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EVALUATING END-USER SATISFACTION WITH AN E-GOVERNMENT SERVICE ELECTRONIC LABOR EXCHANGE (ELX)

ZULRIDAH MOHD NOOR, HASMIAH KASIMIN, AINI AMAN, NORAIDAH SAHARI

ABSTRACT

A major domain of e-government research has been the examination of information delivery to citizens. These services involve communications and transactions between government, at various levels, and citizens. The rise of these services has led to a concurrent need to develop models of citizen satisfaction with e-governmental services. This research aims to contribute to this need by devising an ELX Consumer Satisfaction Index (ELXCSI) model and using it to evaluate citizen satisfaction. This model includes various performance and emotional measures. To explore its applicability, the model is applied to electronic labor exchange (ELX), a form of government-to-citizen service delivery. This paper presents results of a statistical analysis of an end-user survey conducted in 2009 to evaluate user satisfaction with ELX. Using structural equation modeling, a highly statistically significant goodness-of-fit was found for the model, which included 15 measures capturing three constructs of performance dimensions (utility, efficiency, customization) as affecting three emotional dimension variables (confidence, pleasantness, satisfaction). The calculated ELXSCI of 66 indicates that more effort should be carried out to improve performance measurements in order to increase satisfaction among end-users of ELX in Malaysia.

Keywords: E-Government, Citizen-centric delivery, Electronic labor exchange (ELX), End-user satisfaction, Structural Equation Modeling.

INTRODUCTION

Electronic Government (E-Government) refers to the delivery of government-related information and services online through the Internet or other digital means (West 2004). Public agencies, utilizing this facility, provide a range of services to various stakeholders. A major service domain involves the effective delivery of information to citizens (i.e. government-to-citizen services). The continued rise of Internet connectivity has led to concurrent increase in use of these services. For example, a survey conducted by Norris and Moon (2005) indicates that nearly 90% of U.S. local governments with populations of 10,000 or more had official web sites through which they delivered various services. Further, Pew Internet reports that 77% of Internet users, or 97 million adult U.S. citizens, participate in some form of e-government (Horrigan 2004). These reports indicate that there is an apparent realization as to the importance of e-government initiatives – by citizens and by government agencies at various levels.

The issue then becomes the extent to which citizens are satisfied with their electronic encounters with government. At a prima facie level, West (2004) notes that one valuable characteristic of such initiatives is that they allow citizens to seek public services at their own convenience and not just when the government office is open. As such, citizens are increasingly expecting government units to perform like commercial entities (Reynolds and Regio, 2006). That is, citizens want their electronic encounters to be more akin to a commercial transaction (e.g. Amazon.com). Traunmuller and Wimmer (2003) note that although citizen-centric interactive websites have been produced, there are also heightened expectations in terms of the quality of e-government transactions. Consequently, online e-government initiatives need to be user-centric or citizen-centric in nature (Parks & Schelin, 2005; Scott, Golden & Hughes, 2006; West 2005). For this reason, there is a need to identify theoretical constructs and measures that can be used to evaluate citizen experiences using e-government information services. Such detailed evaluations can provide insights for better delivery of e-governmental services.

This study attempts to contribute to understanding of about citizen interactions with e-governmental services ELX. A model of e-government satisfaction will be devised and then applied in the domain of Electronic Labor Exchange (ELX), a form of government-to-citizen information service. The

paper is organized as follows. The following section gives background study on ELX in Malaysia. The next section draws from literature on customer and user satisfaction and presents a satisfaction model formulated for citizen-centric evaluation. Subsequently, the methodology of the study including the process of data collection is described. Multivariate analyses based on the model are presented. The final section details the findings of the study

E-GOVERNMENT SERVICE ELX IN MALAYSIA

ELX is an application under the 7th Multimedia Super Corridor Flagship, Electronic Government Project. The system was launched by the Minister of Human Resources on 30th of May 2002. It comprises of 3 modules: Job Clearing System (JCS), Labor market Database (LMD), and Office Productivity Support System (OPSS). On 1st of August 2008 JCS was changed to JobsMalaysia which was officially launched on 22nd November 2008. JobsMalaysia provides (1) jobseeker registration, (2) employers registration, (3) job matching, and (4) job search. A survey questionnaires related to the model was designed. End-users were asked to evaluate ELX services provided by the Ministry of Human Resource. Their responses were quantitatively analyzed to validate our model. The following section draws from literature on customer and user satisfaction and presents a satisfaction model formulated for citizen-centric evaluation. Subsequently, the methodology of the study including the process of data collection is described. Thereafter, demographics of users and multivariate analysis based on the model are presented.

THE CONCEPTUAL FRAMEWORK – THE CONCEPTUAL MODEL AND HYPOTHESES

The Conceptual Model: ELXCSI Model

There are two objectives of the study. Firstly, it explores the relationships between four constructs namely utility, efficiency, customization and satisfaction within the context of end-user of e-government service ELX. Secondly, the ELX consumer satisfaction index will be developed. The ELX consumer satisfaction index (ELXCSI) model formulated by this study considers these varied perspectives and presents a causal construct comprised of features that promote confidence, trust, openness and citizen-centric delivery in utilizing online e-government ELX. Moreover, this model considers the emotional response of the users to be a dependent factor on performance features of digital government service delivery. The ELXCSI model is depicted in FIGURE 1.

As citizens increasingly interact with online digital governmental services, there are widespread expectations for effective service delivery from such initiatives. At a general level, West (2004) has noted that for e-government to progress there needs to be a successful movement from citizens from viewing e-government as a set of websites (or "billboards") to viewing e-government as an effective suite of transactions. Within the realm of empirical assessment, there have been several evaluations that apply citizen-centered features to systems evaluation. Wang et al. (2005) propose a model for evaluating the performance of a web-enabled e-government system with a citizen centric approach, focusing on both the process and the outcome of the interaction. Carter and Belanger (2004) present results of their study on citizen adoption of e-government initiatives based on an approach supported by the Technology Acceptance Model (TAM) (Davis, 1989). Reddick (2004) analyzes the demand side of e-government, which relates to the citizen-centered aspect of interacting with e-government systems.

The ELXCSI research model has been formulated with the aim of providing a scale by which government-to-citizen web-based service delivery can be evaluated - in terms of satisfaction derived by citizens (Horan, Abhichandani, and Rayalu 2006). To begin with the Emotional Dimensions, while satisfaction has been identified as a single summary concept, it is comprised of certain affective responses with varying intensity. Giese and Cote (2002) identified alternative terms that were offered by various consumers in their research. These alternative terms may indicate multiple variations of emotional response that comprise the larger emotional construct. Westbrook and Oliver (1991) confirmed such variations while identifying the dimensionality of emotion space in satisfaction. Emotional composition of satisfaction, in this study, has been extended to include not just Satisfaction, Pleasantness, Confidence and Trustworthy. Many previous studies have found that high confidence and trust regarding e-government security network are important factors in adopting e-government. In Malaysia, study by Mohd Yusof Hj. Abdullah and

Mohd Azrul Mohamad Salleh (2008) found that public's level of confidence towards e-government was still moderate.

Moving to the Performance Dimensions, research studies have considered a variety of measures in evaluating performance of a web-based system. Doll and Torkzadeh (1988), in developing the End-User Computing Satisfaction (EUCS) instrument, identified content, format and timeliness of the information delivered and the ease of use facilitated by a system. Effectiveness of information delivered by a system has been measured through the User Information Satisfaction (UIS) model (Ives, Olson & Baroudi 1983). Brooke (1996) formulated a usability index – System Usability Scale (SUS). Extensions of similar measures have been recommended for web-based initiatives and services. Zeithaml, et al. (2000) identified the importance of responsiveness and ease of navigation in utilizing a service offered through websites. Loiacono et al. (2002) have included usability measures in devising a quality instrument for websites – Webqual. Similar aspects, or extensions thereof, have been used in other studies (Fayish, Gross & Jovanis 2005; Muylle, Moenaert & Despontin 2004; Zhang & Dran 2001). These contributions have been formulated as Utility construct in this study, which examines whether the ELX service is usable or not. In general, Utility covers aspects such as easy to learn, easy to use, user's friendly, easy to remember, making minimal error, and can be trusted (Fitzpatrick and Higgins, 1998).

While the importance of usable and reliable information is largely acknowledged, it is also pertinent that the information can be accessed efficiently with minimal effort by the end-user. The Efficiency construct examines the accessibility and organization of the features and information available in the website (Fayish, Gross & Jovanis 2005; Huizingh 2000; Zhang & Dran 2000). Performance construct "Customization" is also devised to evaluate these operational aspects of digital delivery. Customization is the degree to which the ELX service's offering is customized to meet heterogeneous customer needs.

Based on these measures and overall constructs,15 survey questions were identified. Of this total, 12 of them were based on 3 performance constructs and 3 were identified as constituents of the satisfaction measure. These questions were presented as 5-point Likert scale questions, designed to collect responses with varying degrees of agreement or disagreement.

The primary objective in estimating the ELX consumer satisfaction index model is to explain ELX end-user loyalty. The **theoretical ELX consumer satisfaction index model (ELXCSI)** that we estimate will be based on the concept of cumulative customer satisfaction (CS) and the concept behind the development of the ELXCS index model also requires a methodology with two fundamental properties. First, the methodology must recognize that the index and other constructs in the model represent different types of customer evaluations that cannot be measured directly. Accordingly, the ELX index uses a multiple indicator approach to measure overall customer satisfaction as a latent variable. Second, as an overall measure of customer satisfaction, the ELXCSI will be measured in a way that not only accounts for consumption experience, but also is forward-looking. To this end, the index is embedded in the system of cause and effect relationships which makes the centerpiece in a chain of relationships running from the antecedents of customer satisfaction – utility, efficiency, and customization to the consequences of customer satisfaction loyalty. In this paper, an attempt is made to calculate the ELX consumer satisfaction Index (ELXCSI) in the context of end-user satisfaction with the government service ELX using structural equation modeling. The purpose of calculating this index is to determine the level of satisfaction in using ELX. The calculation of the ELXSCI is based on American Consumer Satisfaction Index (ASCI) as suggested by Fornell et al. (1996). This paper proposes the following formula for the ELXSCI:

$$\textbf{ELXCSI} = \frac{\sum_{i=1}^{3} w_i \bar{x}_i - \sum_{i=1}^{3} w_i}{4\sum_{i=1}^{3} w_i} \times 100$$

where ELXSCI = ELX in satisfaction index, w_i's = the unstandardized estimates, x_i = the measurement variables.

Hypotheses

The study proposes that utility, efficiency, and customization have important influences on customer satisfaction results. A structural equation modeling (SEM) is used in this study to analyze the structural

effect of these three constructs on the satisfaction results. In this paper, firstly, the study aims to test the fitness of the overall SEM model based on the main null hypothesis: H_0: The overall hypothesized model has a good fit. For structural equation modeling, accepting this hypothesis indicates that the model presented adequately reproduce the observed covariance matrix (Bollen, 1989; Joreskog, 1989; Mueller, 1996) and suggests that the data fit the proposed SEM model. Therefore, in the test of goodness of fit for the SEM, the probability that is expected should not be significant (p-value > 0.05) to support the overall null hypothesis which suggests that the overall hypothesized model has a good fit. Then secondly, the study investigates the main research hypotheses of the study regarding the relationships between utility, efficiency, customization, and satisfaction. Therefore, the following main research hypotheses are investigated:

H_{1A}: Utility has a positive structural effect on satisfaction
H_{1B}: Efficiency has a positive structural effect of satisfaction
H_{1C}: Customization a positive structural effect on satisfaction

RESEARCH METHODOLOGY

Research Design

This paper forms part of a larger study on impact of e-government system application. Seven of the lead applications launched by government namely eService, eSyariah, eFilling, eSila, eProcurement, eKL and ELX were studied. This paper is only confined to ELX. A survey questionnaire designed comprised of questions related to 1) the ELXCSI model; 2) demographics; and 3) past user experience with e-government service ELX. The survey was designed to inquire about user experiences with the ELX based on performance and emotional dimensions as well as to understand the characteristics of users utilizing this service.

The instrument used in this study was a structured survey questionnaire, which was designed to assess the end-users of ELX in term of the described dimensions. To enable respondents to indicate their answers, five–point interval scales were used for the questionnaire. Several items of 3 constructs, which have been widely referred, were extracted. Similarly, the dependent variables namely satisfaction also used a five-point interval scale, representing a range of agreement on emotional dimension statements whether the end-users were satisfied with the ELX service.

Research Sample

The sample units of analysis in this study are end-users of e-government service delivery namely Electronic Labor Exchange (ELX). One hundred and ninety responses were received and analyzed. The primary purpose of the research is to measure end-users satisfaction with the ELX to gain insight into the factors effecting satisfaction and to develop ELX consumer satisfaction index.

Independent and Dependent Variables' Measurements: Factor Analyses, Validity and Reliability

As the initial data analysis, satisfaction and performance variables were subjected to factor analyses, validity and reliability tests. Since data for this study was generated using multi-scaled responses, it was deemed necessary to test for reliability. The reliability analysis is concerned with the consistency of the research findings and most frequently associated with multi-item scales. The validity and reliability tests were computed to select and assess the final items of the constructs that would be utilized for statistical and hypotheses testing (Nunnally, 1978; Ahire, Golhar and Walter 1996). The reliability analysis was conducted by computing the Cronbach's alpha for the main constructs. Exploratory factor analysis (EFA) was conducted to investigate whether the factors derived from the exploratory factor analysis fit the constructs described theoretically in the literature review. Three dimensions of performance namely utility, efficiency and customization adapted from several sources were included in the study.

RESULTS AND MODEL EVALUATION

Background data collected in the study can be divided into three different groups – demographics, ELX usage, and experience with ELX service. Demographic data included information such as Age, Gender, Level of Education, Employment Status, and Ethnicity. Further, data regarding experiences using ELX service was collected. About 58.9 percent of respondents were under or equal to 25 years of age (TABLE 1). This was due to the nature and types of the services offered by ELX for people searching for jobs. Nearly 60 percent of respondents were females. Most of the respondents were Malays. More than 55 percent of respondents had a Bachelor's degree. Nearly 39 percent of respondents were students. The majority of respondents were working. About 71 percent respondents were single. The percentages of respondents with either no working experience or 1 – 5 years working experience were 42.3 and 32.8, respectively. Most of the respondents were either from education (32.1%) or services (26.3%) sectors.

The model presented in Figure 1 was evaluated using Exploratory confirmatory factor analysis (CFA) (Byrne 2001). SPSS v12.0 was used to calculate item reliability and Cronbach alpha (Nunnally 1978) for various constructs. Average Variance Extracted (AVE) and construct reliability were calculated based on standardized regression weights and measurement errors (Hair et al. 1998). Table 2 illustrates the reliability estimates. Initially, to filter out the variables that failed to explain the cohesiveness of a construct, corrected item-to-total correlations and Cronbach alphas were examined per construct. Variables with low corrected item-to-total correlations (i.e. < 0.50) and pair-wise correlations (i.e. < 0.50) were removed. Constructs with Cronbach alpha less than 0.70 were removed from further analysis. Subsequently, additional analyses involved examining squared multiple correlation (R^2), regression weights (i.e. factor loadings for observed variable and structural coefficient for constructs), AVE and construct reliability. R^2 indicates the amount of variance explained, predicted or accounted for by a set of variables (Schumaker & Lomax 2004). The reliability result shows that the Cronbach's alpha measures for the main constructs exceed the threshold point of 0.70 suggested by Nunnally (1978). Alpha coefficients for satisfaction scales and performance scales ranged between 0.791 and 0.854 after the alpha maximization processes were carried out (Table 2).

The result from the exploratory factor analysis indicates that the KMO (Kaiser-Meyer-Olkin) measure is 0.873 with significant chi-square value (Barlett's Test of Sphericity = 714.062). The value of KMO in this analysis surpasses the threshold value of 0.50 as recommended by Hair et al. (1998). All constructs exhibit high factor loadings and fall into the 4 designated factors. This result provides evidence to support the theoretical conceptualization of the four constructs.

Given the confirmatory nature of this study, the statistical analysis technique called structural equation modeling (SEM) was utilized. A SEM model was employed to investigate simultaneous linkages that allow a researcher to determine the relative strength of relationships between performance and satisfaction. To support the assumption regarding the fitness of the SEM model with the empirical data, the acceptance of the null hypothesis of the overall model is expected. Hence, in this test of goodness of fit for the structural equation modeling, the resulting probability should be higher than 0.05 to support the overall null hypothesis of the model. The overall model was evaluated using SAS v9.2 statistical software using Maximum Likelihood Estimation (MLE) as the variables were found to be multivariate normal and the sample size was moderate (Hair e al. 1998) and reported in Figure 2 and Table 4. We use standardized variables to evaluate the measurement portion of the model and fit measures, whereas we use unstandardized variables as inputs to calculate index.

The SEM result in Figure 2 indicates that the direct structural effect of 'utility' on 'satisfaction' is substantial with structural effect value of 0.2426 (Figure 2 and Table 4) suggesting that utility is an important determinant of satisfaction on e-government service ELX in Malaysia. The standardized structural coefficient of 'utility' on 'satisfaction' is associated with low standard error (0.0738) and non-zero critical ratio (3.2877), which indicates that the structural effect between these two constructs, is positive and relationship is significant. The direct structural effect of 'efficiency' on 'satisfaction' is higher and significant (structural effect value of 0.431) with low standard error (0.0718) and non-zero critical ratio (6.0028). The direct structural effect of 'customization' on 'satisfaction' is the highest and significant (structural effect value of 0.459) with low standard error (0.0707) and non-zero critical ratio (6.4857). Therefore, we have enough evidence to accept the three main research hypotheses. Firstly, 'utility' has a positive effect on customer satisfaction (H_{1A}). Secondly, 'efficiency' has a positive structural effect on 'satisfaction' (H_{1B}) and thirdly, 'customization' has a positive structural effect on satisfaction (H_{1C}). Thus, the evidence is clear to suggest that performance measures namely utility, efficiency, and customization can ultimately improve end-user satisfaction of ELX services in Malaysia. Looking at the structural loadings of performance determinants on 'satisfaction', all constructs have positive impacts on

'satisfaction' but 'customization' has the highest contribution toward 'satisfaction'. This is followed by 'efficiency' and 'utility' measures.

Various recommendations have been proposed for fit-indices depicted in TABLE 5. One of the preliminary fit indices is the value obtained by dividing Chi-Square with degrees of freedom (CMIN/df). Although there is no clear-cut guideline about what value of CMIN/df is acceptable, a frequent suggestion is that this ratio should be less than 3 (Kline 1998). In this study, value of less than 3 was obtained. Other indices have been recommended, as they are less sensitive to sample sizes, such as GFI and AGFI. Both of the indexes range from 0 to 1 with values close to 1 being indicative of good fit. However, no absolute threshold levels for acceptability have been established (Hair et al. 1998). Based on the values obtained in this study, it can be concluded that the model fits the sample data in moderation. PGFI is indicative of parsimony in the model with a value greater than 0.5 indicates better parsimony. NFI and CFI have been proposed to be the practical criterion of choice. CFI values of 0.95 and greater for a model have been generally considered as an indication of a well-fitting model (Bentler 1988). Similar values (≥ 0.95) have been obtained in these analyses. Values of 0.05 or less have been proposed for error approximation and residuals (Byrne 2001). Values close to 0.05 have been obtained in this study. This analysis yielded the following results: GFI - 0.92, AGFI - 0.93, NFI – 0.96, CFI – 0.91, RMSEA – 0.06, RMR – 0.07.

The results of the study suggest that 'customization', 'efficiency', and 'utility' are important factors that influence emotional satisfaction with the 'customization' construct affects the most. Features related to efficient access were also found to be determinants of overall satisfaction in using ELX services. These features included better organization and integration of content as well as visual presentation. Among the dependent satisfaction emotional measures, respondents were found to be very confident in using ELX and fairly trust the system. This implied that end-users generally quite satisfied with services provided by ELX.

ELX Satisfaction Index

Since findings from several statistical analyses above strongly indicate that utility, efficiency and customization are very important in enhancing satisfaction, this study attempts to explore the level of satisfaction in using ELX by calculating ELXCSI. The ELXCSI calculated is equal to 66. A score of 66 for the ELXCSI is still considered moderate but above average. Therefore, more effort should be carried out by government to encourage and promote ELX services in order to increase satisfaction among end-users.

CONCLUSION

The ELXCSI represents a significant step forward in the evolution of end-user satisfaction indicators. It provides an independent and uniform means of assessing the quality of e-government service used. For policy makers, ELXCSI has the potential to be a useful tool for evaluating and enhancing the e-government service delivery as a whole. For customers, ELXCSI provides information that is not only useful in making transaction decisions, but also likely to lead to improvement in the quality of the services they consumed, as well as in their overall standard of living. The existence of such a measure would likely lead to improvement in the quality of e-government services in general and ELX in particular. In addition, ELXCSI should have particularly important implications for the quality of these services. To summarize, ELXCSI represents a new means of evaluating and enhancing performance for the e-government services. It provides a complement to conventional over the counter measures. It has the potential to move to center stage the quality services – as experienced by the customers of those services – of government service delivery. As marketing scholars and practitioners have long recognized that customer satisfaction is an important and central concept, as well as an important goal of all business activity, the role of government in promoting e-government services should be self-evident.

Government websites have been known to generate a considerable amount of Internet traffic (ComScore Networks 2006). And this suggests there is an overall realization as to the importance of e-government initiatives – by citizens and by government agencies at various levels. As these sets of interactions spread, expectations from online e-government initiatives increase. The need to address these expectations has been widely recognized as an essential step to improving relations between public agencies and citizens (Gronlund 2005). Ho (2002) and Osborne and Gaebler (1992) have recommended specific user-centric features to be implemented by agencies to promote the e-government paradigm.

Similarly, concepts related to universal usability– universal access to information and communications - have been introduced to propel the effective dissemination of e-government applications (Association for Computing Machinery, 2006; Schneiderman, 2003). This study advances the notion of examining the applicability of a multi-dimensional model of citizen satisfaction. To address this need, the study has formulated a model to reflect certain specific performance and emotional attributes.

The results suggest that utility, efficiency, and customization are important factors that influence emotional satisfaction. It is hoped that future research will extend the ELXCSI model to other domains and other online e-government service deliveries. The overall vision is that such a model will drive the creation and use of highly effective and satisfying online governmental services.

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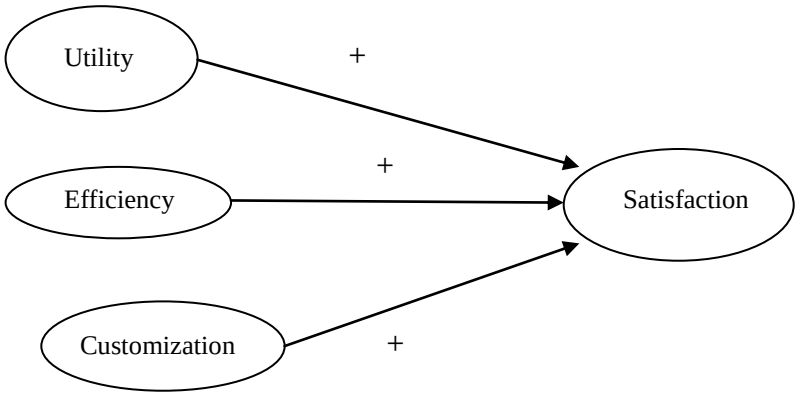

FIGURE 1: ELXCSI research mod

TABLE 1: demographic profile of ELX respondents

Characteristics		Frequency	Percentage
Gender	Male	77	40.5
	Female	113	59.5
Age	<= 25	112	58.9
	26 – 30	42	22.1
	31- 40	19	10.0
	41- 55	13	6.6
	> 55	4	2.1
Occupational Status	Employed	109	57.4
	Unemployed	5	2.6
	Self-employed	8	4.2
	Students	68	35.8
Educational Level	Ph. D	2	1.1
	Masters	12	6.3
	Degree	106	55.8
	Diploma	41	21.6
	STPM	10	5.3
	SPM	19	10.0
Ethnic Group	Malay	164	86.3
	Chinese	10	5.3
	Indian	13	6.8
	Others	3	1.6
Marital Status	Single	135	71.1
	Married	55	28.9
Industrial Sector	Manufacturing	5	2.6
	Education	61	32.1
	Trade	3	1.6
	Agriculture	4	2.1
	Services	50	26.3
	Construction	7	3.7
Years of Working Experience	0	80	42.3
	1 – 5	62	32.8
	6 – 10	21	11.1
	11 – 20	15	7.9
	21 – 30	9	4.8
	> 30	2	1.0

TABLE 2: results of reliability tests

CONSTRUCT	Exploratory Factor Analysis –EFA (Varimax Rotation)			Reliability
	Eigenvalue	% of Variance Explained	Cummulative Variance Explained	Cronbach Alpha
UTILITY	6.395	42.634	4.634	0.846
EFFICIENCY	1.551	10.337	52.972	0.823
CUSTOMIZATION	1.197	7.982	60.954	0.822
EMOTIONAL DIMENSION	1.149	7.659	68.613	0.747

Notes: Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization (KMO = 0. 873, Bartlett's Test of Sphericity (chi-sq = 714.062**)

TABLE 3: descriptive statistics and factor analysis

Construct/ Indicator	Mean (Std. Dev.)	Factor loadings 1 (utility)	Factor loadings 2 (efficiency)	Factor loadings 3 (customization)	Factor loading 4 (emotional dimension)
EFFICIENCY					
The system accomplishes task more quickly (EF1)	3.7105 (0.8516)	0.425	**0.653**	0.094	0.081
The system can reduce the transaction time (EF2)	4.1263 (0.8066)	0.089	**0.743**	0.334	0.053
The system can precisely revise previous record (EF3)	3.9000 (0.7736)	0.179	**0.592**	0.269	0.253
The system let users finish the transaction at their own times (EF4)	3.9053 (0.8174)	0.149	**0.781**	0.021	0.230
Fast and accurate transaction (EF5)	3.6736 (0.7826)	0.493	**0.620**	0.108	0.141
UTILITY					
The system is easy to use (UT1)	3.8737 (0.8636)	**0.806**	0.165	0.162	0.152
The system is user friendly (UT2)	3.7157 (0.8056)	**0.811**	0.182	0.092	0.156
The system is easy to learn (UT3)	3.8684 (0.7688)	**0.798**	0.207	0.130	0.057
I am satisfied with the system (UT4)	3.7632 (0.7501)	**0.639**	0.217	0.248	0.293
SATISFACTION					

I am confident with the system (ST1)	3.8737 (0.7523)	0.248	0.322	0.436	**0.576**
The system is trustworthy (ST2)	3.7368 (0.7930)	0.154	0.147	0.142	**0.847**
I am dependent on the system (ST3)	3.2526 (0.9536)	0.151	0.144	0.072	**0.776**
CUSTOMIZATION					
The system makes task easier (CU1)	4.0790 (0.6894)	0.309	0.353	**0.677**	0.051
The system saves cost (CU2)	4.0421 (0.7686)	0.089	0.088	**0.879**	0.133
The system is beneficial (CU3)	4.1895 (0.6390)	0.155	0.148	**0.835**	0.181

Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization (Rotation converged in 5 iterations).

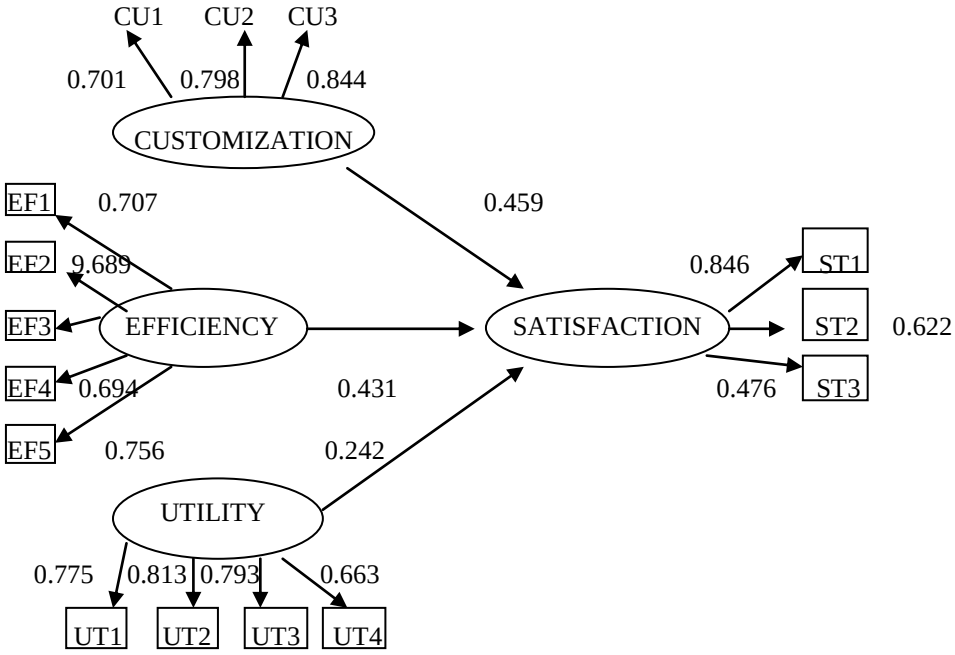

FIGURE 2: The Result of the Structural Model Showing the Structural Linkage between Performance and Satisfaction

TABLE 4: structural and measurement results of the SEM ELXCSI model

(i) Constructs/ Indicators	Std. Loadings	Std. Errors	Critical Ratio	Probability
EFFICIENCY				
The system accomplishes task more quickly (EF1)	0.0777	0.0457	15.4982	0.000
The system can reduce the transaction time (EF2)	0.6898	0.0472	14.6162	0.000
The system can precisely revise previous record (EF3)	0.6215	0.0529	11.7415	0.000
The system let users finish the transaction at their own times (EF4)	0.6948	0.0468	14.8573	0.000
Fast and accurate transaction (EF5)	0.7569	0.0415	18.2249	0.000
UTILITY				
The system is easy to use (UT1)	0.7750	0.0379	20.4305	0.000
The system is user friendly (UT2)	0.8139	0.0348	23.3724	0.000
The system is easy to learn (UT3)	0.7933	0.0364	21.7719	0.000
I am satisfied with the system (UT4)	0.6635	0.0478	13.8676	0.000
SATISFACTION				
I am confident with the system (ST1)	0.8467	0.0516	16.4217	0.000
The system is trustworthy (ST2)	0.6217	0.0580	10.7150	0.000
I am dependent on the system (ST3)	0.4756	0.0664	7.1637	0.000
CUSTOMIZATION				
The system makes task easier (CU1)	0.7012	0.0458	15.2934	0.000
The system saves cost (CU2)	0.7981	0.0396	20.1726	0.000
The system is beneficial (CU3)	0.8448	0.0372	22.6956	0.000
(ii) Exogenous/ endogenous Path				
a. UTILITY → SATISFACTION	0.2426	0.0738	3.2876	0.000
b. EFFICIENCY → SATISFACTION	0.4314	0.0717	6.0028	0.000
c. CUSTOMIZATION → SATISFACTION	0.4588	0.0707	6.4857	0.000

TABLE 5: results of the overall model fit

Statistics	Model Values	Recommended values for good fit
Probability Level	> 0.10	≥ 0.05
χ^2/df	2.750	≤ 3.00
Bollen (1989) Incremental Fit Index (IFI)	0.915	≥ 0.90
Parsimony Goodness of Fit (PGFI)	0.677	≥ 0.5
Adjusted Goodness of Fit Index (AGFI)	0.931	≥ 0.90
Bentler (1988) comparative fit model (CFI)	0.913	≥ 0.90
Normed fit index (NFI)	0.964	≥ 0.90
Goodness of fit index (GFI)	0.917	≥ 0.90
Root Mean Squared Error of Approximation (RMSEA)	0.06	
Root Mean Square Residual (RMR)	0.07	