Integration of Task Technology Fit Model and Unified Theory of Acceptance and Use of Technology to Explain e-CRM Adoption in Banking Industry

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ABSTRACT

Today, regarding to the customer-orientation approach, banking industry have implemented innovative information technology and developing the advanced e-business applications such as electronic customer relationship management (e-CRM) to make long-term relationship with customers. Despite the promising expectations of adopting and implementing such a concept, there is a significant number of e-CRM projects fail reports. The main objective of this study is to explore the factors affecting the acceptance and using of e-CRM systems in banking industry. The proposed research model was designed on the basis of unified theory of acceptance and use of technology (UTAUT) and task-technology fit (TTF) model. 350 self-administrated questionnaires were distributed among the employees in three Iranian major banks who were familiar and worked with e-CRM systems and received 233 useful responses. The results showed that in processing of e-CRM adoption, technology characteristics and task characteristics should consider as important factors as well as user characteristics.

INTRODUCTION

Despite the benefits of information technology (IT) and its ability to perform relationship marketing tasks in Iranian banking sector, still, there is a dearth of empirical evidence in the area of relationship marketing (RM) and customer relationship management (CRM) and its application “e-CRM”.

In literature, there are a number of failure rates in e-CRM system adoption and implementation [1]. On the other hand, there are quite large numbers of reports of failure rate of e-CRM systems in many organizations. Iranian banks, also, face with same situation very little empirical studies have been done about this phenomenon.

According to the literature the main failure causes are mainly employee resistance to change [2], insufficient e-CRM training [3], lack of management support [4], lack of appropriate IT infrastructure [5] and being department-centric rather than customer-centric [6].

Prior studies have not adequately addressed user acceptance behavior and attitude toward adoption of e-CRM systems. Indeed, successful e-CRM projects have focused more on application of technology rather than human issues. One of the challenges of e-CRM research is the need for an interdisciplinary view [7].

Despite the fact that employees are an integral part of the delivery of e-CRM activities, banking industry in Iran has often placed too much focus on the technology side instead of user-related issues. Little attention is given to the role of employees in the implementation of effective e-CRM activities. Hamidzadeh, Foroghi & Movaghar [8] claim that about 69% of Iranian government banks apply e-CRM systems but unfortunately about 78% of them are discontented with the results. Hesami [9] also in his four-year research about Iranian banks exposed that 82% of e-CRM systems in Iranian banks have failed. It could be explained that banking sector in Iran fails to realize that to adopt e-CRM system efficiently, the essential link among human resource, business strategy and also using IT is necessary. Therefore, the main purpose of this study is analyzing the key factors affecting the user acceptance of IT regarding the appropriateness of the application of unified theory of user acceptance and use of technology (UTAUT) and task-technology fit (TTF) model by determining the user’s behavioral intention toward employing the e-CRM system with considering the specific features of e-CRM and specific features of employees’ task in operational level of Iranian banks.

Literature Review:

Electronic customer relationship management (e-CRM):

Concept of e-CRM has its root in the relation marketing theory, which is considered one of the main areas of modern marketing development [10]. With developing of relationship marketing (RM) and birthing of customer relationship management (CRM) and bombing of Internet, e-CRM appeared. Fjernestad and Romano [11] defined e-CRM as a combination of hardware, software, processes, applications, and management commitment.

e-CRM systems can help organizations to provide tools to efficiently analyze and understand customer requirements, to increase customer retention rate, customer satisfaction, customer loyalty and maintain competitive advantage with increasing revenue and portability, increasing employee productivity and overall, cost reduction.

Unfortunately, many researchers claimed that e-CRM applications fail to deliver the expected benefits. A plethora of studies have indicated the failure rate of adoption of e-CRM technological initiatives to be as high as 70-90 percent and like many new technologies, e-CRM has been accompanied by stories of adoption implementation failure [12, 13, 14].

Richards and Jones [15] argued that the lack of strategy can be a serious cause of failure. Bradshaw and Love, noted that e-CRM applications must not only integrate functionally at the front office but also integrate with back office functions such as manufacturing and billing [16, 17]. Aurelie and Laid [18] state the view of e-CRM as a technology is really important and misunderstanding about e-CRM is the cause of numerous failures of e-CRM projects. Based on the prior studies the main problems of e-CRM are lack of technical support and reducing contact with customers. A common difficulty for organizations to adopt and implement e-CRM is a reduction in face-to-face contact with customers[19, 20, 21]. Rajola [22] claims the main problem of e-CRM implementation is disregarding it as an integration system of processes, techniques, and organization. Indeed, e-CRM requires the integration of activities and an integrated view across the whole organization [23]. In current study, also, authors consider “Integration” as one the significant factor in processing of adoption e-CRM in banking sector.

Integration:

Since the early 1990s, the “integration” of communication has become a central theme in corporate and marketing communication [24]. Initially promoted by executives of advertising agencies in the early 1980s, the concept has subsequently been increasingly endorsed by writers in marketing communication [25]. Also, he claims that integration of communication enhances organizational performance. Today, organizations require an integrated information system to provide relevant, real-time and accurate information to all employees in the organization [26]. The integration of information in the organization usually requires a centralized database, data warehouse or data marts to store all relevant information about the customer together with operational data within the organization [27]. e-CRM is an integrated system and usually requires integration of the marketing, sales and service functions of the organization. It works as a network within an organization and connect all levels of organization to each other. Indeed, e-CRM is a process of integrating businesses procedures and information technology, aiming to effectively obtain multiple dimensions of clients’ information and to continually use the accurate information of existing and potential customers to predict and respond to customer needs [28]. This feature of e-CRM helps employees to accept and work with technology easier [29]. This feature also helps employees to enhance their performance in marketing aspect of organization’s activities. Therefore, failure to achieve alignment is one of the reasons for e-CRM failure.

Unified theory of acceptance and use of technology (UTAUT):

The Unified Theory of Acceptance and Use of Technology (UTAUT) was proposed and validated in order to provide a unified theoretical basis from which to facilitate research on information system (IS) or information technology (IT) adoption [30]. This model has been successfully utilized by a large number of previous studies of technology or innovation adoption and diffusion within both the information systems field and other disciplines including marketing, social psychology, and management. The theory postulates that four core constructs - performance expectancy, effort expectancy, social influence, and facilitating conditions−are direct determinants of IS/IT behavioral intention and ultimately behavior . The theory also assumes that the effect of core constructs is moderated by gender, age, experience, and voluntariness of use [31]. In literature some researchers have fully used UTAUT and some have not employed the complete theory but have used a subset of the original constructs and moderating variables in order to justify their outcomes. In current research, authors also have not used the complete theory.
Among existing adoption model, UTAUT is able to cover more influencing aspect of new technology acceptance but it can only explain 70% variance of usage intention [32] and some interactive relations have not been considered. For example, the impact of effort expectancy on performance expectancy which is identified as a very important link in expectancy theory is ignored. On the other hand, some other significant factors such as features of technology and task characteristics were unnoticed in UTAUT model. So, in order to evaluate successful matching between task and information technology and also users’ character, authors suggest a rational research model that covers integral factors in explaining the e-CRM adoption decision by combination of UTAUT model and task-technology fit (TTF) model.

Task-Technology Fit Model (TTF):
This theory was offered by Goodhue and Thompson [33]. They proposed the idea that information technology should provide assistance to job performance, also, that technology has to be accepted and willing to be used by people on job-sites. Hence, the technology, the task and the individual all will affect final job performance. TTF model means that individuals will adopt a technology based on the fit between the technology characteristics and task requirements. It is possible that, although users perceive a technology as being advanced, they do not adopt it if they think this technology does not fit with their tasks and cannot improve their performance [34, 35].

Despite the strength of TTF model which have largely been discussed in the literature about IT adoption, TTF is failing to include one important aspect; the interaction between user and task. In this theory the impact of attributes of individual users beside the attributes of technology, attributes of task and attributes of organization in IT adoption process (in this study is e-CRM adoption) is ignored. So, this theory can supplement UTAUT theory. In this paper, segmentation is considered as the main feature of task-characteristic. In fact segmentation of information is the main duty for those employees who are working with e-CRM systems.

Segmentation:
The term of segmentation is defined as consumer heterogeneity in marketing. Consumer heterogeneity is a fundamental concept in marketing research, providing the basis for market segmentation [36]. Segmentation is an important marketing concept in a relationship marketing context [37]. The theory of Customer segmentation (CS) is a process that we divided the total customers into some analogous groups according to the diversity of characteristics which was advanced by America scholar Wendell Smith in the middle 1950's. Segmentation is an element that focused on a particular product or market. Segmentation is most important duty of an employee who is working with CRM and e-CRM systems. Indeed, It is a component of a CRM/e-CRM strategy which is dividing a market discrete customer groups that share similar characteristics. In literature there is a quite big number of studies on concept, definition and method of segmentation such as papers by Teichert [38]. However,
there is a scant research about segmentation as a task-character of an employee who intent to adopt e-CRM system and its impact on processing of e-CRM adoption.

**Research Model and Hypotheses:**

In this paper, authors employed the UTAUT theory and TTF model. Authors aim to make the empirical study on cause- and- effect relationship for task character, technology character, task-technology-fit, performance expectancy and effort expectancy, in relation to operational staff behavior with intention of adopting the e-CRM systems in Iranian banks. The research model is demonstrated as follows;

![Research Model](image)

**H1: Technology characteristic positively affects task-technology fit:**

Based on Goodhue and Thompson research, the organizational mission derives from the individual’s use of information technology”. That means a complex task will decrease the task technology fit. In other words, when tasks become more difficult, technologies will hardly meet task demands [41]. From the research proposed by Goodhue and Thompson, it can be stated that task character will directly or indirectly affect the character of specific system. Zhou [42] showed that task characteristics and technology performance determine the task technology fit of e-CRM systems. Indeed, for e-CRM systems the main purpose is to handle cross-data integration and segment most effective information to benefit the entire operation. Therefore, the following hypothesis is proposed:

**H2: Task characteristic positively affects task-technology fit:**

"The relationship between Effort and Performance is known as the E-P linkage” in different model. On the other hand, it seems that the term “expectancy” in UTAUT model has roots in “expectancy theory”. The expectancy component of expectancy theory is the belief that one's effort (E), will give the expected performance (P) goal". In UTAUT performance expectancy is defined as the degree to which an individual believes that using the system will help him / her to attain gains in job performance. According to Austin [43], in accepting a new technology, usefulness is more important than ease of use.

Chau [44] also claimed perceived ease of use (as a determinant of effort expectancy) has significant influence on perceived usefulness (as a determinant of performance expectancy). It means the significance of effort expectancy and performance expectancy is not equal. Abu-Shanab and Pearson [45] found that there is a significant relationship between perceived ease of use and perceived usefulness within the context of bank’s
employees in accepting new technology. But, Al-Qeisi [46] in his study under the term of the electronic banking adoption, stated that effort expectancy does not have any impact on performance expectancy in processing adoption new technology. Thus, the hypothesis three is formulated as follows:

**H3: Effort Expectancy positively affects performance expectancy:**
A good task technology fit will promote user adoption of e-CRM. In contrast, a poor task technology fit will decrease users’ adoption intention. Although e-CRM has many advantages, if users cannot work with that, they will select traditional system. Previous research also suggests the importance of task technology fit on user adoption. Zhou et al. (2010) found that task technology fit affects mobile banking usage. Wu and Wu [47] noted that the interaction between task and technology characteristics will affect users’ usage of e-CRM. Thus, the following hypothesis is proposed:

**H4: Task-technology fit positively affects behavioral intention:**
Venkatesh defined Performance Expectancy as “the degree to which an individual believes that using the system will help him or her to attain gains in job performance. Venkatesh, Thong, & Xu [48] found that performance expectancy has a significant impact on intention to use. Further, research by Schamber, Jackson, Yi & Park and Lee & Song [49, 50, 51] all found that performance expectancy has a significant positive influence on intention to use. Accordingly, it can be assumed that performance expectancy will have a significant positive impact on operational staff intention to use e-CRM system. Therefore, under the premises that e-CRM system can develop job performance and will improve system usage behavior, the authors offered their fifth hypothesis:

**H5: Performance expectancy positively affects behavioral intention:**

**Research Methodology:**

**Data Collection and Sample:**
350 self-administrated questionnaires were distributed among the employees in three Iranian major banks who were familiar and worked with e-CRM systems and received 233 useful responses, an effective response rate of around 66%.

**Measurement Development:**
In this study the questionnaire is used as a suitable tool for collecting data. The questionnaire was administered by conducting; the pre-testing and the pilot test. The questionnaire was divided into two main parts; demographic questions and items relevant to the constructs of the study. The research model includes six constructs; each of them was measured with multiple items. Most of the items were adapted from the existing literature to preserve the content validity. Measurement items were each based on a 5-Point Likert Scale, form strongly disagree (=1) to strongly agree (=5). After collecting data, a confirmatory factor analysis (CFA) conducted to purify the items.

**Pre-Testing:**
After designing the initial questionnaire, pre-testing was conducted in order to determine the strength and weaknesses of the survey concerning question format and wording. So, questionnaire of current study was sent to seven professors in the same area of this study. Based on their feedback some logical amendments were done and questions which were not representative of the questionnaire’s domains eliminated.

**Data Analysis:**
Descriptive statistics such as means, standard deviations, and frequency, percentage and reliability coefficients were computed. SPSS software is utilized to carry out some of the statistical tests and to measure the frequency distribution and correlation matrices. The reliability of the questionnaire and internal consistency of the data is estimated by calculating Cronbach Alpha for each scale and the results are acceptable (average 0/8). Then, in order to measure the relationships between the independent variables and dependent variables, SEM was used. Amos as the best-known SEM statistical programs was applied by authors in this paper.

**Results:**

**Participants Characteristics:**
Through the 233 returned questionnaire, 12 questionnaires had too many missing values or had the same answer to all questions, so, the valid responses were 221. Among them the percentage of males was around 69% that means male samples were the majority of total samples. Around 94% of participants were between 20 to 39 years old and all of them (100%) were university educated.
Descriptive Statistics:
For this study, descriptive statistics are used to summarize data and "describe" about the construct of the study. In the current study the mean of all constructs are located near the midpoint (3) and data are close to the mean. The values of kurtosis for all constructs are between 0/698 and 1/038 and the values of Skewness are between 0/699 and 1/102 respectively. As such, the data of the study can be considered as distributed.

The Measurement Model:
Measurement model specifies the pattern by each load on particular factors by conducting CFA in order to examine and test whether accuracy and fitness evaluation of the variance. Based on the measurement model, all the factor loadings of latent constructs are greater than 0/50 which are in acceptable range. That means all questions were reliable and none of them were dismissed. On the other hand, according to Hair [52], GFI, CFI, NFI, IFI and AGFI must be greater than 0/90, RMSEA must be less than 0/08, CMIN/df must be less than 3 and PMR must be less than 0/10. Therefore, based on the reliability results, the data indicates that the measures, in terms of their internal composite reliability as indexed by the composite reliability, ranged from 0/6326 to 0/7854, exceeding the recommended threshold value (0/50). Furthermore, the average variance extracted (AVE) for each measure ranged from 0/2799 to 0/5222. Consequently, validity of the research model completely supported by the scales.

The Structural Model:
After confirming the measurement model, structural model was checked and examined. That is because; the structural model specifies the causal relations among the theoretical constructs. According to the results of structural model examination, the fit indices of this model capture the minimum requirement. In SEM at least four model fit indices are required for model to be fit. In the analysis for the current study six model fit indices (CMN/DF, RMR, IFI, TLI, CFI, and RMSEA) are more than the minimum requirement that deem fit and are indicated.

Table 1: The Recommended and Actual Values of Ft Indices.

<table>
<thead>
<tr>
<th>Fit Index</th>
<th>df</th>
<th>RMSEA</th>
<th>NFI</th>
<th>GFI</th>
<th>CFI</th>
<th>AGFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended Value</td>
<td>&lt;3</td>
<td>&lt;0/08</td>
<td>&gt;0/90</td>
<td>&gt;0/90</td>
<td>&gt;0/90</td>
<td>&gt;0/80</td>
</tr>
<tr>
<td>Actual Value</td>
<td>2/23</td>
<td>0/061</td>
<td>0/951</td>
<td>0/898</td>
<td>0/933</td>
<td>0/811</td>
</tr>
</tbody>
</table>

Note. df is the ratio between Chi-square and degrees of freedom, GFI is Goodness of Fit Index, AGFI is the Adjusted Goodness of Fit Index, CFI is the Comparative Fit Index, NFI is the Normed Fit Index, RMSEA is the Root Mean Square Error of Approximation.

Table 2: Path coefficients and their significance

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Path</th>
<th>Path Coefficient by AMOS</th>
<th>Supported or Not</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>TSC → TTF</td>
<td>0.06 *</td>
<td>Yes</td>
</tr>
<tr>
<td>H2</td>
<td>TEC → TTF</td>
<td>0.08 *</td>
<td>Yes</td>
</tr>
<tr>
<td>H3</td>
<td>EE → PE</td>
<td>0.04 **</td>
<td>Yes</td>
</tr>
<tr>
<td>H4</td>
<td>TTF → INTEN</td>
<td>0.02 ***</td>
<td>Yes</td>
</tr>
<tr>
<td>H5</td>
<td>PE → INTEN</td>
<td>0.01 ***</td>
<td>Yes</td>
</tr>
</tbody>
</table>

* P < 0/10
** P < 0/05
*** P < 0/001

Fig. 4: Results of Structural Model.
Based on figure 4, effort expectancy had significant effect on performance expectancy, likewise, segmentation and integration had impact on task-technology fit and also performance expectancy and task-technology fit had significant effects on user intention. These results are consistent with those of previous research such as Park [53].

Discussion:
The influence of task characteristics (Segmentation) and technology characteristics (Integration) on task-technology fit:

The results show that all hypotheses of TTF are supported by the data. Both task characteristics and technology characteristics strongly affect the task technology fit, which further determines user adoption. This results support the finding of previous [54]. It can be concluded, when banks promote their e-CRM systems, they need to consider the fit between users’ task requirements and functions of e-CRM systems. e-CRM is an organized system within a bank, in order to provide on-time information for all sectors, so it must be designed as an integrated program. On the other hand, banks need to conduct market segregation and analyze the demand characteristics of different user groups. Then they can differentiate their products and services to users, and acquire a good task technology fit. Therefore, user adoption and usage behavior can be promoted.

The influence of effort expectancy on performance expectancy:

Despite neglecting the relationship between effort expectancy and performance expectancy in Unified Theory of Acceptance and Use of Technology (UTAUT) model, in this study the hypothesis testing supports the link between effort expectancy and performance expectancy. It proved that easy to use has a significant impact on performance expectancy. Overall, the results of current research confirmed the finding by Zhou et al. (2010), Chen and Chang (2011).

The influence of task-technology fit on behavioral intention:

This empirical study shows, task-technology fit positively affects behavioral intention. This means banks’ employees are willing to adopt and implement e-CRM system and when an employee feels the system is easy to use and performance can be improved. This result supports the idea of Goodhue and Thompson.

The influence of performance expectancy on behavioral intention:

The results of current study show that there is a significant and positive relationship between performance expectancy and intention to e-CRM adoption. This result is consistent with previous study has been done in different contexts by Esmaeilzadehet [54]. Indeed, among factors affecting user adoption, the effect of performance expectancy is relatively large. It can be discussed that one of the strongest predictors of intention that embedded in UTAUT model is perceived usefulness. As far as, e-CRM systems are perceived as a useful system in performing marketing functions, employees who are working in operational level are willing to use it. Over the years, banking sector in Iran developed various operational systems that provide functionality for staffs to carry out their marketing tasks in serving customers. This group of systems, known as operational e-CRM. Above all, an e-CRM system enables service sectors to provide appropriate services and products to satisfy the customers so as to retain customer royalty and enhance customer profitability.

Research implication and Suggestions for Future Studies:

This research integrates TTF and UTAUT to explain user adoption of e-CRM system in banking sector. Authors found that, in addition to technology perceptions such as performance expectancy, task technology fit also has a significant effect on user adoption. These results also presented that, compared with the individual UTAUT and TTF models; the combined model delivers more explanation on user adoption. In fact, integrating both perspectives can provide stronger insights. Thus, future research can combine both perspectives to observe and explain user adoption of other techno-relationship system in different sectors, in order to determine whether differentiations exist between technology acceptance and behavioral intention.

REFERENCES


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