Exploring User Satisfaction of the Public e-Services in the State of Qatar: Case of Traffic Violations e-Service Provided by the Ministry of Interior

Completed Research Paper

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Abstract

This study aims at exploring users' satisfaction with the traffic violation e-Service provided by the Ministry of Interior in Qatar. The paper presents the findings of a quantitative survey that covered over 300 users of the traffic violation e-Service and reflects on satisfaction based on the four dimensions of the COBRA framework (Osman et al. 2011): cost, opportunity, benefit and risk constructs. The main advantage of employing COBRA is the variety of analysis that can be conducted on the collected data, such as factor analysis and data envelopment analysis (DEA). Though just descriptive, the results presented in this paper show that the majority of users are quite satisfied with the e-Service and that it succeeds in meeting users' their overall expected essential needs. Also, the paper draws on the qualitative results obtained from respondents' feedback that can be employed to determine ways of improving the present traffic violation e-Service in the State of Qatar and increase potential user satisfaction.

Keywords: e-Government, User satisfaction, e-Service, Traffic violation e-Service, State of Qatar.

Introduction

Qatar is a fast-evolving developing state located in the Arab peninsula and member of the Gulf Cooperation Council (GCC). It is famous for its oil and natural gas resources which positioned the state at the top of the list of the richest countries based on PPP per capita GDP, according to the IMF data published in 2013. e-Government initiatives were introduced in the State of Qatar in 2000 in parallel to e-Health and e-Education programmes (Al-Shafi and Weerakkody 2007). Conversely to other developing countries where technology availability is limited, Qatar has followed and generously invested in the latest technological trends in ICT in order to secure a superior ICT infrastructure on which sustainable public e-Services such as e-Government, e-Learning and e-Health can be implemented, yet it is estimated that these are under-utilised (Al-Shafi and Weerakkody 2008).

In the State of Qatar, e-Services provided by the Ministry Of Interior (MOI) have been designed to facilitate the processing of several civil operations for individuals as well as for businesses. These e-Services cover activities related to traffic authorities, such as consulting traffic violations and payment of traffic fines, and also activities related to immigration affairs such as visas and requests for exit permits. In addition to these services, information and official documents and forms are also

provided. In this study, traffic violation services were selected for multiple reasons. Firstly, they have relatively advanced maturity level among other e-Services implemented in Qatar and they are one, if not the most, popular e-Service used by the residents in Qatar. Also, traffic violation e-Services are typical examples of e-Services and have appeared frequently in the e-Government literature (Lollar 2006; Sharma et al. 2013).

Traffic violation e-Services are aimed at providing drivers and traffic authorities with timely and detailed information about vehicles' road offences such as over speeding or failing to comply with traffic signs and rules. To increase road safety, main road networks in the State of Qatar have been equipped with stationary and mobile speed and red light cameras that would take a photo of the concerned vehicle at the time of offense as a piece of evidence. The caught photos are digitally processed at the traffic authorities department to then be tagged with a timestamp, location and the type of offense. When the process is completed, the full description of the traffic offense can be reviewed and paid online, either through the MOI website or via the Hukoomi e-Services portal. In addition to the traditional web-based e-Service applications, a complementary initiative provided by the MOI is the mobile application, Metrash. Metrash is a utility tool aiming at simplifying the delivery of some of the MOI services. After the registration process where users have to provide their ID number (the national number for Qatari citizens or the residence permit number for non-Qatari residents) and the plate number of the vehicle(s), users can get notified as soon as a violation has been issued so that timely actions can be taken. While the aim of the MOI traffic violation e-Services have been focusing on increasing reliability and reducing the time and cost of traffic fines transactions for users and optimise efficiency and decrease paper work, little research, if any, has been performed on the users' experience with regard to consulting and paying traffic fines solely via e-Services.

To the best of our knowledge, existing research has mostly mentioned the traffic violation e-Services as examples of e-Government implementation but none has explicitly addressed investigating users' experience and satisfaction with using these e-Services, particularly in the State of Qatar. Users' satisfaction and continuous usage of such e-Services is crucial in a state like Qatar where population is estimated to dramatically increase in the next few years (Khatri 2013) and where private car ownership is already surging (Feuilherarde 2013); therefore, ensuring that ICT is properly exploited by the authorities in the public sector and the provided e-Services meet the needs of users would naturally result in better management of busy public sectors such as the traffic department in Qatar.

On the other hand, there has been a recent focus on understanding the stakeholders' view on public e-services due to the huge investments and the less-than-expected take up by the public. For instance, Irani et al (2012) analysed the methodologies utilised in e-government research from a users' perspective. Weerakkody et al. (2013) then classified the users' literature into Cost, Risk and Benefits and Opportunity categories following the COBRA analytical work in Osman et al. (2011). Recently and based on data collected from a Turkish context, Osman et al. (2014) proposed the COBRA framework and established, using structured equation modelling (SEM) techniques, the causal relationships between Cost-Risk and Opportunity-Benefit variables to assess users' satisfaction of Turkish public e-services. Further Osman et al. (2014) used the COBRA components to conduct a Frontier data envelopment analysis (DEA) to improve e-services from the users' perspective. The Cost and Risk variables were used as input whereas the benefit and opportunity variables were used as output indicators for DEA analysis. DEA results were used to generate individual user satisfaction scores towards a given e-service as well as recommending improvements on the e-Service for each group of users. Results also showed that users in different countries have set different importance weights to the COBRA components when comparing UK and Turkish users. This may lead to a significant research question of whether using common fixed weights to generate UN e-government indices is a valid approach. In this paper, we are interested in taking a step forward following the same line of research and explore whether the COBRA framework can be applied in a different cultural context and on a different public e-service in Qatar.

Despite the fact that I-MEET project expands to consider the evaluation of public e-Services from both users' and providers' perspectives, this paper only covers the users' perspective. Besides the aim of observing some usage characteristics of the MOI traffic violations e-Service, it seeks to quantively capture users' satisfaction related to the usage of the e-Service by assessing the perceived costs, opportunities, benefits and risks (COBRA) of using the e-Service. Users' qualitative feedback is also considered to assess whether the e-Service is meeting their needs, and the reasons if not. Users included in this study cover national citizens as well as foreigners living in Qatar and who are making use of the MOI traffic violation e-Services, whether directly from the MOI website, through the Hukoomi web portal, or via handheld devices through the Metrash applications.

The rest of this paper is organised as follows. The next section briefly revisits the literature covering topics related to e-Service evaluation and user satisfaction. It also reviews relevant studies conducted in the Middle East and Qatari context. Afterwards, the research design and methodology section describes how the questionnaire was designed and distributed and how the data was handled. The subsequent sections present the demographic information of the survey participants followed by a discussion of the study results about participant satisfaction with the MOI traffic violation e-Service. The paper concludes with the theoretical and managerial implications of the study as well as acknowledging its limitations and future research venues.

Review of public e-Services assessment and the evaluation of users' satisfaction

Like any new technology, the adoption of a new e-Service, which can be considered as a sign of success (Gatian 1994), is highly affected by its quality and the advantages it offers (Sharma et al. 2013). Therefore many research efforts focused on developing frameworks and theories addressing the evaluation of e-Services. The conceptual basics for understanding, measuring and improving services date back to the seminal works of (Shostack 1982), (Parasuraman et al. 1985) and (Grönroos 1984) which led later to the SERVQUAL framework (Parasuraman et al. 1985) and the service quality model by Gronoos (1984). Along with the emergence of the internet, the availability of existing and new customer-related services online led to the development of specific frameworks and models to evaluate the quality of e-Services (Parasuraman et al. 2005). Important models, which may be regarded as modern extensions of SERVQUAL, include WebQual (Loiacono et al. 2007), SiteQual (Webb and Webb 2004), eTailQ (Wolfinbarger and Gilly 2003) and E-S-QUAL (Parasuraman et al. 2005).

Despite the considerable number of studies focusing on the evaluation of e-Services, relatively little research addressed the evaluation of public e-Government services (Sharma et al. 2013). Moreover, most studies in this field focused on evaluating the adoption of public e-Services from governments' (i.e. providers) perspective (Sharma et al. 2013). This phenomenon might be influenced by two main factors; firstly, most public e-Services are initiated and guided by the supply side (i.e. the government and respective public agencies) and the second is tightly related to technology (Verdegem and Verleye 2009). In the first approach, governments expand their e-Government innovation by adding electronic versions of existing offline services without considering other factors, such as process re-engineering or considering users' preferences (van Dijk et al. 2008; Lee-Kelley and Kolsaker 2004). In the second approach however, too much consideration is given to technology and implementation issues leaving aside users' real needs and expectations of the new e-Services (Bertot and Jaeger 2008; van Dijk et al. 2008).

In responses to these two tendencies, focus was shifted to more "user-centred e-Government" in terms of engaging citizens in the way how the new e-Government should be shaped, instead of imposing innovation straight from public authorities, and in considering more users' needs and satisfaction attributes as in CRM systems (Tat-Kei Ho 2002; Verdegem and Verleye 2009). By reviewing the literature on technology acceptance and how and why do users adopt a new technology, one main theoretical root arise, the theory Diffusion of Innovation (Rogers 2003). However, this theory wase too abstract to be applied in the context of adoption and users' satisfaction with e-Services in general, and e-Government services in particular (van Dijk et al. 2008; Verdegem and Verleye 2009). Therefore several extensions influencing the way technology is assessed from users' perspective appeared in the literature such as the Theory of Reasoned Actions (TRA) proposed by Ajzen (1985), which in turn was extended to the Technology Acceptance Model (TAM) by Davis and colleagues (1989). The Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh and colleagues (2003) forms another theoretical milestone which consolidates different constructs relating to performance expectancy, effort expectancy, social influence and other facilitating conditions that are direct antecedents of use behaviour. UTAUT also posit factors such as age, gender and voluntariness as moderators to the impact of those constructs on usage intention and behaviour.

Since the introduction of e-Government initiatives in the Middle East in early 2000, several studies addressed the issues of e-Government implementation and the social implications of the new public e-Service culture. Most of the studies were concerned with investigating ways to improve e-Government infrastructures, examining the technical, financial and cultural barriers hindering the broad adoption of ICT in the public sector, notably the lack of awareness. (Alomari et al. 2012) examined e-

Government adoption issues in Jordan and identified several factors such as trust, beliefs, awareness, and perceived usefulness that influence citizens' choice in using the web version of public services in Jordan. In another study (Alomari et al. 2014) advanced the e-Government debate in Jordan by addressing the impact of *wasta* and word of mouth, to spread awareness of public e-Services among the population, on the barriers of e-Government adoption. (AlAwadhi and Morris 2009) applied an amended model based on UTAUT to explore factors affecting the take-up of public e-Services in Kuwait considering cultural and social influences, technology issues and lack of awareness. In the Lebanese context, (Charbaji and Mikdashi 2003) empirically proved that despite the availability of e-Government services, lack of people's awareness about their existence and how to make use of them hinders their wider adoption.

In the GCC settings, evaluation of e-Government services gained scholars' interests given the particularity of ICT propagation. Contrary to most developing countries, diffusion of ICT in the GCC has been considerably positive as most of member countries managed to secure modern ICT infrastructures necessary to run most of public e-Services, but social issues such as digital divide, lack of awareness, and bureaucratic challenges hindered the spread and acceptance of public e-Services (Al-Shafi and Weerakkody 2010; Al-Sobhi et al. 2010). For instance, (Weerakkody, El-Haddadeh, et al. 2013) employed a variation of UTAUT to examine the role of intermediaries in bridging the digital divide, hence enhancing the adoption, of public e-Services in the Kingdom of Saudi Arabia (KSA). Also, in Oman, significant works contributed to the understanding of e-Government systems evaluation and adoption in the Sultanate. (Al-Busaidy and Weerakkody 2011) used a quantitative approach to assess e-Government implementations and diffusion from employees' point of view whereas the important work by (Sharma et al. 2013) sought to understand users' perception of the quality of the public e-Service in Oman and valued factors such as reliability and security as main quality determinants.

In Qatar, several studies on e-Government implementation, diffusion and acceptance were recently conducted. (EL-Haddadeh et al. 2010) empirically explored the key challenges and implementation issues in the GCC area considering Qatar as representative model. Similarly, (Weerakkody et al. 2011) empirically investigated e-Government implementation and diffusion complexities from developing countries perspective in Qatar. (Al-Shafi and Weerakkody 2007) considered a citizen perspective in examining the issues and challenges in implementing and managing e-Government developments in Qatar.

Research Methodology and Design

In order to conduct this research, a three-phase plan was followed: research design, data collection and finally data analyses and discussion of findings. The study started by gaining general background knowledge about the investigated topic, which is the evaluation of public e-Services and users' satisfaction with how ICT is employed to serve these e-Services. Thereafter and to address the aim of this research, the review of literature was narrowed down to revisit normative literature and relevant secondary sources about the use and adoption of public e-Services in the Middle Eastern context and, specifically, in the State of Qatar. Given the descriptive nature of this research (Jackson 2011), it was judged most appropriate to employ a survey-based quantitative approach in order to collect data from subjects, who were in our case the users of the MOI traffic violation e-Service in Qatar. The survey instrument was designed using closed questions organised into respective sections, one section per description dimension, in addition to open-ended questions to catch users' feedback regarding their satisfaction/dissatisfaction with the e-Service and whether they have any comments.

Design and Development of the Questionnaire

Contrary to traditional models and frameworks that assess public e-Services from a general point of view, the COBRA framework has the ability to guarantee fine-grained evaluation of e-Services from users' and providers' perspectives considering "*the most successful factors that impact the satisfaction of users within an e-government service*" (Osman et al. 2011). According to the COBRA framework, factors affecting satisfaction levels towards an e-Service are based around four major constructs; those are cost, opportunity, benefit and risk. The *cost* variable includes all material and immaterial costs, such as the cost of using the internet and the time needed to lookup information, respectively. *Opportunity* considers the advantages a user can obtain by using the service to complete a transaction, such as flexibility in accessing the service or the ability to consult service support. The *Benefit* variable stands for the extra value generated to the user by using the e-Service. These benefits can be expressed by the money and time saved compared to perform the same service offline. Finally,

Risk includes factors that may make the system, or make it appear, vulnerable. Also risks can be tangible, such as financial frauds and payment mistakes, or intangible and more social, such as data privacy and protection or social isolation.

Considering these constructs and their respective relationships with users' satisfaction, the main section of the questionnaire instrument was mainly developed following the COBRA framework. This section contained 49 closed multiple-choice questions addressing factors affecting each of the 4 constructs, 2 questions about how the e-Service meets users' needs and another one for users' general feedback about their experience of using the e-Service. Answers were given by selecting the most appropriate and relevant option of a 7-point Lickert scale where 7 was marked as "Strongly Agree" and 1 as "Strongly Disagree" with the exception of the last multiple choice question where 1 stood for "Strongly meets most of my essential needs" and 7 for "Doesn't meet any of my essential needs".

The next section of the questionnaire was dedicated to capture respondents' demographic data, internet usage and experience with the e-Service.

Distribution of Questionnaire and Data Handling

The first version of the questionnaire was developed and validated in English since similar studies are also conducted in the UK context as part of the I-MEET project activities. While this ensured the soundness and correctness of the questionnaire, professional translation to Arabic was required. Arabic translation was done iteratively by 3 Arabic-speaking team members, a professional translator, and finally validated with few other Arabic-speaking experts in the field of information systems and e-Government.

After obtaining all permissions from the Qatar University Institutional Review Board (IRB), the survey, in both Arabic and English, was published online on the Qatar University website using LimeSurvey. Hard copies were also produced and distributed to respondents qualifying as being users of the MOI traffic violation e-Service. On average, it took respondents between 15 to 20 minutes to complete the questionnaire. Data was collected anonymously and respondents were informed about the confidentiality of their data and the voluntary nature of the survey.

To conduct descriptive statistics analyses, data was cleaned and exported to Microsoft Excel 2010 where quantitative results were organised and graphically plotted into charts. Furthermore, a simple thematic analysis process (Boyatzis 1998) was employed to treat the qualitative answers from the open-ended items and users' feedback.

Results and Study Findings

Demographics

326 users of the MOI traffic violation e-Service took the survey and completed the questionnaire. While (*51.23%*) of the respondents were females (*43.65%*) were males, and (*5.21%*) did not provide an answer about their gender. Table 1 summarises the respondents' demographic details including their age group, education level, income range, their experience with using the internet and their usage frequency of the traffic violation e-Service. Almost half of the respondents (*47.85%*) reported to have an undergraduate qualification. (*46.93%*) rated themselves to be highly experienced with using the internet and almost a quarter of the participants (*23.31%*) answered to use the e-Service several times a year.

Age Group		Education Level		Income		Internet Experience		PPC Use	
<25	41.1%	Secondary or less	1.53%	< $10,000	32.82%	Beginner (less than 3 Years)	3.68%	Every day	18.71%
25-34	23.62%	High School	12.58%	$10,000-$19,999	11.04%	Fair (3-6 Years)	12.27%	Several times weekly	17.18%
35-44	16.87%	Undergrad Education	47.85%	$20,000-$49,999	23.94%	Good (6-10 Years)	33.13%	Once a month	16.56%

45-54	11.66 %	Postgrad Education	22.7%	$50,000-$69,999	8.58%			Several times a month	15.35 %
55-64	1.23%	Doctorate	6.75%	$70,000-$99,999	5.52%	Excellent (over 10 Years)	46.93 %	Once a year	4.6%
>65	1.53%	Other Professional Qualifications	3.07%	>$100K	8.9%			Several times a year	23.31 %
N.A	3.99%	N.A.	5.52%	N.A.	9.2%	N.A.	3.99 %	N.A.	4.29%

Table 1. Summary of the sample demographics.

Data of COBRA Users' Satisfaction Indicators

As mentioned earlier, this paper aims at providing insight about user's satisfaction regarding the MOI traffic violation e-Service in Qatar according to the COBRA framework. Based on the data collected from users, the four main COBRA dependent constructs are measured by independent items as well as holistically by asking users to rate their overall satisfaction of each of the COBRA constructs. The following subsections describe the overall users' satisfaction levels of the COBRA constructs as reflected from the collected data. Detailed analysis involving the independent items is planned as future work since simple descriptive statistics is judged marginal when it comes to measure complex inter-construct relationships.
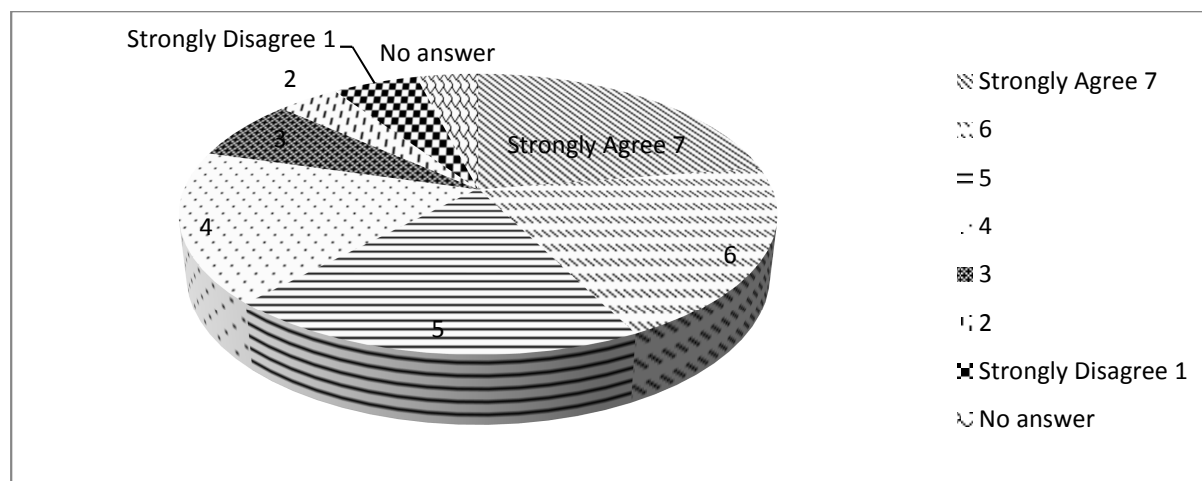
Cost

This construct is intended to catch the tangible and intangible costs users have to compensate for using the e-Service. To evaluate this composite construct, 10 independent items were conceived. Intangible costs were measured by items related to the time needed to locate the e-Service, time required to upload or download data, time to expect acknowledgement, effort needed to complete a task (in terms of time and complexity), time to get the necessary information, and the number of steps (e.g. pages navigation or clicks per page) to complete the task. As for the tangible (i.e. material) costs, measurement items were questions related to the registration costs to obtain the e-Service (if any), costs of internet subscriptions and the cost of renewing the e-Service (e.g. annual fee to get notified about traffic violations by SMS text messages).

Except the internet subscription fee, all the other material costs of the MOI traffic violation e-Service are free. While this has been approved by the users and therefore highly contributed to the positive cost-based feedback, different levels of satisfaction were expressed regarding the other costs. Figure 1 shows the results of users' overall satisfaction with the costs incurred of using the MOI traffic violation e-Service. It is worth noting that the highest score (*22.39%*) is achieved by having users "Strongly agree" with the statement that the overall costs of using the e-Service is satisfactory. Also, the majority of the surveyed users expressed their relative satisfaction by providing an answer above the neutral level (i.e. 5 for fairly agree, 6 for agree, or 7 for strongly agree) with a total percentage of (*61.97%*).
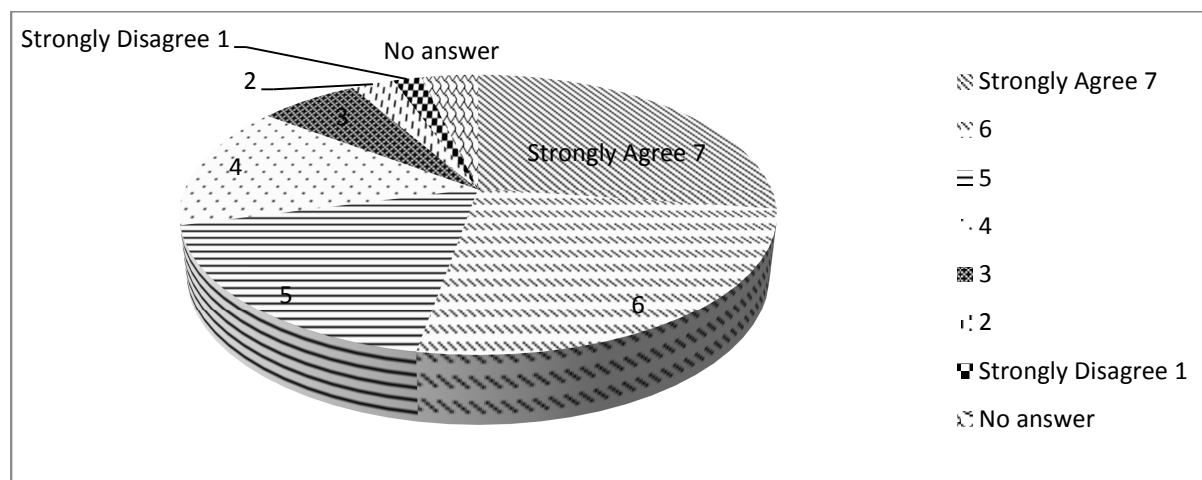
Opportunity

Besides measuring users' overall satisfaction regarding the opportunity gained when using the MOI traffic violation e-Service, opportunity was assessed by 14 independent items. These are related to the potential for corruption, any time access to the service, customisation and personalisation of the e-Service, delivery options, error alerts, availability of user technical support, support from officers, options for getting update notifications, payment methods, access to previous transactions (i.e. transaction history), ability to recommend the e-Service (e.g. sharing the link of the e-Service on user's social networks), multilingual interface, timely information, and directions for completing the task.

Figure 1. Users' overall satisfaction with the cost of the e-Service.

Figure 2 depicts the data of users' opinion about the opportunities offered by the features of the MOI traffic violation e-Service. Again, most respondents expressed their overall satisfaction regarding the opportunity obtained by using the e-Service. The percentage of the total of positive answers (i.e. above neutral) sums up to (*70.86%*), of which (*27.3%*) is attributed to the users' "Strongly agree" statement. On the other hand only (*11.04%*) of the respondents rated the opportunity of using the e-Service negatively. These scores infer that the majority of respondents are quite satisfied with the features offered by the e-Service and judge it as a good opportunity to use it.
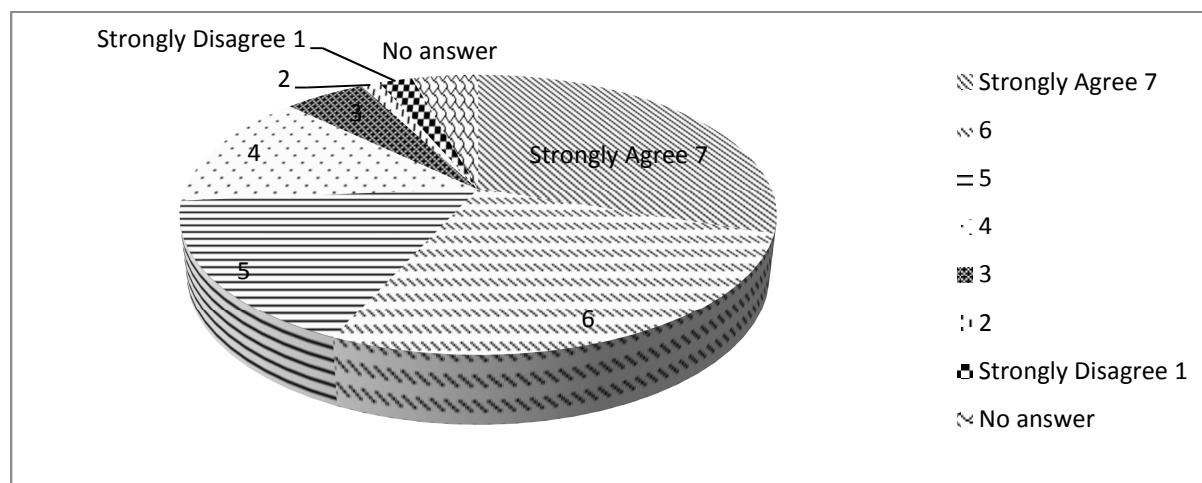

Figure 2. Users' overall satisfaction with the opportunity of the e-Service.

Benefit

The perceived benefits of the MOI traffic violation e-Service were evaluated through 17 items, in addition to the overall assessment. These items were oriented towards satisfaction regarding time and money savings, overall costs reduction, reduction in transportation, service security, finding support contact information easily, ease of understanding and use, presentation of information, information completeness and accuracy, ease of navigation, up-to-date information, ease of information lookup and search and the steps required to complete the service online compared to its offline equivalent. As Figure 3 shows, only few respondents (*8.59%*) rated the e-Service benefit negatively, whereas the majority judged the benefits gained from the MOI traffic violation e-Service satisfactory with a total of positive answers scoring (*73.62%*), of which (*30.06%*) strongly agreed with the benefits offered by the e-Service.

Risk

Perceived risk associated with using the MOI traffic violation e-Service was measured using 8 independent items plus an overall question. Independent items included questions about risk of fraud, mistakes in payment, hidden cost for the tangible risks, and auditing by public agencies, social isolation, data usage for purposes other than completing the service, and data privacy for the intangible risks. Figure 4 overviews respondents' responses regarding their overall evaluation of the risk associated with using the MOI traffic violation e-Service. It is worth noting that most of the respondents expressed positive satisfaction regarding the risk of using the e-Service with a total score of (*57.97%*), of which only (*18.4%*) strongly agreeing with the overall risk. Also, it is noticeable that there is a relatively higher rate of neutral (*18.71%*) and negative (total of *20.56%*) answers compared to respondents' neutral and negative satisfaction towards the other COBRA constructs. This may lead to conclude that respondents are quite aware of the risks associated with using the e-Service in particular and ICT in general and are quite concerned about them.

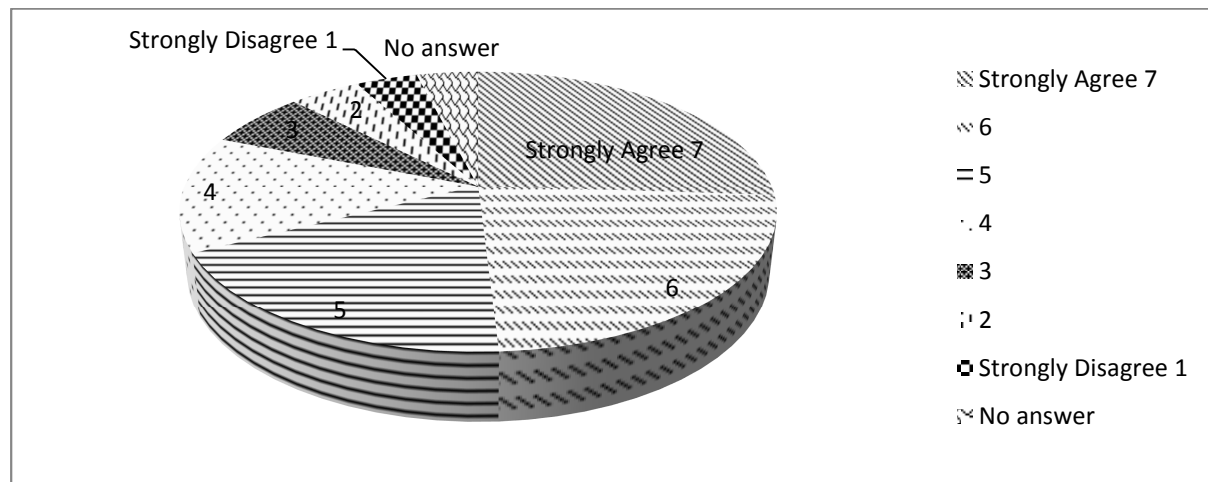**Figure 3. Users' overall satisfaction with the benefit using of the e-Service.**
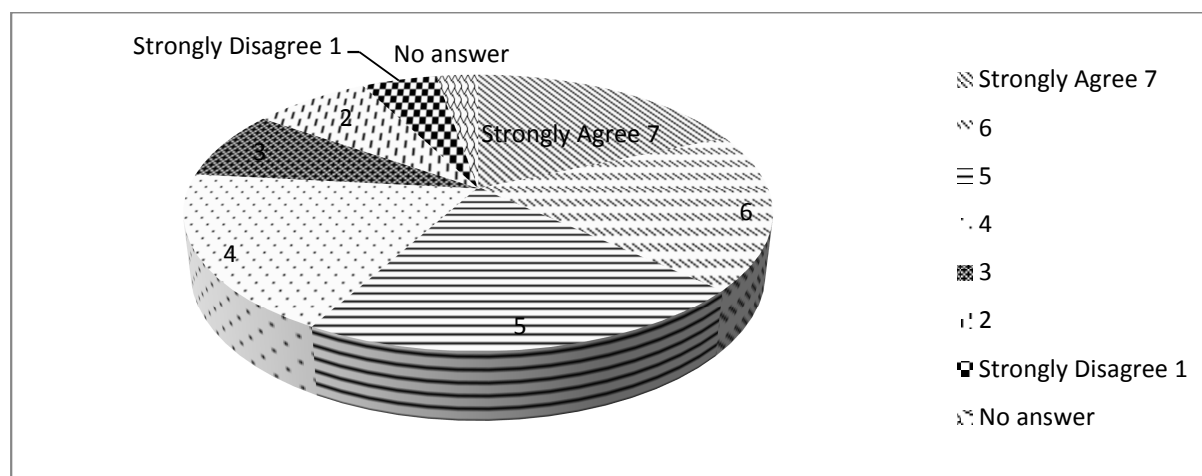
Figure 4. Users' overall satisfaction with the risk of using the e-Service.

Overall Generated Value

The overall generated value is intended to reflect a holistic evaluation of users' satisfaction by considering the four COBRA constructs at once. To capture this data, respondents were asked to rate on a 7-point Likert scale their opinion regarding the statement "*I am satisfied with the overall*

generated value of this e-Service". As presented in Figure 5, more than two-thirds of respondents positively answered the question with a total score of (*67.48%*) where the "Strongly Agree" option recorded the highest value of (*26.07%*). On the other hand, only around *15%* of the respondents expressed their disagreement with the statement.

Figure 5. Users' overall satisfaction with the overall generated value of using the e-Service.

Essential Needs

Finally, respondents answered a question to express how the MOI traffic violation e-Service is useful and meeting their needs. Figure 6 shows the answers' rate with a total of (*61.66%*) of positive answers, of which (*22.09%*) reported that the e-Service "*Strongly meets most of their needs*". On the other hand, only a total of (*16.26%*) of the respondents negatively answered the question and about a fifth (*19.33%*) stood neutral.
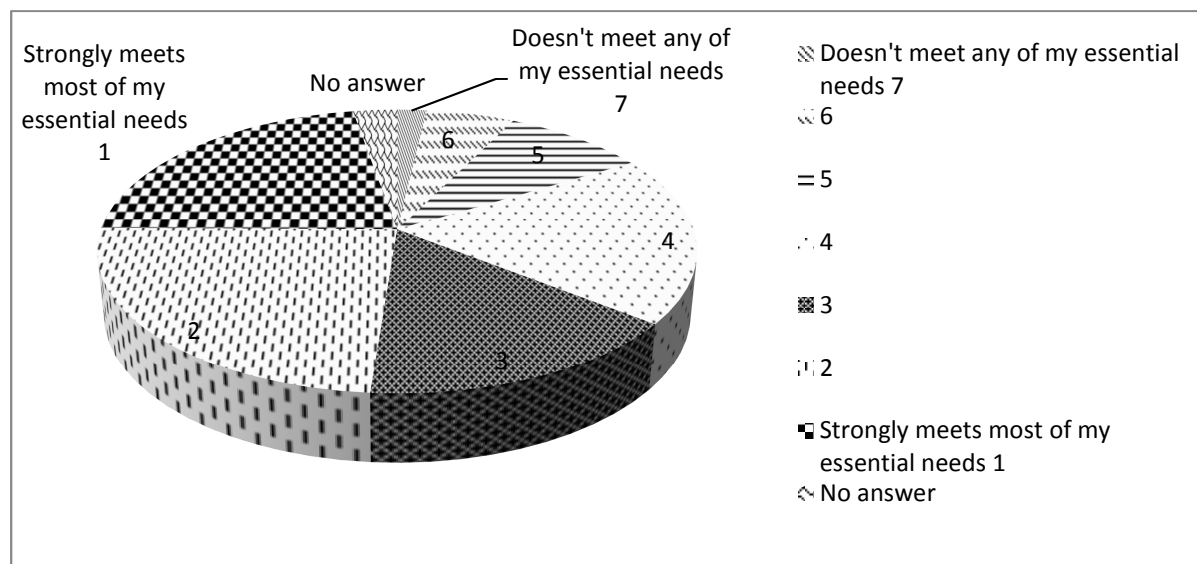
Figure 6. Users' overall satisfaction with how the e-Service meets their essential needs.

Qualitative Observations

Following the closed-ended questions, respondents were asked to report their qualitative feedback by answering two open-ended questions, the first was to explain why, or why not, the e-Service met the

user's needs whereas the second question focused on capturing any free comment regarding the e-Service. Recorded answers could naturally be classified into two themes, one per question: reasons of dis/satisfaction and issues & recommendations, respectively.

Complementing the positive quantitative results described earlier, the first open-ended question was mostly answered positively. The reasons for respondents' satisfaction towards the e-Service could be assigned to three main categories: Effort and cost reduction, time saving and convenience, and information quality. Most respondents who provided qualitative feedback expressed their satisfaction about the e-Service for reasons mostly related to the benefit dimension of the COBRA framework. The ability to pay traffic fines at any time of the day, avoiding traffic jams on the way to the traffic department and the clarity of information were all statements frequently mentioned. Another, but less frequently mentioned, statement was the ease of use of the e-Service. Some dissatisfaction was also reported and categorised as issues with privacy and the need to physical presence at the department to complete some administrative steps for some services.

Answers to the second open-ended question recorded issues that could be classified into three main categories: The need for a comprehensive e-Government portal where all public services are integrated (this issue has already been considered by ictQatar with the Hukoomi portal), occasional information inconsistency between the online and offline versions, and, most importantly, the need to increase the number of payment methods (currently only via credit cards) as not everybody may have or qualify for a credit card.

Discussion and Concluding Remarks

The MOI traffic violation is one of the most mature and popular e-Services in the State of Qatar. It has attracted many users by improving the way traffic violation are managed and paid. Despite its significance, and to the best of our knowledge, no studies have been conducted to evaluate users' satisfaction with this e-Service. Therefore this study attempts to shed some light on the users' satisfaction and to investigate the reasons encouraging users to keep using the e-Service. Based on opinions collected from 326 users, satisfaction data was perceived based on four main dimensions taken from the COBRA framework (Osman et al. 2011): cost, opportunity, benefit and risk of using the e-Service. While the quantitative results reflected positive overall satisfaction levels, notably for the first three dimensions, qualitative feedback confirmed users' satisfaction and that the e-Service meets their essential needs. The feedback also consisted of recommendations to improve the service, notably regarding the integration of complete public e-Services in one web portal compatible with modern handheld devices and diversifying the payment methods of traffic fines to include other means than credit cards.

It is also worth mentioning the importance of the Metrash mobile application in disseminating and encouraging people to use the e-Service. Though not mentioned in the results section, but a significant number of respondents reported having heard about and used the e-Service through SMS messages. The first version of Metrash enabled registered users to get notified via SMS messages about their traffic violations as soon as they are issued so users may log to the e-Service webpage and pay the fine. With the new Metrash 2 mobile app, users are not only alerted about their traffic violations but they can also review and pay it straight through their mobile device. This is significant sign that users of public e-Services in Qatar are quite enthusiastic to move to the next step of ICT-enabled government, the m-Government.

Study's Implications

The present study offers several theoretical and practical contributions. Firstly it contributes to the body of literature related to the direct evaluation of users' satisfaction towards public e-Services based on cost, opportunity, benefit and risk. This type of research is also novel in the context to which it was applied, that is traffic violation e-Services in Qatar, in terms of providing a clear definition of the e-Service and the users' satisfaction data associated to it. Therefore, the findings are judged to provide valuable overview to the providers of e-Services in Qatar in general and those of the MOI traffic violations in particular. Results may be exploited by the providers of the e-Service, policy makers or other institutions in order to improve the service quality. The qualitative feedback may also serve stakeholders in addressing issues reported by users in order to broaden the acceptance and continuity of use of the e-Service.

Limitations and Future Work

Some limitations were encountered in this study and are worth acknowledging. Firstly, data collection was done using a cross-sectional design resulting in only capturing users' satisfaction at a limited period of time. It would be interesting to conduct a second round of data collection after some time to observe how demographics, attitudes and satisfaction levels would vary. Also, due to the relatively long questionnaire, data collection was challenging; therefore, convenient sampling was used and mostly targeted respondents at university levels, such as students, academic and administrative staff; nevertheless some random respondents took the survey too. Therefore, collecting data by random sampling may also enrich this study. Finally, this paper presented the collected data only in a descriptive shape without analysis.

Future work will mainly focus on data analysis as it is planned to be conducted at different stages; firstly descriptive statistics and factor analysis, both exploratory and confirmatory (using structured equation modelling techniques), will be done measure the goodness of fit of the COBRA model against the data. Data mining using classification and regression trees (CART) is also planned to build a predictive model based on attributes taken from the demographic and the COBRA satisfaction dimensions data. Lastly and as part of the I-MEET project activities, data will be collected from users of other e-Services such as the renewal and replacement of health cards e-Service and the e-Service for utility bills payment. Furthermore, data will be collected from users and providers of each e-Service in order to perform data envelopment analysis (DEA). This will allow evaluating the efficiency of these e-Services and benchmarking the results with their equivalent e-Services in Lebanon and the UK since I-MEET spans to include in depth comparisons of e-Services in these three countries.

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