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Designing a Model to Measure Customer Satisfaction for Municipality Services in Iran

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Abstract-- One of the most crucial changes which occurred in the domain of improvement of quality in the last decade of the 20th Century was the introduction of a system to measure the level of customer satisfaction as one of the main requirements or components of quality management services for entire business institutions and agencies. The objective of this study is to design and constitute a system capable of measuring the rate of satisfaction among customers which in particular can be applied in municipalities. The statistical pool of the current research is divided in two groups: First, are university professors and experts qualified. Second, are municipalities customers. The method of data collection determined for the first group was non-probability and random sampling and the scope and limitation of this data was specified through the application of the central limit theorem. The sampling method used for the second group was random regional sampling through the application of the proportional distribution method. Hypotheses testing was carried out by applying tests of variations analysis, analysis of the confirmatory factor and structural equation modelling using SPSS, LISREL and PLS software. Conclusion of the study indicates a significant, positive impact of processes involving services offered by the city (municipality) the perceived quality of services. In addition, the significant and positive impact of the concept of quality service an average customer conceives regarding the perceived level of service quality is also confirmed. Furthermore, the significant and positive impact of a mutual comprehension of the effect of quality on customer satisfaction has been confirmed and it has also been verified that the range of customer expectations has a direct significant and positive impact on the level of customer satisfaction. Finally, the role of a significant and positive impact on customer satisfaction in promoting customer trust has also been confirmed.

Keywords-- customer satisfaction, perceived quality of services, mental image, trust, customer expectations, general services

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1. Introduction

One of the most crucial and significant changes of the last decade of the 20th century in the domain of principles to improve quality was the introduction of a system to measure the level of customer satisfaction as one of the main requirements of quality management services for in entire ranks of the business world. Therefore, it can be rightfully claimed that the theoretical basis of quality service is firmly planted in theoretical basis of customer satisfaction [1].

Even though, the level of satisfaction among customers was not literally measured up to the latter part of the 20th Century and it was merely a promotional tool, but today it is considered to be main elements in international standards on quality management such as ISO 9001[2]. It can therefore be concluded that regular measurement of customer satisfaction is an issue that most economic organizations and agencies pay particular attention to [3]. Despite the fact that most quality management models call for measuring the level of customer satisfaction and emphasize on it as necessity, no specific ways or methods have been put forth thus far [3]. Although, some models like CSI and SERVQUAL have been introduced and are available [4] but having a suitable model and is still a question that has been left unanswered [5]. So, the main question is how to measure customer satisfaction. And what are the precise customer satisfaction indices? And above all there has to be a reliable and specific criteria or standard which is widely accepted for continual measurement of customer satisfaction.

A particular dilemma facing this study is the non-existence of a model or a tool with sufficient efficiency for measuring level of customer satisfaction pertinent to services offered by institutes - particularly municipalities – which may be applied in collecting feedback from customers which can

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then be customized to direct and guide organization activities and resources in such a way that eventually the biggest objective of the organization which is providing improved services through maintain a fruitful and long-term relation with customers is realized.

Numerous basic models for measuring national indices on customer satisfaction have been introduced in developed countries since the end of the 20th Century such as ACSI[1] in the US and Malaysia as well as other similar models. Some models like TQM[2], EFQM[3] and QFD[4] have also

2.   Literature Review

By conducting a review of the existing literature on customer satisfaction, one can easily see that social science and psychology researchers have presented various different definitions for "satisfaction" most of which have been reviewed and tested through interviews. A number of researchers have confronted the issue of satisfaction among customers as an emotional and affectionate reaction and as result in some definitions particular attention has been extended to this point that impression a customer has of satisfaction is formed based on expectations by the same. Therefore, it is reiterated that performance in various segments of the market must exceed and go beyond what is expected by customers [6].

To the contrast, other researchers believe that customer satisfaction is not linked to expectations alone, but attention must also be paid to customer demands as they are distinctly different than expectations.

Additionally, there are other ways that a customer may experience or perhaps better said feel satisfied, namely products, organizational services and their uniqueness, establishing contact and the manner of interaction with customer, performance of organization and associated agencies as well as that of outlets and branches, manner of establishing contact with the organization prior to purchase of product or products and the related after-sales services [7].

been made available in the Iranian market to meet demands. However, with due attention to the importance of service providers such as municipalities which offer services to a wide range of customers, this study will use those services as a guideline to design a model that can be applied to measure the level of customer satisfaction on services provided and offered by municipalities. In continuum, the framework and theoretical basis of the research along with the study method and the analytical results will be reviewed. And finally, recommendations and sum up of the research will be put forth.

Juran describes customer satisfaction as a state in which customer feels the product features conform to his or her expectations [8]. Moreover, in his opinion customer dissatisfaction is a state in which defects in product causes customers not to be satisfied which ultimately leads to complaints and criticism [9]. Toper points out to an interesting fact in determining the concept of customer satisfaction, "customer satisfaction does not depend on the type or line of activities conducted by an organization nor to its stance in the market, but on the capability and the ability of an organization in providing the level of quality a customer expects [6].

Grading or calibration of customer based on level of anger, unhappiness, satisfaction, happiness and captivation is the result of the study conducted on the level of customer satisfaction or dissatisfaction among different social classes towards organizational performance. Accordingly, the consequential changes in customer attitude towards the organization due to satisfaction have been further studied.

Several methods have been applied in measuring customer satisfaction which can be separated into two different groups including:

a)   Objective method
b)   Theoretical and conceptual methods

However, it should be added that objective methods are perceived to be more reliable which themselves are further divided in two general groups, namely event-based method and feature-oriented approach.

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[1]American Customer Satisfaction Index
[2]Total Quality Management

[3]European Foundation Quality Management
[4]Quality Function Deployment

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The index on customer satisfaction has been used as a solution to measure the level of satisfaction among customers, ACSI and ECSI for developed countries and CSI for developing countries. The ACSI model is also applicable in public and private institutes.

The history of the opinion put forth by customers on their level of satisfaction and the indices used for this purpose are divided into two separate groups: The latter decades of the 20th Century and the first decade of the 21st Century:

Table 1: Summary of Previous Studies and the Applied Variables from 2005 to 2011

Row	Researcher	Year	Research Pool	No. of Indices	Assessed |Indices
1	Chan & Hui [10]	2008	Service Providers (organizations)	7	Customer character, customer expectations, perceived performance, perceived value, customer satisfaction, loyalty and customer comments
2	Aydin & Ozer [11]	2005	Service Providers (organizations)	8	Expectations, perceived quality, complaint control, customer satisfaction, mental picture, loyalty, trust, replacement cost
3	Turkyilmaz & Ozkan[12]	2007	Mobile Phone	6	Expectations, conceived quality, perceived value, mental picture, customer satisfaction and loyalty
4	Mohamad Niza & others [13]	2010	Public Services	4	Service production, service presentation, ambience of services to be provided, satisfaction
5	Ipsos MORI [14]	2010	Government Sponsored Services	7	Presentation of services, timely services, presented services, staff approach, professionalism of staff, accessibility, satisfaction
6	NISI [15]	2011	Public Services	9	Process, information, customer services, website, perceived quality, expectations, satisfaction, trust in organization and complaints
7	Arawati Agus et al. [16]	2007	Public Services	12	Physical features, trustworthiness, response, courtesy, credibility, sincerity, accessibility, service quality, general level of satisfaction and performance level

The pivotal focus of this study is on designing a model by which the level of customer satisfaction from services provided by municipalities throughout the Country of Iran can be measured. The figure below illustrates the conceptual framework of this research which has been adapted from different models used in previous studies.

2.1. The conceived level of quality goes back to two different issues

a) Technical components including trustworthiness, information, ease of mind on security and assurance

b) Services provided for the consumer including evident variations such as work hours, friendly behavior of staff, customer comments and handling complaints. Another word, the conceived quality of provided services stems from the last assessment of customer's experience in using services such as provision of services, the condition under which service is provided and manner of displaying various products, range of services and goods. To a large extent, this quality is influenced by the line of organization activities and the perception of an organization which eventually has an impact on the level of customer satisfaction.

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2.2. Perception Regarding the Company (Organization):

The mental picture formed regarding a company is the conception of the trade name of the type of communication line customers develop with an organization product (services or goods). In the current research, a hidden variation is implied on the basis of customer satisfaction which is shown as the over-all effect of offered services and service providers. In this model, the variable associated with "perception" has a direct impact on the level of perceived quality from an organization in conjunction to the level of customer satisfaction.

2.3. Customer Expectations

Customer Satisfaction is a perceptual comment formed from the type of experience a customer has had with a particular service or a product which is triggered by the level of customer satisfaction. So, such expectations in themselves are in fact based on the experience of using services and products, whereby the perceived difference between expectations and performance of a service indicates the degree of customer satisfaction. Therefore, it can be said that assessment of expectations in order to project the level of satisfaction among the social spectrum can be quite useful. In this model, the "expectation variable" affects the perceived quality and the rate of customer satisfaction.

2.4. Complaint

A complaint is a verbal negative message through which consumers voice their opinion on problems which have not been rectified or simply stated, voice their complaints. Increase in degree of satisfaction ultimately results in less complaint and vice versa. In this model, "customer complaint" impacts both customer satisfaction and trust.

2.5. Trust

Trust is a major factor in securing and gaining customer trust. To have customers' trust in a brand, first they have to have a positive perception about the current outcome of the product and its achievements and must establish trust in the constant positive outcome of the product in question. In customer satisfaction models used by government agencies and various other service providers, the variable for customer trust is used instead of the loyalty variable. This is essentially due to the literal non-existence of competition or a suitable replacement.

Based on everything stated so far, a main question arises that "What exactly are the dimensions of the model used by municipalities across the country to assess the rate of customer satisfaction?" and also the side questions of "What is the relationship between customer expectations and the perception of a quality service?" as well as "What is the relationship between perception of an organization and the perceived level of quality?"

The hypotheses of the current research regarding the above-stated questions are as follows:

Hypothesis 1: There is a significant and meaningful relationship between the set of activities carried out in municipalities to provide and deliver services to customers and the perception customers have regarding such services.

Hypothesis 2: There is a significant and meaningful relationship between customer expectations and perception.

Hypothesis 3: There is a significant and meaningful relationship between perception regarding an organization and customer's perception of a quality service.

Hypothesis 4: There is a significant and meaningful relationship between customer perception regarding quality and customers' degree of satisfaction.

Hypothesis 5: There is a significant and meaningful relationship between customers' expectations and satisfaction.

Hypothesis 6: There is a significant and meaningful relationship between customers; level of satisfaction and complaints.

Hypothesis 7: There is a significant and meaningful relationship between customers' level of satisfaction and trust.

Hypothesis 8: There is a significant and meaningful relationship between customers' complaints and trust.

Hypothesis 9: There is a significant and meaningful relationship between the perception formed regarding an organization and customer satisfaction.

It should be mentioned; however, that in order to acquire a greater level of certainty four hundred and fifty questionnaires were handed out and four

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hundred and twenty of which had appropriate data applicable to this study.

3.   Methodology

The type of the current research is developmental as well as applied. Moreover, the statistical pool for the study was comprised of municipality experts and technicians who were surveyed thoroughly via interviews and formation of pool groups on one hand, whereby sampling was non-probable and random. The sample volume was also based on central limit theorem. And on the other hand, were different municipality district customers spread out in five centrals, north, south, east and west geographical areas of the Greater Tehran.

The framework or list of members of the statistical pool is indeterminate and unlimited and the sampling unit was cluster (across the five geographical areas inserted above), whereby customers were sampled randomly within individual clusters. Furthermore, data collection was carried out through distribution of questionnaires which included sixty-five questions and five demographic variables each.

Volume of the primary sample was estimated to be around two hundred using the factor analysis technique. However, results of past studies reveal that the higher the number of participants better the outcome acquired from structural equations. Therefore, the number was eventually determined as three hundred and eighty-four by applying the sample volume determination formula (based on components of statistical non-parameter).

4.   Discussion

- Respondents of the research were comprised of 86.5% male and 13.5% female out which 75.5% of men and 10.13% of women for a total of 85.22% were married and 14.76% were single.

- 53.36% of respondents had no university education and 46.12% were either university graduates or were studying in university.

- As far as range of income of respondents is concerned, the highest levels were between IRR 800,000 and IRR 1,000,000 (30% of

$$n = \frac{Z^2 a / p q^2}{2}$$

Where p is the estimate of the variable ratio from previous studies which can be assumed to be 0.5 in the event of non-availability of that variable and q=1-p and d is the sample error ratio which from the measurement error level of d=5% the amount Z a/2 from a similar table is yielded to be 1096 and as result $n = \frac{(1096)^2 (0.5)(0.5) = 384}{(0.5)^2}$

* However, in this research, for higher reliability, 450 questionnaires were distributed and collected of which 420 had useful data.

3.1. Modeling structural Equations and Testing the Research Hypotheses

In this research, Liserl 8.5 software is used to study the statistical data using the method of analysis of factor verification and also SPSS software has been applied in comparative studies to analyze the proposed model. Moreover, the well-known RMSEA indices (acceptable in less than 8%) and the work ratio of two degrees of freedom which should be between 1 and 3 as well as CFI, GFI and NFI (amounts higher than 0.9 are acceptable) for the suitability of the model and also variance testing has been utilized in order to study the effect of personal variables on the customer expectation dependent variable. Finally, the standardization of structures was studied based on the result of the analysis of verification factors in the form of two standard and meaningful number models. Also, Cronbach's alpha method was used to determine the end result for questionnaires. This particular coefficient is considered weak at less than 0.69 and is considered acceptable at 0.6 and for any number above 8 is considered to be good and the better it is as it gets closer to 1. In the research questionnaire, the coefficient ($\grave{\alpha}=0.89$) was used.

total) and income levels below IRR 1,000,000 were in majority (70.77%).

- Most respondents were between the ages of 40 to 45 (21.74%); however, it should be noted that side layers of individuals ranging in age from 36 to 40 and from 46 to 50 were also of significance.

4.1. Factor Analysis Results for Measurement Models:

In this part, measurement models used for the structural equation model are applied to confirm the accuracy of structure measurements obtained through relevant indices. This means that by using verification factors, the first and second

stages can be determined in order to ascertain whether the questions designed for each structure can in fact measure the structure in question and whether the questions and indices possess sufficient justifiability or not.

4.2. Outcomes for Testing Research Hypotheses

Structural equations make it possible to simultaneously review and study relationships among several independent variables and their effect on the dependent variable. Accordingly, based on the analysis of data obtained from questionnaires, research hypotheses may either be verified or rejected. Variable correlation ratios of the research are presented in Table 2.

Table 2. Analysis of Primary Correlation among Model Variables

Correlation	Quality	Expectation	Satisfaction	Complaint	Trust	Perception
Quality	-	None	0.107 Significant	None	None	0.227 Significant
Expectations	-	-	None	0.084 Significant	None	None
Satisfaction	-	-	-	0.150 Significant	0.405 Significant	0.243 Significant
Complaint	-	-	-	-	None	0.118 Significant
Trust	-	-	-	-	-	None
Perception	-	-	-	-	-	-

As it can be observed in the table above some model variables have a primary and meaningful correlation.

Results of testing the research hypotheses are presented in Table 3 and as it can be seen out of nine proposed hypotheses, seven have been confirmed and two have been rejected. Of course, the first

hypotheses include five special hypotheses all of which have been confirmed.

In the likelihood event of customer complaints, the effect of those complaints on customer trust has not been confirmed and the impact of organization perception on the level of customer satisfaction has not been confirmed either.

Table 3. Results of testing the research hypotheses

Row	Hypothesis	Result	Effect	Significant Number
First Special Hypothesis	Effect of work processes on perceived quality	Confirmed	0.67	2.15
Second Special Hypothesis	Effect on information and communication on perceived quality	Confirmed	0.34	2.43
Third Special Hypothesis	Effect of services provided for patrons on perceived quality	Confirmed	0.56	3.63
Fourth Special Hypothesis	Effect of website-oriented activities on perceived quality	Confirmed	0.28	4.42

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Fifth Special Hypothesis	Effect of services offered through telephone on perceived quality	Confirmed	0.51	213
Second Hypothesis	Effect of customer expectations on perception of quality by the customer	Confirmed	0.15	- 3.22
Third Hypothesis	Perception of Organization on customer perception	Confirmed	0.23	3.37
Fourth Hypothesis	Effect of quality perception by customer on customer satisfaction	Confirmed	0.38	-2.18
Fifth Hypothesis	Effect of customer expectation on customer satisfaction	Confirmed	-0.32	-2.03
Sixth Hypothesis	Effect of customer satisfaction on customer complaint	Confirmed	-0.41	-2.37
Seventh Hypothesis	Effect of customer satisfaction on customer trust	Confirmed	-0.43	2.46
Eighth Hypothesis	Effect of customer complaint on customer trust	Not confirmed	-0.048	-1.37
Ninth Hypothesis	Effect of organization perception on customer satisfaction	Not confirmed	0.049	1.002

4.3. Determining coefficients of model's dependent variables

The amount of model's determining coefficient of dependent variable: customer satisfaction, is 0.456, i.e. variables affecting this dependent variable (perceived quality and customer expectations and mental image) can define 45.6% of its variations and the rest depend on other factors.

The amount of model determining coefficient of dependent variable: customer complaints, is 0.087, i.e. variables affecting this dependent variable (customer satisfaction) can define 8.7% of its variations and the rest depend on other factors.

The amount of model determining coefficient of dependent variable: customer trust is 0.21, i.e. variables affecting this dependent variable (customer satisfaction) can define 21% of its variations and the rest depend on other factors.

1 - The amount of model determining coefficient of dependent variable: customer expectations, is 0.481, i.e. variables affecting this dependent variable (perceived quality) can define 48.1% of its variations and the rest depend on other factors.

5. Conclusion

Findings show that among variables affecting the perceived quality of processes, including office regulations and facilitating equipment have the highest impact on perceived quality (0.590). Thus, it is recommended to municipality authorities that the most effective measures to enhance citizens' perception of municipality services, and consequently, their higher satisfaction, must begin from this aspect, i.e. this area has the highest priority for the citizens. Moreover, it is recommended to municipality authorities that they should be more vigilant to identify measure and manage their service quality, and use new models and methods of

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pinpointing, measuring and improving service quality.

Results show that information and communication have similar impacts on perceived quality of municipality services (0.340). However, this is a weak impression but it is positive and thus, it is recommended to municipality authorities to improve citizen communication methods using particularly new technology such as cellphone and Internet.

Results show that information and communication have similar impacts on perceived quality of municipality services (0.340). This depicts that the citizens – after processes which are the main element of services - require speedy services provision and good manners from the staff. Since this aspect relates to organization's staff, it is recommended to municipality authorities that to enhance citizens' satisfaction relative to the organization, take steps towards customer – oriented approach, respecting clients, and planning incentives for the staff.

Results show that a website and services offered therein have a low impact on perceived quality (0.280). Therefore, it is recommended to municipality authorities that firstly improve online services in the website to make it more user friendly to prevent citizens' crowding and waiting at municipality districts. And secondly, since many citizens have Internet illiteracy and cannot use electronic government services, use brute force strategy and offer services online as much as possible. Also, use attraction strategy to create a culture of using electronic government services and promote advantages of online services.

Results show that the telephony services system has a positive and moderate impact on perceived quality (0.51). Since citizens have welcomed this system and it has a good impact on perceived quality, it is recommended to municipality authorities to increase the number of lines and speed up the application processes.

Results show that the quality of services – besides its relationship with customer satisfaction –can impress customer satisfaction as much as 0.590 which means more investment and efforts towards quality of services can enhance customer satisfaction and it is on a par with existing related theories. Thus, it is recommended to municipality authorities to come up with mechanisms that ensure impact of their quality improvement measures on customer satisfaction. They can use techniques such as QFD (quality function development). This and other techniques help municipality authorities to identify with client and better recognize the incentive / hygienic factors in offering services.

Results show that the customer expectations have a weak and reversing impact on customer satisfaction. Perhaps this result from manager's ignorance of behavioral patterns and requirements in Iranian government organizations, and they just pursue measures that they imagine would bring about the customer satisfaction. This is partly related to public sector's non – competitive nature and ignorance of municipality authorities about new marketing concepts. It is recommended to municipality authorities to use advanced statistical and data mining techniques to identify factors affecting satisfaction of varied groups of clients.

Customer satisfaction – besides its relationship with trust – can have a significant and positive impact on it up to 0.430 which conforms to previous results. It shows that taking care of customer satisfaction, and meeting their requirements, may increase trust of customers in municipality. Since in customer satisfaction models in public organizations, the loyalty structure is not manifest, and trust structure is used instead, so it is recommended to municipality authorities and other public organizations that try to provide more customer satisfaction and strive to improve and maintain this relationship and increase citizens' trust in their organization.

Results show that the customer satisfaction – besides its negative relationship with customer complaints – can have a negative impact of 0.410 on customer complaints. This means the satisfied clients would submit fewer complaints which conform to previous results. It is recommended to municipality authorities that besides public monitoring system provide a separate methodology or even department in their organizational flowchart to respond to clients' complaints with special authorities. Unfortunately, Iranian public organizations' system misses out the clients' complaints among administrative processes without any results, and the root of the problem must be in non – profit and public nature of these services. However, launching a public monitoring system in municipality is a crucial point in this matter.

Results show that the mental image has an impact of 0.230 on perceived quality of services. This means the improvement of citizens' mental image of municipality can lead to higher levels of perceived quality of municipality services, and consequently higher customer satisfaction of the organization. Innovation, using advanced equipment to offer services, and participating in social and public benefit activities has changed the municipality standing in the citizens' minds. So, it is recommended to municipality authorities that besides their efforts in this area pay special attention to make services transparent and equal, and avoid

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personal taste, and also communicate these activities to citizens.

5.1.   Recommendations related to research

It is recommended to municipality authorities to establish a customer satisfaction measurement system in their districts. This has not really been the Iranian organizations' piece of cake and its precedence is only related to customer respect topic. Since this system is better than respect scheme, it is recommended that the municipality authorities pay attention to this index besides their own indices in the long run and always take it as a vital and guiding index for the organization and predicting its future functions.

It is recommended to municipality authorities not to attempt to improve solely the individual variables of the model, but pay attention to relationship system among the model variables to achieve effective results.

It is reminded to municipality authorities that the quality *per se* cannot create satisfaction in the long run. Factors like shaping customer expectations and citizens' mental image of the organization also affect customer satisfaction.

Technical developments and the fact that most public services elements can be offered via virtual environments, municipality authorities must pay attention to IT and its impact on customer satisfaction. This research has briefly discussed such matters.

5.2.   Recommendations for future research

This study has not engulfed all municipality services areas and has solely concentrated on administrative services in municipality districts. It is recommended to future researchers to study waste management, renovation services, Behesht Zahra, automobile technical examination centers, real estate, city redecoration, fruit & grocery fields, firefighting & safety services, transportation & traffic, taxi driving, passenger terminals, park & rides, and other city services.

It is recommended that similar studies take place in civil service areas like registration of identities, documents registration offices, public transportation, tax offices, judiciary power, etc.

This research was mostly concentrated on citizens who refer to municipality districts in a traditional way, i.e. in person. Thus, it is recommended that a similar research should be conducted about customer satisfaction in electronic government services area. Since the electronic government

factors might be different than factors indicated here.

Based on the role of information and communication technologies in modern government services system, it is recommended to conduct an independent research to check the impact of IT on changing citizens' satisfaction context and factors that affect it.

It is recommended to use qualitative research methods like data – related theories, to enrich the model and include more variables in it.

It is recommended that based on profit – service chain model, the role of staff should be studied in public services in a more accurate and detailed manner.

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