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| **To Link this Article:** http://dx.doi.org/10.6007/IJARAFMS/v2-i3/9925 DOI:10.6007/IJARAFMS /v2-i3/9925 |
| ***Received:*** *07* August *2012,* ***Revised:*** *29* August 2012*,* ***Accepted:*** *08* August 2012 |
| **Published Online:** 21 September 2012 |
| **In-Text Citation:** (Maroofi et al., 2012)**To Cite this Article:** Maroofi, F., Darabi, A., & Torabi, J. (2012). Effects of e-CRM on Customer–Bank Relationship Quality and Results. *International Journal of Academic Research in Accounting Finance and Management Sciences*, *2*(3), 148–168. |
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| **Vol. 2, No. 3, 2012, Pg. 148 - 168** |
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**Effects of e-CRM on Customer–Bank Relationship Quality and Results**

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**Abstract**

This research examines the results of electronic customer relationship management (e-CRM) system carrying out in the Iran banking industry from customer outlooks. Because most e-CRM carrying outs cannot be directly seen or identified by customers, report survey and interviews with experts in the Iran banking industry were used to develop a new construct called ‘customer-based service ascribe’ to quantify e-CRM results from customers' outlooks. A full-scale field survey of 684 customers of Iran commercial banks was then directed. A service ascribes model and a model that integrated relationship quality and result were constructed, and their validity and reliability was verified. Analysis of the results by using structural equation modeling demonstrated that e-CRM carrying out has a statistically significant positive relationship with customer-based service ascribe and with the quality and result of customer–bank relationships as well as an indirect effect on relationship quality and result through customer-based service ascribe.

**Keywords:** E-CRM, Relationship Quality, Relationship Result, Banking, SEM

# Introduction

Making long-term relationships with valued customers is commonly viewed as the key to profitability in an increasingly active market. e-CRM is one of the first strategic enterprises in industry today. It has become the major model of relationship marketing in the e-world (Chen & Chen, 2004). Although CRM has become greatly identified, it has no generally accepted explanation. Table 1 show the previous research of the explanation and circumstances of CRM. Bradshaw and Brash (2001) stated that companies have become more effective in developing marketing relationships that use Internet technology. Feinberg and Kadam (2002) suggest that the use of the Internet as a channel for commerce and information presents an opportunity for businesses to use the Internet as a platform for the delivery of CRM functions on the e-CRM. A survey of the related e-CRM report shows that various researchers have specified e-CRM according to different aspects (Table 2).

Table 1. CRM definition and context

|  |  |
| --- | --- |
| **Definition and context of CRM** | **Researcher** |
| Interaction between customers who are more well-informed, more demanding, and require more concentration and companies that are more customer-focused and more interested in building closer and longer-term relationships with their customers and having more interaction with them | Khalifa and Shen (2005), Barnes (2001), |
| An enterprise approach to understanding and influencing customer behavior through significant communications in order to improve customer acquisition, customer loyalty, and customer profitability | Swift (2001) |
| A strategy that rests on the five-pillar approach: The five basic issues that are to be tackled and managed by companies wanting to implement relationships with their clients are segmentation, information networking, algorithms, IT systems, and sales and client support. | Lindgreen and Antioco (2005) |
| The strategic use of information, processes, technology, and people An approach that creates a competitive edge for an organization and that also has a positive impact on organizational performance | Parvatiyar and Sheth (2001), Kincaid (2003) Sin, Tse, and Yim (2005) |
| The process of building and maintaining profitable customer relationships by delivering superior customer value and satisfaction | Kotler and Armstrong (2004) |
| The strategy that provides the seamless integration of different activities for anticipating, understanding, and meeting customer needs | Anton and Hoeck (2002) |

Table 2. Trait of e-CRM

|  |  |
| --- | --- |
| **Interaction** | **Enhances CRM** |
| Online marketing | Technology-facilitated |
| Multi-channel communication | Uses electronic channels |
| Process automation | Uses electronic channels |
| Data derived from Internet | e-business context |
| Customize | Network feel-point |
| Sales | Internet |
| Marketing | Web |
| Service | Mobile |
| e-messaging | Wireless |
| Call me button | e-mail |
| Data mining | Interaction chat |

Therefore, e-CRM has been specified as a part of online distribution and marketing that spread out the traditional CRM techniques by mixing technologies of new electronic channels, such as wireless, and voice technologies, and combining them with e-business implementation into the CRM strategy of an enterprise. In addition, Dyche (2001) suggested that there are two main types of e-CRM: operational e-CRM and analytical e-CRM. Operational e-CRM such as, e-mail, telephone, direct sales, and fax but analytical e-CRM focuses on using technology to procedure and make feel of large quantity of customer data. Because of the significant role of operational e-CRM, Anon (2002) and Kennedy (2006) tried to spread out it to include other electronic technologies and channels, such as mobile telephones, customer establish communication centers, and voice reaction systems that allow companies to manage customer interaction with either no human contract at all or with reduced levels of human interaction. The present research is based on these previous studies. Many articles have calculated how services differ from products in terms of qualities (Sheng, 2002). In the service circumstances, interpersonal relationships are calculated a key element of what is presented (Berry, 1995; Czepiel, 1990). Research has shown that establishing relationships between customers and service contributor has a positive impact on customer-to-firm relationships (Guenzi & Pelloni, 2004). Therefore, service contributors have developed the maintenance of close relationships with customers (Wetzels, et al, 1998). For service industries, such as banking, relationship marketing is a significant way of creating more effective and effective relationships with demanding customers in order to earn more business receive benefit (Chadwick, McHardy, & Wiesenhofer, 2002; Shenwell & Yavas, 1998). Therefore, to increase profits, the banks will need to shift their business models from central of product to a customer-central ones (Singh, Chhatwal, Yahyabhoy, & Yeo, 2002). In addition, Lemon and Rust (2001) state that banks' customers anticipated personalization can understood by their banks and also mentioned that for the banking sector, e-CRM include enterprise-wide reprocessing and strategic position across multiple channels as well as consistency and cooperation across all channels throughout the firm. The advantages of an institution's implementation of an e-CRM approach to its service interaction marketing including quick service, two-way interaction service relationships, and the ability to supply service for customers from anywhere at any time (Lai, Hsiao, Yang, Huang, & Lee, 2009 ). However, few studies have researched CRM/e-CRM results from the customer's view. Pan (2005) calculated CRM from three outlooks: the technology view, business view, and customer view. To study the customer view, content analysis was functional to focus-group data; the clear concept was identified; and four main attribute of an effective CRM were described: (1) Delivery of the right product at the right time through the right channel, (2) Multiple value-adding customer interaction (3) Channels for customers to supply feedback that is valued by the organization and used to produce personalized and customizable product and services, and (4) Establishment of customer trust in CRM systems. Kiniloğlu and Zarali (2008) in their research referred to Kim, Suh, and Hwang (2003), who constructed the customer-central evaluation of CRM into (1) customer lifetime value and loyalty; (2) customer satisfaction, and gaining; (3) customer reaction; and (4) customer knowledge understanding. Once a business has carried out e-CRM that business expects its greatest earns from e-CRM carrying out to be in the areas of customer relationship quality and relationship result.

**Relationship Quality and Relationship Results**

Jarvelin and Lehtinen (1996) described relationship quality as a customer's feeling of how well his or her expectations, predictions, goals, and desires regarding the whole relationship are accomplished (Roloff and Miller, 1987; and Crosby, Evans, and Cowles, 1990). Hennig-Thurau and Klee (1997) suggest that relationship quality could be identified as the level of sufficient satisfaction of the needs of the customer associated with the relationship. Relationship quality includes several key elements that reflect the nature of relationships between firms and their customers (Hennig-Thurau, Gwinner, & Gremler, 2002). The major constructs of relationship quality, attracted from major studies on relationship quality, are identified in Table 3. Thus, the three constructs that have been the most frequently identified are trust, satisfaction, and obligation. Trust is examined and accepted idea in relationship marketing (Mohr & Spekman, 1994), and it has been shown to have an effect on the development of business relationships (Anderson & Weitz, 1992). Trust was discovered to have an influence on relationship stability and relationship quality (Wong & Sohal, 2002). Dorsch, Swanson, & Kelley, (1998) argued that customers are generally not equally satisfied with their entire qualified salesman. Storbacka, Strandvik, and Grönroos (1994) determined customer satisfaction as a customer's cognitive and affective evaluation based on his or her personal experiences across all service occurrences within the relationship. The concept of obligation plays a central role in the report on relationship marketing, and it is a major typical of relationship marketing models (Scanzoni, 1979). Obligation is necessary for the development of successful relationship exchanges (Gundlack et al, 1995), and it shows the highest level of relationship bonding (Dorsch et al., 1998). It also involves to maintaining a valued relationship in the future (Dorsch et al., 1998; Moorman, et al 1992). Furthermore, research suggests that exchange partners are more obligated to the relationship when they show stronger intentions to develop and maintain the relationship (Dorsch et al., 1998; Gundlack et al., 1995).

Table 3. Summarized ingredient of relationship quality

|  |
| --- |
| Trust |
| Obligation |
| Satisfaction |
| Communication |
| Conflict |
| Opportunism |
| Cooperation |
| Understanding |
| Customer power |
| Coordination |

**Relationship Results**

Thorsten Hennig-Thurau (2002), attempted to identify how managerially controlled variables influence significant relationship marketing results. This research tested the relationship of these variables to customer loyalty and word-of-mouth ideas and explained customer satisfaction and obligation as intervener. Hennig-Thurau and Klee (1997) suggested that besides affecting satisfaction and quality feeling, the customer's evaluation of his or her relationship with the company impacts customer retention and must be calculated. The most common ingredient of relationship results discovered in previous studies is customer loyalty, customer retention and readiness to endorse. Previous studies indicate that there is a large gap between e-CRM carrying out and results and that there must be something to link them. Customer-based services ascribe are specified in this research as CRM and e-CRM services activities; in other words, as CRM/e-CRM results in the service industry from the customer's view. By using information from previous studies, we construct the customer-based service activities and related e-CRM results (Table 4). To date, most CRM and e-CRM research have identified the objectives and receive benefit of e-CRM carrying out from a business view, with a focus on factors such as customer gaining (Max, 2004; Sheng, 2002), customer retention (Fjermestad & Romano, 2003), financial receive benefit (Max, 2004; Scullin & Fjermestad, 2004), customer loyalty (Fjermestad & Romano, 2003; Max, 2004) but relatively little research has been done on the results of CRM or e-CRM from the customer's view. Moreover, most of the research in this area was directed by using a qualitative approach. Generally, researchers of e-CRM, such as Hennig-Thurau et al. (2002); Lang and Colgate (2003); Kim, Lee, and Yoo (2006), have studied either how relationship quality or how relationship results are pleasurable to firms. A survey of the key report shows that only Hennig-Thurau et al. (2002) and Kim et al. (2006) studied relationship quality and relationship result in the same research. Both calculated relationship quality as a intervene construct on relationship result. Relationship quality and relationship result were calculated detached entities. Moreover, only a few studies in the area of customer relationships, such as those by Hennig-Thurau et al. (2002) and Lindgreen and Antioco (2005), were worried with service industries; most related research has focused on the manufacturing or retailing industries. On the basis of the report survey, it is discovered that there is (1) without research those resources results of e-CRM from the customer outlooks, (2) Without research that implement both qualitative and quantitative approaches to summarize results, (3) Without research that shows that relationship quality and relationship result cannot be analyzed in a detached manner, and (4) Without research that studies e-CRM in the service industries. This study tries to fill these gaps. The main circumstances of this study are the Iran commercial banking industry. According to a 4018 Bank of Iran and (BOI) report, there are 10 Iran commercial banks detached into three groups–large, medium, and small–according to asset criteria. This research is worried only with the large and medium banks. Most of the small banks were before financial securities companies, and their main business differs from that of large and medium commercial banks in several respects. For example, as compared to large and medium commercial banks, small banks may have different lending policies; they may supply only a limited selection of bank products; and they do not currently implement e-CRM.

Table 4. Customer-based service attributes' constructs

|  |  |
| --- | --- |
| **Reference** | **Constructs** |
| Kos, Sockel, and Falk (2001),Wilson, Elizabeth, and Malcolm (2002) | Interaction opportunities with the bank |
| Jutla, Craig, and Bodorik (2001), Kos et al. (2001), Pan and Lee (2003) | Supply of exact information |
| Jutla et al. (2001), Kos et al. (2001), Pan and Lee (2003) | Supply of related information |
| Jutla et al. (2001), Kos et al. (2001), Pan and Lee (2003) | Supply of responding information |
| Goodhue, Wixom, and Watson (2002), Kos et al. (2001) | Complete customer information |
| Nykamp (2001), Peppers and Rogers (1993) | Personalized information and service |
| Goodhue et al. (2002), Peppard (2000) | Supply of data consistency |
| Boonajsevee (2005) | Contact anytime & anywhere |

**Research Questions and Hypotheses**

This research focuses on the e-CRM receive benefit that customers can identify. Therefore the research focuses on the following questions:

RQ1: How can customers feel the receive benefit that they get from their banks' CRM/e-CRM carrying out?

RQ2: What distinction can customers feel between banks that have carried out e-CRM and those that have not?

RQ3: Does e-CRM have a positive or negative effect on the quality and result of customer–bank relationships?

According to the research three main hypotheses were developed.

H1. E-CRM carrying out has a significantly positive relationship with customer-based service ascribe.

H1a. E-CRM carrying out has a significantly positive relationship with information accepted by the customer.

H1b. E-CRM carrying out has a significantly positive relationship with customer comfort.

H1c. E-CRM carrying out has a significantly positive relationship with customer ideas channels.

H2. E-CRM carrying out has a significantly positive relationship with the quality and result of customer–bank relationships.

H2a. E-CRM carrying out has a significantly positive relationship with the quality of customer–bank relationships

H2b. E-CRM carrying out has a significantly positive relationship with customer trust.

H2c. E-CRM carrying out has a significantly positive relationship with customer satisfaction.

H2d. E-CRM carrying out has a significantly positive relationship with customer obligation.

H2e. E-CRM carrying out has a significantly positive relationship with customer loyalty.

H2f. E-CRM carrying out has a significantly positive relationship with customer readiness to endorse.

H3. E-CRM carrying out has an indirect effect on relationship quality and result through customer-based service ascribe.

**Methodology of Research**

In this research there are three approaches consisting of a report survey, interviews, and field surveys was functional to answer the research questions. As the e-CRM problems with an organization are not well known in the Iran banking industry, investigative qualitative work is a useful and necessary step toward earning a better understanding. The qualitative work of this study was directed in two stages. First, experts were interviewed to obtain itemized viewpoints and earn a better initial understanding of problems (Healy & Perry, 2000; Maxwell, 1996). Second the report was surveyed to explain e-CRM explanation, Iran commercial bank information, and e-CRM service activities and measurement. To collect the banks' e-CRM carrying out information, interviews were directed with 18 senior managers who had positions of responsibility in the CRM projects of large -and medium-sized Iran commercial banks, which were all, redisplay. A quantitative field survey of bank customers was directed in two phases.

First as an experimental survey and then as a full-scale survey. The experimental survey was directed in 2010 to test the questionnaire's reliability and explore the constructs of customer-based service ascribe. To answer the research questions and test hypotheses, a full survey was directed to collect data from bank customers in Iran from February to April 2011. Sample selection was based on the stratified sampling technique. Banks were detached into strata after interviews with executive of several banks on the basis of the different e-CRM features that they carried out. Random sampling was then used to select a sufficient number of subjects from each striatum balanced to the number of accounts in each stratum. The questionnaire includes of four parts: (1) defendant personal information, (2) financial service behavior, (3) customer-based service ascribe with regard to the defendant main bank, and (4) relationship quality and result. The customer-based service ascribe were calculated by using customers' subjective estimation of their main banks. A customer's reactions were based on his or her main bank only, and the explanation of ‘main bank’ was clearly display in the questionnaire. Nine items were included in the questionnaire to collect information on e-CRM results that customers were able to identify. The questionnaire used a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5) to reflect the main attribute of the results. To avoid reaction bias, in the measurement of dependent variables (relationship quality and result), a two-stage Likert scale was functional in the main part of the questionnaire (Albaum's, 1997). The first stage asked for the direction of feeling (positive, neutral, or negative) and the second asked for the strength of feeling in reaction to the factor (strongly, or not so), and this scale was converted to a 7-point Likert scale before the analysis procedure. The items in this part of the questionnaire resulted from the report survey and expert interviews. The number of items in each construct was as follows: relationship quality, 5 items; trust, 2 items; satisfaction, 5 items; obligation, 3 items; loyalty, 2 items; and readiness to endorse, 1 items. All the items were cross-validated by expert verification before they were added to the questionnaire, and the understanding of respondents was tested before the field survey was deployed, to increase the reliability of reactions.

Relationship Quality

 H2

Trust

 H1

Relationship Quality and results

Satisfaction

Customer-based Service attributes

E-CRM

Commitment

Loyalty

Readiness to recommend

Fig. 1. The research framework

**Data Analysis and Results**

The main idea and implementation of e-CRM collected from the report surveys and expert interviews are shown in Table 5.

Table 5. E-CRM concepts from the studies and interviews

|  |  |  |
| --- | --- | --- |
| Interview | studies |  |
| // | // | Sales |
| // | // | Service |
| // | // | CRM concept embedded |
| // | // | Marketing |
| // | // | Electronic channel |
| // | // | Network feel point |
| // | // | Internet/Web |
| // | // | Customize |
| // | // | Technology |
|  | // | Interaction |
|  | // | e-mail |
| // |  | ATM |
| // |  | Online-teller |
| // |  | Telesales |
| // | // | e-business context |
| // |  | e-banking context |
|  | // | Online purchase |
| // |  | chat |

Although there were some distinction between the report and the interviewed experts' outlook in regard to the feel points, the different sources agreed that the Internet/Web and mobile telephones should be included in the list of electronic feel-points. However, some channels described in the report, such as e-mail, online chat, and online purchasing, were not suitable to banking in Iran. Because the circumstances of this research was Iran banking, Iran bank senior managers concluded that the only related electronic channels that existed in Iran banks were automated teller machines (ATMs), interactive voice reaction (IVR) and online tellers (bank tellers connected to the CRM system). Based on the report survey and expert interviews, e-CRM in this research has been specified as the technological element of CRM that customers can identify and acknowledge through their relationships with their banks. This research covers both analytical and operational e-CRM. Normally, customers are not aware of the internal business procedures of their banks, so they use operational criteria, specifically the ideas channels that banks use to interact with their customers, to detached banks into groups. The ideas channels that are carried out, such as teller systems or telebanking, are indirect feel-points. The banks' e- CRM carrying out according to the interviews is shown in Table 6.

Table 6. Banks' e-CRM implementation

|  |  |  |
| --- | --- | --- |
| Medium banks | Large banks |  |
| M4 | M3 | M2 | M1 | L3 | L2 | L1 |  |
| / | / | / | / | / | / | / | Marketing automation |
| / | / | / | / | / | / | / | Sales automation |
| / | / | / | / | / | / | / | Service automation |
| X | / | X | / | X | / | X | Ideas channel  |

Furthermore, the interviews indicated that the Iran commercial banks change something in terms of customer strategies. Therefore, the research divided Iran commercial banks into two groups according to their carrying out of e-CRM ideas channels, which are the only points of customer interaction with e-CRM.

1) The e-CRM group includes banks that had ideas channels that capable customers to identify e-CRM: Banks L2 M1, and M3.

2) The CRM group includes banks that did not have ideas channels that permitted customers to identify e-CRM: Banks L1, L3, M2, and M4. Additionally, the report survey and interviews indicated that customer-based service ascribe could also supply a link between e-CRM carrying out and customer identification. Since customer-based service ascribe were newly developed, an investigative factor analysis (IFA) was directed by implementing a factor analysis using principal element removal and varimax revolution. The experimental survey was directed in 2010 to collect data for the IFA and verify the measurement. Questionnaires were handed to 240 customers of Iran commercial banks, and 222 valid questionnaires were collected directly from the defendants (92.5% reaction rate). IFA results showed that the Kaiser–Meyer–Olkin (KMO) quantify was 0.867, and the Bartlett's test was statistically significant, indicating that the data was appropriate for implementation of the factor analysis technique. Table 7 shows the 8 items of customer based service ascribe organized into three different factor groups according to factor scores, which were all statistically significant at the 0.01 level. Moreover, Cronbach's alpha of each construct was calculated to check the instrument's reliability, and these values are shown in Table 7.

Table 7. Factor loading and Cronbach's alpha of three factors

|  |  |  |  |
| --- | --- | --- | --- |
| **Cronbach's alpha** | **Factor loading** | **Variable** | **Factor** |
| 0.859 | 0.785 | Serv2. supply of exact information | Information |
|  | 0.704 | Serv3. supply of related information |  |
|  | 0.645 | Serv4. supply of responding information |  |
|  | 0.583 | Serv5. Complete customer information |  |
| 0.691 | 0.726 | Serv6. Personalized information and service | Comfort |
|  | 0.623 | Serv7. Provision of data consistency |  |
| 0.669 | 0.787 | Serv1. Interaction opportunities with the bank | Idea |
|  | 0.674 | Serv8. Contact anytime & anywhere |  |

The results from IFA identified three factors of customer-based service ascribe:

1) Information: composed of 4 items (Serv2, Serv3, Serv4, Serv5); the 4 items calculated 86.6% of the information construct.

2) Comfort: composed of 2 items (Serv6, Serv7); the 2 items calculated 69.6% of the comfort construct.

3) Ideas channels: composed of 2 items (Serv1and Serv8); the 2 items calculated 67.3% of the ideas channels construct.

 Relationship quality and relationship result

Implementing the incomplete correlation technique with demographic data (gender, education, occupation, and income) set as control variables, all relationship quality and relationship result constructs were statistically significantly correlated at the 0.01 level, as shown in Table 8.

 Table 8. Correlation result between the relationship quality and relationship result

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Loyalty** | **Commitment** | **Satisfaction** | **Trust** | **RQ** |  |
|  |  |  |  | 0.638\*\* | Trust |
|  |  |  | 0.697\*\* | 0.732\*\* | Satisfaction |
|  |  | 0.436 \*\* | 0.315\*\* | 0.386\*\* | Obligation |
|  | 0.507\*\* | 0.575\*\* | 0.421\*\* | 0.465\*\* | Loyalty |
| 0.537\*\* | 0.421\*\* | 0.659\*\* | 0.527\*\* | 0.556\*\* | Recommend |

 Note: \*\* correlation is significant at 0.01 levels

The results indicated that relationship quality and relationship result were indivisible in the analysis. Therefore, in this research relationship quality and relationship results were calculated together. Previous studies have indicated that the linkage between relationship quality and relationship result should not be totally cut off, and this result was verified by statistically measuring correlation. In this research, these variables were then integrated into a ‘relationship quality and result’ variable that included of six constructs: relationship quality, trust, satisfaction, obligation, loyalty, and readiness to endorse. These key constructs have frequently been functional in many previous studies. Questionnaires were handed out to 1500 bank's customers and directly collected from respondents during 2010. The final valid reaction rate was 88%; that 1363 completed questionnaires returned and 137 questionnaires were disqualified from the study, leaving 1184 cases for analysis. Of those reactions, 39.5% (520 cases) were from customers of e-CRM banks, and 60.5% (664cases) were from customers of banks without e-CRM; this divided was balanced to the number of banks in each group (Table 9).

Table 9. Respondents' demographic data

|  |  |  |  |
| --- | --- | --- | --- |
| **Percent** | **Frequency** | **Measure** | **Item** |
| 43.8 | 275 | Male | Gender |
| 56.2 | 387 | Female |
| 9.6 | 61 | Below undergraduate | Education |
| 61.9 | 429 | Undergraduate |
| 27.7 | 168 | Master's degree |
| 0.5 | 5 | Doctoral degree |
| 0.4 | 3 | Other |
| 15.8 | 112 | Student | Occupation |
| 17.3 | 133 | Government staff |
| 54.2 | 381 | Private company employee |
| 8.1 | 52 | Self-employed |
| 4.6 | 24 | Other |
| Electronic banking usage |
| **Percent** | **Frequency** | **Frequency of use** |
| 23.7 | 153 | Never |
| 6.8 | 47 | Daily |
| 30.8 | 236 | 2–3 times a week |
| 26.9 | 172 | 2–3 times a month |
| 11.8 | 76 | Once a month |
| Electronic channel usage |
| **Percent** | **Frequency** |  **Channel** |
| 17.5 | 122 | Used | Telephone |
| 82.5 | 561 | Never |  |
| 14.4 | 101 | Used | Mobile |
| 85.6 | 583 | Never |  |
| 39.3 | 253 | Used | Internet |
| 60.7 | 409 | Never |  |
| 89.8 | 588 | Used | ATM/CDM |
| 10.2 | 98 | Never |  |

The survey showed that 18.4% of the respondents never reach their main bank via electronic channels. The highest percentage (27.8%) used electronic banking 2–3 times a week. ATMs and CDMs were identified as the electronic feel-points that respondents were most familiar with. Before the way of managing a business the structural equation modeling (SEM), construct and scale validity were calculated using two measurements. 1) A relationship quality and result measurement model was used to verify that the factors remove from the report and adjusted by the experts belonged to the designed constructs and to confirm the construction of the factors. 2) A customer-based service ascribe measurement model was used to verify that the factors remove from the IFA belonged to the designed constructs and to confirm the construction of the factors. In order to approach the constructs' convergent validity, corroborative factor analysis (CFA) was functional using LISREL 8.72. First, measurement models were evaluated for goodness-of-fit to indicate how well the specified models reproduced the covariance matrix among the indicator items (Table 10).

Table 10. Goodness-of-fit indices for the measurement models

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **RMSEA** | **AGFI** | **GFI** | **NNFI** | **CFI** | **p-value** | **λ2/df** | **Value required** |
| <0.05 | >0.89 | >0.89 | >0.89 | >0.89 | >0.05 | <2.00 |  |
| 0.011 | 0.97 | 0.97 | 1.00 | 1.00 | 0.28 | 1.10 | Service attribute model |
| 0.013 | 0.95 | 0.96 | 1.00 | 1.00 | 0.10 | 1.10 | RQ and RO model |

 Note: CFI = Comparative Fit Index, NNFI = Non-normed Fit Index, GFI = Goodness of Fit Index, AGFI = Adjusted Goodness of Fit Index, RMSEA = Root Mean Square Error of Approximation.

Table 10 shows that both of the measurement models used in this research–the service attribute model and the relationship quality and result model–met all criteria of good fit. Explanation showed that the customer-based service ascribe can be calculated according to three factors: information, comfort, and ideas channels–which verified the IFA result from the experimental survey. The results also verified the measurement of relationship quality and result by six constructs based on the report and correlation results: overall relationship quality, trust, satisfaction, obligation, loyalty, and readiness to endorse. Both of the measurement models were valid, meaning that the measurement models supported the observed data. Second, to quantify the construct reliability of the dimensions, average variance extracted (AVE) was used. Anderson and Gerbing (1998) have endorsed the AVE procedure as a way of indicating convergent reliability by representing the ratio of the total variance that is due to the hidden variable. According to Hair, et al (2006), AVE greater than 0.50 shows that the validity of both the construct and the individual variables is high, meaning that more than one-half of the variances observed in the items were accounted for by their hypothesized factors. Moreover, hybrid reliability was issued to evaluate the reliability and convergent validity of each construct, with the explanation of the resulting effective similar to that of Cronbach's alpha. The result for both measurement models was 0.83, which was acceptable value. From results value in Table 11 indicated the measurement models calculated reliable. To test the specified hypotheses, SEM was used to investigate the significant paths among constructs.

Table 11. Composite reliability and average variance extracted (AVE) of proposed measurement models

| **AVE** | **Hybrid reliability** | **R2** | **SE** | **Factor loading** |  |
| --- | --- | --- | --- | --- | --- |
| 0.63 | 0.83 |  |  |  | Service attribute |
|  |  | 0.62 | 0.31 | 0.75 | Information (5 items) |
|  |  | 0.74 | 0.19 | 0.82 | comfort (3 items) |
|  |  | 0.54 | 0.39 | 0.70 | Communication (2 items |
| 0.45 | 0.83 |  | Relationship quality and result |
|  |  | 0.66 | 0.27 | 0.78 |  RQ (5 items) |
|  |  | 0.56 | 0.37 | 0.71 | Trust (2 items) |
|  |  | 0.76 | 0.17 | 0.84 | Satisfaction (5 items) |
|  |  | 0.20 | 0.72 | 0.43 | Obligation (3 items) |
|  |  | 0.29 | 0.64 | 0.52 | Loyalty (2 items) |
|  |  | 0.43 | 0.50 | 0.63 | Recommendation (2 items) |

The model was tested by LISREL 8.72, using a covariance matrix, and the maximum likelihood estimation (MLE) procedure. According to the same criteria as that used for the CFA model fit, all statistical fit indices of these structural models indicated a good fit (chi-square=29.01, df=24, p-value=0.229, CFI=1.00, NNFI=1.00, GFI=0.98, AGFI=0.97 and RMSEA=0.014), and the path coefficients were significant (t-scores were above 1.95; p≥0.05).

**Direct and Indirect Effect**

The results from path analysis showed that the direct path coefficients of e-CRM carrying out to customer-based service ascribe was positive and significant (0.07, t-value=2.21); thus, H1 was supported. In addition, as shown in Fig. 2, the path coefficients of e-CRM carrying out to relationship quality and result was positive and significant (0.12, t-value=3.50); thus, H2 was also supported. Moreover, the path effectives, shown in Table 12, indicated that there were statistically significant direct effects of e-CRM carrying out on all of the e-CRM service attribute and relationship quality and result constructs.

Relationship Quality

Obligation

Satisfaction

Loyalty

Trust

Relationship Quality and results

E-CRM

Customer-based Service attributes

 0.12

 Readiness to recommend

Fig. 2. Path coefficient from the path analysis results

Table 12. Path analysis for direct effect results

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Hypothesis** | **Path** | **R2** | **Coefficient** | **t-value** | **Conclusion** |
| H1 | e-CRM →service attribute |  | 0.08\* | 2.21 | Support |
| H1a | e-CRM →information | 0.61 | 0.08\* | 2.21 | Support |
| H1b | e-CRM →comfort | 0.73 | 0.09\* | 2.22 | Support |
| H1c | e-CRM →idea channels | 0.53 | 0.09\* | 2.22 | Support |
| H2 | e-CRM→RQ and result |  | 0.12\*\* | 3.50 | Support |
| H2a | e-CRM → relationship quality | 0.65 | 0.19\*\* | 3.49 | Support |
| H2b | e-CRM →trust | 0.55 | 0.24\*\* | 3.51 | Support |
| H2c | e-CRM →satisfaction | 0.78 | 0.25\*\* | 3.51 | Support |
| H2d | e-CRM →obligation | 0.22 | 0.11\*\* | 3.42 | Support |
| H2e | e-CRM →loyalty | 0.31 | 0.16\*\* | 3.45 | Support |
| H2f | e-CRM →readiness to recommend | 0.44 | 0.23\*\* | 3.48 | Support |

To test the intervene role of customer-based service ascribe on the relationship path between e-CRM carrying out and relationship quality and result, the indirect effect on customer-based service ascribe was analyzed. Not only was the direct effect of e-CRM carrying out on relationship quality and result significant, but also the indirect effect of e-CRM through customer-based service ascribe was significant, with a path effective of 0.06 and a t-value of 2.19.Therefore, H3 was supported. The conclusions of the indirect effect hypothesis testing and the indirect path effective are both shown in Table 13.

Table 13. Path analysis for indirect effect results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Conclusion** | **t-value** | **Coefficient** | **Path** | **Hypothesis** |
| Support | 2.19 | 0.06\* | e-CRM →service attribute →relationship quality and result (Indirect) | H3 |

Note: \*pb0.05

Moreover, this research functional SPSS 16 to compare service ascribe of the banks that carried out CRM to those of the e- CRM banks. The t-test results that show the mean difference comparisons are given in Table 14.

Table 14. Comparison of t-test findings for significant differences in service attributes between CRM and e-CRM banks

| **Sig** | **Mean** |  | **Construct** |
| --- | --- | --- | --- |
| .882 | 4.174.16 | CRM e-CRM | Serv1. Interaction opportunities with the bank |
| .403 | 3.983.94 | CRM e-CRM | Serv2. supply of exact information |
| .805 | 3.92 3.74 | CRM e-CRM | Serv3. supply of related information |
| .499 | 3.893.86 | CRMe-CRM | Serv4. supply of responsive information |
| .003\*\* | 3.703.89 | CRM e-CRM | Serv5. Complete customer information |
| .009\*\* | 3.503.68 | CRM e-CRM | Serv6. Personalized information and service |
| .608 | 3.693.73 | CRM e-CRM | Serv7. supply of consistency data |
| .465 | 3.793.72 | CRM e-CRM | Serv8. Contact anytime & anywhere |

As shown in Table 14, the mean comparisons between banks that carried out e-CRM and those that did not show six constructs that were significantly different at a significance level ≤0.05 (Serv5, Serv5 and Serv6). Therefore, this research study discovered that banks that implement e-CRM can make customers feel positive because e-CRM enables the banks to supply customers with personalized information; lets customers contact their banks from anywhere.

**Conclusions**

This research is investigating the results of e-CRM in the service industry from the customers' outlooks. And the results of the study can answer all three of the research questions, as follows.

RQ1: How can customers feel the receive benefit that they get from their banks' e-CRM carrying out? From the report survey and interviews with experts, 8 ingredient, referred to in this study as customer-based service ascribe, were discovered to reflect the customer's identification of his or her main bank's e-CRM. Factor analysis results showed that these 8 ingredients could be grouped according to 3 factors: information, comfort, and ideas channels.

RQ2: What distinction can customers feel between banks that have carried out e-CRM and those that have not? The results of t-tests of customer-based service ascribe that compared the reactions of customers of banks with and without e-CRM demonstrated that there are 4 elements that e-CRM banks' customers attribute to their main banks more than customers of banks without e-CRM do. These are (1) they can contact their main banks from anywhere, (2) their main banks supply them with personalized information and service (3) their main banks present complete customer information, (4) they can get up-to-date information from their main banks.

RQ3: Does e-CRM have a positive or negative effect on the quality and result of customer–bank relationships?

According to path analysis results, e-CRM carrying out has a positive relationship with all ingredients of relationship quality and result. Factors with the highest effects are customer satisfaction, trust, and readiness to endorse, in that order. A causal-effect analysis discovered that e-CRM had both a positive direct and a positive indirect effect on relationship quality and result This study helps in filling an area of empirical research on e-CRM measurement from the customers' side, which is absent, specifically in the service industry. It supply's a measurement model of e-CRM carrying out from the customer view. ‘Customer-based service ascribe’ was developed as a construct to quantify e-CRM results from the customers' points of view. The factor analysis results demonstrated that three factors of customer-based service ascribe (information, comfort, and ideas channels) are central to an evaluation of the customers' feeling of Iran commercial banks' e-CRM carrying out. In addition, this study show that the ingredient that frequently include relationship quality–trust, satisfaction, and obligation–are statistically significantly correlated with the ingredient of relationship results—customer loyalty, and readiness to endorse. Thus, this research integrated constructs of relationship quality and relationship results. CFA was directed to test both the measurement models developed in this study. The results validated the customer-based service attribute model, thereby verifying the results of the IFA, and the relationship quality and result model, thereby verifying the results of the qualitative approach and correlation results. Both measurement models are valid and reliable. Path analysis discovered that customer-based service ascribe play a necessary intervene role in the relationship between e-CRM carrying out and relationship quality and result. Relationship quality and result, which include relationship quality, customer satisfaction, trust, obligation, customer loyalty, and readiness to endorse, are the result of the customers' identification of their main banks' e-CRM carrying out through information, comfort, and ideas channels factors. This research ratifies Lemon and Rust's (2001) study that showed that personalization made banks truly understands their customers, which satisfied customers' expectations. In accord with the results from studies of the manufacturing industry, such as Lang and Colgate (2003) and Kim et al. (2006), the results of this study show that e-CRM carrying out helps banks satisfy the bank–customer relationship, as calculated through relationship quality and result. This research also described the intervene role of customer-based service ascribe. The causal-effect results show that in addition to the direct effect of e-CRM carrying out on relationship quality and result, customer-based service ascribe have a intervene effect on the relationship path between e-CRM carrying out and relationship quality and result. From interviews with experts, the study discovered that only a few Iran commercial banks are currently investing in electronic channels and, unlike in developed countries, most of the respondents had not connect their main banks via electronic channels. This study focused on customers' outlooks on the aspects of their main banks' e-CRM carrying out that they can acknowledge. The scope of the study is basically related by the circumstances of Iran commercial banks. Findings from this study show that currently, Iran commercial banks still have not stress e-CRM technology very much and most implementation of e-CRM are in analytical areas, meaning that they are related to the banks' internal procedures. Only three banks had carried out operational e-CRM that customers can identify and the feel-points that customers can identify are indirect feel-points, such as teller systems and telebanking. That is to say, there is still has much time for improvement of e-CRM in Iran commercial banks. When banks implement e-CRM, their customers identify that their main banks supply them with (1) more comfort, with personalized service, (2) accurate information, through various channels, and (3) more ideas channels that allow them to contact their main banks from anywhere. The most earn from e-CRM carrying out that customers can identify is increased comfort. This study verified the significant role of e-CRM carrying out in Iran commercial banks. The results show that e-CRM has statistically significant effects, both direct and indirect, on relationship quality and result. The statistical results show e-CRM carrying out to be a viable means of increasing the bank–customer relationship quality and result, which includes relationship quality, trust, satisfaction, obligation, loyalty, and readiness to endorse. These results indicate that if banks implement e-CRM, specifically operational e-CRM, their customers will recognize additional service ascribes and the customers' relationships with their banks will improve. The limitations of this study are developing e-CRM which will take at least three years (Foss & Slone, 2002), and some Iran banks have had limited investment in e-CRM implementation because they regard traditional CRM as sufficient. When data was collected from banks' customers by stratified random sampling, some sample bias existed due to the personal relationships that respondents had before established with their main banks' staff members. In this study, the researcher divided the banks into only two groups: those that carried out e-CRM and those that did not. Grouping and comparison would be clearer if we were able to quantify the banks' e-CRM carrying out by level. Therefore, the measurement of e-CRM carrying out levels of e-CRM features for the service industry is still needed. This research focuses only on the Iran banking industry.

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