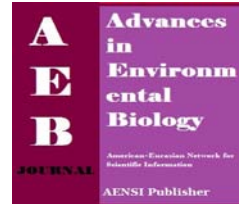




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## Service Quality Dimensions in Technology-Based Banking: Impact on customer satisfaction and loyalty

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### ABSTRACT

With the emerging a new phenomenon of Internet, the banks have gone through the traditional process and have reached the stage of modern banking in their career. Following this transition, the banks became familiar with numerous banking technologies. However, the main concern in the use of these technologies was the quality assessment and their impact on customers' satisfaction and loyalty. Therefore, the objective of the present study is to provide a model which is able to assess the quality of any kind of banking technologies (whether the technologies that are already in use or those that will be used in the future). Firstly, exploratory factor analysis (EFA) method was used to identify the service quality dimensions within technology-based banking. Then, the effect of each variable on customers' satisfaction and loyalty was investigated using structural equations modeling employing LISREL software. Following exploratory factor analysis, 8 dimensions of easiness, assurance, security, customization, comprehensiveness, convenience, support services and the employee knowledge were identified as the service quality dimensions within technology-based banking. Finally, the effect of each of the eight dimensions on the customers' satisfaction and loyalty was investigated using structural equations modeling.

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## INTRODUCTION

Increases in labor costs and advances in technology encourage service firms to explore technology -based service options, which enable customers to produce services independent of service employees [38]. Parasuraman [42] suggested, technology can dramatically change these three relationships: company-customer, employee-customer, and company-employee [37]. Banking has always been a highly information intensive activity that relies heavily on information technology (IT) to acquire, process and deliver the appropriate information to all relevant users and differentiate their products and services [26]. In fact, rise of information technologies and the internet in particular, have changed the consumption process of retail banking as human-human interactions in service delivery is becoming increasingly redundant. So traditional banking or branch banking is increasingly being replaced by the technology-based banking [23]. Some of the most popular form of technology-based banking are Internet banking (IB), ATMs and telephone banking (TB).

With an increase in using technology- based banking technologies and a change in the pattern of behavior in banks customers to apply these tools more, the need for measuring the customers certainty and trust in using these services has increased. Regarding that the presented Iranian bank services are almost the same and similar for the customers in all of the banks, the bank managers must make themselves distinct in the method of customers serving from other competitors in order to be able to continue their competition to gain customers satisfaction and loyalty. Based on the performed researches and the presented theories, satisfaction and loyalty are regarded to be among the most important factors in the evaluation of a company or an organization's performance. These two factors also have a direct and positive influence on the amount of trust and certainty of the customers in the company [9]. Therefore, it is necessary and essential to recognize those factors of technology-based banking influencing the amount of customer satisfaction and loyalty. The most influential factor on customers' satisfaction and loyalty in service marketing is the quality of presented services. The more is the understood quality by the customer, the more satisfied the customer would be. Therefore, managers of the service businesses (such as banks) must recognize the dimensions demonstrating the quality of the presented services in order to evaluate the amount of this quality by measuring these factors.

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Most of the performed studies on the quality of services in modern banking have only sufficed to a determined dimension of the banking; for instance, have paid attention to the service qualities of internet banking, telephone banking, or ATM based banking evaluation. The concluded results have been limited to that specific area of modern banking [1,15]. Performing a research studying the quality of services dimension in the technology- based banking (regardless of the technology type) and measuring its effects on the customers' satisfaction and loyalty is completely necessary. The results of such a research can be generalized to different applied technologies in presenting banking services. These results can even be applied for the yet unborn serving technologies in the future. Therefore, the purpose of this research is to recognize the quality dimensions of the banking services, and to evaluate its effects on customers' satisfaction and loyalty. We are to present a model which is measurable for each type of the technology- based services.

#### Literature review:

##### Service quality:

Service quality has been identified as a critical success factor for organizations to build their competitive advantage and increase their competitiveness [46]. Service quality is defined as the gap between customers' expectation of service and their perception of the service experience [34]. Parasuraman et al. [42] developed a multiple-item scale, SERVQUAL, for measuring service quality and argued that service quality, as perceived by customers, originated from a comparison of customers' expectations and their perceptions of the performance delivered by the firm [30]. The five dimensions of SERVQUAL are:

- (1) tangibles, which pertain to the physical facilities, equipment, personnel and communication materials
- (2) reliability, which refers to the ability to perform the promised services dependably and accurately
- (3) responsiveness, which refers to the willingness of service providers to help customers and provide prompt service
- (4) assurance, which relates to the knowledge and courtesy of employees and their ability to convey trust and confidence; and
- (5) empathy, which refers to the provision of caring and individualized attention to customers [46].

According to previous studies on retail banking industry, it is confirmed the link between service quality, productivity, reduced costs and profitability [41]. Herington and Weaven [29] find that IT-based services indirectly impact upon a customer's perceived service quality and satisfaction, and also they find support for service and product quality impacting upon the reputation of financial institutions. Recent research also shows that service quality delivery has a significant positive impact on customers' attitudes and behavioral intentions and on a company's financial outcome [51].

##### Service quality in technology-enabled services:

The rise of internet-based services has changed the way that firms and consumers interact. E-service is conceptualized as an interactive information service providing a mechanism for firms to differentiate their service offering and build competitive advantage [29]. In case of technology-enabled services, research has identified new dimensions of service quality (different from the traditional service quality dimensions), such as automated search, communication among customers, information acquisition, content, mass customization, and ease of use [23]. Bressolles and Durrieu [6] identified: Quality and quantity of information, ease of use, website design and aesthetic elements, reliability and respect of the commitments, security and privacy, offer interactivity as the crucial dimensions of e-service quality in the case of internet-enabled businesses. E-service quality can also be considered from the perspective of process, outcome and recovery quality [13]. Table I shows the e-service quality measurement in prior studies.

**Table I:** E-service quality measurement in prior studies

Authors	Dimensions of e-service quality
Jun et al. [31]	Reliable / prompt responses, attentiveness, and ease of use
Parasuraman et al. [42]	Privacy /security ; information content and availability ; website design ; ease of use; and reliability / fulfillment
Yang and Fang [56]	Ease of use ; usefulness
Dabholkar [17]	Speed of delivery; ease of use; reliability; enjoyment; and control
Gounaris et al.[22]	Customer service; privacy/security; website design; and fulfillment / reliability
Zeithaml et al. [60]	Information availability and content, ease of use, privacy/ Security , graphic style and fulfillment /reliability.
Lee and Lin [36]	Web site design, reliability, responsiveness, trust, and personalization
Barnes and Vidgen [4]	Tangibles, reliability, responsiveness, assurance, empathy
Wolfenbarger and Gilly [54]	Fulfillment/reliability, website design, privacy/security, customer service
Yoo and Donthu [56]	Ease of use, aesthetic design, processing speed, security of personal and financial information
Bauer et al. [5]	Responsiveness, reliability, process, functionality/ design, enjoyment
Carlson and O'Cass [10]	Graphic quality, Clarity of layout, Attractiveness of selection, information quality, Ease-of-use, Technical quality, Reliability, Functional benefit, Emotional benefit

The other important research areas related to technology-enabled services are, Self-service technology (SST) and call centers (customer service). With technological interfaces, SSTs enable customers to produce a service independent of direct service employee involvement. Additionally, integrated with internet, other SST options will provide a wide variety of self-service possibilities. Examples of SSTs include interactive kiosks, automated teller machines (ATMs), self-service banking by internet or the telephone, electronic funds transfer by web and so on [12]. Consumer perceptions of service quality vary depending on the type of SST used [15]. Dimensions of service quality for call centers, are adaptiveness, assurance, offering of explanations, empathy, authority, educating customers, personalization [8,45,22] and also customer feedback, customer focus and time taken to respond are the other dimensions of call centers' service quality [18,19,22,23] In case of electronic banking, Rod et al. [46] considered banking service quality with respect to technology use, such as ATMs, telephone, and the internet and identified six dimensions. They were convenience/accuracy; feedback/complaint management; efficiency; queue management; accessibility; and customization. Lee and Lin [36] offered another model with five dimensions of service quality: Website design, Reliability, Responsiveness, Trust and Personalization. For Online banking Bauer et al. (2006) found out the following dimensions of service quality:

- (1) security / trustworthiness
- (2) basic services (core services category)
- (3) cross-buying services
- (4) added value (additional services category)
- (5) transaction support and
- (6) responsiveness (problem-solving services category).

Besides these other dimensions identified for technology banking are: reliability, responsiveness, web usability, security, trust, information quality, access, service recovery, flexibility and customization / personalization [40,55,22,23].

#### *Customer satisfaction and loyalty:*

Service firms focus on achieving customer satisfaction and loyalty by delivering superior value, an underlying source of competitive advantage [2]. Customer satisfaction is often seen as the long-term success factor to an organization's competitiveness [55]. Satisfaction refers to a global outcome assessment of the extent to which customers are pleased and have positive emotional evaluations of suppliers [21]. The general consensus is that higher customer satisfaction leads to higher levels of repurchase intent, customer advocacy, and customer retention [53]. Customer satisfaction is also considered from a cumulative satisfaction perspective and is defined as customer's overall experience to date with a product or service provider. Most of the customer satisfaction studies are now using this cumulative satisfaction concept [23]. Another important customer metric is customer loyalty. Creating and maintaining customer loyalty has become a strategic imperative for service firms in recent years [53] because high loyalty coincides with consumers' positive behavioral intentions, such as spreading positive word-of-mouth, increased repurchasing intentions, and a willingness to pay price premiums [43].

#### *Impact of service quality on customer satisfaction and loyalty:*

Satisfaction and quality are two concepts that are the core of marketing theory and practice. The key to sustainable competitive advantage lies in delivering high quality service that will result in satisfied customers [32]. E-service quality is related to user satisfaction and information systems (IS) success in the IS field, and is also related to customer satisfaction, retention and loyalty in the marketing field [58,14,16,47]. Prior studies generally support a positive relationship between e-service quality and customer outcomes, such as channel satisfaction, user loyalty and positive word-of-mouth [38]. Table II summarizes prior findings regarding the relationship between the e-service quality dimensions and customer relationship outcomes. According to Kim and Kim [33], e-service quality and satisfaction are significant predictors for loyalty. In case of automated banking service quality dimensions have been found to affect customer satisfaction and loyalty [23]. In light of all these considerations the following hypothesis is proposed:

**H1:** Generic service quality dimensions of technology-based banking have direct positive effect on customer satisfaction.

**H2:** Generic service quality dimensions of technology-based banking have direct positive effect on customer loyalty.

**Table II:** Prior studies about relationship between the e-service quality dimensions and customer relationship outcomes

Articles	Independent variable (s)	Dependent variable (s)	Result
Rod et al. [46]	Overall internet banking service quality	Satisfaction	+
Gounaris et al. [27]	e-service quality	Satisfaction and Loyalty	+
Lee and Lin [36]	e-service quality	Satisfaction	+
Carlson and O'Cass [10]	e-service quality	Satisfaction and Loyalty	+
Yen and Lu [58]	e-service quality	Satisfaction and Loyalty	+
Sabiote et al. [47]	e-service quality	Satisfaction	+
Kim and Kim [33]	e-service quality	Satisfaction and Loyalty	+

Besides that customer satisfaction also affects customer loyalty. There is strong evidence of an overall positive main effect of the relationship between customer satisfaction, as an antecedent, on loyalty intentions and customer behaviors [53]. Research in different industries have investigated the relationship between customer satisfaction and customer loyalty – durable products, non-durable products, and services [20]; multiple industries [21] B2B [53]; online gamers [48]; high-contact service industries [57]; mobile communications [35]; e-retailers [43]; automobile [7] IT [50]; Coffee shops [49]; restaurants [25]; health care [11]; Banking [22,23,33]. In light of all these considerations the following hypothesis is proposed:

**H3:** Customer satisfaction has a direct positive effect on customer loyalty.

#### Methodology:

##### Measurement instrument:

The survey instrument was developed based on literature review [22,23,33,32,12,15,45]. The variables included in the study have been adapted from the existing literature. As we are not considering a specific technology like internet, ATM or telephone, but treating the technology in generic terms the items used were adopted from different studies. The measurement instrument consists of three sections:

- (1) 27 items related to Service quality items (including technology-enabled service quality, customer service, problem solving capabilities)
- (2) 4 items related to customer satisfaction and
- (3) 3 items related to customer loyalty.

**Table III:** Demographic characteristics of respondents

	%
<i>Gender</i>	
Male	59.9
Female	40.1
<i>Age</i>	
20 years and less	3.9
21-27 years	36
28-34 years	27.6
35-41 years	17.5
42-48 years	11
49 years and more	4
<i>Education</i>	
Associates Degree	26
Bachelor's degree	51
Postgraduate education	23
<i>Monthly income</i>	
Less than \$400	42.8
Between \$401-700	19.8
Between \$701-1000	31.4
Greater than \$1000	6
<i>Period for which respondents are customers of their bank</i>	
Less than 6 months	11.9
Between 6-12 months	23.7
More than 1–up to 3 years	28.7
More than 3 years	35.7
<i>Note : Adapted from SPSS</i>	

#### Sampling and data collection:

We collected data from the all students of Islamic Azad University (Ahwaz Branch) in IRAN. This student sample was chosen because they are heavy users of technology banking. Students are the most innovative users of technology [24]. 700 questionnaires were distributed online and 560 of which were usable; therefore, the rate of return of questionnaires is calculated 0.8. The descriptive statistics of the respondents' demographic

characteristics were analyzed and presented in Table III. Table IV shows the frequency of use of types of technology-based banking.

**Table IV:** Frequency of use of types of technology-based banking

	More than 20 times per month (%)	10-20 times per month (%)	5-10 times per month (%)	Rarely (less than 5 per month) (%)	Never (%)
ATM	12.8	35.7	24.8	19	7.7
IB	11	20.6	25.7	24	18.7
TB	13.2	21.5	28.3	18.6	18.4
Others (mainly credit card, POS)	19	37.5	26.3	13.7	3.5
<i>Note : Adapted from SPSS</i>					

#### Data analysis and results:

##### Exploratory factor analysis:

In the first stage an exploratory factor analysis was performed on sample using the 27-variables related to the service quality of technology banking. The criteria used for factor extraction is two fold, i.e. the eigen value should be greater than one but more importantly the factor structure should be meaningful, useful and conceptually sound [44].

Prior to the extraction of the factors, several tests should be used to assess the suitability of the respondent data for factor analysis. These tests include Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy, and Bartlett's Test of Sphericity. The KMO index, in particular, is recommended when the cases to variable ratio are less than 1:5. The KMO index ranges from 0 to 1, with 0.50 considered suitable for factor analysis. The Bartlett's Test of Sphericity should be significant ( $p < .05$ ) for factor analysis to be suitable [52]. The value of KMO and Bartlett's Test is separately calculated, which is shown in Table V.

**Table V:** Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity (SPSS Output)

KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.799
Bartlett's Test of Sphericity	Approx. Chi-Square
	df
	Sig.

Results of the factor analysis are shown in Table VI and fig1.

On examining the content of the items making up each of the dimensions (factors) we label the factors as shown in Table VII and provide concise definitions for the dimensions:

- 1) *Easiness*: this means that users can easily learn how to work with the technology and use it.
- 2) *Assurance*: this means that technology works true.
- 3) *Security*: safety in using technology, proper handling of information and quality information.
- 4) *Customization*: to make (something/ services) according to a customer's individual requirements and needs.
- 5) *Comprehensiveness*: this means that the technology must be capable of providing a wide range of customer needs.
- 6) *Convenience*: convenience of using technology over the employees as well as speed and time of using technology.
- 7) *Support services*: the service provided to customers during problem situations and through call centers.
- 8) *Employee knowledge*: the amount of employees' information and knowledge to solve customer problems.

**Table VI:** Rotated Component Matrix for technology-based service quality

Rotated Component Matrix <sup>a</sup>									
	Component								
	1	2	3	4	5	6	7	8	9
q1	.163	.835	-.073	.082	.058	.184	-.034	.053	-.017
q2	-.015	.796	.281	.205	.218	.051	-.028	.185	.088
q3	-.017	.609	.520	.043	.222	.070	.087	.130	-.102
q4	.067	.365	.556	-.037	-.007	.111	-.056	.008	.508
q5	.003	.007	.776	.078	.127	.001	.021	.141	.151
q6	.126	.075	.649	.121	-.027	.319	.184	-.126	-.258

q7	-.068	.162	.189	-.041	-.061	.814	.008	.124	.104
q8	.001	.128	.112	-.108	.367	.565	.117	.112	.079
q9	.139	.099	.044	-.012	.783	.091	-.024	.221	.047
q10	.064	.222	.102	.071	.757	.022	.243	-.144	.034
q11	.000	.374	-.173	.091	.073	.355	.657	.014	.117
q12	.139	-.057	.121	.066	.068	.132	.710	.053	.155
q13	.125	-.095	.133	-.014	.276	-.137	.544	.394	-.027
q14	.261	-.042	.009	.759	.083	.115	.251	.010	-.013
q15	.197	-.054	-.143	.534	.091	.435	.066	-.428	-.167
q16	.001	.133	.172	.650	.085	.057	-.024	-.024	.267
q17	-.008	.172	.026	.597	-.074	-.034	.063	.313	-.112
q18	-.006	.006	.025	.772	.003	-.114	.018	.044	-.077
q19	.638	.290	-.107	-.188	-.314	-.155	.409	-.052	-.034
q20	.691	.134	.113	-.205	-.016	-.224	.340	-.071	-.020
q21	.674	.266	-.036	-.083	.064	.019	.242	.063	.129
q22	.709	-.045	.238	.126	-.003	-.039	.181	.025	-.073
q23	.629	-.130	-.023	.203	.198	-.042	-.076	.048	.237
q24	.723	-.034	-.051	.040	.004	.067	-.056	.202	.148
q25	.352	.156	.016	.116	.031	.151	.012	.644	.197
q26	.613	.061	-.019	-.047	.248	.269	-.200	.211	-.068
q27	.165	.174	.083	.176	.133	.190	.228	.616	-.179
Extraction Method: Principal Component Analysis.									
Rotation Method: Varimax with Kaiser Normalization.									
a. Rotation converged in 13 iterations.									

**Table VII:** Rotated factor matrix and dimensions for technology-based service quality

Factors	Measurement items	Factor loadings	Cronbach's Alpha
Easiness	Q1	0.835	0.7
	Q2	0.796	
	Q3	0.609	
Assurance	Q4	0.556	0.77
	Q5	0.776	
	Q6	0.649	
Security	Q7	0.814	0.81
	Q8	0.565	
Customization	Q9	0.783	0.79
	Q10	0.757	
Comprehensiveness	Q11	0.657	0.83
	Q12	0.710	
	Q13	0.544	
Convenience	Q14	0.759	0.75
	Q15	0.534	
	Q16	0.650	
	Q17	0.597	
	Q18	0.772	
Support services	Q19	0.638	0.77
	Q20	0.691	
	Q21	0.674	
	Q22	0.709	
	Q23	0.629	
	Q24	0.723	
	Q26	0.613	
Employee knowledge	Q25	0.644	0.81
	Q27	0.616	
customer satisfaction	Q28	0.718	0.83
	Q29	0.736	
	Q30	0.71	
	Q31	0.74	
customer loyalty	Q32	0.73	0.84
	Q33	0.78	
	Q34	0.76	

*Confirmatory factor analysis:*

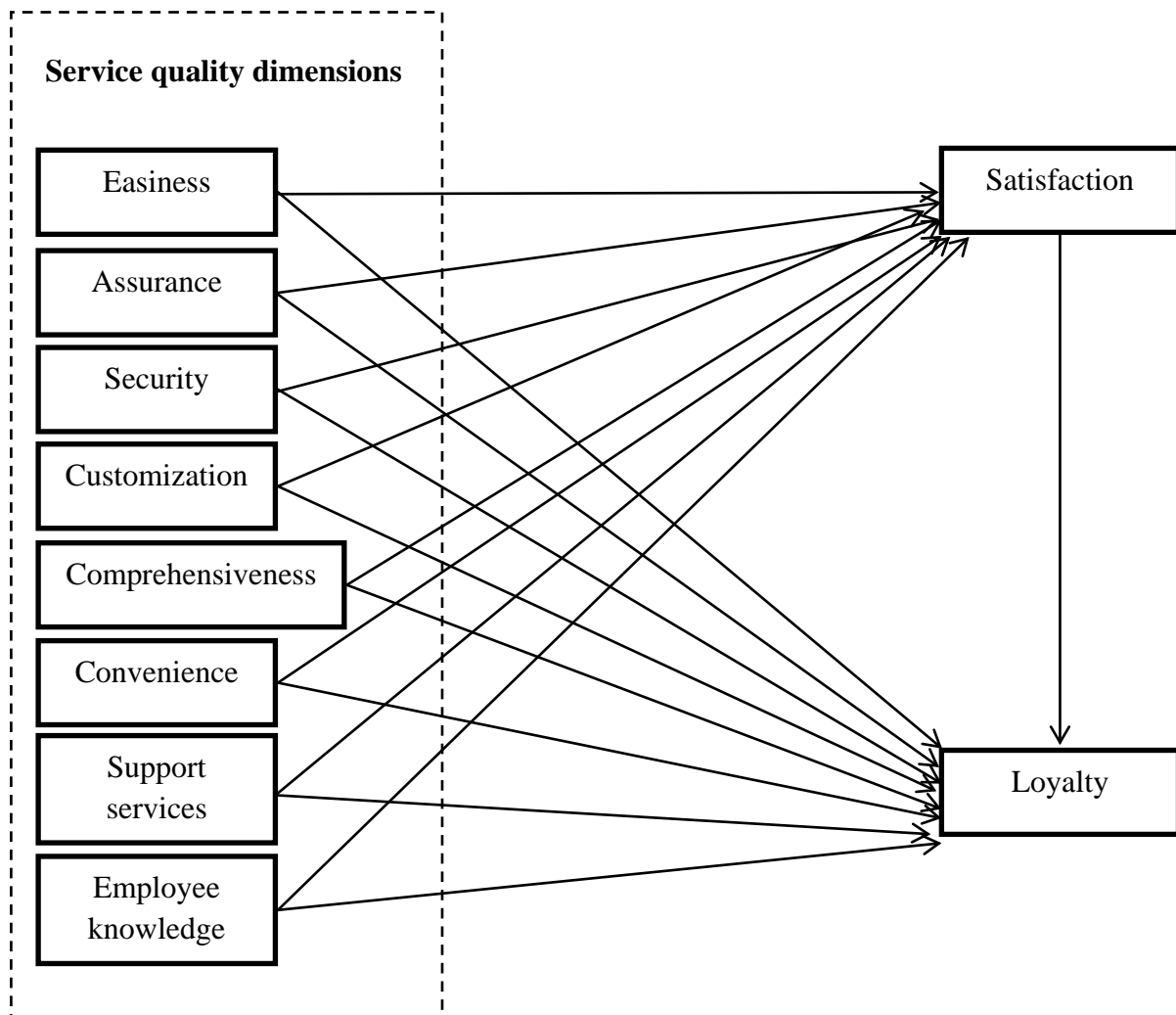
After identifying eight clear factors through exploratory factor analysis, the next stage is to confirm the factor structure on sample. Structural equation modeling (SEM) using Lisrel 8.80 was used to perform the confirmatory factor analysis. Confirmatory factor analysis revealed that the measurement items loaded in accordance with the pattern revealed in the exploratory factor analysis.

*Fitness of research model:*

Fitness is the suitability and adequacy of data for the investigated model, which means if fit indices indicate the fitness of the model; the data had been suitable and adequate for analysis and conclusion of relationships in the model. In other words, fitness of the model determines the degree which supports the sample variance-covariance data of the structural equation model [3]. Therefore, we examined fit indices. The calculated values of these indices are given in Table VIII and indicate a relatively good fitness of the model.

**Table VIII:** Fit indicators

Index	Value
$\chi^2$	1086.28
RMSEA	0.046
NFI	0.88
NNFI	0.86
CFI	0.86
GFI	0.88
AGFI	0.85
P<0.05	d.f= 451

**Fig. 1:** The structural model

*The method to analyze data and results:*

In this study, the obtained information was analyzed using the inferential statistical method, and the statistical technique of structural equation modeling (analysis of the confirmed path) and confirmatory factor analysis was used through LISREL 8.80 software. After Confirmatory Factor Analysis and ensuring about significance of the coefficients between latent variables (factor loads) and the measured variables (items of the questionnaire) as well as the confidence in the model fitness, research hypotheses will be tested. That is, the significance of latent variable path coefficients will be examined using T-Student test. Since the confidence level of 0.95 or the error level of 0.42 is considered in this research, the positive path coefficients are characterized by the above significant 1.96 value of the statistic *t* and their associated research hypothesis will be confirmed. The results from the confirmation or rejection of the hypotheses are presented in Table X. Additionally, from Table IX, correlation between constructs ranged from 0.05 to 0.69, with the correlations of no pair of measures exceeding the criterion (0.9 and above) [28]. Empirical support thus exists for the discriminant validity of the measures.

**Table IX:** Discriminant validity assessment

Construct	eas	assu	secu	custom	compre	conv	support	knowl	satisfa	Loyal
eas	1.00									
assu	0.47	1.00								
secu	0.52	0.53	1.00							
custom	0.47	0.54	0.46	1.00						
compre	0.53	0.61	0.42	0.43	1.00					
conv	0.56	0.58	0.61	0.68	0.66	1.00				
support	0.65	0.59	0.55	0.56	0.42	0.47	1.00			
knowl	0.68	0.64	0.57	0.59	0.61	0.52	0.53	1.00		
satisfa	0.68	0.64	0.69	0.63	0.52	0.57	0.68	0.60	1.00	
Loyal	0.58	0.63	0.51	0.48	0.49	0.44	0.53	0.57	0.69	1.00

**Table X:** Results of research hypotheses

Hypothesis	Hypothesized paths	Estimated coefficients	path	Statistic <i>t</i>	Results
H 1. Service quality / customer satisfaction	CS - easiness	0.68		5.12	Accepted
	CS - assurance	0.58		6.45	Accepted
	CS - security	0.57		4.11	Accepted
	CS - customization	0.46		1.93	Rejected
	CS - comprehensiveness	0.59		3.49	Accepted
	CS - convenience	0.48		4.61	Accepted
	CS - support services	0.53		3.71	Accepted
	CS - employee knowledge	0.49		2.62	Accepted
H 2. Service quality / customer satisfaction	CL - easiness	0.54		5.02	Accepted
	CL - assurance	0.49		5.36	Accepted
	CL - security	0.65		3.68	Accepted
	CL - customization	0.46		1.68	Rejected
	CL - comprehensiveness	0.35		1.81	Rejected
	CL - convenience	0.65		3.48	Accepted
	CL - support services	0.59		2.52	Accepted
CL - employee knowledge	0.45		2.43	Accepted	
H 3. customer satisfaction / customer loyalty	CS-CL	0.75		6.28	Accepted

*Discussion and managerial implications:*

The present study intended to provide a model which is able to assess service quality dimensions related to any kind of banking technologies (i.e. irrespective of the technology being used by the banks for service delivery). The model obtained in the present study was used to identify the service quality dimensions regardless the applied banking technology, therefore it is considered as a general model which is applicable to any kind of banking technology. The dimensions identified in this study are: easiness, assurance, security, customization, comprehensiveness, convenience, support services and the employee knowledge. These dimensions will act as guidelines for the managers of banking services as it will help them to understand the particular dimensions that customers consider while evaluating the service delivery process of banks using technology. The various dimensions of service quality identified in this study should be viewed as levers of improving bank's perceived service quality in the minds of its customers. However, the degree of emphasis placed on these dimensions depends on the objectives of the banks. In a performed research by Ganguli et al. on the obtained dimensions, they have found the four dimensions of security, convenience, easiness, and customer services. Al-Hawari et al. have also referred to the three dimensions of reality, concreteness, and responsiveness as the service quality dimensions. Dean has also referred to supporting services, convenience and certainty factors. According to the performed study, almost the majority of the researchers have generally measured the easiness, certainty, convenience, supporting services, and the employees' knowledge factors as the dimensions of service quality.



Thus, our research has also introduced three variables of safety (safety and certainty were considered as one variable in previous researches), customization, and comprehensiveness as effective variables on service quality. The effect of these eight dimensions is evaluated on the customers' satisfaction and loyalty in the remaining parts of this research. The results show that the two variables of customization and comprehensiveness have not effected the customers' loyalty. The hypothesis of customization effect on customer satisfaction was also rejected. Based on the obtained model, the bank managers and the researchers can determine the applied technology in banking to measure the quality, considering these eight dimensions. The bank managers must keep in mind that ignoring the dimensions of service qualities and their effect on customers' satisfaction can cause bank customers' lack of satisfaction. Considering that we have recognized the service qualities dimensions in the technology-based banking in this research regardless of the applied technology by the bank, this model is therefore applicable to different banking technologies.

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