A model for assessing the impact of cloud computing on the success of customer relationship management systems (case study: agricultural companies)

Marieh Khorraminia, Zahra Lesani, Mahdi Ghasvari, Lila Rajabion, Mehdi Darbandi and Alireza Hassani

Abstract

Purpose – *Nowadays, communications, products, services and costs are customized through the internet technology. The main theory to continue competitiveness in the organizations is customer relationship management (CRM). CRM enables organizations to efficiently interact with customers and gather, store and examine their data for providing a complete view of them. On the other hand, the subject of cloud computing has increasingly become the bridge for the success of the CRM implementation. Therefore, this study aims to investigate the impact of cloud computing (new cloud facility, knowledge of information technology (IT), cloud security and cost) on the success of CRM systems.*

Design/methodology/approach – *The model and the questioners-based data are analyzed using the Smart PLS 3.0. The data were gathered based on 80 employees of three main agricultural companies in Iran.*

Findings – *The obtained results have indicated that all of the considered factors, new cloud facilities, knowledge of IT, cloud security and cost, play an important role in CRM systems' success. Also, the evaluation and examination of the consistency and validity of the model are performed through the structural equation model.*

Research limitations/implications – *First, the authors have conducted a study in a single region. It cannot be guaranteed that the results can be generalized to other regions. Second, for this cross-sectional study, the research design was conducted that showed constant relationships between variables. The research done for this study is cross-sectional. Third, because of time and financial restrictions, the authors have gathered data using a sample from a single location.*

Originality/value – *Proposing a new model for investigating of the impact of cloud computing (new cloud facility, knowledge of Information Technology (IT), cloud security and cost) on the success of CRM systems is the main originality of this paper.*

Keywords *Agriculture, Relationship, Customer, Success, Management, Security, Cloud computing, Cost*

Paper type *Research paper*

1. Introduction

Cloud computing provides noteworthy financial benefits for organizations and enterprises and offers high-level collaborative opportunities (Navimipour *et al.*, 2015). However, it cannot be considered as new technology (Fouladi and Jafari Navimipour, 2017; Hajizadeh and Jafari Navimipour, 2017). It can reduce total cost and can increase the scalability of IT-based services (Milani and Navimipour, 2016). With the benefit of cloud computing, new IT services derived from the junction of business and technology viewpoints that allow users to access IT resources using mobile phones and tablet computers anytime and anywhere

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(Navimipour *et al.*, 2015). Many organizations use cloud computing for providing new Web-based services and reducing infrastructure costs (Chiregi and Navimipour, 2016a). Cloud computing provides a model based on the virtualization technology that allows users to use common and diverse storage resources based on an on-demand and cost-effective style (Levitin *et al.*, 2017). It enables customers to store the data on remote storages offered by a third party called a cloud service provider (CSP) (Sookhak *et al.*, 2016). The CSP, data owners (DO) and the user are all included in the cloud. The CSP is responsible for managing the services, and the data on the cloud server is stored by DO. To access data or services, the user sends a request from the cloud server (Hazratzadeh and Jafari Navimipour, 2016; Jafari Navimipour *et al.*, 2014). From the user's side, a computer, laptop or any e-device with Web browsing capability is required (Chiregi and Navimipour, 2016b). Today, many businesses offer cloud-based services, such as Google, Apple, Amazon, etc. (Namasudr *et al.*, 2017).

In the 1990s, the concept of customer relationship management (CRM) emerged and became a legitimate field for scientific research (Soltani and Navimipour, 2016; Soltani *et al.*, 2018). CRM is a method that attempts to make a new business environment that allows you to improve the customer relationship (Ahmad and Shahid, 2015b; Liu *et al.*, 2017; Soltani and Navimipour, 2016). The organizations are able to make interaction with customers, store, gather and investigate the customer data to provide a broad customers' view through CRM (Khodakarami and Chan, 2014). Using the internet and telecommunication allows customers and industrial consumers to get information about products from different companies (Bagal *et al.*, 2018; Ibrahim *et al.*, 2014; Khan *et al.*, 2012; Khodaei *et al.*, 2018). The information can affect the purchasing decisions of customers and consumers (Ibrahim, 2015; Rana and Paul, 2017). Moreover, many companies can analyze customer information to make well decisions in marketing policies based on IT services (Gerpott *et al.*, 2017; Navimipour and Soltani, 2016; Peltola and Hämmäinen, 2018). Today, companies have to step up their efforts to compete with rival companies. Companies try to provide new ways of relating to customers by expanding the customized services to meet the needs of their customers. Based on the market trend, CRM is a significant business approach in the current marketing environments which is used to build long-term and efficient relationships with customers (Chang *et al.*, 2014; Ebrahimian *et al.*, 2018; Jalili and Ghadimi, 2016).

On the other hand, the cloud in organizations affects everything and makes it easy to manage. Also, it affected many companies and organizations. To give the advantages of cloud computing in CRM, in this paper, we try to investigate the effect of cloud computing in the success of CRM systems in the agricultural sector. Briefly, the contribution of this paper is as follows:

- highlighting the advantages of using cloud computing in the success of CRM systems;
- providing and investigating the cloud computing applications and their benefits in the success of CRM systems;
- providing a model for defining the success factors of the CRM systems; and
- assessing the impact of cost, cloud security, knowledge of IT acceptance and new cloud facilities on the success of CRM systems.

The following sections will be described in the rest of this paper. A research design based on an integrated model is described in Section 2. In Section 3, we discuss the research methodology by describing the instruments, target population and measurement model. Section 4 presents the obtained results. Finally, the discussion, conclusions and limitations are provided in Sections 5 and 6, respectively.

2. Backgrounds and related work

A short summary of the application of cloud computing in management and a brief discussion on CRM is provided in this section.

2.1 Cloud computing in management

Navimipour *et al.* (2015) have proposed a new framework called Expert Cloud to share the knowledge and skills of human resources on cloud computing. The cloud users can apply for human skills through this model without knowing their position. Moreover, it enables cloud users to share the skill, knowledge and experiences of human resources. Internet infrastructures and cloud ideas are used to examine, design and implement the proposed architecture. Improving human resource utilization, decreasing customer response time and reducing the task completion time are the main achievements of this model. In this regard, customer satisfaction and better performance of human resource in the organizations are achieved.

Chiregi and Navimipour (2016b) have proposed a new trust assessment mechanism in cloud computing when there are enough services and expectations. Also, the proposed method assesses the reputation values and recognizes the trusted services in the cloud environments. Three parameters such as accessibility, dependability and ability are used to evaluate the reputation value. A method identifies the trusted services using three topological metrics, containing in-degree, reputation measures and out-degree.

Furthermore, Kouatli (2016) has aimed to find out the management of the best practices of cloud computing. There should be a trust relationship between the CSPs and their customers for managing such an environment. This trust value depends on the latest technical tools and on the management strategy. To realize this goal, a study on cloud services is also proposed, which results in three main sections, including security, data protection and ethics. The sample size was 441, in which the crucial relationships between security and ethics, as well as ethics and data protection, were created to motivate any business to join the cloud.

Arpaci (2017) has proposed the use of cloud in education to enhance knowledge management with prior analysis and cloud computing implications. In this way, this study provides cloud computing in a credible learning environment to support the knowledge management practices and provide education and training to participants. Pre- and post-tests were also administered on the first and last week of the 14-week intervention. Examining the relationship between the expectations for knowledge management practices and the practicality of cloud services is one of the responsibilities of this study. Further, the causal relationships among innovativeness, training and education are examined in this study. The research model is confirmed using a structural equation modeling based on data collected from 221 undergraduate students. The results have indicated that the perceived usefulness is associated with the expectations for knowledge creating, discovery and storing.

2.2 Customer relationship management

Navimipour and Soltani (2016) have investigated the effectiveness of e-CRM using some factors, including cost, technology acceptance and employees' satisfaction. The structural equation modeling technique is used to study the reliability and validity of the model. Moreover, this method evaluates the causal model. The obtained results have investigated the positive impact of the technology acceptance on the organizational infrastructure capabilities, ease of use and e-learning systems. Also, they have shown the collaboration between these factors positively influences the effectiveness of e-CRM.

The way of supporting customer knowledge creation processes, including combination, socialization, internalization and combination using CRM systems, has been explored by Khodakarami and Chan (2014). They have examined the CRM systems in three categories, including collaborative, operational and analytical CRM. The analytic systems strongly support the combination process based on the study of CRM requests in three organizations.

Furthermore, Trainor *et al.* (2014) have studied how social media technology and customer-centric management systems can contribute to a sustainable level of social CRM capability. The conceptualization and measurement of social CRM ability are the main goals of this study. Exploring the way that both customer-centric management systems and social media technologies affect social CRM ability is another goal of this study. It seems that these two resources have an interactive effect in forming a firm-level capability, which indicates that it is positively related to customer relationship performance. A structural equation modeling approach is also used to analyze data from 308 companies.

The influences of service quality, customer satisfaction and customer value on customer loyalty have been examined by explaining the role of CRM quality mediation (Nyadzayo and Khajehzadeh, 2016). The study examines the effect of brand image moderator on intermediary relationships. The results have shown that the mediator role of CRM quality is supported by the relationship between the service evaluation variables and customer loyalty.

Finally, Ghazian *et al.* (2016) have proposed varied channels for customers to have enough information to select a product competitive space and reduce their loyalty to the supplier. In this regard, the durability and stability of the company's competitiveness based on customer relationship are investigated. The method uses a descriptive survey. A structural equation modeling approach is utilized to analyze the validity of the study. The effect of internet service, purchase castle, brand development, brand preference, reaction to price support and intend to buy are all realized by analyzing these methods.

3. Conceptual model and research hypotheses

A new model is provided in this section to determine the role of the effective factors in the success of CRM systems. Figure 1 presents the suggested research model. The rest of this section investigates each factor, as illustrated in Figure 1.

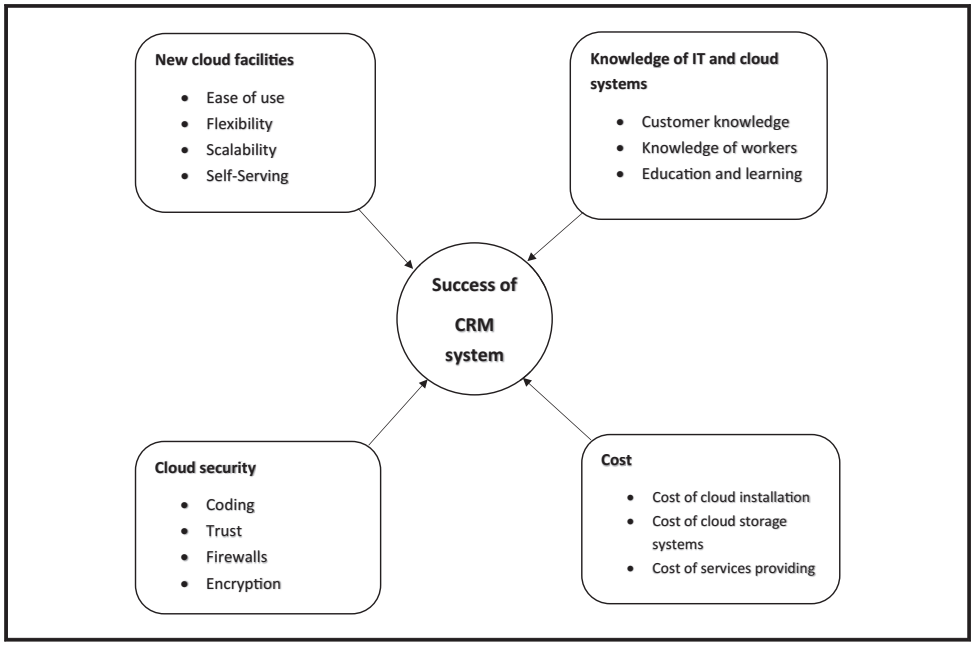
3.1 The new cloud facilities

Cloud computing provides a paradigm that allows users to utilize various customizable resources using low-cost and cost-effective methods. This section discusses the main facilities of cloud computing, including ease of use, flexibility, scalability and self-serving.

3.1.1 Ease of use. The human–computer interaction-based user experience is a key criterion in assessing whether an application is successful or not. The cloud service tries to deliver a good experience for a cloud user at ending up. The available services from the CSP should be effortlessly accessed by a cloud user. The ease of use property of cloud helps it to be widely accepted by people who are not familiar with computer professionally (Gong *et al.*, 2010).

3.1.2 Flexibility. In recent years, the IT industry has recognized cloud computing as one of the most influential paradigms. As this new computing technology requires users to entrust their valuable data to the cloud, security and privacy concerns have been increased on outsourcing data. Flexible and accurate access control is also required in the service-oriented cloud computing model (Wan *et al.*, 2012). The main advantage of cloud computing can be converted into the business flexibility that reduces IT investment to operational cost on demand (Laatikainen *et al.*, 2016).

Figure 1 Proposed research model



3.1.3 Scalability. Providing on-demand computing services with high reliability, availability and scalability is the main responsibility of cloud computing. To design effective cloud services, one of the important issues is scalability. It defines the cloud's ability to handle a growing amount of users with an acceptable level of efficiency (Navimipour *et al.*, 2014).

3.1.4 Self-serving. Self-service agile infrastructure platforms are used to operate small services using their own separate units. These platforms provide more operational capabilities over IaaS infrastructures, such as automated scaling of application instances, load balancing, dynamic routing and combination metrics. The cloud-native application (CNA) is a distributed, elastic and horizontal scalable system which includes many microservices. The application and each self-contained deployment unit of that application is designed based on cloud-focused design patterns and is run on a self-service elastic platform (Kratzke and Quint, 2017).

3.2 Knowledge of information technology and cloud systems

In today's world, professionals with little knowledge of information and communication technology (ICT) do their responsibilities harder than their counterparts at the same level, but with an intermediate knowledge of ICT (Ahmad and Shahid, 2015a). To guarantee the effective competitive situation, the desire to improve the ICT capabilities in many areas, especially in organizations, is continuous (Madadi *et al.*, 2011). Customer knowledge, knowledge of workers and education and learning are considered as three main indicators of this variable.

3.2.1 Customer knowledge. Customer knowledge is increasingly recognized as a strategic asset for companies and can predict new product trends (Chari *et al.*, 2016). The companies are looking for this key component, which is the main factor of competitiveness in the global economy. This knowledge enables the organization to increase resource exploitation and competency. Customer knowledge processing involves managing customer communications to maintain customers in the business process. To control customer behavior, CRM is used to collect information from customers. Today, the

customer is considered as the main source of knowledge. The researchers believe that increasing the knowledge of managers from their customers causes making a more effective decision. Therefore, this knowledge is an important resource in any organization, and it is a new competitive advantage for them (Mehdibeigi *et al.*, 2016).

3.2.2 Knowledge of workers. Changing the job market toward more information- and knowledge-based work has attracted and retrained the source of work knowledge as a source of competitive advantage. On the other hand, from a business perspective, the knowledge of the employees is more likely to establish high-growth ventures that lead to wealth creation and economic growth. They are concerned with the knowledge of users in the field of entrepreneurship (Seth and Lee, 2017). The recent estimates suggested that knowledge of workers, such as experts and engineers, establishes more than a quarter of advanced economies' workforce (Englmaier *et al.*, 2014).

3.2.3 Education and learning. The utilization of cloud in education is in the center of attention. The educational institutions use cloud computing as a platform for offering modern IT resources to students. This is particularly important in developing countries, and it can be accessed by a limited budget (Koch *et al.*, 2016). As the educational establishments need low cost without impacting their performance, cloud computing and its flexible operational models are considered as a real alternative for this purpose. Furthermore, cash-strapped educational establishments and new institutions that are still in operation will gain scalability benefits, and the cost structure of payments will be more attractive in the cloud-based models (Sabi *et al.*, 2016).

3.3 Cloud security

In the cloud environment, there is still no standardized approach to security planning. Perhaps, this presents the transition from distributed systems to a more logical architecture that is the characteristic of the cloud. However, there is very little discussion about the central role played by a specific system or policy issue in the design of cloud environments securely. The security strategy lies at the core of a cloud security plan, which should be aimed at reducing the risk at the budget level, as long as the management accepts the remaining countermeasures (Chang *et al.*, 2016).

3.3.1 Coding. The security assurance includes the policies that the cloud administrator has to prevent and monitor misuse, alteration or denial of the service. Coding, authorization, confirmation, encryption, decryption and corrective controls are important factors of cloud computing (Navimipour, 2015). Therefore, coding is one of the main issues that can exactly influence security concerns.

3.3.2 Trust. The trust in the cloud can be divided into four sub-categories:

1. how to describe and assess trust based on the single attribute of cloud environments;
2. how to handle malicious information;
3. how to consider and provide a diverse level of service security based on the amount of trust; and
4. how to manage the change in the trust values in the interaction time (Sun *et al.*, 2011).

Therefore, the trust value is another main parameter in cloud security.

3.3.3 Firewalls. IT managers in corporate and intermediate businesses have to balance both network performance and network security concerns. While the security necessities for companies are essential, the organizations should not have to sacrifice through the ability and efficiency of security. Today, earlier-generation firewalls create a serious security risk for organizations. Their technology has effectively become obsolete because they are not able to inspect data from network packets downloaded by today's internet criminals (Malecki, 2012). The recently available firewalls have some limitations in the execution of the

tasks and cannot be used to work on some major firewall networks (He *et al.*, 2014). However, modern firewalls have many benefits and can be used as one of the main parts of the security variable.

3.4 Cost

Rapid elasticity, minimal upfront investment, measured service, less maintenance cost and universal access to cloud services are the benefits of the cloud model for users and service providers. Also, the used virtualization technology in the cloud will lead to a high level of resource utilization and, thus, reduce the cost of service for service providers (Sookhak *et al.*, 2017). With the increasing complexity of the market, the customer can access the knowledge and ability to succeed in the global competition for better quality at a lower cost and better delivery (Gollou and Ghadimi, 2017; Navimipour and Soltani, 2016). The cost of cloud installation, cost of cloud storage systems and cost of providing services are included in this section.

3.4.1 Cost of cloud installation. Cost is one of the important factors for installing cloud services. Particularly, migrating the traditional IT services to the cloud has needed some cost. Therefore, an IT planner must consider this cost and also investigate the return on investment (ROI).

3.4.2 Cost of cloud storage systems. By increasing the acceptance and cost-effectiveness of cloud storage systems, many organizations migrate to the cloud or are planning to transfer data to the cloud. However, depending on specific cloud storage providers, there are a number of potentially thoughtful problems (Wu *et al.*, 2017). The cost of data storage management is an important factor in the company perspective, as migrating to the cloud is very important (Mansouri and Buyya, 2016).

3.4.3 Cost of services providing. The cost of IT infrastructures is reduced by cloud. The lack of a common standard enables the CSPs to create their computing platforms in a different way. One of the challenging task for users is to choose the cloud provider from the heterogeneous cloud environments in a cost-efficient way. A server can find the right service provider to satisfy user service requirements by considering many parameters such as cost and latency (Naha and Othman, 2016).

3.5 Research hypotheses

Based on the above discussion, the hypotheses of this research are:

- *H1.* The new cloud facility has positively influenced the success of the CRM system.
- *H2.* Knowledge of IT and cloud systems has positively influenced the success of the CRM system.
- *H3.* Cloud security has positively influenced the success of the CRM system.
- *H4.* Cost has positively influenced the success of the CRM system.

4. Results and discussion

In this section, the partial least squares (PLS) approach is used to analyze the questionnaire data (Nesioonpour *et al.*, 2014; Ren *et al.*, 2011). The PLS is a component-based approach that measures the credibility of a structure and examines the relationships between structures (Cheng and Yang, 2014). The PLS approach is frequently used as an alternative to the structural equation modeling (SEM). Compared to SEM, the PLS is able to process a small sample (minimum sample size = 20). Therefore, the PLS is adopted for data analysis. In this paper, Smart PLS 3.0 is also used to evaluate the measurement and structural models (Huang *et al.*, 2012).

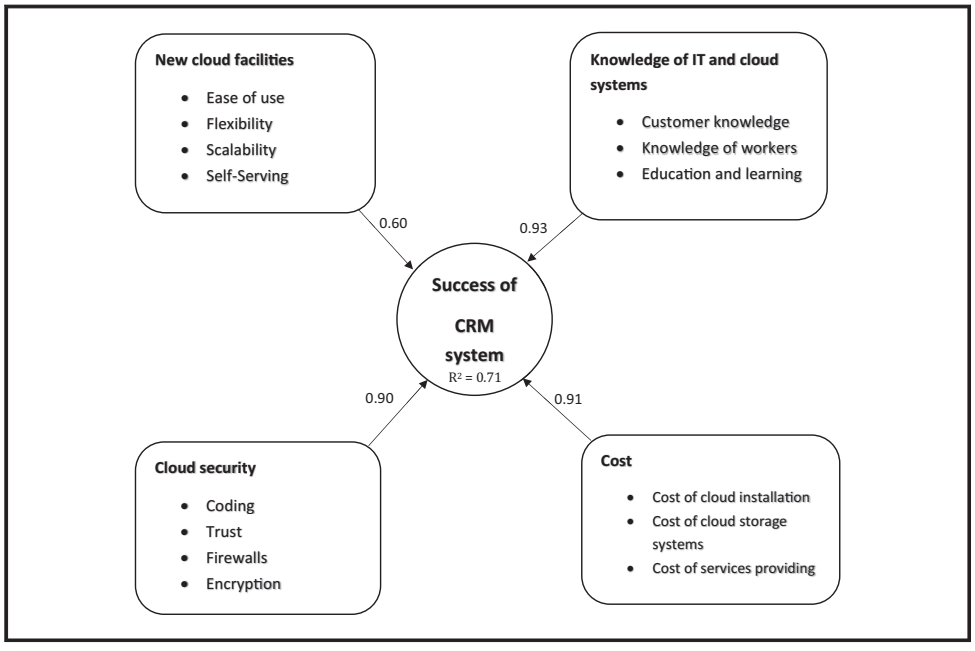
4.1 Structural model

The SEM analysis process is applied in two stages. The first stage involves performing reliability and analyzing the validation factor. The second stage involves examining all the assumptions of the study through SEM (Chen and Tseng, 2012). This study applies the maximum probability method to assess the measurement and the structural model to determine which path coefficient is significant and confirms the hypothesis. The following three indexes, including the *R*2 value and path coefficients index, the GOF index and the *T*-values, are used to evaluate the fit of the model.

4.1.1 R^2 value and path coefficients index. The structural model with path coefficients and R^2 value are used to verify the hypotheses. The R^2 is responsible for explaining variance in the dependent variables (Chin, 1998). The statistical significance of the hypotheses is evaluated using path coefficients (Chin *et al.*, 2003). Figure 2 shows the results of the structural model.

Based on the effect sizes of R^2 which is defined by Chin (1998), these effects can be classified as large (R^2 small: 0.19; medium: 0.33; large: 0.67). The transformation probability for the selected model ($R^2 = 0.71$) indicates that it is suitable for the selected independent variables. Four- path coefficients are also given in Figure 2. The standardized path coefficients represent the relative power of any previous effect. First, the path coefficient between new cloud facilities and the success of the CRM system is 0.60, which indicates that the new cloud facilities have a positive and significant impact on the success of the CRM system. Second, the path coefficient between knowledge of IT and the success of the CRM system is 0.93, which indicates that knowledge of IT has a positive and significant impact on the success of the CRM system. Third, the path coefficient between cloud security and the success of a CRM system is 0.90, which indicates that cloud security has a positive and significant impact on the success of the CRM system. Fourth, the path coefficient between cost and the success of the CRM system is 0.91, which indicates a positive and significant influence on the success of the CRM system. The results have shown that all four hypotheses are confirmed.

Figure 2 The structural model for the success of the CRM system



4.1.2 The goodness-of-fit index. Recently, a suitable global standard for the PLS path modeling has been suggested, GOF ($0 < \text{GOF} < 1$), defined as the geometric mean of the average communality and average R^2. If the GOF value is 0.1, it is small. If the GOF value is 0.25, it is medium, and if the GOF value is 0.36, it considered as large (Wetzels *et al.*, 2009). The GOF index is calculated by equation (1):

$$\text{GOF} = \sqrt{AVE \times R2} \tag{1}$$

where AVE is calculated by equation (2):

$$\mu_{\text{AVE}} = \frac{1}{n} \cdot \sum_{i=1}^{n} xi$$

$$\mu_{\text{AVE}} = \frac{\begin{array}{c} AVE\ new\ cloud\ facilities + AVE\ knowledge\ of\ IT + AVE\ cloud\ security \\ + AVE\ cost + AVE\ the\ success\ of\ \text{CRM}\ system \end{array}}{5} \tag{2}$$

$$\mu_{\text{AVE}} = \frac{0.63 + 0.58 + 0.59 + 0.66 + 0.54}{5}$$

$$\mu_{\text{AVE}} = 0.60$$

The results of the baseline model show that the R^2 of 0.71 is significant for employee satisfaction using an inner model path weighting scheme. The R^2 average value is calculated as:

$$\mu_{\text{R2}} = \frac{1}{n} \cdot \sum_{i=1}^{n} \text{xi} \qquad \mu_{\text{R}}^2 = 0.71 \tag{3}$$

Substituting equations (2) and (3) into equation (1), the GOF value obtained is:

$$\text{GOF} = \sqrt{0.60 * 0.71} = 0.65$$

We had a GOF value of 0.65, which is more than 0.36 for large effect sizes of R^2. The model is very affordable compared to the baseline values defined above. Therefore, the model structure is suitable for data.

4.1.3 T-test results. The PLS statistical software is used to analyze the questionnaire results. Paired *t*-test results in Figure 3 show that cloud computing improves the success of the CRM system. The statistically significant loadings are at the 99 per cent significance level. The results prove that cloud computing improves CRM system performance.

4.2 Discussion

As discussed, cloud computing is expected to be a key element of CRM success in the twenty-first century. In this regard, a research model and its application are evaluated to examine the success of the CRM system in exploiting cloud computing technology. For evaluation of this model, 80 employees of the three main agricultural companies in Iran have participated in this questionnaire. The aim of the questionnaire is to understand the factors affecting the success of CRM systems in using cloud computing. In details, the success of a CRM system is influenced by new cloud facilities, knowledge of IT, cloud security and cost. As shown in Table I, the obtained results of *t*-test and path coefficient have implied that new cloud facilities have a positive effect on the success of CRM systems (*T*-value = 5.63, path coefficient = 0.60). In addition, the effect of interdependence between the knowledge of IT and the success of a CRM system is significant and positive (*T*-value =

Figure 3 *T*-test results

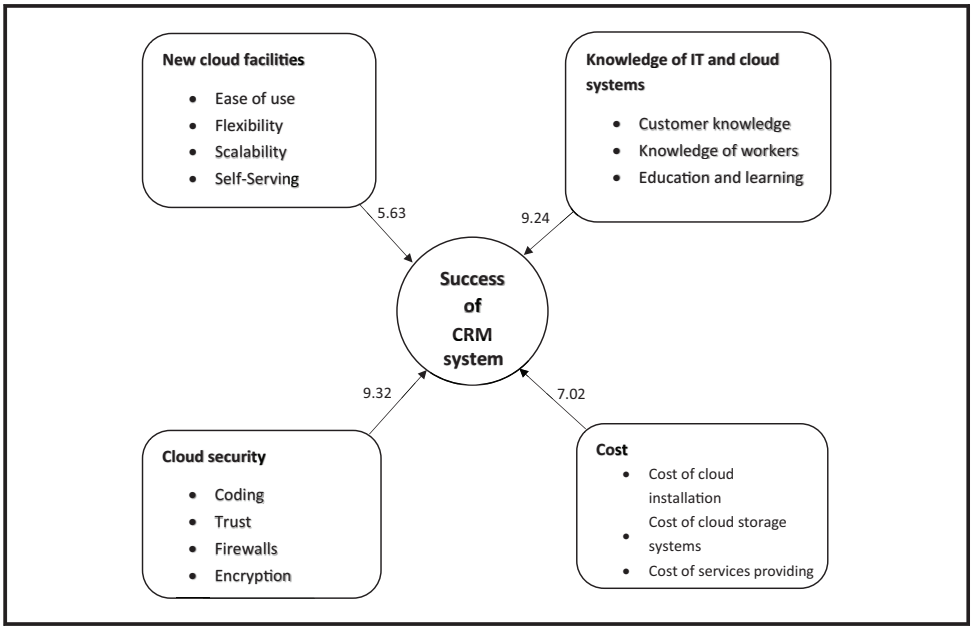


Table I Summarization of the results and hypothesis tests

Variables	*Path coefficient*	*T-value*	*Level of significance*	*Effect*
New cloud facilities	0.60	5.63	Significant	Strong
Knowledge of IT	0.93	9.24	Significant	Strong
Cloud security	0.90	9.33	Significant	Strong
Cost	0.91	7.02	Significant	Strong

9.24, path coefficient = 0.93). Furthermore, the impact of cloud security on the success of CRM systems is significant and positive (*T*-value = 9.33, path coefficient = 0.90). The impact of cost on the success of a CRM system is also significant (*T*-value = 7.02, path coefficient = 0.91).

5. Conclusion, limitations and directions for future research

The business opportunities have been created by the emergence of the internet and the widespread use of Web technology that provides many technology features for the success of CRM systems. The customer is the driver of the company's success. Many companies move toward Web-based customer services to reduce costs and provide real-time services for improving the customer's convenience and satisfaction. We have provided a model for assessing the factors that have a direct and indirect effect on the success of CRM systems. Data were collected from 80 employees of three main agricultural companies in Iran. The results have shown that technological innovation leads to the success of CRM systems, and new cloud facilities can also have a key role in improving an organization's performance. A clear interpretation of this study has shown that organizations must have knowledge of IT and cloud systems. Rapid changes in today's world of the organization have faced various challenges. However, there are also successful organizations that use the tools provided by management tools and new technologies to benefit their organization. To gain competitive

advantage and to continue, survive and deal with environmental changes, many organizations have used modern management tools, new techniques and principles. But over time, we see an increase in the importance of employee knowledge and learning in social media (Saberi and Ekhtiyari, 2019). The presence of personnel familiar with IT and the existence of IT training courses affects the adoption of cloud computing. The present research studies the role of cloud security in the success of CRM systems, and cloud security variables (coding, trust and firewalls) are key drivers of the success of CRM systems. Additionally, the success of CRM systems also depends on coding in the system. As a result, it can be concluded that coding is one of the technological factors that play an important role in the performance of CRM systems. Therefore, the study suggests that coding is one of the preconditions for increasing cloud security in CRM systems, and cloud security is imperative for an organization that uses a cloud computing model. Cloud computing is a very promising technology that reduces the costs of installing and maintaining cloud-based systems in organizations. Undoubtedly, in the existing competitive market, any business to expand its activities and ultimately increase its profits will need to attract new customers and maintain their current customers. Most organizations try to achieve this goal by implementing CRM systems. The cloud computing will greatly reduce the organizations' costs of hardware and software, and install and maintain the software applications, and also reduce the cost of installing and storing the organization information.

Our research has a great impact on both academics and practitioners, but it still has some limitations. First, we have conducted a study in a single region. It cannot be guaranteed that the results can be generalized to other regions. Second, for this cross-sectional study, the research design was conducted that showed constant relationships between variables. The research done for this study is cross-sectional. Third, because of time and financial restrictions, we have gathered data using a sample from a single location.

Future research by collecting a comprehensive sample may uncover other important elements that are critical to the success of CRM systems. Also, one of the main goals of the future studies is to investigate the relationships between the service quality, trust and loyalty and respect for customer privacy for success in CRM systems. Finally, searching for other databases, journals and libraries (Saberi, 2009, 2018) for finding other relevant factors in this domain is recommended for future studies.

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Appendix. Morgan table

Table AI Morgan table

N	*S*	*N*	*S*	*N*	*S*	*N*	*S*	*N*	*S*
10	10	100	80	280	162	800	260	2,800	338
15	14	110	86	290	165	850	265	3,000	341
20	19	120	92	300	169	900	269	3,500	246
25	24	130	97	320	175	950	274	4,000	351
30	28	140	103	340	181	1,000	278	4,500	351
35	32	150	108	360	186	1,100	285	5,000	357
40	36	160	113	380	191	1,200	291	6,000	361
45	40	170	118	400	196	1,300	297	7,000	364
50	44	180	123	420	201	1,400	302	8,000	367
55	48	190	127	440	205	1,500	306	9,000	368
60	52	200	132	460	210	1,600	310	10,000	373
65	56	210	136	480	214	1,700	313	15,000	375
70	59	220	140	500	217	1,800	317	20,000	377
75	63	230	144	550	225	1,900	320	30,000	379
80	66	240	148	600	234	2,000	322	40,000	380
85	70	250	152	650	242	2,200	327	50,000	381
90	73	260	155	700	248	2,400	331	75,000	382
95	76	270	159	750	256	2,600	335	100,000	384

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