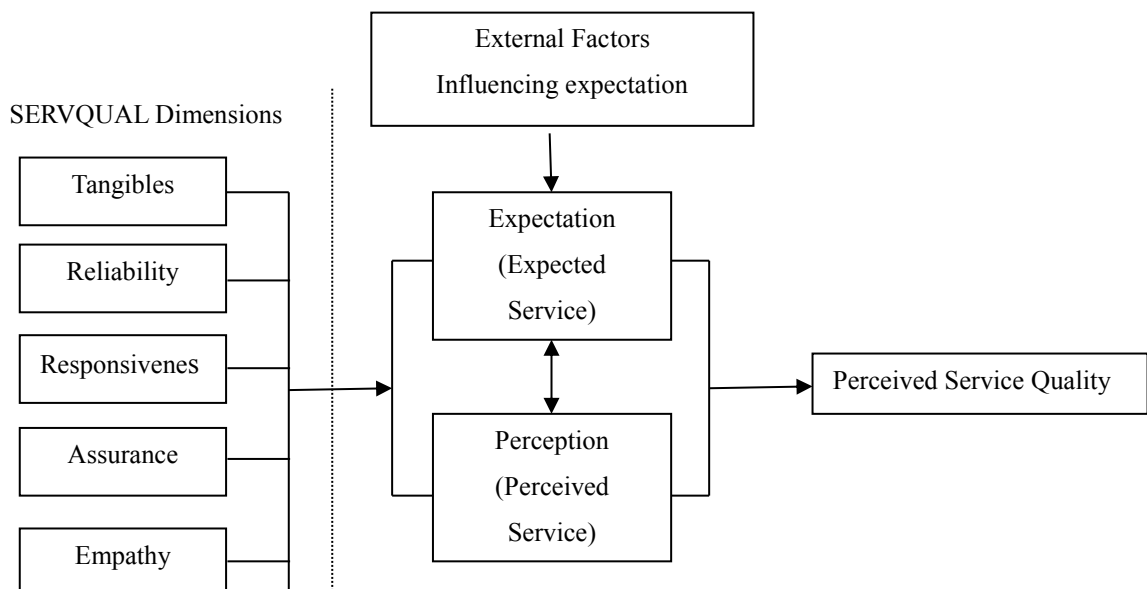


Figure 2: Measuring Service Quality with SERVQUAL Model

(Source: Kumar et al., 2009)

Aim of the study

The major intend of this paper is to investigate the inter-relationships of major constructs related to citizens satisfaction regarding e-Service Quality Gap in Public Sector related to e-Government services. The plan of the document is to appraise the e-Service Quality offered by the Greek e-Government services by evaluating Gaps between customers' expectations and perceptions as they relate to SERVQUAL dimensions with respect to citizens' trustworthiness (Parasuraman, Berry and Zeitham, 1988; 1990). Consequently this study will focus on Gap 5 between expected and perceived/actual e-Government services.

The instrument

Proposed a Conceptual Model that is the based to measure e-Government Service Quality, is related to SERVQUAL dimensions. These dimensions named Web site design/ Tangibility, Reliability, Responsiveness, Security and Personalization were modified and paraphrased to be in a line with organization perspectives. The proposed new SERVQUAL instrument by Wesam Abdallat (2014) adapting the five dimensions of service quality secured by SERVQUAL to e-Government Service Quality (Ateeq et al., 2010) includes 22 items. This instrument consisted of two parallel sections: the expected e-Government services and the actual/ perceived e-Government services. The difference between them represents the Service's Gap.

This tool consists of 22 items referring to five different dimensions, as follows:



International Journal of Entrepreneurship
and Innovative Competitiveness

Volume: 1 - Issue: 1 February 2019

(a) Web site design/ Tangibility' dimension includes 7 items (E1/A1, E2/A2, E3/A3, E4/A4, E5/A5, E6/A6 and E7/A7). It refers to Web site design congeniality and suitability, functionality and appearance (e.g. E1. e-Government web site will be excellent with an attractive appearance, A1. The e-Customs Department web site has an attractive appearance to the viewer).

(b) Reliability' dimension includes 4 items (E8/A8, E9/A9, E10/A10, E11/A11). It refers to promised service performance regarding e-mailing, calling a customer, delivering the right products with right charges (e.g. E8. When the e-Government website undertakes to call me or send me an email message, I would like to commit them to this, A8. When the e-Customs Department web site undertakes to call me or send me an email message, they are committed to this).

(c) Responsiveness' dimension includes 3 items (E12/A12, E13/A13, E14/A14). It refers to e-Government service provision regarding adequate assistant to users with delays (e.g. E12. I think that the e-Government website provides prompt service, A12. I think that the e-customs department website provides prompt service).

(d) Security/Confidentiality' dimension includes 4 items (E15/A15, E16/A16, E17/A17, E18/A18). It refers to e-Government service provision regarding security and confidentiality and protection related to users' personal information (e.g. E15. The e-Government website must provide security and protection, A15. The e-Customs department website provides security and protection for users).

(e) Personalization/Privacy' dimension includes 4 items (E19/A19, E20/A20, E21/A21 and E22/A22). It refers to e-Government service virtual environment. It relates to e-Government service services to convince individuals business's needs (e.g. E19. I love the e-Government website that offers option to build a personal profile, A19. The e-Customs Department website provides options to build a personal profile).

The sample

The sample comprises of 205 respondents, of whom 128 (62.4%) were men and 77 (37.6%) were women (Table 1).

Volume: 1 - Issue: 1 February 2019

With respect to the respondents' age, 110 (53.7%) were from 18 to 24 years old; 44 (21.5%) from 25-34; 24 (11.7%) from 35 to 44 years; and finally 27 (13.2%) from 45-54 years old.

With respect to their marital status, 157 (76.6%) were single; 43 (21%) were married and 5 (2.4%) were separated or divorced.

As for the respondents' education level, 2 (1%) answered that they have completed elementary education, 105 (51.2%) secondary, 72 (35.1%) tertiary and, finally, 26 (12.7%) hold a post-graduate or doctoral title.

127 of the 205 respondents (62%) stated that their income is less than €10.000; 56 (27.3%) from €10.000 to €24.999; 12 (5.9%) from €25.000 to €49.999; 2 (1%) from €50.000 to €74.999 and, finally, 8 (3.9%) did not respond to this question.

Table 1: Demographics

Demographic data	Category	Frequency (N=205)	Relevant frequency (%)
Sex	Male	128	62.4
	Female	77	37.6
Age	18-24	110	53.7
	25-34	44	21.5
	35-44	24	11.7
	45-54	27	13.2
Family status	Single	157	76.6
	Married	43	21.0
	Divorced/Separated	5	2.4
Education	Elementary education	2	1.0
	Secondary education	105	51.2
	Tertiary education	72	35.1
	Postgraduate studies / Doctorate	26	12.7
Income	<€10.000	127	62.0

Volume: 1 - Issue: 1 February 2019

€10.000-€24.999	56	27.3
€25.000-€49.999	12	5.9
€50.000-€74.999	2	1.0
Did not respond	8	3.9

Results

Reliability test: A reliability test was carried out to ensure that the reserve instrument that evaluates the data collected is reliable (Anastasiadou & Zirinolou, 2014). The coefficient Cronbach's α is calculated to measure the reliability of the five dimensions, i.e. Web site design/Tangibility, Reliability, Responsiveness, Security/ Confidentiality and Personalization/ Privacy (Table 2).

Table 2: Cronbach's Alpha of all the items

Dimensions	Expectation	Perception /actual
Web site design/ Tangibility	0.76	0.72
Reliability	0.69	0.84
Responsiveness	0.78	0.79
Security/ Confidentiality	0.83	0.88
Personalization/ Privacy	0.78	0.81

Analysis of Mean Scores and e-Service Quality Gap of Perception and Expectation in Public Sector related to e-Government Services: The following section presents the mean and the standard deviation of perceptions/actual and expectations and the e-Service Gap regarding e-Service Quality Gap in Public Sector related to e-Government Services on Tangibility.

From the results presented in table 3 it can be observed that the mean expectation scores are greater than the mean actual/perception scores in relation to all seven attributes, fact that it can certify that citizens are dissatisfied.

However in terms of magnitudes of the Gap scores, it was found the Gap scores ranged from -1.67 to -0.68. Attribute E6 referring to whether the Website of the e-Government should not be down permanently has the highest mean and attribute E2 referring to whether the user interface for e-Government website will be well-organized has the lowest mean in terms of expectation.

Attribute A3 connected with whether the process of conducting transactions in the e-Customs Department web site is easy and fast has the lowest in the dimension of Tangibility. Attribute A1 refers to whether the e-Customs Department web site has an attractive appearance to the viewer in terms of actual/ perception has the highest mean in the dimension of Tangibility.

It should also be noted that attribute E6 which refers to whether the Website of the e-Government should not be down permanently, has the highest negative sign.

Table 3: Mean Scores and e-Service Quality of Actual Perceptions and Expectations and e-Service Gap on Web site design/Tangibility

The Expected E-Government services	Mean (Std. Deviation) Expectation	The actual E-Government services	Mean (Std. Deviation) Actual	Gap
E1. e-Government web site will be excellent with an attractive appearance.	3.64(0.564)	A1. The e-Customs Department web site has an attractive appearance to the viewer.	2.35(0.636)	-1.29
E2. The user interface for e-Government website will be well-organized.	2.89(1.160)	A2. The user interface for e-Customs Department web site is well-organized.	2.21(0.909)	-0.68
E3. The process of conducting transactions on the e-Government website will be easy and fast.	3.32(1.025)	A3. The process of conducting transactions in the e-Customs Department web site is easy and fast.	2.04(0.498)	-1.28
E4. The e-Government website will be always	3.65(0.620)	A4. The e-Customs Department web site is	2.23(0.486)	-1.42

available to business companies.		always available to business companies		
E5. The e-Government web must download and run immediately.	3.59(0.692)	A5. The e-Customs Department web site is downloaded and run immediately.	2.25(0.535)	-1.34
E6. The Website of the e-Government should not be down permanently.	3.77(0.611)	A6. The e-Customs Department web site is rarely down.	2.10(0.409)	-1.67
E7. The pages in e-Government web site do not delay to emerge after the entry of a request for Information.	3.67 (0.653)	A7. The pages in e-Customs Department web site do not delay to emerge after the entry of a request for Information.	2.22(0.617)	-1.45

The following section presents the mean and the standard deviation of perceptions/actual and expectations and the e-Service Gap regarding e-Service Quality Gap in Public Sector related to e-Government Services on Reliability.

From the results presented in table 4 it can be easily observed that the mean expectation scores are greater than the mean actual/ perception scores in relation to all four attributes.

The results show that citizens are not satisfied as far as reliability is concerned. However, in terms of magnitudes of the Gap scores, these ranged from -1.13 to -0.77. It must be said at this point, that attributes E8 and E9 have the highest negative signs and state that citizens are dissatisfied with both when the e-Government website undertakes to call them or send them an email message, they would like to commit them to this and when the e-Customs Department web site delivers the services that they order it do it exactly.

Attribute E10 refers to whether they can be sure that when e-Government website will ask them for payment, fits with the requested service submitted by they like paying taxes has the highest mean in terms of expectation. Attribute E9 referring to whether they can be sure

when that when the e-Government web site will deliver the services that they order it do it exactly how the lower mean in terms of expectation.

In addition, Attribute A11 refers to whether e-Customs Department web site insists on error-free records has the highest mean in terms of perceptions, while, Attribute A9 refers to whether The e-Customs Department web site delivers the services that they order exactly has the lowest mean.

Table 4: Mean Scores and e-Service Quality of Actual Perceptions and Expectations and e-Service Gap on Reliability

The Expected e-Government services	Mean (Std. Deviation)	The actual e-Government services	Mean (Std. Deviation) Actual	Gap
E8. When the e-Government website undertakes to call me or send me an email message, I would like to commit them to this.	3.56(0.729)	A8. When the e-Customs Department web site undertakes to call me or send me an email message, they are committed to this.	2.50(1.008)	-1.06
E9. I like to be sure that the e-Government web site will deliver the services that I order exactly.	3.51(0.844)	A9. The e-Customs Department web site delivers the services that I order exactly.	2.38(0.762)	-1.13
E10. I like to be sure that the e-Government website will ask me for payment, fits with the requested	3.57(0.818)	A10. I like to be sure that the e-Customers Department web site will ask me for payment, fits with the	2.72(0.973)	-0.85

service submitted by me like paying taxes.		requested service submitted by me like paying fees.		
E11. The excellent e- Government to have error- free records.	3.56(0.736)	A11. e-Customs Department web site insists on error-free records.	2.79(0.946)	-0.77

The following section presents the mean and the standard deviation of actual perceptions and expectations and Service Gap of citizens on Responsiveness.

From the results presented in table 5 it can be effortlessly observed that the mean expectation scores are greater than the mean perception scores in relation to all three attributes, fact that it can again confirm citizens' dissatisfaction. Nevertheless, in terms of the magnitudes of the Gap scores, it was found that Gap scores ranged from -1.21 to -0.45. It ought to be mentioned that attribute E14/A14 has the highest negative sign and signify citizens' dissatisfaction in relation to e-Customs Department website' delay in answering requests from companies.

It should be noted that the highest mean in terms of expectations involve attributes E14 and E13 which shows that the citizens feel that these two are the attributes that matter the most to them.

The highest mean in terms of expectation is observed in attribute E14, which relates to e-Government website busyness to answer requests from companies. The second highest has the attribute E13, which relates to e-Government website readiness to help companies.

Attribute A13 also has the highest mean score in terms of perception. Nevertheless, attribute A14 which refers to whether that e-Customs Department website should delay in answering requests from companies scored the lowest mean in terms of actual perception.

Table 5: Mean Scores and e-Service Quality of Actual Perceptions and Expectations and e-Service Gap on Responsiveness

The Expected e-Government services	Mean (Std. Deviation) Expectation	The actual e-Government services	Mean (Std. Deviation) Actual	Gap
E12. I thing that the e-Government website provides prompt service.	3.49(0.711)	A12. I think that the e-Customs Department website provides prompt service.	2.72(0.973)	-0.45
E13. I believe that e-Government website must be always ready to help companies.	3.58(0.505)	A13. I believe that the e-Customs Department website must always be ready to help companies.	2.79(0.946)	-0.78
E14. I think that e-Government website should not be too busy to answer requests from companies.	3.81(0.402)	A14. I think that e-Customs Department website should not delay in answering requests from companies.	2.60(0.953)	-1.21

The following section presents the mean and the standard deviation of actual perception and expectations and the e-Service Gap regarding e-Service Quality Gap in Public Sector related to e-Government Services on Security and Confidentiality.

From the results presented in table 6 it is manifest that the mean expectation scores are greater than the mean perception scores in relation to all four attributes on security and confidentiality, fact that once again confirms citizens' dissatisfaction. Even so, in terms of magnitudes of the Gap scores, it was found that the Gap scores ranged from -1.32 to -1.03.

It should be pointed out that attributes E15/A15, E16/A16, E17/A17 and E18/A18 have the quite high negative sign and thus were revealing of customers' disappointment and dissatisfaction.

It can be noted that the highest negative sign of the Gap, -1.32, is connected with attribute E17/A17, namely whether the e-customs department website shores their

personal information with other websites. Equally high was the negative Gap, -1.31, of attribute E18/A18 indicating that the protection of credit card information by the e-customs department website is of a major importance.

Table 6: Mean Scores and e-Service Quality of Actual Perceptions and Expectations and e-Service Gap on Security and Confidentiality.

The Expected e-Government services	Mean (Std. Deviation) Expectation	The actual e-Government services	Mean (Std. Deviation) Actual	Gap
E15. The e-Government website must provide security and protection.	3.90(0.304)	A15. The e-Customs Department website provides security and protection for users.	2.62(0.996)	-1.18
E16. I want to be confident of the security of e-Government website.	3.80(0.397)	A16. I am confident of the security of the e-Customs Department website.	2.77(1.081)	-1.03
E17. The e-Government website does not share my personal information with other websites.	3.95(0.226)	A17. The e-Customs department website does not share my personal information with other websites.	2.63(1.061)	-1.32
E18. The e-Government website will protect my credit card information.	3.85(0.579)	A18. The e-Customs Department website is protecting my credit card information.	2.54(1.091)	-1.31

The following section presents the mean and standard deviation of Actual perception and expectations and the e-Service Gap regarding e-Service Quality Gap in Public Sector related to e-Government Services on Personal handling and privacy.

From the results presented in table 7 it can be observed without doubt that the mean expectation scores are greater than the mean perception scores with respect to all four

attributes on personal handling and privacy, fact that further verifies citizen dissatisfaction.

It is ought to be mention that attribute E22/A22 has the highest negative sign and signifies the discord by citizens for e-Government website options' provision for delivering services.

Attribute E21, refers to whether the e-Government website will provide other e-Government service options (e.g., payment methods) has the highest mean score in terms of expectation. Attribute E22 regards whether the e-Government website will provide options for delivering services scored the lowest mean in terms of expectation. Attribute A21, which refers to whether the e-Customs Department website provides other options of e-Governmental services (e.g. payment methods) has the highest mean score in terms of perception. Finally, attribute E22 which regards whether the e-Customs Department website provides options for delivering services in terms of perception.

Table 7: Mean Scores and e-Service Quality of Actual Perceptions and Expectations and e-Service Gap on Personal handling and Privacy.

The Expected e-Government services	Mean (Std. Deviation) Expectation	The actual e-Government services	Mean (Std. Deviation) Actual	Gap
E19. I love the e-Government website that offers option to build a personal profile.	3.74(0.718)	A19. The e-Customs Department website provides options to build a personal profile.	2.47(0.993)	-1.27
E20. The excellent e-Government website has links to other websites. That could be of interest to companies (links with similar companies and other website branches of	3.81(0.480)	A20. The e-Customs Department website has links to other websites. That could be of interest to companies (links with similar companies and other websites branches or other e-government sites)	2.67(1.087)	-1.14

other e-GOVERNMENT sites).				
E21. The e-government website will provide other e-Government service options (e.g., payment methods).	3.85(0.406)	A21. The e-Customs Department website provides other options of e-Governmental services (e.g. payment methods).	2.75(1.125)	-1.10
E22. The e-Government website will provide options for delivering services.	3.50(1.065)	A22. The e-Customs Department website provides options for delivering services.	2.27(0.991)	-1.33

Conclusions

In conclusion, one could claim that the citizens are not satisfied with the quality of e-Service Quality Gap in public sector related to e-Government services. Above all, citizens are dissatisfied with respect to the possibility that the e-Customs Department web site can be down permanently and they point it out that e-Customs Department web site must be rarely down. In addition, citizens are dissatisfied with respect to the pages in e-Government website delay to emerge after the entry of a request for Information. It is worth observing that there was a negative Gap for all 22 attributes.

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International Journal of Entrepreneurship
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Volume: 1 - Issue: 1 February 2019

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International Journal of Entrepreneurship
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Volume: 1 - Issue: 1 February 2019

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Volume: 1 - Issue: 1 February 2019

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