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Effect of Electronic Customer Relationship Management on University Performance and Students Satisfaction: A Case Study on Islamic Azad University of Tehran Electronic Branch

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Abstract

Electronic Customer Relation Management (e-CRM) is a repaid growing technology which many organizations worldwide are using to improve their electronic service or are planning to implement it. The system proved to have positive effects on customer-oriented approach and consequently on the performance of organizations. In this regard, the present paper aims to provide a framework which examines the effects of e-CRM on the performance of universities and students satisfaction in electronic branch of Islamic Azad University. The data collection is performed using Likert-based questionnaires. The reliability of the questionnaire was also achieved through Cronbach's alpha. Using random sampling, 150 students were chosen as the study population. Students were all from Islamic Azad University of Tehran electronic branch. Structural equation modeling was used to examine the proposed model and analysis the hypotheses. The results of data analysis suggest that students' commitment and privacy protection had no influence on e-CRM system while factors such as trust, convenience and high-quality electronic system have a significant influence on e-CRM system. In addition, e-CRM system and students' information management had positive impacts on the performance of university and increased the students' satisfaction. While studying the mediating role of students' information management showed that e-CRM had a positive influence on students' satisfaction and university performance. Our research findings can help the universities to consider those important factors for improving the satisfaction of the students and accordingly the performance of university.

Keywords: Electronic Customer Relation Management, Satisfaction, Performance, University

1. Introduction

According to Ngai, Xiu, & Chau (2009), Customer Relation Management (CRM) is defined as "helping organizations to better discriminate and more effectively allocate resources to the most profitable group of customers through the cycle of customer identification, customer attraction, customer retention and customer development". Electronic CRM (e-CRM) is the internet related CRM which is defined by Hashemi & Hajiheydari (2011) as "as a web-centric approach to synchronizing customer relationship across communication channels, business functions and audiences. It enables online ordering, e-mail, a knowledge base that can be used to generate customer profiles, personalized service, the generation of automatic response to e-mail, and automatic help".

Nowadays, CRM is widely applied as an important business approach by many organizations (Ngai et al., 2009). The CRM framework is mainly classified into two main categories, operational and analytical (Berson, Smith, & Thearling, 2000; He, Xu, Huang, & Deng, 2004). The CRM mainly includes guidelines, methods, processes and strategies that enable the organization to integrate customer interactions, as well as record all of its information (Harrigan, Ramsey, & Ibbotson, 2011; Kim, Zhao, & Yang, 2008; Wu & Wu, 2005). In this context, technologies are being used to attract new and profitable customers, as well as maintaining and strengthening relationships with existing customers. In E-CRM, all forms of managing relationships with the customers are considered, when using information technologies and systems (Kotorov, 2002; Pan & Lee, 2003). In fact, in e-CRM, a range of

information technologies and systems are used to support the CRM strategy of companies (Chang, Park, & Chaiy, 2010; Feinberg & Kadam, 2002; Harrigan, Ramsey, & Ibbotson, 2009).

Student satisfaction is one of the most important factors for the long-term success of higher education institutions (Athiyaman, 1997; Clemes, Gan, & Kao, 2008; Douglas, Douglas, & Barnes, 2006). Universities should be encouraged to consider the important demands of their students and increase the quality of services to meet their expectations and satisfaction (McKenzie & Schweitzer, 2001). Satisfaction with the quality of educational services will greatly improve organizational performance (Aitken, 1982; Bean & Bradley, 1986). CRM has played an important role in increasing the performance of educational organizations (Hendricks, Singhal, & Stratman, 2007).

Understanding the satisfaction factors in relationship management systems for the e-customers is important. The relationship management systems must provide the platform for a better communication among the customers and organizations (Damabi, Firoozbakht, & Ahmadyan, 2018). In addition, before implementing this system, students' needs must be identified and the system is designed in accordance with the demand of students, which are the main customers of the university. This study is conducted to investigate the effect of e-CRM on the customers' satisfactions and organizations performance. Specifically, we identify the factors which influence on the successful implementation on e-CRM systems in universities. Accordingly, a model is developed which includes eleven hypotheses and the data is collected from the students of Azad University in Iran.

The rest of this study is as follows. In Section 2, we provide the related work. In Section 3, the methodology is presented. In Section 4, the data analysis in conducted. Finally, in Section 5, we conclude the study and present the limitations.

2. Related work

Several studies have been conducted on the CRM and e-CRM in the organizational context. In this section, some of these studies are introduced.

In a study by Wang, Po Lo, Chi, & Yang (2004), the author developed an integrated framework for customer value and CRM performance from the customers perspective in China. In addition, the investigated the influence of customer value on CRM performance in terms of relationship quality and customer behaviours. Reinartz, Krafft, & Hoyer (2004) empirically investigated the performance consequences of CRM processes implementation in the organizational context. The case of their study was different industries and three countries. They found that the implementation of CRM processes can significantly influence both perceptual and objective company performance. Ernst, Hoyer, Krafft, & Krieger (2011) investigated the mediating role of new product performance for CRM. They developed a model where multiple facets of CRM were linked to new product and company performance. They evaluated the model based on a cross-functional sample which included 115 R&D and 122 marketing managers. They found that there is a positive relationship between the CRM and new product performance. They also showed that the product performance mediates the relationship between CRM of the company and the company performance. Reimann, Schilke, & Thomas (2010) conducted a study on CRM and firm performance. They investigated the mediating role of business strategy. Their results from an in-depth field interviews and a large-scale, cross-industry survey, showed that CRM does not affect firm performance directly. The research conducted by Ryals & Knox (2001) investigated the Cross-functional issues in the implementation of relationship marketing through CRM. Mithas, Krishnan, & Fornell (2005) evaluated the effect of CRM on customer knowledge and customer satisfaction. The analysis of archival data for a cross-section of U.S. firms demonstrated that the use of CRM applications is led to improved customer knowledge and satisfaction. Coltman, Devinney, & Midgley (2011) conducted a study on CRM and firm performance. Their model included the following factors: Human knowledge capability, IT infrastructure capability, Business architecture capability, Superior CRM capability, Performance, CRM strategic emphasis, Control: number of customers and control: number of employees. The result of their study showed that there is a positive relationship between the CRM and firm performance. Verhoef (2003) investigated the effect of CRM efforts on customer retention and customer share development. Feinberg & Kadam (2002) developed a study to reveal the relationships between e-CRM and customer satisfaction by the determination of the presence of e-CRM features on retail web sites. They found that the amount of e-CRM on a web site positively influence the customer satisfaction with the web site.

3. Research model

This research is conducted to investigate the effect of e-CRM on the customers' satisfactions and organizations performance. Specifically, we identify the factors which influence on the successful implementation on e-CRM systems in universities. Accordingly, a model is developed which includes eleven hypotheses and the data is collected from the students of Azad University in Iran. The proposed model is presented in Fig. 1. As can be seen from the figure, the model includes Commitment, Trust, Privacy, Perceived Ease of Use and Quality of Service as main factor for assessing the e-CRM in the university. In addition, the effect of e-CRM on the students' satisfaction and university' performance is evaluated in the next stage. The eleven hypotheses are presented in Fig. 1 which are described in Table 1.

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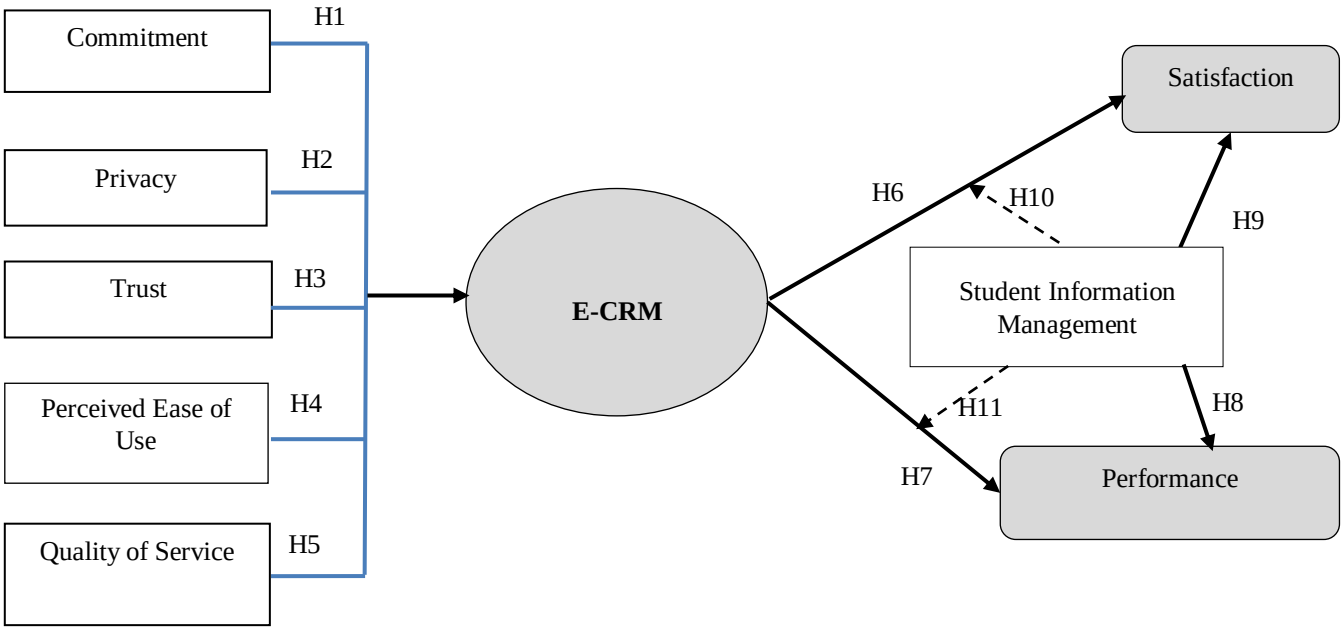

Fig. 1. Conceptual Framework

Table 1
The hypotheses in the proposed model.

Hypothesis Number	Hypothesis	Hypothesis Description
Hypothesis 1	Commitment → e-CRM	There is a positive relationship between the Commitment and e-CRM.
Hypothesis 2	Privacy → e-CRM	There is a positive relationship between the Privacy and e-CRM.
Hypothesis 3	Trust → e-CRM	There is a positive relationship between the Trust and e-CRM.
Hypothesis 4	Perceived Ease of Use → e-CRM	There is a positive relationship between the Perceived Ease of Use and e-CRM.
Hypothesis 5	Quality of Service → e-CRM	There is a positive relationship between the Quality of Service and e-CRM.
Hypothesis 6	Student Information Management → Satisfaction	There is a positive relationship between the Student Information Management and Satisfaction.
Hypothesis 7	Student Information Management → Performance	There is a positive relationship between the Student Information Management and Performance.
Hypothesis 8	e-CRM → Performance	There is a positive relationship between the e-CRM and Performance.
Hypothesis 9	e-CRM → Satisfaction	There is a positive relationship between the e-CRM and Satisfaction.
Hypothesis 10	e-CRM → Student Information Management →Satisfaction	The relationship between the e-CRM and Satisfaction is positively mediated by Student Information Management.
Hypothesis 11	e-CRM → Student Information Management →Performance	The relationship between the e-CRM and Performance is positively mediated by Student Information Management.

4. Research model

To evaluate the model, the data is collected from the students of Islamic Azad University of Tehran electronic branch. The data collection is performed using Likert-based questionnaires. The reliability of the questionnaire was also achieved through Cronbach's alpha. Using random sampling, 150 students were chosen as the study population. Structural Equation Modeling (SEM) was used to examine the proposed model and analysis the hypotheses. The demographic information of the respondents is presented in Table 2.

PLS-SEM is a component-based estimation approach (Hair Jr, Hult, Ringle, & Sarstedt, 2016). This approach is widely used by the researchers for model evaluation (Leong, Ibrahim, Dalvi-Esfahani, Shahbazi, & Nilashi, 2018; Yadegaridehkordi, Nilashi, Nasir, & Ibrahim, 2018; Yadegaridehkordi, Shuib, Nilashi, & Asadi, 2018). It is found to be the most suitable method to hypotheses of a model and examine the complex models with several latent variables (Yadegaridehkordi, Shuib, et al., 2018).

In this study, to evaluate the hypotheses of the model, we first assessed the data for its reliability. The results showed that all constructs of the model have acceptable level of Cronbach's alpha. Next, we performed Average Variance Extracted (AVE) for convergent validity assessment. According to (Hulland, 1999; Lin & Lu, 2011; Yadegaridehkordi, Shuib, et al., 2018), "all construct should fulfil an AVE of greater than 0.5 to be included within the structure and reflect the acceptable values for convergent validity". We also obtained the path coefficients and R-squared (R2) from bootstrapping in SmartPLS software. The ranges R-squared is from 0 to 1 with 1 which defines perfect predictive accuracy. The results of hypotheses analysis are presented in Table 3. From this table, it can be seen that the AVEs for the constructs are:

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Performance (0.660), Satisfaction (0.707), Commitment (0.665), Trust (0.763), Privacy (0.821), Perceived Ease of Use (0.683) and Quality of Service (0.721) and Student Information Management (0.537). In addition, from the hypotheses evaluation, three hypotheses (Commitment → e-CRM, Privacy → e-CRM, Student Information Management → Satisfaction) are rejected.

Table 2
Demographic information of respondents.

Item	Information	Frequency	%
Gender	Female	82	54.7
	Male	68	45.3
Age	20-25	2	1.3
	26-31	41	27.3
	32-37	58	38.7
	38-43	34	27.7
	>44	15	10
Job	Student	30	20
	Public sector employee	59	39.3
	Private sector employee	55	36.7
	Self-employment	4	2.7
	Other	2	1.3
Education	Humanities	64	42.7
	Science	7	4.7
	Engineering	79	52.7

Table 3
The results of hypotheses analysis

Hypothesis	Path coefficient	T-Value	Result
Commitment → e-CRM	0.025	0.414	Rejected
Privacy → e-CRM	0.043	0.694	Rejected
Trust → e-CRM	0.235	1.894	Supported
Perceived Ease of Use → e-CRM	0.257	2.455	Supported
Quality of Service → e-CRM	0.288	1.591	Supported
Student Information Management → Satisfaction	0.132	1.224	Rejected
Student Information Management → Performance	0.383	3.680	Supported
e-CRM → Performance	0.359	4.008	Supported
e-CRM → Satisfaction	0.612	7.704	Supported

To find out the strength of mediation, we used the variance accounted for (VAF) (Sarstedt, Ringle, Smith, Reams, & Hair Jr, 2014; Suki, Suki, & Azman, 2016) which indicates the strength of the indirect effect in relation to the total effect. The results for this test are presented in Table 4. The results showed that Student Information Management positively mediates both relations e-CRM → Satisfaction and e-CRM → Performance with t-value = 7.155 and t-value = 3.215, respectively.

Table 4
The results for strength of mediation

Hypothesis	Path coefficient	T-Value	Result
VAF=0.738			
e-CRM → Student Information Management →Satisfaction	0.373	7.155	Positive Relationship
VAF=0.363			
e-CRM → Student Information Management →Performance	0.218	3.215	Positive Relationship

In Fig. 2 and Fig. 3, we present the structural path model for the proposed model. Overall, the findings of our study are as follows:

In Hypothesis 1, we proposed that there is a positive relationship between Commitment and e-CRM. Our results show that there is no significant relationship between these two factors (β = 0.025, t-value = 0.414). Hence, Hypothesis 1 was rejected.

In Hypothesis 2, we proposed that there is a positive relationship between Privacy and e-CRM. Our results show that there is no significant relationship between these two factors (β = 0.043, t-value = 0.694). Hence, Hypothesis 2 was rejected.

In Hypothesis 3, we proposed that there is a positive relationship between Trust and e-CRM. Our results show that there is a significant relationship between these two factors (β = 0.235, t-value = 1.894). Hence, Hypothesis 3 was accepted.

In Hypothesis 4, we proposed that there is a positive relationship between Perceived Ease of Use and e-CRM. Our results show that there is a significant relationship between these two factors (β = 0.257, t-value = 2.455). Hence, Hypothesis 4 was accepted.

In Hypothesis 5, we proposed that there is a positive relationship between Quality of Service and e-CRM. Our results show that there is a significant relationship between these two factors (β = 0.288, t-value = 1.591). Hence, Hypothesis 5 was accepted.

In Hypothesis 6, we proposed that there is a positive relationship between Student Information Management and

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Satisfaction. Our results show that there is no significant relationship between these two factors (β = 0.132, t-value = 1.224). Hence, Hypothesis 6 was rejected.

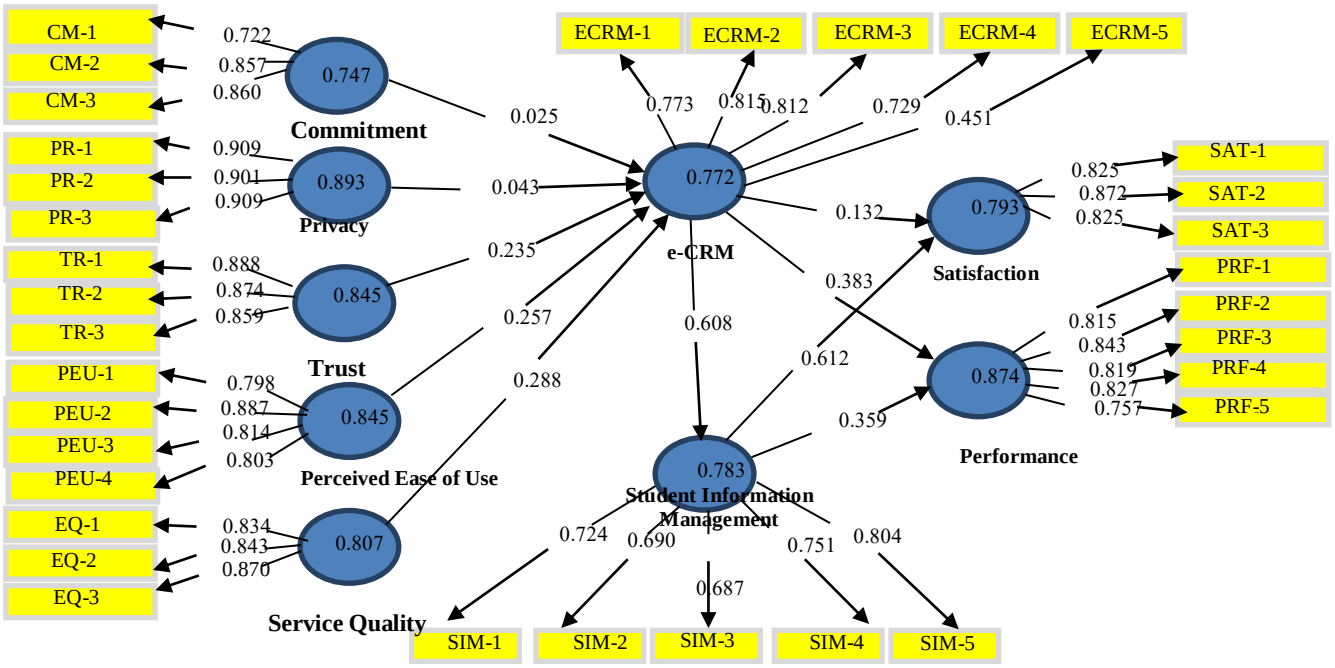

Fig. 2. Structural path model 1

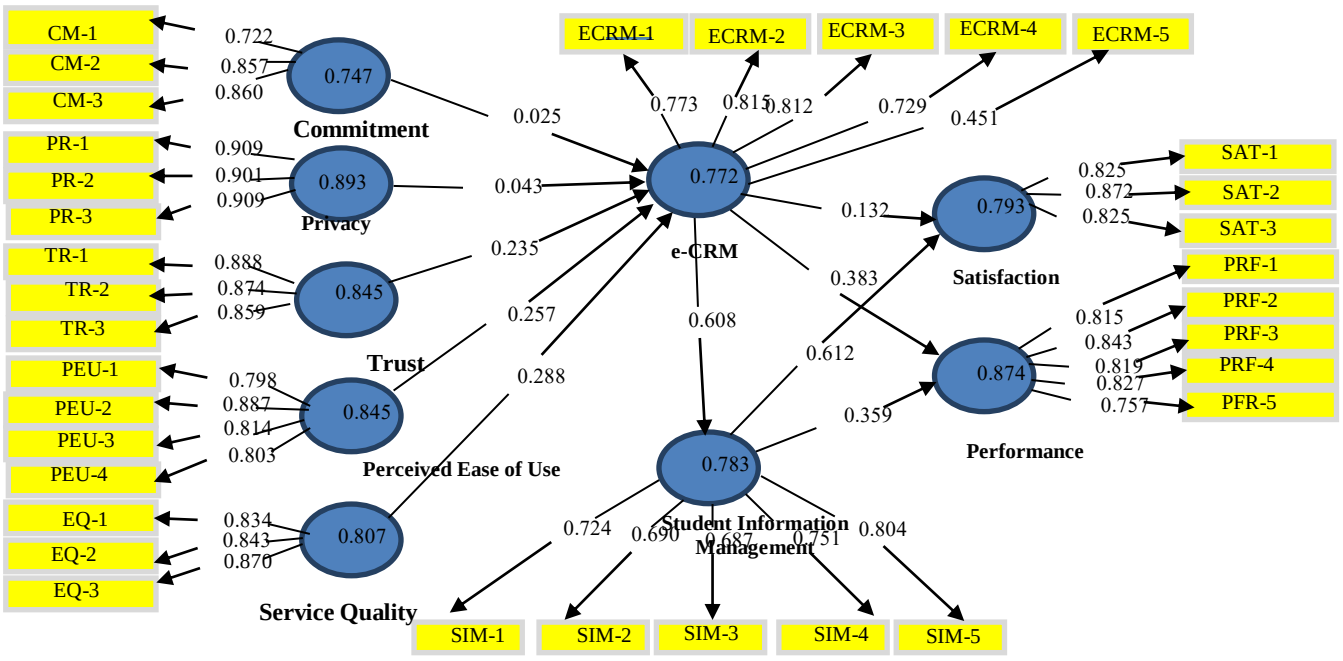

Fig. 3. Structural path model 2

In Hypothesis 7, we proposed that there is a positive relationship between Student Information Management and Performance. Our results show that there is a significant relationship between these two factors (β = 0.383, t-value = 3.680). Hence, Hypothesis 7 was accepted.

In Hypothesis 8, we proposed that there is a positive relationship between e-CRM and Performance. Our results show that there is a significant relationship between these two factors (β = 0.359, t-value = 4.008). Hence, Hypothesis 8 was accepted.

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In Hypothesis 9, we proposed that there is a positive relationship between e-CRM and Satisfaction. Our results show that there is a significant relationship between these two factors (β = 0.612, t-value = 7.704). Hence, Hypothesis 9 was accepted.

In Hypothesis 10, we proposed that the relationship between the e-CRM and Satisfaction is positively mediated by Student Information Management. Our results confirmed this relationship (β = 0.373, t-value = 7.155). Hence, Hypothesis 10 was accepted.

In Hypothesis 11, we proposed that the relationship between the e-CRM and Performance is positively mediated by Student Information Management. Our results confirmed this relationship (β = 0.218, t-value = 3.215). Hence, Hypothesis 11 was accepted.

5. Conclusion

This study proposed a new model to investigate the effect of e-CRM on the customers' satisfactions and organizations performance. The proposed model was designed based on the following factors: Commitment, Trust, Privacy, Perceived Ease of Use and Quality of Service, Satisfaction and University' Performance. We also investigated the mediating effect of Student Information Management on the Performance and Satisfaction. The data was collected from 150 students and employees in Islamic Azad University of Tehran electronic branch. The model was evaluated using PLS-SEM approach, designed in the SmartPLS software. The results of hypotheses evaluation showed that Student Information Management positively mediates both relations e-CRM → Satisfaction and e-CRM → Performance. In addition, the results revealed that e-CRM has positive effect on performance and satisfaction. Furthermore, the relationships Commitment → e-CRM, Privacy → e-CRM and Student Information Management → Satisfaction were not supported. We found that there is a positive relationship between the Perceived Ease of Use and e-CRM, and Quality of Service and e-CRM.

This study has only incorporated the Commitment, Trust, Privacy, Perceived Ease of Use and Quality of Service factors into the proposed model to assess the e-CRM in the university. The future studies may investigate other factors in the literature such as Human knowledge capability, IT infrastructure capability, Business architecture capability, Superior CRM capability and CRM strategic emphasis. In addition, this study has used PLS-SEM approach for the data analysis. Other techniques in the multi-criteria decision making such as Analytic Hierarchical Process (AHP) and the Analytic Network Process (ANP) are also recommended for data analysis in the future studies to evaluate the effect of e-CRM on the universities performance from experts' perspectives.

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