

Critical success factors for electronic customer relationship management success adoption: Telecommunication companies case study



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ABSTRACT

A systematic literature review has been conducted on the existing E-CRM system and found that 70% of E-CRM projects do not meet their ultimate goals. Furthermore, more than 77% of E-CRM projects do not succeed in the company's objectives. Many telecommunication companies reported that the existing E-CRM systems face severe challenges, which hinder the E-CRM system's successful adoption. This study aims to report the literature review on the Critical Success Factors for E-CRM systems and identify the rate of failure for E-CRM adoption. The systematic literature review (SLR) method has been conducted by analyzing 210 articles between 2011 to 2021 from different databases collections of research papers. The study determines E-CRM Critical Success Factors from three aspects: technology, organization, and individual factors. The three main categories were analyzed as the effects of the issue on E-CRM success in telecommunication companies. The results show that the three aspects (technology, organization, and individual factors) have a significant effect on the successful adoption of E-CRM.

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1. Introduction

Electronic Customer Relationship Management (E-CRM) aims to present customers' needs and grow a healthy relationship between customers and the organization (Chen et al., 2021). It gives the ability to organizations to gather the knowledge of different sources successfully. The gathering of customer data may be through extranets, customer knowledge discovery algorithms, web spiders, cookies, online registration, and purchasing, generating vast amounts of data. E-CRM presents an excellent system to enable quick access to customers, store their information, and analyze customer data to provide a universal view of customer needs (Fjermestad and Romano, 2003). Many authors claim that the E-CRM system is essential to improve customer needs and organizations' performance. In Fjermestad and Romano (2003), the research was focused on enhanced customer services and cost

reduction as a significant critical success factor (CSFs). It also considers CSFs as a successful measurement of E-CRM. Previous studies about the use of E-CRM in companies and organizations have shown that E-CRM improves customer loyalty, extends sales, expands customer service, enhances the personalization of relationships and cost savings in marketing, and improves market awareness. Shoniregun et al. (2004) examined the trust factor to increase the effectiveness of E-CRM toward customers. Khalifa and Shen (2009) discussed the successful modeling of E-CRM with practical consideration, and the paper confirmed that there is essential to take into account the conceptualization of customer satisfaction. This systematic review is designed to examine and determine the E-CRM CSFs. This systematic review aims to study many previous works based on the E-CRM scope of CSFs and identify the rate of failure of E-CRM adoption. Moreover, it may help the organization determine the essential E-CRM success. Also, decide E-CRM CSFs that contribute to the success of E-CRM adoption.

2. Background

The E-CRM started in the mid-1990 via combining the Internet and electronic touchpoint.

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Touchpoint connects with customers such as email, call centers, direct sales, phone, and social media websites. Web-based E-CRM technology provides a way to interact with the business, customers, and employees. Software, hardware, processes, and executive commitments are included in the process to support an enterprise-wide CRM business strategy. Furthermore, using the Internet as a base for CRM functions and a channel for marketing, commerce, and information introduce new and great opportunities for businesses, described as E-CRM. Toyese (2014) defined E-CRM as part of the traditional CRM system that is provided using internet technology. E-CRM offers many advantages in online services, such as building a good relationship with customers, increasing customer satisfaction with loyalty supported by extensive literature studies.

E-CRM plays a critical role in managing internal and external information, offered anytime and anywhere. E-CRM has a significant role in integrating technology and the organization process. Despite the E-CRM, the system generally depends on the business approach. There are intensely competitive in many organizations in global marketing (Chang et al., 2005). The telecommunication companies attempt to deliver a high level of services to support the marketplace (Ishmael, 2015) competitively. Many studies about E-CRM failure in the literature and the causes of unsuccessful E-CRM in telecommunication companies. Among them are the lack of Top Management Support, user Training (Hosseinianzadeh, 2015), and lack of Experience and skill (Nguyen and Pham, 2015). On the other hand, Kassahun (2012) mentioned that Individual Performance influences the success of the E-CRM adoption. A significant number of previous studies in the E-CRM field suggest investigating the causes of limited E-CRM success (Sunny and Abolaji, 2016; Nguyen and Pham, 2015).

3. Systematic review

This study aims to do a systematic literature analysis to find the most Critical Success Factors (CSFs) that contribute to the successful adoption of E-CRM systems. It also seeks to define comprehensive metrics to aid in the evaluation of these Critical Success Factors. The systematic review uses the framework and guidelines that implement the following three main phases: Preparing the

review (research question), selection criteria, and paper ranking.

3.1. Research questions

Bohling et al. (2006) indicated that the examination question is the central part of an empirical review. This section aims to address the issue and challenges in E-CRM adoption by reviewing the studies and literature under the E-CRM field that present the failure levels of the adoption and raise the understanding of the high failure. This study will give insight into the following study questions: What the Critical Success Factors positively affect E-CRM adoption, and how do those factors affect Employee Satisfaction with E-CRM. These questions aim to recognize the extent of those Critical Success Factors that positively affect the successful adoption of E-CRM. Moreover, it identifies the challenges of Employee Satisfaction as the main contribution to E-CRM usage. After identifying the research questions, the review for the study was done. This process has various phases: Keyword study, database selection, quality papers selection, and analysis.

3.2. Searching process in databases

The examination method of this literature involves collecting databases from the thesis, journals, and conferences with keywords. The databases were selected for the years from 2000 to 2020. The databases used are as shown in Table 1. This study selects journals and conferences based on these keyword queries (E-CRM, successful adoption, Critical Success Factors, success factors, challenges, Employee Satisfaction). The database collection provides an important list of possible researches. The processes in selecting the studies relevant to paper review are as follows:

1. Exclude studies whose titles are not relevant to the paper goal.
2. Exclude papers there abstracts and keywords not related to the paper goal.
3. Read the remaining sections on the papers and exclude any paper that is not relevant to the scope.

The details of the initial result for all database reviews are illustrated in Table 1.

Table 1: List of databases and initial results

Databases	Db	Initial Results	Years	Keywords
Scholar	scholar.google.com	3150		("E-CRM" OR "ECRM" successful adoption") AND ("Critical Success Factors" OR "success factors" OR "challenges" OR "Employee Satisfaction")
Springer	www.springer.com	3		
Emerald	www.emeraldinsight.com	110		
IEEE	ieeexplore.ieee.org	3	2000-	
ACM Digital Library	http://dl.acm.org	2	2020	
Science direct	http://sciencedirect.com	72		
Total	7 DB	3349		

3.3. Paper selection

The papers were selected based on the title and the abstract with the keywords. Then the papers were selected based on the studies conducted between 2000 and 2021. In this process, 210 papers were eligible from the initial 3349 articles, as shown in Table 2.

3.4. Papers based on database

E-CRM and CRM papers were published from different databases. Fig. 1 shows the eligible paper's distribution based on the databases in which 78% papers from google scholar, 13% from the emerald database, 1% from science direct, 5% from IEEE database, 4% from springer, and 1% from Elsevier.

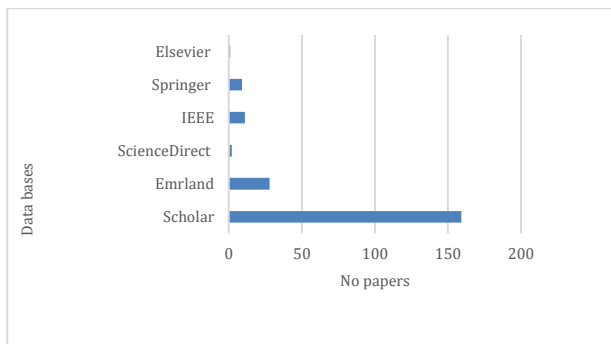


Fig. 1: Databases

3.5. Papers based on E-CRM years

Fig. 2 shows the number of eligible papers based on the years of the publications. The number of eligible papers has remarkably increased in recent years, which indicates that E-CRM is progressively attracting the attention of scholars and researchers.

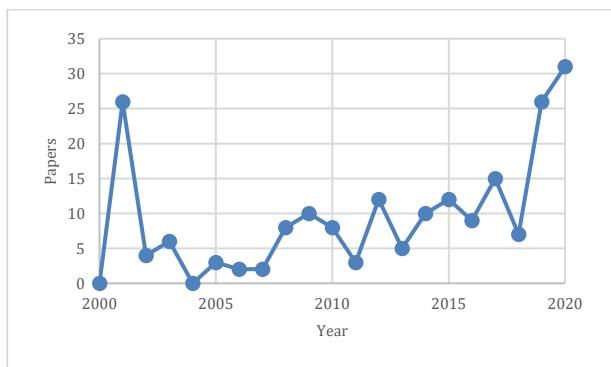


Fig. 2: Articles based on years of publications

3.6. Papers based on countries

This research filtered the E-CRM papers based on countries. The details are shown in Fig. 3. 10% of the papers were studies conducted in India, 7% in Indonesia, 12% in Jourdan, 2% in Nigeria, 9% in Iran, 3% in Kenya, 3% in Uganda, 8% in Taiwan, 18% in Malaysia, and 22% in general.

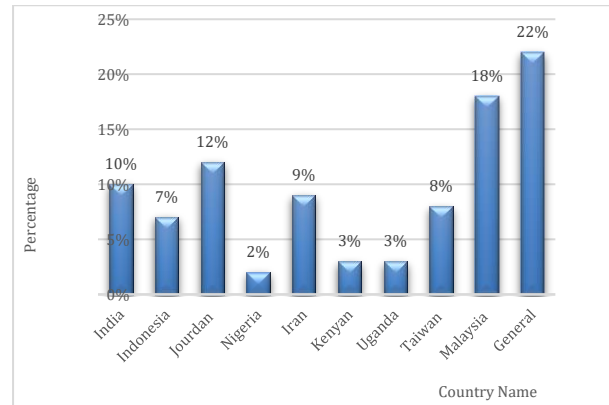


Fig. 3: Articles based on countries

3.7. Investigation of existing studies focusing the critical success factors toward E-CRM

Table 2 shows the previous studies' factors that covered some issues in their Critical Success Factors. Based on the last works' attention, studies have focused on investigating technology, organization, and individual factors' effects on Employee Satisfaction, which is considered the main contributor to E-CRM success.

4. Analysis of related works

Alim and Ozuem (2014) focused on the effect of E-CRM customer satisfaction in the mobile environment. The results showed that E-customer CRM's Service Quality and customer satisfaction are closely linked (Alim and Ozuem, 2014). Hosseini et al. (2013) built a consistent and legitimate mobile communications data quality framework. The study shows that participants play an important role in determining pricing policies and service convenience and improving customer loyalty. The research has shown that the funding focuses on the consumer satisfaction effect of quality of service. The success rate has always been constrained by the lack of response and empathy with service quality. Allozi et al. (2016) addressed an electronic information database framework of the E-customer processes for better e-customer conservation. The resulting research included electronic awareness of the mechanism of E-CRM factors driving the demand for electronic customer engagement.

Furthermore, the research assessed the influence of E-CRM on customer satisfaction, whereas the E-CRM also had a multi-dimensional impact on the customer dimensions. Dubey and Srivastava (2016) studied the quality of service and effects in the Indian communications industry on customer retention. The research finding was performance efficiency, concreteness, and confirmation with important and fundamental effects on customer relationships. Intangibility has a significant impact on customer loyalty. According to the structure model's founding, responsibility, tangibility, empathy, assurance, and reliability are considered the central part of Service Quality. Still, this study has limitations and failed to investigate user

satisfaction, and is still far from measuring E-CRM performance. Employee Satisfaction can significantly impact the effectiveness of companies by contributing to income optimization. Employee Satisfaction is a measurement of critical success and has an impact on the company's competitiveness.

Employee Satisfaction becomes one of the most important and significant professional concepts that the company cannot ignore. E-CRM efficiency

depends on several main components, including technology, organization, and, from the individual perspective, the user aspect. Depending on the issues, there is a need for intervention to boost employee success via Employee Satisfaction. Consequently, this paper put the interest and resolve the gap in research. The metrics are adapted when assessing employees' output via the current E-CRM framework.

Table 2: Summary of the key factors of existing works

Reference	Previous works focused	Factors	Outcome	Methodology
Chang et al. (2014)	Customer	Customer loyalty and Customer-switching intention (CSI), Customer Privacy	E-CRM performance on customer	Questionnaires/ students
Ismail and Hussin (2016)	Customer	Customer Satisfaction and Loyalty	It indicates that almost all of the participants are happy with the E-services offered by the airlines in Malaysia and by this attitude of consumers; loyalty satisfaction and indirectly, both customer and business are forming successful relationships.	analysis technique
Aldaihani and Ali (2018)	Technology factors	Website design, Privacy, Privacy and security, Delivery time	Electronic Service Quality on customer	questionnaire
Soltani and Navimipour (2016)	Organization	Organizational Capability	Organization Performance	questionnaire
	Customer	Customer Orientation, Customer Knowledge Management	Customer retention	questionnaires
	Technology	Information Technology		
Khaligh et al. (2012)	customer	Consumer allegiance, E-CRM, customer satisfaction, customer engagement, Confidence, the appeal of replacements, pricing		interviews
	Technology	Service Quality		
Mang'unyi et al. (2017)	Customer	Pre-service features, During service features, Post-service features	Customer satisfaction with CRM, Overall customer loyalty	interview
Soltani and Navimipour (2016)	Organization	Organizational Capability	Organization Performance Customer	questionnaire
Allozi et al. (2016)	Technology Human	E- customer process (E-customer analysis – customer attractive E-customer acquisition) Customer knowledge	E-customer retention	218 survey
Joshi and Sharma (2015)	Technology	Customer Focus, Organizational Factors, Knowledge Management, Technology-based CRM, Distribution Channel.	Customer Satisfaction	Reviewing paper
Dubey and Srivastava (2016)	Service Quality	Sympathy, Ensure, Awareness, tangibility, and consistency.	Customer loyalty	survey
Bataineh (2015)	Social networking	Communicative Contact, E-direct Mail, Expected Incentives	Customer Satisfaction	Review 507 of customers
Alim and Ozuem (2014)	Human	Cognitive Loyalty, Affective Loyalty, Conative Loyalty, Action Loyalty	Customer Loyalty and Satisfaction	507 customers,
Oumar et al. (2017)	Technology	Pre—services transaction E-CRM, during service transaction E-CRM, post-Service transaction E-CRM	E-customer Satisfaction	78 customers
Dubey and Srivastava (2016)	Customers	Service Quality, Tangibility, Reliability Responsiveness, Assurance, Customer Relationship Management Empathy	Customer Loyalty	262 customers
Tan and Trang (2017)	Customer	Customer companies, loyalty, implement control management	Commerce companies	customers
Dubhilela and Molise-Khosa (2014)	Implement E-CRM	Customer loyalty, customer retention	Customer profitability	Customers
Sivaraks et al. (2011)	The research framework.	Customer-based service attribute	The study investigated the organization's performance via factors of customer satisfaction, Trust, sales revenue, and investment output.	684 customers
Marjani and Sadeghi (2016)	Conceptual Framework	CRM, Organizational performance		questionnaire
Khaligh et al. (2012)	Model of this research	The study focused on customer loyalty and retention as dependent variables.	The study's result supports the association between the Applicability of E-CRM and loyalty and retention of customers.	200 questionnaires
Ismail and Hussin (2016)	Airline e-ticketing model	Web feature, promotion, loyalty program, and purchase cycle, boost booking, customer service.	This outcome detects which most of the defendant is satisfied with the e-services offered by airlines in Malaysia.	500 questionnaires
(Alim and Ozuem, 2014)	Customers	Customer Satisfaction and customer loyalty factors.	The outcome of the study is a link between E-CRM and customer satisfaction and customer loyalty.	Interview
Alim and Ozuem (2014)	Customers	Cognitive Loyalty, Affective Loyalty, Conative Loyalty.	The study that E-CRM is efficient at encouraging customer relations and promoting an appealing virtual community that further improves satisfaction.	Survey on customers
Bataineh	Proposed research	Interpersonal Communication, Electronic	The study result presented that customers	507 customers

(2015)	model	Direct Mai, Perceived Rewards, Customer Satisfaction.	respectively influence direct electronic mail, perceived rewards, and interpersonal communication.	
Chuang and Lin (2013)	Customers performance	Infrastructure Capability, Customer Orientation, Customer Information Quality, Customer Relationship Performance, Control Variables Firm Capital Firm Size Firm Age, Overall Firm Performance.	The resulting study stated that customer Information Quality positively affects customer relationship performance, leading to perfection in total company performance.	116 financial service firm
Salehi et al. (2015)	Designed	The aim of the study was customer Loyalty, Behavioral Approach, attenuation approach.	The study result showed that E-CRM has an essential effect on customer loyalty.	correlation survey
Wang et al. (2016)	Design characteristics	E-tailer CRM capabilities, Customer attraction capability, Customer conversion capability, Customer retention capability. to investigate rebranding and staff perception through Change Communication Factors (Receiving Information, Providing Input, Value of Input, and Involvement in Decision Making) Receiving Information, Receiving Information Executive Non-Executive.	CRM capabilities, through the argument that Skills can enhance the demand-side factors of EMAs.	7309 e-tailers
Vujic et al. (2016)	Adoption	The paper proposes a framework to explore the effects of success factors on AI adoption by integrating the technology, organization, and environment (TOE) framework and diffusion of innovation (DOI) theory.	Found only Receiving information produced significant differences between the executives and the not executives through the study.	Questionnaire
Chen and Chen (2010)	AI adoption	The study Examined the utility and factors related to the use of a phone in the market, incorporating sustainable attributes, such as viable strategy and policy, Sustainable product design, Sustainable sourcing, Sustainable end-of-life-management-.	The results indicate that compatibility, relative advantage, complexity, managerial support, government involvement, and vendor partnership are significantly relevant to AI adoption.	Questionnaire
Yazdani et al. (2019)		Indicators including organization capital, human capital, customer retention process, customer perceived value, and customer expansion process play an essential role in succeeding CRM.	This paper endeavors to identify the most influential factors for selecting smartphones because this aids users and customers to be able to choose an ethical or sustainable phone.	Questionnaire
Keramati and Shapouri (2016)			Indicators including organization capital, human capital, customer retention process, customer perceived value, and customer expansion process play an essential role in succeeding CRM.	Analysis 32 Iranian ISP firms

5. Results

This phase presents the result of the systematic literature review process. After reviewing the previous studies dimension of the E-CRM system, this study lists all the selected papers and investigates the essential factors from the studies to meet the addressed study's objective. The study would answer questions as presented in the following subsections.

5.1. Identify the challenges behind limited E-CRM successful

Adopting E-CRM is often seen as a solution to decrease the massive gap among both consumers and companies. E-CRM is becoming widespread in different world areas for local companies (Benitto and Kumar, 2015). The E-CRM in telecommunication companies is necessary to allow these companies to monitor the vast quantities of information (Anaam et al., 2020a; 2020b; Chavoshi et al., 2015). There is also a high percentage of E-CRM failures, and in the future, this number will be increased (Bhanu and Magiswary, 2010). More than 77% of E-CRM adoption does not succeed the company's goals, and the rate of success E-CRM is low.

Hence, this provides interest for many academic researchers to investigate the high rate of unsuccessful E-CRM adoption. Previous works that studied the adoption of E-CRM systems in telecommunication companies stated that there are remaining problems that hinder the successful adoption of the E-CRM system (Chavoshi et al., 2015;

Ishmael, 2015; Joshi and Sharma, 2015; Sunny and Abolaji, 2016). Furthermore, Bataineh (2015) suggested further investigation on E-CRM in the telecommunication area. Study on 700 firms, the author stated that significant problems behind the failure were organization change 29%, company policy 22%, and lack of CRM understanding 20%. The author also validated that the main issue of CRM failure is the lack of Top Management Support. Table 3 illustrates the summary of the key factors in the previous works.

5.2. Current study of critical success factors

Critical Success Factors are defined as the major measure of a company's operations essential to its success (Alzaghaf and Mukhtar, 2017). In this study, three factors are considered, (1) Technology, (2) Organization, (3) Individual. There is not much research that comprehensively examines the key success factors from the three antecedents in technology, organization, and individual relationships. This study intends to resolve this gap in the existing literature by integrating organizational, technical, and Employee Satisfaction in understanding the importance of Individual Performance to the E-CRM's successful adoption, specifically in telecommunication companies.

Furthermore, there is not much research that incorporates three-dimension antecedents to examine the performance of E-CRM. Al-Weshah et al. (2019) suggested that academic research on E-CRM efficiency, especially in telecommunication, has poorly been published. Therefore, more empirical

studies are needed to bridge this shortcoming (Anaam et al., 2018). Many studies have investigated the effect of CSFs on E-CRM. The key factors reported by the past researchers depend on their specific

research objectives. A collection merely from one dimension would support just a small percentage of success factors that lead to efficient E-CRM adoption within the company.

Table 3: Critical success factor

Authors/Years	Service Quality	System Quality	Information Quality	Top Management Support	Training	Ease of Use	Skills	Computer it-self	Computer Experience	Perceived Usefulness	Employee Satisfaction
(Zhou et al., 2010)	X						X				
(Urbach et al., 2010)											X
(Khaligh et al., 2012)									X		
(Siegel, 2008)								X			
(Liang et al., 2009)								X			
(Hosseinianzadeh, 2015)									X		
(Yee et al., 2008)		X									
(Leong et al., 2013)	X	X					X				
(Law et al., 2013)									X		
(Nasri and Charfeddine, 2012)								X			
(Hsiao et al., 2013)											
(Chen and Chen, 2010)									X		
(Ishmael, 2015)											X
(Petter et al., 2013)			X				X				
(Tam and Oliveira, 2016)							X				
(Chang et al., 2007)			X								
(Junglas et al., 2008)								X			
(Kabak and Dogac, 2010)	X										
(Li and Mao, 2012)									X		
(Gruen et al., 2000)	X										
(ALHussan et al., 2014)									X		
(Petter et al., 2008)	X	X	X				X				
(Hannachi, 2015)			X				X				
(Yang et al., 2010)							X				
(Ahmad et al., 2011)				X			X				
(Abdullateef et al., 2014)											
(Hsiao et al., 2013)	X				X		X				
(Chuchuen and Chanvarasuth, 2011)			X				X				
(Grandhi and Chugh, 2012)			X				X				
(Petter et al., 2008)	X	X	X	X			X				
(Hosseinianzadeh, 2015)								X			
(D'ambra and Wilson, 2004)	X	X	X	X			X			X	
(Seddon, 1997)	X		X				X				
(Liu and Arnett, 2000)	X	X	X								
(Kassim, 2006)									X		
(Mohamadali, 2013)										X	
(Kim et al., 2004)		X		X							
(Maillet et al., 2015)		X								X	
(Tam and Oliveira, 2016)		X								X	
(Akinuwesi et al., 2013)			X								
(Abdullateef et al., 2014)									X		

5.3. Identified critical success factors

This section identifies the factors from the past theories. Critical Success Factors can help an organization determine the key for success or failure for the organization's needs. There are many key factors from the literature that can be adopted. This method is used vastly in different business fields and is stated in many academic types of research. EUCE, TAM3, UTAUT, LR, and IS theory have been applied in this research to assist the framework modeling. Table 4 shows the factor from each of the theories.

5.4. Design items from previous studies

All questionnaire items were adopted from the previous work related to the context of each factor, as shown in Table 5.

5.5. Research questionnaire design

The data will be collected through questionnaires. A questionnaire is a set of standardized questions, often called items. The questionnaires were sent to employers of the telecommunication companies to determine the views and validate the variables used

in this study. Questionnaires can assist the researchers in evaluating and comparing with other studies, and they can be used to determine the respondents' attitudes regarding a hypothesis. The questionnaire was designed based on a closed and open question that allowed respondents to provide accurate answers to each question. The questionnaire was designed so that it would not take so much time. A brief description of the research objective and focus was given before the

respondents began answering the questions. This is to help the responders to answer accurately for each item. All questionnaire items were adapted from the previous studies' work related to each factor's context. Five Likert scaling methods (strongly disagree, disagree, somewhat, agree, strongly agree) were used for this questionnaire to determine the agreement level of the responders. Table 6 presents the items of the study.

Table 4: Adopted theories

No	Theory	Factors
1	Update DeLone and Mclean theory	System Quality, Service Quality, and information
2	EUCE theory	Top management, Training, Experience, Employee Satisfaction
3	TAM 3	Ease of Use, Self-Efficacy, Perceived Usefulness
4	UTAUT	Experience, age, gender, education
5	LR	Skills

Table 5: Design items

Factor	Items	Resource
System Quality	5	(Tam and Oliveira, 2016)
Information Quality	6	(Tam and Oliveira, 2016)
Service Quality	7	(Chang and Thai, 2016; Alanezi et al., 2012)
Top Management Support	6	(Croteau and Li, 2003)
Training	3	(Avlonitis and Panagopoulos, 2005)
Ease of Use	6	(Vella and Caruana, 2012)
Skills	4	(Nguyen and Waring, 2013)
Computer Experience	5	(Avlonitis and Panagopoulos, 2005; Chen and Chen, 2010)
Computer Self-Efficacy	5	(Venkatesh, 2000)
Perceive usefulness	7	(Vella and Caruana, 2012)
Employee's satisfaction	6	(Vella and Caruana, 2012; Avlonitis and Panagopoulos, 2005)
Individual Performance	5	(Tam and Oliveira, 2016; Hart et al., 2004)

Table 6: Items

Variables	Items	Recourse	Variable	Item	Resource
Service Quality	E-CRM system has a high level of operational efficiency.	(Chang and Thai, 2016; Alanezi et al., 2012)	System Quality	The E-CRM system works without crashing.	(Tam and Oliveira, 2016)
	E-CRM system services are always timely.			E-CRM system is always available for use.	
	E-CRM system provides dependable services.			E-CRM system provides data that is suitable for my tasks.	
	Services provided by the E-CRM system can respond to my needs.		E-CRM system is available to provide information and reports of services.		
	E-CRM system provides services that are free from errors.		E-CRM system provides an easy method to search for information.		
	E-CRM system services are always available.		I am adequately trained to understand using the E-CRM system.		
	E-CRM system provides the right services.		The company provides external Training.	Training	
Information Quality	E-CRM system provides accurate information.	(Tam and Oliveira, 2016)	Training	The company regularly provides suitable Training for the entire business task of the system.	
	The E-CRM system provides reliable information.			The E-CRM system is easy to learn.	
	The E-CRM system provides timeliness information.		The E-CRM system is easy to use.		
	E-CRM system provides relevant information to my needs.		The E-CRM system is clear and understandable.	Ease of Use	(Vella and Caruana, 2012)
	The E-CRM system provides complete information.		The E-CRM system is controllable.		
Top Management Support	E-CRM system provides useful information.	(John, 2017; Croteau and Li, 2003)	Experience	The E-CRM system is flexible.	(Avlonitis and Panagopoulos, 2005; Hart et al., 2004; Chen and Chen, 2010)
	Top management provides the facilities for E-CRM system success.			The E-CRM system makes it easy for me to become skillful.	
	Top management is interested in the E-CRM system function			I consider myself an expert in using a computer.	
	Top management understands the importance of the E-CRM system.		My Experience helped me to increase my level of satisfaction with the use of the E-CRM system.		
	Top management always encourages the use of the E-CRM system for job-related work.		My Experience contributes to increased performance with the use of the E-CRM system.		
Top management understands E-CRM system opportunities.	My Experience helped me to do my work quickly and efficiently.				

Perceived Usefulness	I have the ability to develop my Skills using E-CRM.	Self-Efficacy	(Vella and Caruana, 2012)	I could complete the job using the system independently.	(Venkatesh, 2000; Kwon et al., 2007)
	E-CRM system helps me to work more quickly.			I feel comfortable using the E-CRM system on my own.	
	E- CRM system helps my job performance.			I can easily use any of the functions in the E-CRM system.	
	E- CRM system helps me to increase productivity.			Experts will be available at any time for help when required.	
The E-CRM system helps my effectiveness.		Employee Satisfaction		In the beginning, help is needed to complete the job.	
	E-CRM system increases the quality of the work I do.			I am satisfied with the E-CRM system because: The E-CRM system meets my information processing needs.	(Avlonitis and Panagopoulos, 2005; Tam and Oliveira, 2016)
	The E-CRM system allows me to do tasks more correctly.			Data provided by the E-CRM system is quickly updated.	
	E-CRM system increases the efficiency at work.			The E-CRM system achieves tasks successfully.	
What are the other challenges Experienced by E-CRM users?					

5.6. Descriptive statistics

Qualitative analysis can be demonstrated statistically as the likelihood of approval and disapproval (Reimann et al., 2010). Sekaran and Bougie (2003) mentioned descriptive statistics illustrated by the standardized of important propensity and frequency for any indicator dependent on the characteristic of data gathered. The current study has been adopted to explain the new study outcomes statistically. There are descriptive statistics evaluated for every element (System Quality, Service Quality, Information Quality, Top Management Support, Training, Ease of

Use, Skills, Experience, Self-Efficacy, Employee Satisfaction, Perceived Usefulness, and Individual Performance). Table 7 displays the descriptive statistics, Skewness ≤ 2 and Kurtosis ≤ 2 , Corrected item-total Correlation ≥ 0.30 , Cronbach's Alpha if Item deleted ≥ 0.70 for each set of factors among employees. The employers were asked to present their viewpoints which have been calculated on a 5-point Likert scale range from 1 for strongly disagree to 8 for strongly agree. Table 8 shows cross Loading and Fig. 4 shows outer loading of formative measurement loading.

Table 7: Descriptive statistics

Items of	Respondents	Mean	Standard Deviation	Rank	Skewness ≤ 2	Kurtosis ≤ 2	Corrected Item-Total Correlation ≥ 0.30	Cronbach's Alpha if Item Deleted ≥ 0.70
System Quality (SQ)								
SQ1	300	3.24	.971	5	-.049	-.273	.577	.826
SQ2	300	3.40	.789	4	-.675	.472	.665	.801
SQ3	300	3.82	.823	1	-.345	.185	.674	.798
SQ4	300	3.59	.948	3	-.166	-.667	.721	.782
SQ5	300	3.73	.890	2	-.397	-.117	.590	.820
Overall Mean Score		3.55	0.88					.838
Information Quality								
IQ1	300	3.50	1.120	6	-.431	-.426	.728	.874
IQ2	300	3.62	1.098	5	-.530	-.506	.769	.867
IQ3	300	3.82	1.050	2	-.549	-.606	.835	.856
IQ4	300	3.78	1.002	3	-.665	.220	.714	.876
IQ5	300	3.77	.971	4	-.446	-.461	.655	.884
IQ6	300	3.92	.873	1	-.390	-.189	.598	.892
Overall Mean Score		3.735	1.019					.894
Service Quality								
SERQ1	300	3.50	.931	5	-.426	.347	.570	.821
SERQ2	300	3.59	.799	4	.051	-.494	.567	.823
SERQ3	300	3.64	.852	3	-.258	-.506	.592	.819
SERQ4	300	3.83	.848	1	-.390	-.232	.495	.832
SERQ5	300	3.47	1.203	6	-.488	-.612	.628	.815
SERQ6	300	3.42	1.167	7	-.529	-.448	.717	.797
SERQ7	300	3.71	.891	2	-.318	-.592	.616	.815
Overall Mean Score		3.594	0.955					.840
Top Management Support								
TM1	300	3.36	.898	6	.119	-.750	.498	.875
TM2	300	3.71	.849	4	-.340	-.419	.740	.835
TM3	300	3.69	1.092	5	-.578	-.322	.684	.847
TM4	300	3.94	.925	1	-.486	-.653	.681	.844
TM5	300	3.72	.847	3	-.295	-.141	.700	.842
TM6	300	3.78	.803	2	-.250	-.386	.743	.836
Overall Mean Score		3.70	0.902					.869
Training								
T1	300	3.66	1.001	3	-.357	-.594	.504	.844
T2	300	3.79	.918	2	-.852	.654	.782	.541
T3	300	3.86	.938	1	-.372	-.468	.613	.724
Overall Mean Score		3.77	0.952					.786
Ease of Use								
EOU1	300	3.64	1.056	6	-.613	.179	.618	.861
EOU2	300	3.81	.869	4	-.400	-.449	.769	.830
EOU3	300	3.84	.849	3	-.355	-.467	.762	.831
EOU4	300	3.86	.830	2	-.121	-.818	.662	.849
EOU5	300	3.79	.880	5	-.435	-.435	.557	.866

EOU6	300	3.86	.790	1	-230	-.457	.680	.846
Overall Mean Score		3.80	0.879		Overall Reliability (Cronbach's Alpha)			.869
Skills								
SK1	300	3.48	1.061	4	-.589	.016	.761	.769
SK2	300	3.75	1.058	3	-.588	.047	.790	.754
SK3	300	3.77	.770	1	.021	-.633	.585	.844
SK4	300	3.75	.825	2	.020	-.784	.631	.826
Overall Mean Score		3.687	0.9285		Overall Reliability (Cronbach's Alpha)			.846
Computer Experience								
CE1	300	3.63	.971	5	-.459	-.140	.490	.765
CE2	300	3.63	.746	4	-.295	.648	.665	.721
CE3	300	3.71	.895	2	-.802	.617	.661	.710
CE4	300	3.70	1.011	3	-.948	.781	.457	.777
CE5	300	3.73	1.121	1	-1.038	.511	.583	.737
Overall Mean Score		3.68	0.949		Overall Reliability (Cronbach's Alpha)			.783
Self-Efficacy								
CSE1	300	3.67	.940	4	-.645	.647	.683	.880
CSE2	300	3.92	.923	1	-.655	.027	.772	.861
CSE3	300	3.76	.977	3	-1.144	1.516	.838	.845
CSE4	300	3.66	1.030	5	-.825	.757	.836	.844
CSE1	300	3.78	1.055	2	-.847	.362	.573	.907
Overall Mean Score		3.758	0.985		Overall Reliability (Cronbach's Alpha)			.892
Perceived Usefulness								
PU1	300	3.78	.968	6	-.520	-.084	.517	.834
PU2	300	3.83	.839	1	-.355	.086	.552	.828
PU3	300	3.73	.839	7	-.625	1.090	.567	.826
PU4	300	3.81	.934	3	-1.019	1.322	.620	.818
PU5	300	3.80	.971	4	-.869	.885	.698	.805
PU6	300	3.80	.977	5	-.485	-.451	.604	.820
PU7	300	3.83	.965	2	-.553	.160	.630	.816
Overall Mean Score		3.79	0.985		Overall Reliability (Cronbach's Alpha)			.843
Employee Satisfaction								
ES1D	300	3.67	.983	4	-.867	.544	.681	.870
ES1	300	3.62	.905	6	-.120	-.518	.728	.862
ES1A	300	3.69	.961	3	-.346	-.319	.702	.866
ES1B	300	3.78	.942	1	-.393	-.397	.730	.862
ES1C)	300	3.77	.894	2	-.491	.353	.821	.848
ES2	300	3.66	1.063	5	-.508	-.361	.568	.890
Overall Mean Score		3.69	0.958		Overall Reliability (Cronbach's Alpha)			.886
Individual Performance								
IP1	300	3.69	.847	5	-.217	-.527	.671	.796
IP2	300	3.90	.879	2	-.339	-.282	.653	.801
IP3	300	3.85	.763	3	-.466	.832	.701	.790
IP4	300	3.95	.854	1	-.714	.564	.603	.815
IP5	300	3.79	.872	4	-.867	1.321	.579	.822
Overall Mean Score		3.836	0.843		Overall Reliability (Cronbach's Alpha)			.837

Table 8: Cross loading

	(CSE)	(EOU)	(ES)	(IQ)	(PU)	(SK)	(CE)	(IF)	(IP)	(OF)	(SERQ)	(SQ)	(TF)	(TMS)	(T)
CE1	0.500	0.432	0.455	0.481	0.424	0.584	0.791	0.614	0.369	0.518	0.269	0.436	0.463	0.468	0.525
CE2	0.456	0.314	0.380	0.284	0.381	0.591	0.840	0.544	0.258	0.447	0.158	0.476	0.352	0.413	0.560
CE3	0.476	0.228	0.328	0.234	0.381	0.628	0.891	0.602	0.371	0.370	0.087	0.410	0.277	0.329	0.507
CE4	0.559	0.282	0.412	0.326	0.497	0.714	0.904	0.689	0.515	0.416	0.162	0.427	0.352	0.353	0.479
CE5	0.561	0.371	0.596	0.353	0.540	0.590	0.756	0.707	0.558	0.568	0.426	0.567	0.491	0.480	0.600
IF1Y	0.561	0.371	0.596	0.353	0.540	0.590	0.756	0.797	0.558	0.568	0.426	0.567	0.491	0.480	0.600
CSE1	0.720	0.464	0.556	0.495	0.508	0.504	0.463	0.713	0.449	0.455	0.281	0.459	0.487	0.399	0.444
IF2Y	0.720	0.464	0.556	0.495	0.508	0.504	0.463	0.743	0.449	0.455	0.281	0.459	0.487	0.399	0.444
CSE2	0.813	0.592	0.559	0.584	0.663	0.495	0.452	0.618	0.588	0.495	0.410	0.444	0.548	0.463	0.479
CSE3	0.778	0.480	0.459	0.539	0.541	0.510	0.427	0.663	0.601	0.298	0.325	0.382	0.480	0.282	0.290
IF3Y	0.578	0.480	0.459	0.539	0.541	0.510	0.427	0.663	0.601	0.298	0.325	0.382	0.480	0.282	0.290
CSE4	0.605	0.400	0.426	0.506	0.455	0.350	0.205	0.458	0.421	0.124	0.277	0.402	0.471	0.067	0.121
CSE5	0.777	0.430	0.579	0.541	0.693	0.672	0.672	0.694	0.547	0.536	0.332	0.504	0.540	0.497	0.527
EC1D	0.664	0.499	0.866	0.590	0.689	0.492	0.408	0.653	0.738	0.592	0.412	0.541	0.599	0.531	0.433
EOU1	0.479	0.751	0.415	0.406	0.366	0.262	0.297	0.418	0.312	0.387	0.427	0.353	0.458	0.320	0.493
EOU2	0.512	0.849	0.492	0.611	0.388	0.303	0.346	0.439	0.331	0.420	0.526	0.458	0.635	0.403	0.475
EOU3	0.517	0.849	0.441	0.496	0.449	0.270	0.312	0.431	0.405	0.394	0.408	0.342	0.479	0.368	0.450
EOU4	0.470	0.766	0.486	0.587	0.519	0.391	0.304	0.406	0.421	0.480	0.508	0.480	0.615	0.476	0.417
EOU5	0.432	0.686	0.402	0.475	0.441	0.239	0.202	0.338	0.446	0.285	0.426	0.326	0.496	0.322	0.173
EOU6	0.575	0.793	0.520	0.622	0.521	0.330	0.366	0.464	0.536	0.444	0.403	0.342	0.572	0.433	0.341
ES1	0.489	0.452	0.816	0.458	0.621	0.513	0.505	0.547	0.581	0.622	0.499	0.484	0.558	0.540	0.472
ES1A	0.613	0.528	0.875	0.503	0.598	0.473	0.488	0.625	0.643	0.517	0.520	0.618	0.622	0.462	0.382
ES1C	0.622	0.532	0.866	0.613	0.664	0.497	0.433	0.605	0.590	0.607	0.472	0.581	0.630	0.539	0.495
IP1	0.573	0.472	0.614	0.447	0.610	0.507	0.488	0.574	0.813	0.548	0.473	0.434	0.506	0.524	0.367
IP2	0.529	0.339	0.578	0.396	0.563	0.429	0.378	0.511	0.799	0.490	0.344	0.438	0.445	0.445	0.345
IP3	0.615	0.473	0.650	0.422	0.631	0.527	0.388	0.587	0.829	0.431	0.430	0.550	0.458	0.402	0.327
IP4	0.513	0.384	0.483	0.408	0.432	0.499	0.334	0.576	0.729	0.348	0.362	0.482	0.452	0.287	0.427
IP5	0.511	0.347	0.574	0.458	0.470	0.410	0.408	0.546	0.727	0.483	0.437	0.460	0.509	0.460	0.387
IQ1	0.696	0.669	0.594	0.830	0.543	0.341	0.372	0.567	0.526	0.527	0.624	0.556	0.824	0.502	0.412
TF1Y	0.696	0.669	0.594	0.810	0.543	0.341	0.372	0.567	0.526	0.527	0.624	0.556	0.824	0.502	0.412
IQ2	0.692	0.648	0.538	0.855	0.580	0.412	0.324	0.547	0.582	0.451	0.632	0.515	0.783	0.441	0.376
IQ3	0.611	0.614	0.589	0.899	0.569	0.454	0.414	0.556	0.481	0.621	0.577	0.526	0.850	0.583	0.487
TF2Y	0.611	0.614	0.589	0.839	0.569	0.454	0.414	0.556	0.481	0.621	0.577	0.526	0.850	0.583	0.487
IQ4	0.501	0.476	0.400	0.803	0.420	0.319	0.316	0.421	0.390	0.436	0.444	0.379	0.682	0.391	0.410
TF3Y	0.501	0.476	0.400	0.503	0.420	0.319	0.316	0.421	0.390	0.436	0.444	0.379	0.682	0.391	0.410
IQ5	0.499	0.464	0.481	0.759	0.463	0.396	0.254	0.388	0.292	0.439	0.470	0.389	0.678	0.390	0.358
IQ6	0.417	0.380	0.449	0.692	0.394	0.403	0.266	0.442	0.320	0.447	0.375	0.448	0.557	0.357	0.366
PU1	0.542	0.431	0.469	0.377	0.701	0.374	0.369	0.468	0.406	0.447	0.242	0.244	0.337	0.430	0.384
PU2	0.502	0.332	0.557	0.422	0.726	0.372	0.333	0.414	0.509	0.360	0.298	0.325	0.420	0.353	0.204

PU3	0.562	0.328	0.473	0.358	0.725	0.477	0.375	0.474	0.494	0.477	0.352	0.475	0.391	0.482	0.402
PU4	0.571	0.393	0.620	0.521	0.759	0.500	0.490	0.595	0.569	0.531	0.534	0.634	0.636	0.528	0.426
PU6	0.623	0.567	0.584	0.531	0.715	0.429	0.382	0.566	0.543	0.434	0.326	0.498	0.556	0.412	0.312
SERQ1	0.291	0.346	0.358	0.413	0.332	0.290	0.307	0.354	0.384	0.417	0.699	0.473	0.573	0.406	0.384
SERQ2	0.278	0.301	0.358	0.387	0.395	0.186	0.218	0.230	0.334	0.441	0.689	0.430	0.518	0.475	0.374
SERQ3	0.269	0.392	0.471	0.499	0.435	0.290	0.233	0.291	0.360	0.504	0.724	0.499	0.621	0.502	0.426
SERQ4	0.207	0.286	0.425	0.410	0.304	0.168	0.071	0.184	0.358	0.374	0.617	0.447	0.497	0.303	0.301
SERQ5	0.346	0.468	0.300	0.526	0.292	0.195	0.065	0.226	0.361	0.273	0.737	0.332	0.594	0.229	0.261
SERQ6	0.411	0.513	0.451	0.530	0.380	0.263	0.209	0.394	0.472	0.371	0.811	0.457	0.708	0.375	0.279
SERQ7	0.367	0.522	0.420	0.501	0.359	0.303	0.285	0.429	0.361	0.513	0.735	0.413	0.608	0.548	0.405
SK1	0.559	0.302	0.453	0.331	0.485	0.872	0.666	0.688	0.471	0.375	0.232	0.382	0.350	0.317	0.445
SK2	0.588	0.309	0.533	0.454	0.532	0.900	0.725	0.808	0.545	0.445	0.258	0.578	0.473	0.359	0.502
IF4Y	0.588	0.309	0.533	0.454	0.532	0.700	0.725	0.808	0.545	0.445	0.258	0.578	0.473	0.359	0.502
SK3	0.555	0.255	0.470	0.332	0.456	0.754	0.493	0.645	0.461	0.409	0.298	0.516	0.387	0.361	0.357
SK4	0.607	0.413	0.449	0.462	0.509	0.777	0.569	0.618	0.538	0.427	0.357	0.394	0.467	0.381	0.443
SQ1	0.406	0.415	0.463	0.425	0.436	0.367	0.347	0.446	0.352	0.349	0.613	0.769	0.682	0.362	0.432
SQ2	0.432	0.408	0.487	0.386	0.470	0.405	0.467	0.482	0.401	0.320	0.412	0.786	0.531	0.291	0.364
SQ3	0.523	0.319	0.597	0.475	0.515	0.583	0.438	0.600	0.541	0.544	0.397	0.772	0.506	0.485	0.502
SQ4	0.504	0.444	0.597	0.528	0.565	0.484	0.544	0.596	0.596	0.504	0.541	0.857	0.734	0.499	0.356
SQ5	0.463	0.290	0.384	0.459	0.430	0.411	0.395	0.469	0.476	0.441	0.335	0.716	0.495	0.416	0.339
T1	0.556	0.462	0.578	0.548	0.460	0.524	0.548	0.611	0.558	0.707	0.493	0.465	0.564	0.528	0.811
OF1Y	0.556	0.462	0.578	0.548	0.460	0.524	0.548	0.611	0.558	0.707	0.493	0.465	0.564	0.528	0.611
T2	0.387	0.356	0.355	0.368	0.364	0.415	0.565	0.500	0.280	0.645	0.318	0.431	0.397	0.580	0.910
T3	0.345	0.465	0.347	0.303	0.375	0.378	0.503	0.402	0.308	0.509	0.390	0.364	0.390	0.491	0.796
TM1	0.414	0.348	0.320	0.387	0.419	0.333	0.388	0.407	0.416	0.549	0.430	0.367	0.422	0.609	0.486
TM2	0.375	0.386	0.419	0.424	0.486	0.272	0.288	0.316	0.355	0.670	0.446	0.391	0.496	0.803	0.426
TM3	0.470	0.505	0.558	0.545	0.532	0.384	0.328	0.434	0.492	0.759	0.554	0.481	0.604	0.781	0.487
OF2Y	0.470	0.505	0.558	0.545	0.532	0.384	0.328	0.434	0.492	0.759	0.554	0.481	0.604	0.711	0.487
TM4	0.385	0.448	0.494	0.451	0.466	0.353	0.408	0.417	0.507	0.738	0.491	0.456	0.550	0.801	0.529
TM5	0.341	0.327	0.512	0.436	0.529	0.361	0.436	0.421	0.455	0.846	0.388	0.396	0.463	0.833	0.531
TM6	0.329	0.339	0.511	0.387	0.453	0.310	0.469	0.392	0.368	0.849	0.379	0.396	0.430	0.857	0.543

5.7. Cross loadings

The Cross Loading approach is to identify those that have high loadings on the same construct and those that load highly on multiple constructs. To have adequate discriminant validity, the loading of any assessed item on its equivalent construct should be maximum than its loading on another construct. This provides the measuring objects of a construct are scaling their construct. This standard's satisfaction with each of the measure items load highly on their constructs but not as high on the other construct. The loading detached any potential factor, as hypothesized in the conceptual model. Thus, the cross-loading finding specific that the calculation of the measurement system integrand reliability had been assured. The Cross-Loading review emphasizes which the complete elements for the same construct are poorer than other constructs in the model and stronger about its corresponding construct. The instances of this study are shown in Table 8. In the first instance, CE1, CE2, CE3, CE4, and CE5 load in height on its corresponding construct: Computer Experience (CE) but much lesser on other theories. The second instance is that IF1, IF2, IF3, and IF4 load high on its analogous construct: Individual Factors (IF) but much lower on other constructs. The third example is the EOU1, EOU2, EOU3, EOU4, EOU5, and EOU6 load high on their representative construct EOU (Ease of Use) but much lower on other constructs. As presented in Table 8, the cross-loading criterion meets the requirements due to the indicator's external loadings on construct are higher than all its cross-loadings with other constructs (in bold). In other words, analysis of cross-loading in the current research confirms that the discriminant validity for the hypothesized model has been established and satisfied.

5.8. Outer loading of formative measurement loading

The first G factor is the Technology Factors with sub-factors such as System Quality (SQ), Information Quality (IQ), and Service Quality (SERQ). The second G factor is the Organization Factors with sub-factors, namely: Top Management Support (TM) and Training (T). The third G factor is the Individual Factors with four subfactors: Easy to Use (EQU), Skills (SK), Computer Experience (CE), and Computer Self-Efficacy (CSE). Fig. 4 verifies the first-order frameworks' parameters that are concentrating on loadings, STDEV, T-Values, P-Values, and assuredness intervals bias-corrected. Every construction with its particular components is referred to in the first order. The importance of loading or relationships is presented as T-Values ~1.964 and T-Values 0.05. Confidence intervals (CI) bias-corrected is often used to assist the significance of the loading. The lower limit (LL) of CI and the upper boundary (UL) confirms that the loading value or the correlation is significant if either positive or negative (LL-UL) boundary is found. If one of them is helpful, whereas the other is negative, the relationship is not statistically significant. The second/hierarchical/higher-order constructions in Fig. 4 prove statistically significant since they are located in the same positives on T-Values=1.964, T-Values 0.05, Lower Limit (LL), and Upper Limit=UL.

6. Discussion

This systematic review aims to define and identify critical key factors (CSF) that have highly and significantly influenced successful E-CRM adoption. It also investigates, analyzes, and measures the CSFs. The paper does the coverage of many academic researchers in the field. An inclusive initial list of Critical Success Factors was improved by

utilizing the information extracted from the previous literature review. Moreover, a comprehensive major

challenge and reason for the high failure percentage in E-CRM adoption were established.

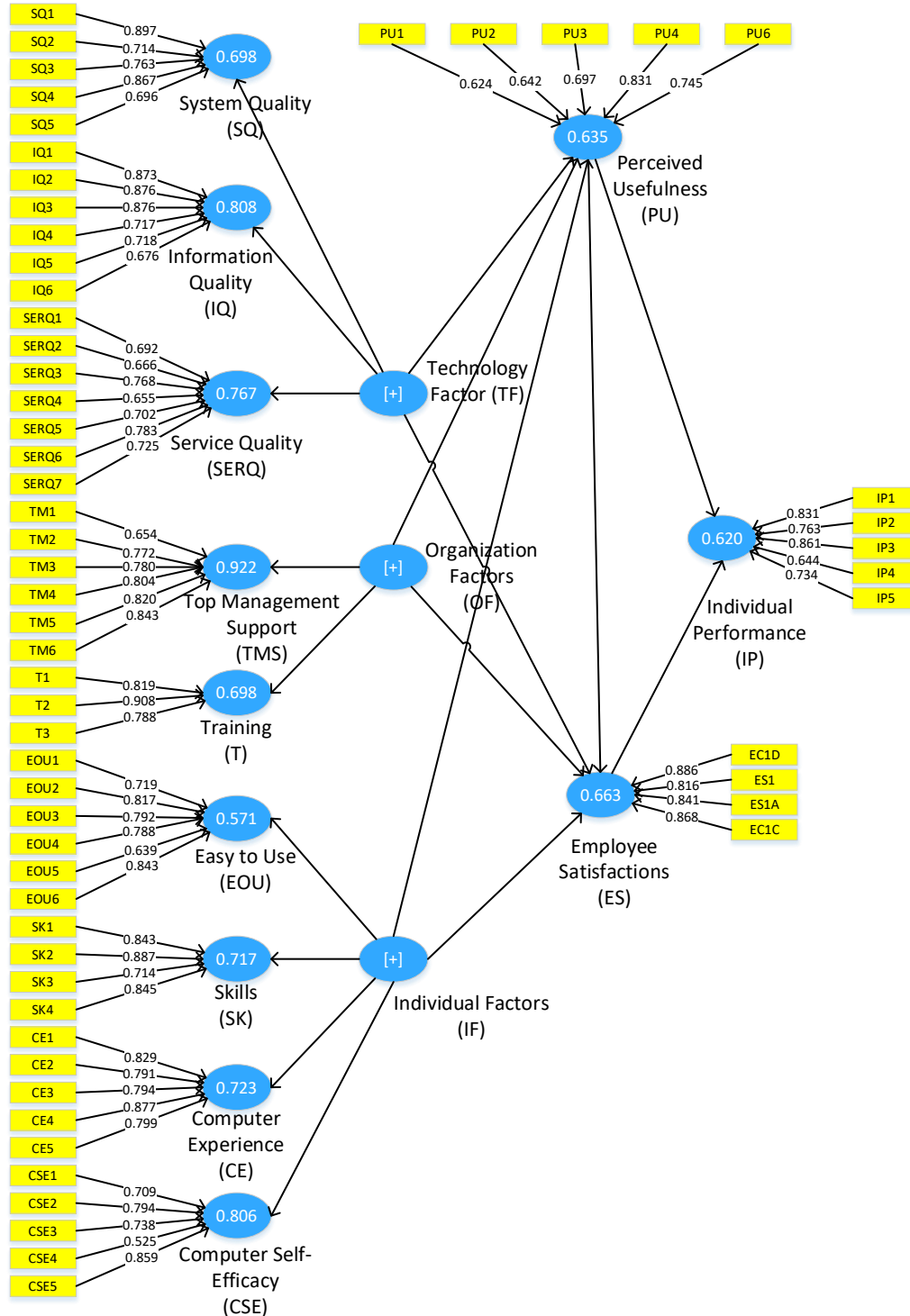


Fig. 4: Outer loading of formative measurement loading

The initial E-CRM key factors list was improved to include five factors that have a significant influence on the E-CRM successful adoption in telecommunication companies. The classification for E-CRM key factors was categorized into thirty dimensions of CSFs: Technology Factors (Information Quality, System Quality, and Service Quality), Organization Factors (Top Management Support and Training), and finally Individual Factors (Skills, Ease of Use, Experience, and Self-Efficacy). The results of analysis using Descriptive Statistics,

Cross Loadings, and Outer Loading of Formative Measurement Loading supported that those factors significantly contribute to success E-CRM adoption.

7. Conclusion

This study attempts to identify the Critical Success Factors of E-CRM adoption. It also discovers the obstacles and the reason for the failure of the E-CRM system by focusing on the Critical Success Factors. This paper starts with determining the

major challenges behind the successful E-CRM adaption. This study identifies the challenges and key Critical Success Factors on telecommunication companies under Technology, Organization, and Individual factors with regards to Employee Satisfaction. Based on the critical analysis of the previous related works, this study developed the questionnaires and examined the relationship between those factors. Finally, the findings of this study are discussed to highlight the key Critical Success Factors to accomplish a successful E-CRM system for telecommunication companies.

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Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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