

Investigating and modeling the impact of online banking marketing interaction management (ORM) on the loyalty of electronic banking customers using structural equations and PLS partial least squares technique

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Abstract

Electronic banking including the provision of online banking and financial services, should benefit from efficient management in its online interactions because electronic banking needs to cover the needs and expectations of its customers in order to achieve greater profitability. The aim of this study was to reach a deeper understanding of the factors affecting electronic loyalty in the electronic banking of Maskan Bank. This applied research was carried out quantitatively and with a survey method. The statistical population of the research includes all electronic banking customers of Maskan Bank in Mashhad City, and the data was collected from a structured questionnaire with 384 customers in Razavi Khorasan Bank Maskan. The relationship between the investigated variables in each hypothesis was investigated based on a causal structure with the partial least squares PLS technique, and finally, the model was fitted based on the structural equations. The findings showed that marketing management of online interactions is effective on the electronic loyalty of Maskan Bank customers, and reasons such as value creation, customer perception, competitive advantage and superior services, security and trust, and application design are effective in marketing management of online interactions. Online marketing is also effective in electronic loyalty.

Keywords: Electronic loyalty, electronic banking, structural equations, Maskan bank
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1 Introduction

Today, all aspects of human life have been affected by the web and the Internet, and providing services on the web and electronically is more economical for all organizations compared to traditional methods [47]. On the other hand, in the current business environment, organizations are looking for solutions and models to outdo their competitors through customer retention and profit. Meanwhile, to provide effective financial and banking services, the use of

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information technology and the use of the Internet are inevitable [24]. So that the provision of banking services through electronic channels has increased the competition in the banking industry and is known as Internet banking, and since the provision of services and services to customers 24 hours a day without time and place restrictions the cost is much lower in global markets in facilitating e-commerce. However, one of the challenges facing banks is to attract and retain customers and formulate and design an electronic loyalty model and its implementation, which is essential from an economic and competitive point of view because, without customer loyalty, the best electronic business models will fail. Irreparable losses will be faced. Luran and Lin [33] believe that to increase customer loyalty, electronic services must be satisfactory. Meanwhile, modern banking services that are closely related to information and communication technology are among the most important factors in creating a competitive advantage for banks and attracting and retaining customers and their satisfaction [35]. Communication with customers is considered one of the important elements in customer marketing and requires banks to communicate closely with their customers to maintain customers and increase them [6].

Today, customer loyalty is known as an effective indicator of continued success in business [14]; and it is one of the main factors that facilitate the achievement of competitive advantage [40]; And it helps companies to be sure of their sales and profit increase in the future [28]. According to Sheena Lovia Boateng [7], customer loyalty is not defined as a positive attitude that customers show toward a certain product or service provider, and as a result, repeat the purchase behavior. On the other hand, the emergence of the Internet and new technologies have changed the foundations of service interactions and we see the growth of services provided through multiple channels, to deal with the economy based on knowledge and information, manual and traditional methods no longer work [12]. Therefore, all organizations and institutions have turned to providing electronic services, and its evaluation has become one of the priorities of their senior managers [29]. Electronic banking was first used in 1995 in the United States, and then expanded, which refers to the provision of banking services through the Internet using a personal computer or other equipment with the ability to access the Internet in different places and at the same time [20]. According to the latest statistics obtained at the end of 2019 in Iran's banking industry, more than 85% of banking transactions were done through electronic banking, and about 50% of transactions in Maskan Bank were non-face-to-face transactions. Floh and Treiblmaier [16] believe that one of the challenges facing banks is building electronic customer loyalty [47]. so that if customers do not accept electronic banking technology and services or do not use them completely, they will earn little income from their investments in such technologies [12]; And the costs of providing face-to-face services should increase. According to the advancement of technology used in banks, the need for a smart and strong information system to identify the needs of customers and satisfy those needs to create loyalty at a higher level is felt [12]. Much research has been done in the field of customer loyalty; However, the discussion of electronic loyalty and a framework of factors to achieve electronic loyalty has received less attention. Due to the many competitions in today's electronic world, it is a fundamental issue to provide a model to maintain and keep customers in your housing bank. Therefore, this research is based on the results of the bank's surveys to solve the challenges facing the bank regarding the electronic loyalty of Maskan Bank users and investigates what is the pattern of electronic customer loyalty in Maskan Bank.

2 Literature review

Due to the development of technology, the volume of e-commerce in the world is growing day by day. These changes are especially evident in the banking sector and it is referred to as electronic banking. Tools such as automatic teller machines (ATM), sales terminals (pos), and bank telephones are all included in the electronic banking collection [25]; which has created a special economic position for itself by reducing costs and increasing the bank's profitability, increasing the speed of providing services to customers and providing easy and round-the-clock access to services for customers. Because customer expectations are constantly increasing, organizations are required to focus beyond the basic needs of customers to a long-term, two-way, and profitable relationship for both parties. Since the customer's purchase process is formed by recognizing the customer's needs, searching for information, evaluating options, making a purchase decision, and evaluating after the purchase [50]; Therefore, customer value should be considered in this process. Zeithaml [51] defines value as the customer's overall assessment of the desirability of a product based on his perception of what he received in exchange for what he paid. Therefore, regarding the concept of value, organizations should focus on providing better and higher value than the value offered by the organization's competitors and constantly improve it to provide the opportunity to succeed and maintain a competitive position of the organization in the market and to increase the motivation of repeat purchases and loyalty [15]. Of course, a brand name with special value can reduce the cost of marketing because customers are loyal to it and trust it, and this factor can defend the company against the price of competing services and make it pay more to get the benefits and quality of their favorite brand [26]. Paying attention to the issue of "customer loyalty" in the subject of marketing goes back to the efforts of Copeland [11]. In general, loyalty is always defined as a sales frequency or a relative volume of purchases from

the same branch. Oliver [37] defines loyalty as "a strong commitment to repurchase a superior product or service in the future, in such a way that the same brand or product is purchased despite the influence and potential marketing efforts of competitors" [3]. Hjalte and Larsson [23] believe: that "Loyalty is creating an obligation in a customer to do business with a particular organization and buy goods and services repeatedly" [23, 46]. Therefore, creating customer loyalty is a way to increase profits and is necessary for survival. In electronic markets, something that becomes more important every day is that online competitors are only a few mouse clicks away from making a person a customer loyal to their organization [12]. Based on the theory of [13], there are three levels of loyalty: extreme (always), hidden loyalty positive attitude, de), and maintenance loyalty. Based on this, banks should go beyond the basic need to satisfy customers, and by creating loyalty and trust, they should focus on a long-term, mut, dual, and profitable relationship for both parties [48].

According to Kotler [32], if the company's performance meets the customer's expectations, the customer will feel satisfied, and if customers are satisfied by receiving the service, they are likely to repeat their purchase and talk about it with others [27]. With the advancement of technology, organizations have turned to customer relationship management to increase customer satisfaction, based on which, to gain more knowledge about the needs and business behaviors of customers and to communicate more and more strongly with them from the set of methodologies, processes, software They use software and systems that help in effective and organized management of communication with customers [1]. Understanding the goals of customer relationship management can help organizations move towards CRM and identify factors affecting success, gain a competitive advantage in customer management, and ultimately increase the level of profitability. The benefits of using a customer relationship management system, the ultimate goal of which is to obtain customer satisfaction and survive in a competitive environment, are: reducing sales costs, better-identifying customers, reducing marketing costs, increasing loyalty, identifying trends and patterns of customer consumption, easy access to the information of the organization, the correct understanding of the effectiveness of marketing activities, attracting new customers, etc.

From Parasuraman et al. [39] and Grönroos [22], service quality is defined as the difference between the customer's expectations of the service received and his perceptions of the service he received [49]. It is an excellent way to increase customer loyalty to the organization, whose dimensions such as responsiveness, execution, security, design, ease of use, privacy, reliability, and tangible information have a positive and meaningful relationship with customer loyalty. Service quality is a competitive weapon all over the world [12]. Based on this, the indicators of customer perception of electronic bank services are ease of use, saving time, presence of signs and guides, and rights Spiritually, it is possible to perform different banking operations, the existence of advanced information technologies, security, services, and support, etc. [19]; If it is accompanied by quality, it will lead to customer loyalty.

2.1 Electronic banking

E-banking as online banking includes the provision of banking services: access to the account, transfer of funds between accounts, and the provision of online financial services [38] that people use to access the bank account, make deposits, perform bank transactions, pay bills, check account balance, money transfer using their system and have access to banking facilities from any place [30] to perform the desired actions at three levels of information, communication, and transaction [41]. Electronic banking has changed from automation behind the counter and in front of the counter, to connecting customers to their accounts creating a fabric of systems and connecting customers with all banking operations.

The concept of e-loyalty shows the consumer's intention to repurchase products and services through a particular e-seller that quality and design reliability, trust (privacy, security, reputable brand, third-party verification, standard terms and conditions, Reliability, communication, and interactions), the quality of electronic services, satisfaction is effective on its level [42].

2.2 Online relationship marketing (ORM)

The discussion of technology and communication management began in the 1990s with studies by authors such as Geiger and Martin [18], who investigated Internet technology as a communication management tool. Information technology plays an essential role when providing communication management performance [7]. This is confirmed by many marketing researchers, who over the years have discussed the role of technology as a necessary condition for success in developing effective relationships between companies and their customers [7].

Online communication marketing captures the use of various interactive web features and active tools on the Internet to create and develop long-term beneficial relationships with their customers [7]. Companies host multiple applications over the Internet, including websites and social media pages, through which they coordinate multiple

activities and relationship development processes [44]. The features of these online programs are often harnessed through activities such as interaction, support, personalization, and collaboration to build successful relationships with their customers [2, 9].

Signaling theory will be used to explain the role of ORM activities in bank RM. This theory was developed in response to information asymmetry - when parties to an exchange have access to different types of information - between trading parties in business relationships [45]. This information asymmetry often occurs due to the characteristics of service providers and their ability to effectively meet the needs of their customers, as well as differentiate themselves from other service providers [10]. Signaling theory has been widely used in various fields to explain the phenomenon of customer choice. This theory supports three main elements, namely the signifier (service provider), receiver (customer), and signal. The service provider is trying to influence the opinions of its customers and often announces information about the characteristics of the brand and the quality of their service. They want to reassure customers of their credibility and integrity. And this information is converted into signals that are appropriately transmitted to their customers using different media.

In recent times, companies have relied more on IT features to send signals to customers to influence their perceptions and behavioral goals [5]. Specifically, in building relationships, they often signal through the deployment of various Internet tools and applications such as secure socket layer encryption and appropriate content and utility functions such as help sheets and FAQs to communicate transparency, security, and privacy [5, 36]. In addition, other signals are sent through conducting specific activities through the Internet, including interaction, personalization, and collaboration to strengthen long-term relationships with customers [7]. Therefore, for this study, engagement is viewed as a signal used by companies to gain online trust and loyalty among their customers.

Gopalsamy and Gokulapadmanaban [21] in a study titled "Does the use of customer relationship management improve customer loyalty?" Seeking to evaluate the effects of customer relationship management activities on the loyalty of 779 customers of Indian public and private sector banks who were selected through simple random sampling; showed that customer relationship management has a positive effect on customer loyalty through customer knowledge management, customer satisfaction, and customer trust, and all these factors are drivers that significantly affect customer trust.

The results of Behari and Behari's research [4] in a study titled The Relationship between Service Quality and Customer Satisfaction, Loyalty and Trust, in the Engelab and Laleh hotels in Tehran, showed that service quality affects customer satisfaction, trust and loyalty, as well as customer trust and loyalty. The customer has a positive and meaningful impact.

Mahmoudi et al. [34] in a study entitled the causal relationship of market orientation with customer loyalty with the mediating role of service quality (providing a model for fitness clubs) found that service quality absorbs the effects of market orientation and then transfers it to customer loyalty. And makes customers loyal.

Ebrahimi et al. [14], in a study titled Customer Loyalty Model for Recommender Systems in Electronic Commerce, showed that the "trust" factor has an important relationship with customer satisfaction in electronic commerce recommender systems. In addition, satisfaction with the proposed products can increase customer loyalty in B2C recommender systems and increase product sales in online sales websites by gaining customer loyalty.

Teimuri and Gudarzvandchegini [47] in a study titled Investigating individual and organizational factors affecting e-loyalty with the mediating role of e-satisfaction reached the conclusion that selected individual and organizational factors, except organizational strategy, lead to e-satisfaction And e-satisfaction in turn affects the e-loyalty of customers.

Reis et al. [43], in an article, highlight the role of online engagement and interaction signaling in influencing banks' ORM results based on signaling theory. The results showed that the bank's online communication activities, more than the online tools used, should establish appropriate and useful signals for a positive effect on online trust and loyalty among customers.

2.3 Hypotheses

1. Creating value is one of the effective factors in managing online interactions with customers.
2. Application design is one of the effective factors in managing online interactions with customers
3. Superior service and competitive advantages are one of the factors influencing the management of online interactions with customers
4. The ability of security and trust is one of the factors affecting the management of online interactions with customers

5. Customer perception is one of the factors affecting the management of online interactions with customers
6. Management of online interactions with the customer is effective in the electronic loyalty of the customers of Maskan Bank.

3 Research method

The current research is applied in terms of purpose and descriptive and survey in terms of data collection method. The statistical population of the research is all electronic banking customers of Maskan Bank of Razavi Khorasan Province, and according to the level of access to these people, 384 of them were identified. Out of this number, 21 people did not answer the sent questionnaires. Therefore, the final sample of the research includes 363 electronic banking customers. To collect information, the field method has been used and the data collection tool is a questionnaire. A purposive sampling method has been used for sampling and people have been selected who, while having a high work experience, have education and position related to the subject under study.

The field method has been used to confirm or reject research hypotheses. A questionnaire was used to collect primary data. The research questionnaire is based on six main constructs, which are:

Table 1: Dimensions of the main structures of the research

Dimensions	Number of items
Creating value	6
Application design	5
Superior service and competitive advantages	5
Security and trust capability	4
Customer perception	5
customer relation management	3

Content validity (opinion of experts), construct validity (external model), and convergent validity (AVE) were used to check the validity of the questionnaire. The AVE value for all research variables is greater than 0.5. Only for the construct of customer perception, the convergent validity rate of 0.486 has been obtained, which is close to 0.5, and according to the other results obtained, this index is also acceptable. Composite reliability (CR) and Cronbach's alpha coefficient were also calculated to calculate reliability. Cronbach's alpha of the whole questionnaire was calculated as 0.871. The combined reliability and Cronbach's alpha of all dimensions are greater than 0.7.

Table 2: Convergent validity and reliability of research variables

Research questionnaire	Cronbach's alpha	composite reliability (CR)	Convergent validity
Creating value	0.750	0.835	0.532
Application design	0.760	0.809	0.524
Superior service and competitive advantages	0.773	0.847	0.530
Security and trust capability	0.810	0.825	0.562
Customer perception	0.768	0.801	0.486
Managing online interactions with customers	0.733	0.844	0.535
Total variables	0.871	0.826	0.504

After ensuring the measurement models through the reliability test, and convergent validity, the results of the external model can be presented.

3.1 Case study

In general, out of 384 people in the sample of this study, (64%) are male customers and (36%) are female customers. From the point of view of education, (18%) of the clients have an associate degree or less. and (57%) of the clients have a bachelor's degree and (26%) have a graduate degree. In terms of age, and (20%) of customers are under 30 years old and (43%) of customers are 30 to 40 years old. and (26%) are 40 to 50 years old. and (11%) of the customers are over 50 years old. Based on the interaction history, (21%) of the customers have less than 5 years of interaction history. and (16%) of customers have 5 to 10 years of interaction experience (41%) of customers have 10 to 15 years of interaction history and (21%) of customers have more than fifteen years of interaction experience.

To check the model, firstly, the external model has been used to measure the relationships between hidden variables and their measurement items. The measurement model (external model) examines the relationship between the items

or questions of the questionnaire with the constructs. In fact, until it is proven that the indicators or questionnaire questions have measured the hidden variables well, the relationships cannot be tested. Therefore, to prove that the concepts are well measured, the measurement model or confirmatory factor analysis is used. The strength of the relationship between the factor (latent variable) and the observable variable is indicated by the factor loading. Factor load is a value between zero and one. If the factor load is less than 0.3, the relationship is considered weak and it is ignored [17]. A factor loading between 0.3 and 0.6 is acceptable, and if it is greater than 0.6, it is very desirable [31]. The minimum acceptable factor load is also mentioned in some sources and references as 0.2, but the main criterion for judging is the t statistic. If the test statistic, i.e. t statistic, is greater than the critical value of $t_{0.05}$, i.e. 1.96, then the observed factor loading is significant.

Table 3: External partial least squares model for research variables

Structures	objects	factor loading	t-statistic
Creating value	Q01	0.832	9.698
	Q02	0.835	8.000
	Q03	0.804	3.232
	Q04	0.753	4.575
	Q05	0.708	6.615
	Q06	0.619	6.362
Application design	Q07	0.766	5.977
	Q08	0.788	4.900
	Q09	0.784	3.538
	Q10	0.795	7.822
	Q11	0.629	6.045
Superior service and competitive advantages	Q12	0.791	9.935
	Q13	0.732	7.931
	Q14	0.778	3.260
	Q15	0.830	8.656
	Q16	0.647	7.130
Security and trust capability	Q17	0.854	5.075
	Q18	0.855	5.524
	Q19	0.849	7.360
	Q20	0.244	5.418
	Q21	0.797	2.355
Customer perception	Q22	0.839	2.589
	Q23	0.489	5.427
	Q24	0.718	2.397
	Q25	0.769	6.640
Managing online interactions with customers	Q27	0.820	5.968
	Q28	0.616	3.583
	Q29	0.626	3.507

Based on the results of the measurement model listed in Table 3, the observation factor load has a greater value of 0.3 in all cases, which indicates that there is a proper correlation between the observable variables and the related hidden variables. Also, the bootstrapping value (t-statistic) is greater than the critical value of 1.96 in all cases, which indicates that the correlation between the visible variables and the related hidden variables is significant. Therefore, it can be concluded that each main variable has been measured correctly, and considering the findings of this scale, it is possible to test the hypotheses of the research.

4 Model alignment using the partial least squares method

The relationship between the investigated variables in each of the research hypotheses has been tested based on a causal structure with the partial least squares PLS technique. The general research model is shown in Figure 1. The p-value statistic to measure the significance of relationships is also shown in Figure 2.

4.1 Assessment of model fit

Finally, the fit of the model has been examined. The structural part of the model, unlike the measurement models, does not deal with the obvious questions and variables of the model and only pays attention to the hidden variables and the relationships between them. In this research, the fit of the structural model was used using the coefficient of determination (R^2), redundancy, and GOF statistics.

The coefficient of determination (R^2) is a measure that expresses the amount of changes in each of the dependent variables of the model, which is explained by the independent variables. The value of R^2 is presented only for the

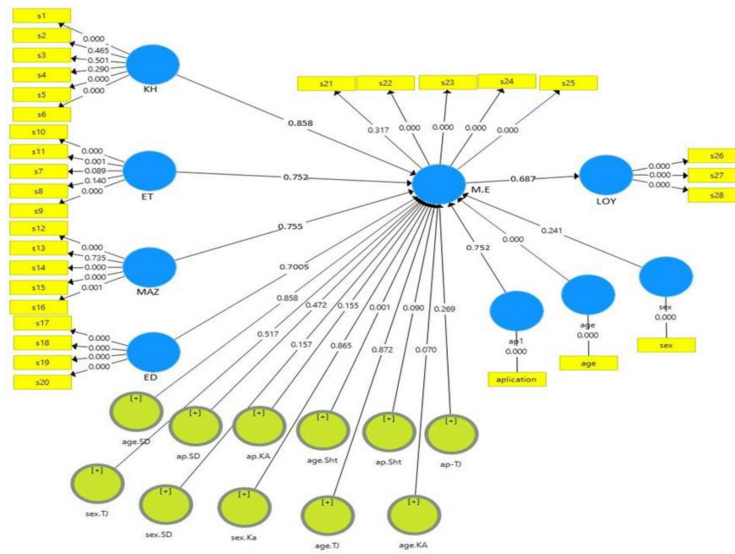


Figure 1: Partial least squares technique of the research conceptual model

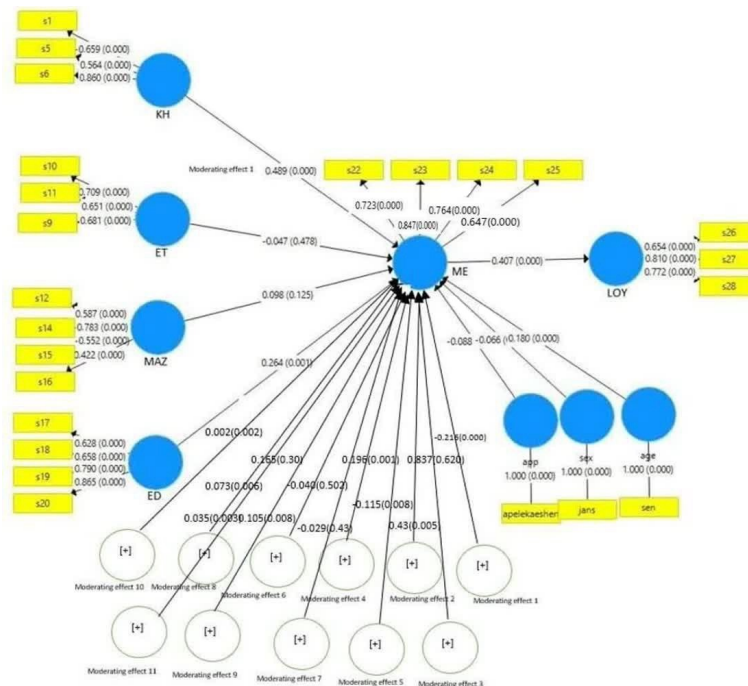


Figure 2: The conceptual model of the research (path coefficient value with p-value statistic after removal)

Table 4: Summary of model fit evaluation results

Research structures	(R ²)	(SRMR)	NFI
Independent variables	—		
Managing online interactions with customers	0.166	0.05	0.91
Electronic loyalty	0.763		

endogenous variables of the model, and in the case of exogenous structures, its value is equal to zero. The higher the value of R^2 related to the endogenous constructs of the model, the better the fit of the model. Chin [8] has defined three values of 0.19, 0.33, and 0.67 as the criterion values for weak, medium, and strong values of the fit of the structural part of the model using the coefficient of determination criterion. The value of R^2 is reported in Table 4. The coefficient of determination of R^2 for the structure of electronic loyalty has been reported as 0.763, which is a significant value and is strongly in line with China’s opinion. Also, the coefficient of determination of customer

relationship management structure has been obtained as 0.166, which is an acceptable value.

The Stone-Geisser criterion or the Q^2 index determines the predictive power of the model. Chin [8] have determined three values of 0.02, 0.15, and 0.35 as weak, medium, and strong predictive power of the model regarding endogenous structures. If the value of Q^2 becomes zero or less than zero in the case of an endogenous construct, it indicates that the relationships between other constructs of the model and the endogenous construct are not well explained. The blindfolding technique was used to calculate the value of Q^2 in PLS software. Positive numbers indicate good model quality. In this study, blindfolding values for all research constructs are positive and greater than 0.35.

5 Discussion

The results of the research showed that the standard factor loading of the effect of the size of value creation on electronic loyalty was obtained as 0.858. Also, the value of the t statistic is 6.413, which is greater than the critical value of 1.96. Therefore, it can be claimed with 95% confidence: that the amount of value creation has a positive and significant effect on electronic loyalty.

The standard factor loading of the effect of application design size on electronic loyalty has been obtained as 0.752. Also, the value of the t statistic is 5.656, which is greater than the critical value of 1.96. Therefore, it can be claimed with 95% confidence: that the size of the application design has a positive and significant effect on electronic loyalty.

The standard factor loading of the effectiveness of superior services and competitive advantages on electronic loyalty has been obtained as 0.755. Also, the value of the t statistic is 7.382, which is greater than the critical value of 1.96. Therefore, it can be claimed with 95% confidence: that the effectiveness of superior services and competitive advantages have a positive and significant effect on electronic loyalty.

The standard factor loading of the effectiveness of security capability and trust on electronic loyalty has been obtained as 0.705. Also, the value of the t statistic is 5.844, which is greater than the critical value of 1.96. Therefore, it can be claimed with 95% confidence: that the effectiveness of superior services and competitive advantages have a positive and significant effect on electronic loyalty.

The standard factor loading of the effectiveness of customer perception on electronic loyalty has been obtained as 0.722. Also, the value of the t statistic is 3.881, which is greater than the critical value of 1.96. Therefore, it can be claimed with 95% confidence: that the effectiveness of superior services and competitive advantages have a positive and significant effect on electronic loyalty.

The standard factor loading of the effectiveness of managing online interactions with customers on electronic loyalty has been obtained as 0.687. Also, the value of the t statistic is 4.352, which is greater than the critical value of 1.96. Therefore, it can be claimed with 95% confidence: that the effectiveness of superior services and competitive advantages have a positive and significant effect on electronic loyalty.

Table 5: Summary of the test results of the research hypotheses

independent variable	dependent variable	Loading Factor	t-statistic	Result
Creating value	Managing online interactions with customers	0.858	6.413	confirm
Application design	Managing online interactions with customers	0.752	5.656	confirm
Superior service and competitive advantages	Managing online interactions with customers	0.755	7.382	confirm
Reliability and security	Managing online interactions with customers	0.705	5.844	confirm
Customer perception	Managing online interactions with customers	0.722	3.881	confirm
Managing online interactions with customers	Electronic loyalty	0.687	4.352	confirm

6 Conclusion

Electronic banking allows banks to respond to the different needs of customers in different places at the same time. By using these systems, the bank can provide better services to the customer, but despite the very high penetration rate of the Internet in Iran, the share of offline payments in the purchase transaction from the total electronic payments based on bank cards is small. Banks have concluded that if customers do not accept electronic banking technology and

services or do not fully use them, they will earn little income from their investments in such technologies and services. On the other hand, in recent years, banks have made increasing and exponential progress in the field of technology, especially electronic service systems. Therefore, the need to manage a smart and strong information system was felt to identify the needs of customers and satisfy those needs to create loyalty at a higher level in Maskan Bank. Therefore, the importance of users in the online environment, the creation of electronic loyalty has been raised as a necessary challenge in the banking of Maskan Bank, and considering the many competitions in today's electronic world, achieving a model for maintaining and keeping customers in Maskan Bank is the problem itself. It is basic. Based on this, the researcher was trying to achieve a causal model in this research.

The partial least squares technique has been used to identify research constructs. Finally, the general model of the research has been put to the test using the same technique. In general, the relationships between variables in the partial least squares technique are of two categories: the outer model and the inner model. The external model indicates the relationship between the questions and the constructs, and in this research, the most important fit indices of PLS based on the external model of the research have all had reasonable statistical limits, which indicated a proper correlation between the visible variables and the hidden variables.

The internal model of the research was also done by testing the research hypotheses. The relationship between the investigated variables in each of the research hypotheses was tested based on a causal structure with the PLS partial least squares technique. The general research model is shown in Figure 2. In this model, which is the output of Smart PLS software, a summary of the results related to the standard factor load of the variables was presented. After the accuracy of the measurement of the research constructs was ensured, the relationships of these constructs became possible to test the research hypotheses, and the measurement and results were mentioned.

To evaluate the fit of the external model of the research, attention was also paid to the investigation of hidden variables and the relationships between them. In this research, structural model fitting was used using the coefficient of determination (R^2), (SRMR) index, and NFI index, and finally the results of table 4 of acceptable customer relationship management variable size and electronic loyalty effect size are approximately It was considered strong.

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