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## Article

# Key factors of educational CRM success and institution performance: A SEM analysis

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*Suggested Citation:* Octavia, Ade; Jovanka, Della Raymena; Alqahtani, Turki Mesfer; Wijaya, Tommy Tanu; Habibi, Akhmad (2023) : Key factors of educational CRM success and institution performance: A SEM analysis, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 10, Iss. 1, pp. 1-16,  
<https://doi.org/10.1080/23311975.2023.2196786>

This Version is available at:

<https://hdl.handle.net/10419/294370>

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**To cite this article:** Ade Octavia, Della Raymena Jovanka, Turki Mesfer Alqahtani, Tommy Tanu Wijaya & Akhmad Habibi (2023) Key factors of educational CRM success and institution performance: A SEM analysis, Cogent Business & Management, 10:1, 2196786, DOI: [10.1080/23311975.2023.2196786](https://doi.org/10.1080/23311975.2023.2196786)

**To link to this article:** <https://doi.org/10.1080/23311975.2023.2196786>



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Published online: 01 Apr 2023.



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Received: 10 October 2022  
Accepted: 20 March 2023

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Reviewing editor:  
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## MANAGEMENT | RESEARCH ARTICLE

# Key factors of educational CRM success and institution performance: A SEM analysis

Ade Octavia<sup>1</sup>, Della Raymena Jovanka<sup>2\*</sup>, Turki Mesfer Alqahtani<sup>3</sup>, Tommy Tanu Wijaya<sup>4</sup> and Akhmad Habibi<sup>5</sup>

**Abstract:** Customer relationship management (CRM) success is vital in today's growing business practice, including in higher education institutions (HEIs). Within this study context, educational customer relationship management (EdCRM) is utilized to manage the interaction between educational institutions and their future and current students. This study aimed at determining the predicting role of institutional capability (IC), student orientation (SO), digital technology (DT), and facilitating condition (FC) to EdCRM success. The study also assessed FC and EdCRM success as factors affecting institution performance (IP). The instrument of the current study was adapted from prior studies and piloted; the pilot data were validated through explanatory factor analysis (EFA). The main data were gathered from 537 respondents. Partial least squares structural equation modeling (PLS-SEM) procedures were used to examine the hypotheses. Findings indicated that the EdCRM success was significantly predicted by IC, SO, and DT. Meanwhile, FC was reported to insignificantly predict EdCRM success. FC and EdCRM success strongly predicted IP. Recommendations were proposed for the betterment of EdCRM success and IP in HEIs.

**Subjects:** Human Resource Development; Strategic Management; Management Education; Critical Management Studies

**Keywords:** educational customer relationship management; institution performance; path analysis; higher education institution

## 1. Introduction

Customer relationship management (CRM) was introduced in the 1990s within the domain of economy and business (Dibb, 2020; Winer, 2001). CRM is a collection of business techniques, tactics, and technologies used to manage and analyze customer data and interactions (Gil-Gomez et al., 2020; Migdadi, 2021). The purpose is to improve relationships with customers, which helps retain existing customers and promote revenue growth. CRM systems collect consumer data. The systems can enable staff who contact directly with consumers with precise information regarding customers' personal information, activity history, and preferences (Winer, 2001).

As an academic term, CRM has triggered researchers and economic communities to apply this model to map the needs for establishing business and research environments (AlQershi et al., 2020). Nowadays, CRM is inseparable from the existence and rapid development of the Internet,

which has made most people worldwide get online. The public is highly influenced by the Internet, in which a new change has been adopted. Companies, including higher education institutions (HEIs), might be able to track behavior and performances online through the Internet (Libai et al., 2020). It also could have the ability to customize prices, communicate with customers, improve service, and obtain new customers (Guerola-Navarro et al., 2020; Khashab et al., 2022; Tassabehji et al., 2007).

HEIs have reformed over time through educational privatization, e-learning, demography shifts, and rising educational costs that have challenged their traditional operating strategies (Rigo et al., 2016). HEIs face more significant coercions for enrollment, student retention, research grants, and corporate support (Page & Sharp, 2012). HEIs that successfully manage and maximize relationships with their constituents could benefit the competitive situation. They should be updated and know their alumnae's history to have a solid and lifelong bond; students and their institutions might have benefited from these strong and lifelong relationships (Rigo et al., 2016).

The educational customer relationship management (EdCRM) system assisted HEIs in focusing on the correct recruitment activities and organizing communications with potential and admitted students (Khodakarami & Chan, 2014; Ogunnaike et al., 2014). Prospects can be targeted with customized information, and interested students can be invited to activities pertinent to their interests. The EdCRM monitors the level of engagement among HEI's target audiences to see whether any changes to the message or content are required. Overall, EdCRM success would be a huge benefit and boost for students' recruitment and admissions procedures.

Many studies have reported the EdCRM success (H. G. Kim & Wang, 2019; Khodakarami & Chan, 2014; Ogunnaike et al., 2014); however, limited research was conducted in the context of developing countries. Therefore, the purpose of this study is to elaborate on how EdCRM success might be predicted by institutional capability (IC), student orientation (SO), digital technology (DT), and facilitating condition (FC) and how FC and EdCRM success predict institution performance (IP). By offering the customers (students, student parents, and other stakeholders) better and more appropriate services, HEIs can have vital information that provides solutions for the institution's advancement from this study. This research benefits CRM research and practice by determining factors affecting EdCRM success and IP within HEIs environment and deepening its exploration in the context of developing countries. Two research questions were proposed to guide the study;

- (1) Do IC, SO, DT, and FC significantly predict EdCRM?
- (2) Do FC and EdCRM significantly influence IP?

## 2. Literature review

### 2.1. Customer Relationship Management (CRM)

CRM is a customer-based method in business that aims to improve customer satisfaction (Guerola-Navarro et al., 2021) and loyalty (Dibb, 2020; Gil-Gomez et al., 2020; Wang, 2008); the method involves a responsive and customized service. CRM used to be a simple task when businesspersons had some local customers. The businesspersons could have record keeping in their heads or an uncomplicated ledger. They already knew their customers personally and what these customers wanted. Nowadays, CRM has become more complicated and complex with megastores, the Internet, suburbs development, and the mobility of customers (Ogunnaike et al., 2014; Sivaraks et al., 2011; Wikner, 2018). Customers with more choices make businesspersons and marketing staff more creative in giving their best service to their customers. Managing consumers' big data with old ways of CRM is impossible because it can be done with information systems that provide more data related to consumers (Bowden, 2011). It was very hard to obtain beneficial information from many sources. The organization should identify, obtain, and retain customers to develop loyalty. Appropriate CRM systems can achieve this assignment through the information

consolidation from all data interactions to a centralized repository that can be accessed by all people (H. G. Kim & Wang, 2019; Khodakarami & Chan, 2014).

### 2.2. CRM in higher education

In today's educational system, HEIs face many challenges in keeping the enrollment numbers of new students. The availability of technological support should support enrollment programs. Although a program successfully attracts students, retaining them is another challenge faced by HEIs. Retention activities should focus on flexible and comprehensive orientation programs, effective student advisory, and outdoor activities. HEIs worldwide recognize that an enterprise-wide information system focusing on students as educational customers could improve enrollment and retention. Most students in HEIs have good experiences with information systems (Galaige et al., 2018). The experiences trigger expectations on technology resource facilitation. Students might hope that technology could be an integral source of the educational process to anticipate fast information access. From this perspective, students as HEIs customers would see EdCRM as a provider for interactions from admissions, and registration, to the final examination. It is expected that through a single system of CRM, students are facilitated for effective and efficient services to maintain enrollment and retention (Khashab et al., 2020). HEIs have many stakeholders who should work together to satisfy their students as the main customers. University students have complex administrative activities before teaching and learning activities in the classroom, such as department selection, registration process, textbook purchase, etc. The success of EdCRM system can ease students in doing administrative tasks such as online registration and payment, attendance checks, and score reports. Finally, it also improves the quality of IP.

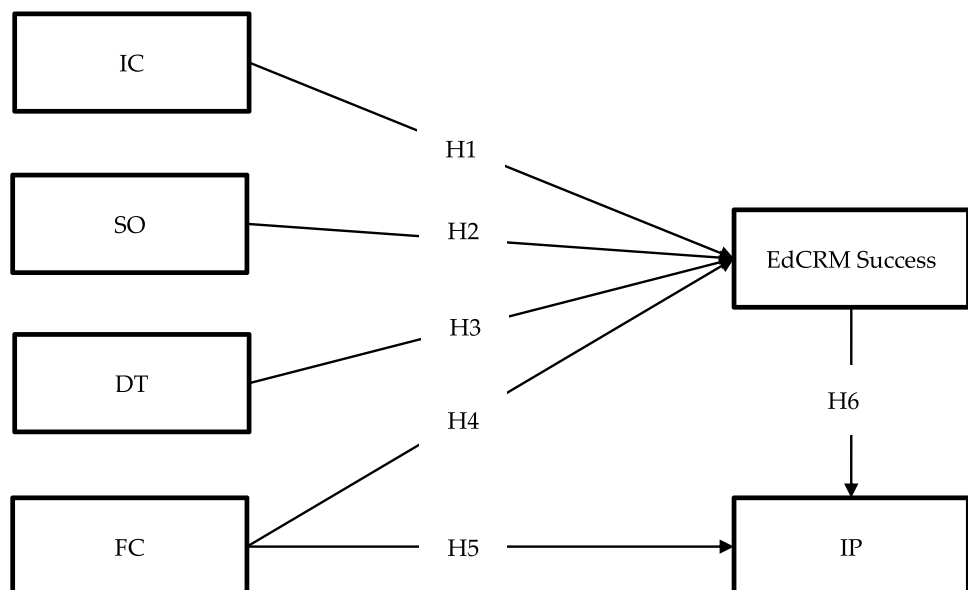
### 2.3. Research hypotheses and model

In this study, we used a new model to map significant factors affecting EdCRM success and IP. Four predictors, IC, SO, DT, and FC are hypothesized to affect EdCRM success. Meanwhile, FC and EdCRM success are hypothesized to significantly predict IP. Figure 1 presents the research model applied in this study with six hypotheses.

#### 2.3.1. Institutional capability (IC)

IC is defined as the capabilities of educational institutions, such as a set of complementary assets, routines, and skills, to provide good services for all stakeholders, especially students. Since IC cannot be explicitly codified, education institutions cannot redo other institutions' capabilities

Figure 1. Proposed model.



when they succeed with their strategies. Contextually, IC is not easy to be transferred from one organization to another. It should be based on procedural knowledge, defined by (Nelson, 1991) as non-formalized and partly tacit. In general, IC, in EdCRM terms, is the ability to make efficient production, keep up with the rapid changes of IS, establish efficient facilities, understand the process and activities, and improve productivity, enrolment, and retention (Deloitte, 2020; Kabrilyants et al., 2021). The capability of organizations has been reported to significantly predict CRM success (Sirbel, 2012; Soltani et al., 2018). One hypothesis is proposed regarding IC's influence on EdCRM success.

**H1:** IC is positively related to EdCRM success.

### 2.3.2. *Student orientation (SO)*

SO is defined as behavioral and cultural concepts referring to HEIs' extent of fulfilling demands of students for building relationships that are expected to last for a long time (Rodriguez et al., 2015). SO is important to manage HEIs-students' long-term relationships. It is an independent concept of competition to get more students in this study (Harris et al., 2005). SO is a set of beliefs prioritizing students' interests and other important stakeholders, namely teaching staff, student parents, and policymakers. However, SO attributes the priority to students' needs as the primary customers (Soltani et al., 2018). It is also described as a market orientation that is a strategic element of CRM. SO is so instrumental in CRM that it absorbs customer-oriented behavior for the employees of an organization, thus influencing their performance positively (B. Y. Kim, 2008; Fu & Deshpande, 2014). The orientation is proof of a considerable contribution to the success of CRM (King & Burgess, 2008; Lin et al., 2010). Therefore, SO is included in the study model,

**H2:** SO is positively related to EdCRM success.

### 2.3.3. *Digital technology (DT)*

DT is a broad term that is everything about computers and technology, which covers many things. People's lives, including those in higher education, are transformed by DT (Nambisan, 2017; Page & Sharp, 2012). Nowadays, technology has produced an incredible improvement in information and communications needed by all organizations, including educational institutions (Bennett et al., 2008; Saleem et al., 2017; Tassabehji et al., 2007; Wu et al., 2017). In general, DT has led companies to compete in the use of technology for every activity and business sector (Page & Sharp, 2012). Through the link between HEIs stakeholders, innovation, and future students and through providing reforms to educational activities, DT helps to redesign educational institution management for students' enrollment and retention. Applications of EdCRM link DT within its ability to address good services and educational products to students as the main customers. Many researchers have discussed DT's role in CRM success or nonsuccess. DT participation has been reported to positively influence CRM (Ko et al., 2008; Saini et al., 2008; Soltani et al., 2018). CRM successful stories rely on how DT has been mastered and used, which involves the customer in the implementation. One hypothesis is proposed to understand the predicting power of DT toward EdCRM success,

**H3:** DT is positively related to the success of EdCRM success.

### 2.3.4. *Facilitating condition (FC)*

In the Unified Theory of Acceptance and Use of Technology, FC refers to the degree to which a person believes that supporting infrastructures exist to support the application of a system (Al-Azawei & Alowayr, 2020). In this study, FC was used as a degree to which students agree that the institution would support the success of EdCRM (Peñarroja et al., 2019). Facilitating condition is

defined as the availability of infrastructures, technical encouragement, professional improvement, and other opportunities and policies in promoting good services to support EdCRM (Tarhini et al., 2017). If benefiting resources and the environment are available for the use of EdCRM, the success of EdCRM will be improved. Similarly, the IP would also be enhanced. (Pai & Tu, 2011) and (Chiu & Wang, 2008) reported when the users consider appropriate usage capacity and assistance in a system in HEIs; students will show more positive acceptance towards the tools and their use. As a result, we believe that FC will significantly affect EdCRM success and IP in Indonesian education institutions. Therefore, the following hypotheses are proposed:

**H4:** FC has a significant influence on EdCRM success.

**H5:** FC significantly affects IP.

#### 2.3.5. *Educational customer relationship management (EdCRM) success*

Generalizing the success or nonsuccess of CRM across companies is complicated. For example, if an organization's goal is to satisfy the customers, the capability to retain customers is the key to CRM success. However, when profit in a certain part of a company is the goal, then the management to generate the profit is the highlight of the CRM success (Payne & Frow, 2005; Soltani et al., 2018). Since various organizations can benefit from similar CRM technology to achieve different goals, the CRM initiatives depend on the organization. They should describe CRM based on the tasks they perform and the implementation way. The CRM system can fail in deciding how CRM guides success (Alshawi et al., 2011; Soltani et al., 2018). Therefore, when companies, including HEIs initiate CRM with their effective and efficient orientation, the success of CRM can be reported. In this study context, CRM success perspectives are established through the students' EdCRM. The definition guides propositional advancement that links CRM success to the strategic orientation of IP. Therefore, one hypothesis is proposed,

**H6:** EdCRM is a significant key determinant of IP.

#### 2.3.6. *Institution performance (IP)*

The EdCRM in this study aims at obtaining the best benefits for education institutions. The attempts include enhancing the satisfaction of the students, providing different services and educational activities, fulfilling students' needs, and managing student retention as well as recruiting new students. EdCRM success implementation could improve students' loyalty and satisfaction. In return, the IP of education institutions improves regarding student enrolment and retention (Galaige et al., 2018).

### 3. Method

To achieve the purposes of the study, we used a survey design. A scale for the design was adapted, validated, and piloted. Through Explanatory Factor Analysis (EFA), we reported the validity of the study instrumentation; besides, a reliability test was also conducted through Cronbach's alpha. Finally, the main data were examined through PLS-SEM's measurement and structural model (Habibi, Riady, et al., 2022).

#### 3.1. *Instrumentation*

Survey instruments were adapted to measure the model's establishment. We adapted the instruments from prior studies (B. Y. Kim, 2008; Fu & Deshpande, 2014; Soltani et al., 2018). To fit the contexts and setting of the study, we validated the instruments through content validity by discussing the items of the instruments with practitioners and academics who have experience in CRM and higher education. Initially, 27 items were included; some revisions of the items were made based on the discussion. We also discussed the clarity and simplicity of the items with five

HEIs students who have similar characteristics to the main samples of the study; the process is part of face validity. A five-point Likert-type scale was administered, ranging from 1 (complete disagreement) to 5 (complete agreement). To purify the scale, we piloted the instrument to 103 students to test the reliability of the instrument. The reliability test was conducted through the measurement of Cronbach's alpha. All constructs achieved satisfactory results of alpha  $>.700$  (Roberts and Bilderback, 1980).

### 3.2. Data collection

The population is all Indonesian students, while the target population is Indonesian students in three universities (A, B, and C). Through G\* power, the sample was determined. G\* Power was a statistical examination program used by social researchers, facilitating both distribution and design-based input types. With six pathlines addressed within this study, the sample should be more than 150 respondents. However, we obtained 537 respondents as the sample of the study (Table 1). From the responses, 186 respondents are males, and 351 are females. Almost 50 % of the samples studied at university A, more than 23 % of the sample were students from university B, and 147 (23.37%) were from university C.

### 3.3. Data analysis

We used statistical software called SmartPLS 3.3 for the data analysis. Partial Least Squares (PLS) procedures are used to test the model since the study's predictive model is complex (Habibi et al., 2020b; J. F. Hair et al., 2019). PLS enables researchers to examine the measurement and structural models with multi-item latent constructs. Examination of the measurement model was conducted for the psychometric properties of the scales. The structural model was done in the second stage. PLS avoids many restrictive assumptions included in covariance-based SEM, such as big sample sizes and multivariate normality (Habibi et al., 2020b; Mukminin et al., 2020). Furthermore, PLS enables both reflective and formative constructs to be tested in the model (Habibi et al., 2020b; J. F. Hair et al., 2019). In this study, formative constructs are carried out.

## 4. Findings

### 4.1. Measurement and structural model

As a preliminary procedure, the normality of the data was examined by computing the standard deviation (SD), kurtosis, and skewness of the current study (J. Hair et al., 2010). SD results (0.6450 to 0.7800) are evidence of the data's even dispersion. Values of kurtosis and skewness show normal distribution; the values range from  $-0.4760$  to  $1.5050$  for kurtosis and  $-0.7190$  to  $0.4320$  and skewness, respectively (J. Hair et al., 2010).

**Table 1. Respondents**

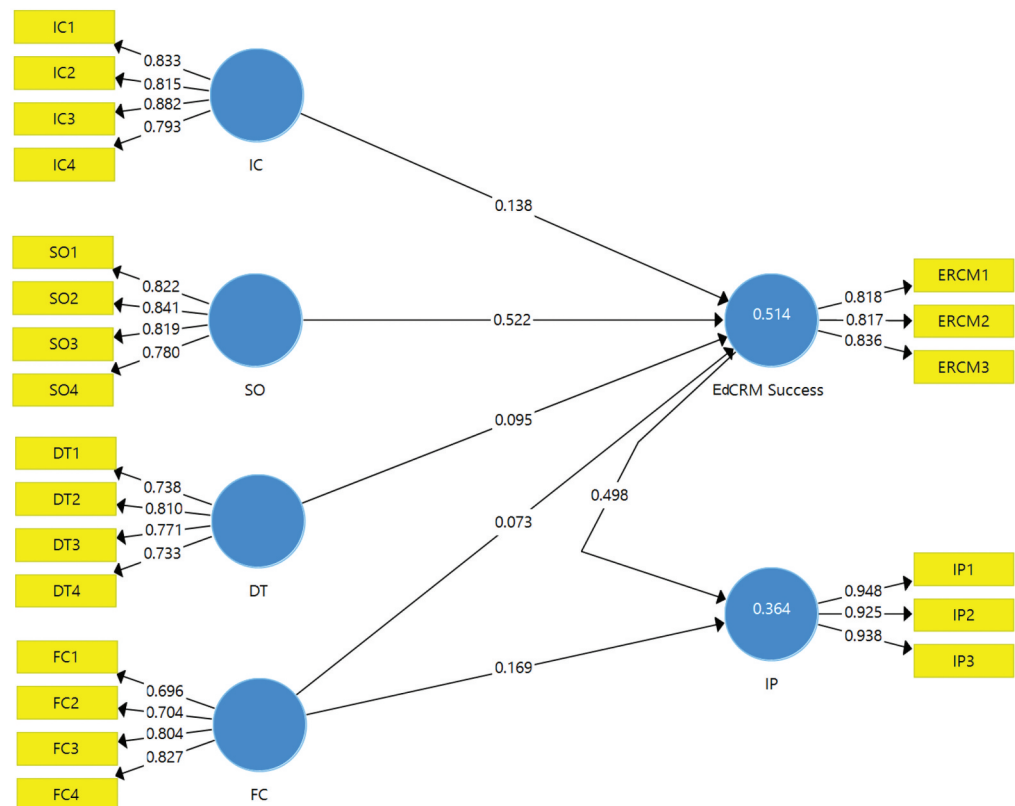
Demographic	n.537	Percentage
Gender		
Male	186	34.64
Female	351	65.36
University		
A	263	48.98
B	127	23.65
C	147	27.37
Age		
<20 years	321	59.78
>20 years	216	40.22



Afterward, the measurement and structural models were assessed. Figure 2 informs that the scale indicators of the measurement model have a substantial contribution to the respective constructs involved in the proposed model, with each loading value. For this study, we followed the recommended loadings proposed by (J. F. Hair et al., 2019) that the values should be  $> .708$ . However, the indicators loaded above 0.500 were retained. One indicator from FC, FC1, has a loading value of 0.6960 that was decided to be retained because the average variance extracted (AVE) and composite reliability (CR) were not influenced by the retention. AVE values of the current study ranged from 0.5770 to 0.8790, exceeding the threshold value of 0.500, which also shows satisfactory results of convergent validity. Similarly, the CR values also meet the recommended value of 0.700 (J. F. Hair et al., 2019). Further, Cronbach’s alpha and Rho\_A values confirm all constructs’ reliability and internal consistency (Henseler et al., 2016).

We also report the multicollinearity issues by examining variance inflation factor (VIF) values. VIF values highlighted in Table 2 inform that the data have no issue with multicollinearity (Mandel, 1963). Besides, the computation of the Heterotrait-Monotrait Ratio (HTMT) was assessed to report the study’s discriminant validity, which is described as a highly proposed or more robust criterion than Fornell-Larcker or cross-loading for PLS-SEM’s discriminant validity report (Habibi et al., 2020a; J. F. Hair et al., 2019). Henseler et al. (2016) also recommended that HTMT results should be assessed. A Monte Carlo simulation experiment compares the new approach to the Fornell-Larcker criterion and the assessment of (partial) cross-loadings to illustrate its improved performance. Henseler et al. (2016) show in a simulation that these methodologies do not reliably detect the lack of discriminant validity in real-world research circumstances. As a result, we suggest a different approach for determining discriminant validity based on the multitrait-multimethod structure: the HTMT of correlations. Table 3 performs the HTMT values that meet the threshold value below .900. Therefore, all constructs differ, which confirms discriminant validity.

Figure 2. Measurement model.



**Table 2. Measurement model**

	Item	Load	$\alpha$	rho_A	CR	Ave	VIF
DT1	Digital technology provided by our institution facilitate EdCRM	0.7380	0.7630	0.7660	0.8480	0.5830	1.552
DT2	Internet services are fast and easy to use for EdCRM	0.8100					1.775
DT3	Digital technology integrated all systems in EdCRM	0.7710					1.443
DT4	Digital technology eases communication for EdCRM	0.7330					1.306
EdRCM1	The EdCRM system is generally regarded as a success in my institution	0.8180	0.7630	0.7650	0.8630	0.6780	1.460
EdRCM2	The EdCRM system improves integration among our institution different systems	0.8170					1.603
EdRCM3	The EdCRM system improve services in our institution	0.8360					1.616
FC1	I have the necessary resources (laptop, internet connection, mobile, desktop, etc.) to use the EdCRM system	0.6960	0.7540	0.7660	0.8450	0.5770	1.269
FC2	I have the necessary knowledge to use the EdCRM	0.7040					1.397

(Continued)

**Table 2. (Continued)**

	<b>Item</b>	<b>Load</b>	<b><math>\alpha</math></b>	<b>rho_A</b>	<b>CR</b>	<b>Ave</b>	<b>VIF</b>
FC3	The EdCRM is compatible with the existing technology (like windows/mac for laptop, android/iOS for mobile, etc.) that I use	0.8040					1.642
FC4	I can get help from others when I have difficulty in using the EdCRM	0.8270					1.719
IC1	Our institution encourages close communication with students	0.8330	0.8510	0.8590	0.8990	0.6910	1.893
IC2	Our institution communicates regularly with students	0.8150					1.756
IC3	Our institution has the ability to build a good working relationship with students	0.8820					2.534
IC4	Our institution can establish mutual trust mechanisms with students	0.7930					1.870
IP1	Institution maintains well its EdCRM for (students' satisfaction)	0.9480	0.9310	0.9380	0.9560	0.8790	4.144
IP2	(Students' retention)	0.9250					3.410
IP3	(Students' enrolment)	0.9380					4.013
SO1	Convenience and ease of the use of EdCRM is assured	0.8220	0.8320	0.8340	0.8880	0.6650	1.842

(Continued)

**Table 2. (Continued)**

	<b>Item</b>	<b>Load</b>	<b><math>\alpha</math></b>	<b>rho_A</b>	<b>CR</b>	<b>Ave</b>	<b>VIF</b>
S02	In our institution, there is an openness to sharing information on EdCRM	0.8410					1.956
S03	Our educational staff are willing to treat different students differently.	0.8190					1.778
S04	EdCRM systematically attempt to customize services and products based on the value of the students.	0.7800					1.616

**Table 3. HTMT & model fit**

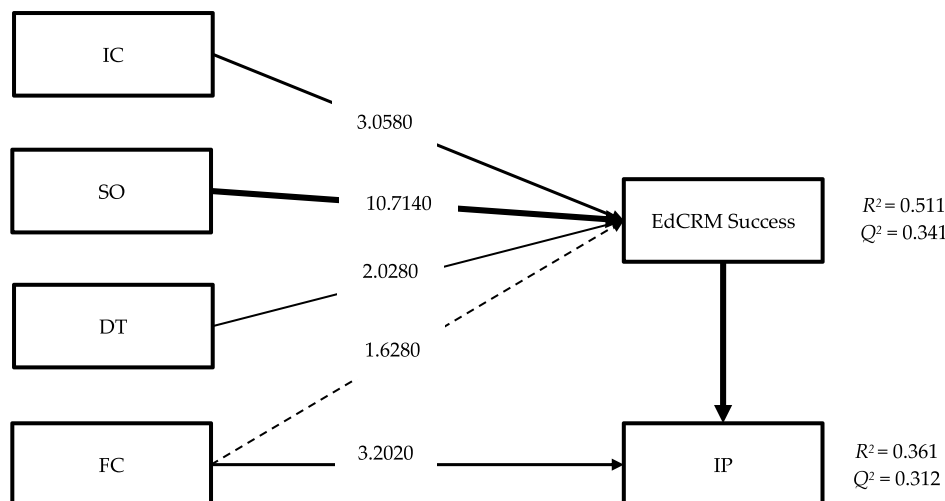
	DT	EdCRM Success	FC	IC	IP	Items	Saturated model
EdCRM Success	0.6130					SRMR	0.0610
FC	0.7630	0.6690				d_ULS	0.9480
IC	0.5010	0.6080	0.5720			d_G	0.3500
IP	0.4480	0.6870	0.5060	0.4330			
SO	0.6840	0.8720	0.7780	0.6530	0.5750		

Additionally, in assessing the study’s measurement model fitness, we implemented the recommendation of (Henseler et al., 2016). They suggested that researchers who want to report model fitness can report a saturated model of the SRMR (Standardized Root Mean Square Residual); the SRMR value of the PLS-SEM fit model should be below 0.08. The value of SRMR, as shown in Table 3, meets the threshold (SRMR = 0.0610) that refers to the model fitness of the measurement model. In addition to the SRMR, the d\_G and the d\_ULS (Henseler et al., 2014) are reported since they are distance measures featured for a model fitness index in PLS-SEM. Both are ways to compute the discrepancy between two matrices (Henseler et al., 2016). Table 3 performs the values of the d\_G and the d\_ULS are 0.9480 and 0.3500, respectively, indicating a well-fitting measurement model (Dijkstra & Henseler, 2015). The difference between the correlation matrix implied by a model ought to be non-significant ( $p > 0.05$ ) for a fit model (Henseler et al., 2014).

Finally, we used consistent PLS bootstrapping with 5,000 subsamples to estimate the structural model. Researchers have recommended the computations of some measures, namely path coefficient ( $\beta$ ), t and p-value,  $R^2$ ,  $f^2$ , and SRMR (J. F. Hair et al., 2019; Ringle et al., 2020; Sarstedt et al., 2016). In Figure 3, the endogenous constructs’  $R^2$  and  $\beta$  are shown. J. F. Hair et al. (2019) recommends that  $R^2$  values of 0.75, 0.50, and 0.25 refer to strong, moderate, and weak values, respectively. Figure 3 indicates that  $R^2$  values of EdCRM success (0.511) and IP (0.361) indicate a significant degree of variance explained. Thus, the study’s exogenous constructs inform a significant elaboration of variance in EdCRM success and IP. For effect sizes ( $f^2$ ), values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects (Cohen, 2013; Ringle et al., 2020). Table 4 presents the  $f^2$  values of all path coefficients. IC has a small positive effect on EdCRM success ( $f^2 = 0.026$ ). Similarly, and DT has also shared positive effect sizes on EdCRM success, respectively ( $f^2 = 0.277$ ; medium and  $f^2 = 0.011$ ; small). Although FC has a positive and relatively small ( $f^2 = 0.033$ ) effect size on IP, it exhibits no effect size towards EdCRM success ( $f^2 = 0.006$ ). EdCRM success exhibits a relatively large effect size on IP ( $f^2 = 0.286$ ).

Meanwhile, we follow (J. F. Hair et al., 2011), who advocate the value of 1.65 at  $p \leq 0.1$  for the significance test. The complete results of the significance test can be seen in Table 4. H1 (IC is positively related to EdCRM success) is significant, and the t value is 3.0390 at  $p \leq 0.05$ . The relationship between SO and EdCRM success is strongly significant ( $t = 10.5110$  at  $p \leq 0.001$ ), supporting the H2 of the study. Similarly, the significant predicting power is also shown for H3 ( $t = 2.000$  at  $p \leq 0.05$ ). IP was also strongly predicted by FC and EdCRM success with a t value of 3.1910 at  $p \leq 0.05$  and 10.5790 at  $p \leq 0.001$ , respectively. However, one relationship is reported to be insignificant; FC is not a key predictor of EdCRM success 1.6490 at  $p = 0.0990$ . Predictive accuracy ( $Q^2$ ) values ( $> 0$ ) for a certain endogenous construct refer to a satisfactory grade of predictive accuracy (J. F. Hair et al., 2019).  $Q^2$  results of EdCRM success (0.341) and IP (0.312) indicate a satisfactory predictive accuracy for the exogenous constructs (J. F. Hair et al., 2019).

Figure 3. Results.



### 5. Discussion

In this study, we proposed a model to examine factors affecting educational customer relationship management (EdCRM) success and institution performance (IP) in Indonesian HEIs. The adaptation of an instrument requires a validity and reliability process. Thus, the involvement of experts and users was initiated as part of content and face validity. The pilot study was conducted using EFA and Cronbach's alpha test to compute the data. These steps were important for establishing reliable and valid items in a survey design study (Alsalamah et al., 2017; Watkins, 2018). Some previous CRM-based studies also implemented relatively similar procedures in validating their scales (Chen et al., 2009; Demo & Rozzett, 2013; Dubey & Sangle, 2019). The reliable and valid items can guide future researchers with common interests in a similar study with different backgrounds, contexts, and settings. Twenty-three items resulted from the instrumentation process; the items were used in the main data collection.

As the main purpose of the study is to examine factors affecting EdCRM success and IP in the context of Indonesian HEIs, we used PLS-SEM as a tool to compute the data (J. F. Hair et al., 2019). Based on the result, five out of six hypotheses were reported to be significant. Institutional capability (IC), which is hypothesized to be a key predictor of EdCRM success is confirmed. It is proved that the capabilities of Indonesian HEIs to facilitate a good service for students significantly affect EdCRM success (Nelson, 1991) and (Soltani et al., 2018) also reported that a good and satisfactory service provided by companies could be a key measure for the success of CRM. SO or student orientation also significantly predicts EdCRM success which supports H1 of the study. Indonesian students' behavioral and cultural concepts for a long-lasting relationship with HEIs services are important for the success of EdCRM implemented in higher education. Previous studies disclosed similar facts about the role of customer orientation in other fields of CRM studies (B. Y. Kim, 2008; Fu & Deshpande, 2014; Soltani et al., 2018).

Digital Technology (DT) is also reported to be strongly related to EdCRM success, demonstrating the importance of technology's use and good service for EdCRM success (Soltani et al., 2018) EdCRM applications synced to DT can improve students' perception of EdCRM benefits (Ko et al., 2008; Soltani et al., 2018). In predicting institution performance (IP), facilitating condition (FC) and EdCRM success present key roles. The facilitation of infrastructures, technical encouragement, and professional improvement certainly improves the performance of the institution (Chiu & Wang, 2008; Pai & Tu, 2011). In the same perspective, a more successful EdCRM in higher education would improve a better performance (Payne & Frow, 2005; Soltani et al., 2018). The only insignificant relationship reported in this study emerges between FC and EdCRM success. The need for follow-up studies regarding this fact should be suggested to support EdCRM's success roles in IP.

**Table 4. Structural model**

H	$\beta$	t	p	Significance	f <sup>2</sup>	Remarks
H1 : IC is positively related to the success of EdCRM success	0.1380	3.0580	0.0020	Yes	0.026	Supported
H2: SO is positively related to ECRM success.	0.5220	10.4940	0.0000	Yes	0.277	Supported
H3 : DT is positively related to the success of EdCRM success.	0.0950	2.0280	0.0460	Yes	0.011	Supported
H4: FC is positively related to ECRM success.	0.0730	1.6280	0.0990	No	0.006	Not supported
H5: FC is positively related to IP.	0.1690	3.2020	0.0010	Yes	0.033	Supported
H6: EdCRM success is positively related to IP.	0.4980	10.7140	0.0000	Yes	0.286	Supported

## 6. Conclusions

By improving the comprehension of the EdCRM success and IP applied in higher education, the current study contributes to educational practitioners and management. The way HEIs function and engage with their “customers,” i.e., students, their guardians, graduates, employers, and employees, is changing dramatically. Customers in higher education demand more attentiveness and immediate services; therefore, evaluation of the usefulness of EdCRM is very important. The reports significantly contribute to the perspectives on the benefits of EdCRM in education, especially HEIs in developing countries. The statistical findings confirmed that most hypothesized relationships are positively significant.

Although this study offers some important information, limitations also emerge. The sample could be increased to conduct a big-scale survey. Because Indonesia has more than 4000 HEIs; more institutions should be involved in future research. In addition, the current work was only conducted within the Indonesian context, and a comparative study between two or more countries can be an option. The oversimplification of social construction is one frequent shortcoming linked to survey studies. Qualitative data could support the use of cross-sectional survey data; the mixed-method approach can be applied to deeply understand the real phenomenon by revealing both statistical analysis and an in-depth understanding of the participants.

Theoretically, future research should be done to extend the models to measure CRM success in education. Constructs could cover more phenomena, and more items can be validated and examined for reliability. Research in K-12 education institutions can also make a difference, especially in developing countries where few studies have been reported in CRM areas. The valid and reliable data of the model can be applied in other contexts and research settings to examine

generalizability. The current study filled the gap in CRM studies that have been frequent in HEIs in the contexts of developed countries. For the managerial implication, universities in an emerging economy like Indonesia compete to improve their services. Through the results of the current study, Indonesian HEIs obtain beneficial findings that suggest policies for the betterment of the institution through a better and more proper service for the customers, students, student parents, and other stakeholders.

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#### Disclosure statement

No potential conflict of interest was reported by the authors.

#### Citation information

Cite this article as: Key factors of educational CRM success and institution performance: A SEM analysis, Ade Octavia, Della Raymena Jovanka, Turki Mesfer Alqahtani, Tommy Tanu Wijaya & Akhmad Habibi, *Cogent Business & Management* (2023), 10: 2196786.

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