

# E-CRM APPLICATION OF MICRO, SMALL AND MEDIUM ENTERPRISES IN SRI LANKA: MIXED METHOD

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## ABSTRACT

*Small Medium Enterprise (SME) sector plays prominent role to the development of Sri Lanka, and they have been facing huge problem and challenges in this competitive and crisis environment. Previous researchers have conducted research on e-CRM application for large firms and proved the e-CRM's significant for large firms. Still e-CRM application is debatable in developing countries. The purpose of this research is to find out the ubiquitous e-CRM application for the success of Sri Lankan MSMEs, especially the factors of e-CRM in SME sector. Researcher applied mixed method in this research and respondents are the owners or managers of SMEs. Four focus group discussion and ten interviews were conducted for the qualitative research and snowball sampling techniques was applied to select the respondents for the quantitative method. The coding and thematic analysis were conducted to find out the themes of e-CRM of SMEs. From the qualitative analysis, fifteen themes were identified and they were come under the three dimensions. For the quantitative research, questionnaire was developed with 36 questions. The exploratory factor analysis was conducted to find out the factors of e-CRM of SMEs. Four dimensions were identified from the exploratory factor analysis. Factor 1 is named as E-CRM in Marketing, factor 2 is denoted as E-CRM implementation, factor 3 is called as Strategic integration and factor 4 is referred as Technology-based CRM. The application of four dimensions of e-CRM enable the SMEs to keep existing customers and attract the new customer.*

**Keywords:** SME, E-CRM in Marketing, E-CRM implementation, Strategic integration, Technology-based CRM

## 1. Introduction

CRM is a strategy to build up sustainable relationship with potential customers and coordinated by the structured management system of companies. There are three stages of CRM namely, CRM support for the division of the institution, integrated solution of CRM and electronic CRM (e-Epichirin, 2004). AlQershi, Mokhtar & Abas, (2020) explained that the CRM capability integrates four resources as CRM technology, Customer orientation, CRM processes and CRM organization. CRM is described as various forms, namely traditional CRM, electronic CRM (e-CRM), mobile CRM (m-CRM) and social CRM (SCRM) (Chatterjee et al., 2020). E-CRM applies information

and communication technology to increase the scope and the scale of customer service (Kotorov,2002) and it is penetrated in the marketing activities through the tools and techniques which are the internet based technologies (Harrigan et al.,2009) and the internet based applications (Skouloudis, 2003). Chatterjee, et al (2020) developed the ICT-enabled CRM systems and it is an innovative technology (Ortega et al., 2008); with the software application for the SME marketing (Ragins and Greco, 2003). Harrigan et al., (2009) explained the e-CRM implementation with the marketing dimensions, as customer communication and customer information management.

Previous researchers explained that the E-CRM tools deals with the front through E-mail, web sites and chat- rooms office (Ang and Buttle, 2006; Simmons et al., 2008). The previous researchers identified the role of e-CRM in SME sector and the impacts of internet based technologies on CRM in SMEs (Harrigan, Ramsey & Ibbotson, 2009). Electronic based applications were widely applied in CRM activities, the level of applications differ across the nature and size of the business sector (Dehghanpouri, Soltani & Rostamzadeh, 2020). Previous researchers have conducted research on e-CRM application for large firms (Al-Dmour et. al.,2019; Nguyen & Waring, 2013) and proved the e-CRM importance for large firms (Dehghanpouri, Soltani & Rostamzadeh, 2020; Al-Dmour et. al., 2019). E-CRM centralizes the customer data, identifies and converts more leads, increases customer retention rates and makes intelligent and data-driven decision for large firms (Yang and Babapour,2022). The application of e-CRM helps to improve organization in competitive and crisis environment (Mang'unyi, Khabala & Govender,2018). The adaptation of ICT-enabled CRM system differs in terms of infrastructure and resources across industries and organization types (Harrigan, Ramsey, & Ibbotson,2012).

The context of the SME marketing hugely differs from the large firms. SMEs have lack of resources such as limited financial, human and other resources and have short term profit earning focus (Carson and Gilmore, 2000). Nature of the innovative technological applications are seen in a two different ways; SMEs adopt informal structure in which quick decision making and informal information flow and flexible system to adopt innovative technology. The limited finance to adopt innovative technology is the major barrier for SMEs. Previous researchers explained the e-CRM importance for SME sector (AlQershi, Mokhtar & Abas, 2020; Harrigan, & Miles, 2014). Lituchy and Rail (2000) and McCole and Ramsey (2004) described that the application of internet technology balances the limited resources of SMEs and advises the means to take competitive advantage for SME sector. AlQershi, Mokhtar & Abas, (2020) revealed that the internet based e-CRM applications protect the SMEs from their competitors. Harrigan & Miles (2014) mentioned that the SMEs are unable to adopt e-CRM applications and software for their business, but they can apply internet based application for their marketing and other activities.

SMEs have been facing huge challenges and problems all over the world, particularly SMEs in developing nature of Sri Lanka have been facing huge challenges by severe competitions, corona virus, political instability, economic crisis etc (Sriyani, 2022; Kengatharan & Balaputhiran, 2021; Gunawardana, 2020). In Sri Lanka, SME sector plays prominent role by contributing to GDP, job creation, income generation and poverty alleviation. The concepts of e-CRM were framed by researchers but most are related with the large organizations and some emanated from SME sector. Large organizations have been acquiring and applying expensive and complex CRM software and this system also wants expertise knowledge. Carson and Gilmore (2000) mentioned that SMEs have limited resources and experts and e-CRM has been getting less important in their marketing activities of SMEs. Previous scholarly work explained that the e-CRM application is the one of strategy to develop the SME sector (Harrigan, Ramsey & Ibbotson, 2012).

SMEs have limited resources and access of financial resources, it is very expensive to develop innovative e-CRM technology platforms that is software and hardware (Harrigan & Miles, 2014). SMEs haven't any formal structure, the implementation of e-CRM is in question. In addition, prior studies described that the e-CRM application vary with the nature and size of the business (Dehghanpouri, Soltani & Rostamzadeh, 2020). Hence, there are some arguments about the application of e-CRM which is worthy or unworthy for firms, especially for the SME sector which have been facing huge problem and challenges.

Due to the vital role of SME sector for the development in Sri Lankan economy and in world economies, along with the lack of previous studies explored e-CRM in SMEs in the crisis environment, counter argument about the application of e-CRM for the SME sector, there is a huge need to investigate more research into e-CRM in SMEs for Sri Lankan context. There is also need to develop a model of the e-CRM application for SMEs in Sri Lanka. In this way, this study considers the prominent need of technology application in CRM by exploring adoption of e-CRM in SMEs. The research question of this study is: What are the factors and critical factors of e-CRM applicable in the SME sector in Sri Lanka? Based on these research questions the purpose of the research is to find out the factors and critical factors of the e-CRM in the SMEs in Sri Lanka.

## **2. Theoretical foundation**

### *2.1 Customer Relationship Management (CRM)*

Customer Relationship Management is one of the main customer focused strategy to build up sustainable relationship with potential customers, which is coordinated by the structured management system of companies. There are three stage development in CRM, at first CRM support for the division of the institution, second integrated solution of CRM and at last electronic CRM applications which is related with the internet based

development (e-Epichirin, 2004). The CRM capability integrates four resources as CRM technology, Customer orientation, CRM processes and CRM organization (AlQershi, Mokhtar & Abas, 2020). The main scope of the CRM was to create a very closer and thick relationship with customer and CRM tries to bring the customer-based culture by identifying the needs and wants and keeping individual\_ based relationship (Peppers et al., 1999). Organizations have more concern on keeping existing customers than attracting new customers, because it is easy to introduce incremental product to existing familiar customers and can provide services to the level of the customer expectations (Buttle & Maklan, 2019). Introducing a new product or incremental products for new customer makes very expensive for organizations (Buttle & Maklan, 2019). CRM is described as various forms, namely traditional CRM, electronic CRM (e-CRM), mobile CRM (m-CRM) and social CRM (SCRM) (Ahani, Rahim, & Nilashi, 2017).

## 2.2 E-CRM

E-CRM apply information and communication technology to increase the scope and the scale of customer service (Kotorov, 2002). The e-CRM is penetrated in the marketing activities through the tools and techniques which are the internet based technologies namely, web sites and e-mail, data-capture, warehousing and mining with a specific aim to locate, data-capture with the purpose of building and improving sustainable relationship with potential customers (Kelley et al., 2003). Skouloudis, (2003) described that the internet based applications are used in e-CRM as websites, e-mails, interactive TV, voice portals, Short Message Service (SMS), Multimedia Message Service (MMS), Wireless Application Protocol (WAP) and Interactive Voice Response (IVR). Firms implement e-CRM through the ad hoc functional team. Chatterjee, et al (2020) developed the ICT-enabled CRM systems to diagnose the progress of the adoption of e-CRM systems in organizations and considered the eight major functions as , Marketing, Sales, Customer Service, Employee, Partner, Support, contacts and Lead Management.

## 2.3 Industry Context: Small and Medium Enterprises (SMEs)

The department of census and statistics has categorized SMEs based on their nature of business into three distinct groups: Industry and construction, trade and services. The corresponding thresholds for the number of employees engaged in each category are 200, 35 and 75 respectively (Department of census and statistics, 2013/2014). The SMEs possess attributes; the positive attributes are simple organization structures, less restriction to access the financial resources, small budgets but flexible and less complex decision marking, and customized service; the negative attributes are lack of finance, limited human resource, lack of skilled and expertise employees and low supply for markets (Gilmore, Carson & Grant, 2001). Carson and Gilmore, (2000) and O'Dwyer et al., (2009) revealed pragmatic marketing theory for SMEs which explains that the SMEs possess employees' loyalty, interface between SMEs and customers, flexibility,

opportunity-focused, speed of response and accessing market information easily (Carson et al., 1995; Baker, 2008; O'Dwyer et al., 2009). Especially SMEs are possible to keep very close relationship with their potential and regular customers and build personalized relationship and interactions with customers and exchange knowledge and ideas with them (Moriarty et al., 2008).

#### *2.4 E-CRM in SMEs*

The e-CRM application explains the management system to create personal relationship with customers (McGowan and Durkin, 2002). Basically, e-CRM applies innovative technology (Ortega et al., 2008); and software application for the SME marketing to compete with the large competitors and keep the close relationship with customers (Ragins and Greco, 2003). Harrigan et al., (2008) linked the SME marketing theory with the e-CRM concept and principles; they revealed the e-CRM implementation in SME with two marketing dimensions, namely, customer communication and customer information management (Harrigan, Ramsey & Ibbotson, 2009).

One of the main objective of the internet is communication (Chaston and Mangles, 2003). O'Dwyer et al. (2009) revealed that SME marketing is a pragmatic marketing which includes informal, constant and open communication by creating mutual value between the firms and customers. This relationship includes the social aspect like face to face contacts (Ritchie and Brindley, 2005). SMEs maintain suitable communication channels to meet their needs of the customers effectively (Chen and Ching, 2007). E-CRM facilitates more convenient mutual link between customers and SMEs by enhancing the communication capabilities. SMEs uses tools and technologies to communicate with their customer based on their capabilities and E-mail, web sites and chat-rooms are the major communication tool in SMEs (Simmons et al., 2008). Mainly, SMEs uses social media as interactive communication tools, which is prompt and interactive communication tool to communicate with customers (Verhoef et al., 2010).

Customer information is acquired, stored and analyzed properly under the e-CRM system (Dwyer et al., 1987). Acquired customer profile information are recorded, unique requirement of customers are identified, histories and website activities are projected properly to create value to the firms through incorporating these information to decision making (Hutchinson and Quintas, 2008). Advanced e-CRM facilitates proper database and predict the consumer behavior through the e-CRM system. Bailey et al. (2009) mentioned "Where the core aim of e-CRM is actually to sell smarter, not necessarily sell more". E-CRM helps firms to sort properly the most potential and profitable customers and easily calculate the lifetime value of customers (Kumar et al., 2010). SMEs keep a back office for the information management capabilities. The SMEs have been applying internet based technologies to improve their communication with customers and manage the back office information management process sand

capabilities (Harrigan, Ramsey & Ibbotson, 2012). SMEs adopt simple technologies and focus to attract new customers and sustain existing customers by using more efficient CRM technologies. SME sector has positive perception on adoption of innovative technology to CRM, and decision towards the e-CRM (Nguyen & Waring, 2013). The advanced technology, Internet based technology and social media based customer data is utilized in a crucial way in organizations.

### **3. Methodology**

The main objective of the research is to investigate the factors of e-CRM application of SMEs in Sri Lanka. This study applied mixed methodology. Initially, concepts, variables and theories were derived from past researches. The qualitative research applied to find out the application of e-CRM in SME sector in Northern Province. Researchers applied snowball sampling to select the SMEs with special nature based on sizes as micro, small and medium and nature of the business. The study population comprises the SMEs in Northern Province, Sri Lanka. Sample Unit is SMEs and respondents are the owners or the managers of SMEs. Data were collected by in-depth interview and focus group discussion. Coding method was applied to identify the application of e-CRM of SMEs in Sri Lanka. Initially twenty-five SMEs were selected for this research study by using snow ball sampling. Researchers selected 10 micro, 10 small and 5 medium sized participants for the qualitative research. The participants represented different industries with varying age groups and experiences. Further, the participants of SMEs belonged to either of the following industries: coconut products (3), palmyrah (3), food products (5), textiles (2), printing products (2), education (2), hotels (3), constructions (3) and Hospitals (2). The time for the interview and focus group discussion varied from 45 to 60 minutes. A thematic coding method was applied to analyze the collected data; the data were categorized based on the themes and concepts.

The quantitative research applied to find out the factors of e-CRM in SME sector in Sri Lanka. There is no population framework for SME sector in Northern Province, Sri Lanka. The convenient sampling method was applied to select respondents; three hundred and fifty questionnaires were delivered directly and sent through the WhatsApp, Viber and e-mail. Only 284 questionnaires were returned. Exploratory Factor Analysis (EFA) was conducted to identify the factors of E-CRM application in SME sector in Sri Lanka. Researcher developed questionnaire and it includes two parts; part one includes demographic information and part two includes thirty six questions for E-CRM. All measures used five-point scales ranging from 1 (extremely disagree) to 5 (extremely agree) (Liu & Chen, 2023).

#### 4. Result

Researchers conducted descriptive analysis, qualitative thematic analysis and quantitative exploratory factor analysis in this research. Under the quantitative analysis 284 responses were the final responses and which were included for the analysis. Descriptive statistics explains the basic characteristics of the SMEs which were considered in this research, 160(56.3 %) of SME owners are male and 124(43.7%) are female, 59.1% of owners are married and 40.9% are unmarried. Through the interview it was clearly proved that 37% of SMEs earn below Rs 500,000/= and 39.4% of SMEs earn between Rs 500,001- 1,000,000 turnover and 23.6% of owners earn more than Rs 1,000,000/= annually. The yardsticks of number of persons engaged in firms is applied to categorize the small and medium business. The 32 % of the samples are viewed as having a micro business and 68% as having a solely medium business. In addition 48% of the sample are viewed as having a manufacturing and 62% as having a service business (Table 1).

##### 4.1 Qualitative research

Lengthy discussions were made up through the interviews and group discussion to identify the themes of e-CRM based for SMEs in Sri Lanka. Under the dimensions of e-CRM strategic integration, integrated communication channel is the important factor.

The owners of the Education Institutions mentioned:

*“Electronic communication is a main way to disseminate information to existing and future customers. Experienced students are sharing their experiences through the electronic feedback and future customers gather information from the website of the institutions.”*

Table 1: Information of SMEs

Details	Frequency	Percentage
Gender		
Male	160	56.3
Female	124	43.7
Marital status		
Yes	168	59.1
No	116	40.9
Turnover		
Less than 500,000	105	37.0
500,001-1,000,000	112	39.4
Over 1,000,000	67	23.6
Size		
Micro	91	32
Small and Medium	193	68
Type		
Manufacturing	136	48
Service	148	62

Coconut, Palmyrah and food producers mentioned:

*“The internet based communication helps to develop a continuous information dissemination and updated information to customers, that is, our supply level, prices, customized products and services, promotions etc.”*

These terms highlights two themes under the integrated communication channel as *customer contacts and proactive customer relationships development.*

Another important dimension of e-CRM strategic integration is Information management integration. The information management integration deals with E-CRM decision making.

Managers of a construction business explained:

*“We are gathering information about the customers through the front office and we have been making decision based on their needs and demand. We have been collecting database about the customers, based on that we are providing privileges for them. In addition, we can collect and store the data about the suppliers and observe the competitors through the electronic communication. Based on this electronic information, we have been making decision about the raw material, finance etc.”*

The next dimension of the e-CRM is technology based CRM which improves customer relations.

A manager of printing firm described:

*“We accept more orders and we will handover this order to partner firms and share all information easily through the advanced communication tools, such as e-mail, WhatsApp and other internet plat forms. This will improve firms’ relationship. Specially, we use the internet technology to update the work progress, customer interactions and relationships.”*

The e-CRM capability is related with the technology based CRM.

A directors of hospital explained:

*“We have been using various types of technology in the hospitals such as telephone, e-mail, online booking, billings etc. We provide adequate training to our employees to handle the innovative technology. At the same time we have computerized every process, that is, booking system, billing counter, pharmacy, ward billing, surgery activities etc. We have more concern on customers, customers can select the doctors, appointment time and convenient payment as cash or card. We have been maintaining patient data base and using their phone numbers as key number to identify them.”*



The concept of ICT-enabled CRM systems is related with the eight functional areas of Sales, Customer Service, Marketing, Partner, Employee, Contact, Support and Lead Management. Focus group discussion was conducted with the Hotel managers, they described:

<i>We understand our customers well by collecting information emanating from different consumer e-based contact points.</i>
<i>We are largely service oriented and the interaction between the customers and company is for a longer period possible through the internet based technologies, e-mail, WhatsApp, phone etc.</i>
<i>Many innovative e-CRM programs like loyalty programs are implemented by our hotel for its regular customers. We encouraged our customers for joining these exclusive clubs which offers them benefits in form of discounts on its various services by proper electronic based information system..</i>
<i>We maintain regular touch with their customers by sending newsletters as well as other publications through electronic tools.</i>
<i>Our success depends on our employees. Customer information helps our employees in customizing and serving the customers better based on individual tastes. Employees are well trained to innovative electronic based technologies.</i>
<i>The employees must have a clear understanding of the vision of the organization and the service philosophy of its top management for a unidirectional approach.</i>
<i>The customers are taken proper care by these organizations making them satisfied more as it gives them better e-word-of-mouth publicity.</i>
<i>They also provide sightseeing facilities, transportation as well as other advisory services through the electronic system to maintain a close touch with them and enhance their goodwill and loyalty of their customers</i>
<i>It also enhances loyalty in front of their customers. Referral through the electronic and internet based platform plays an important role in enhancing the customer base resulting in enhanced profitability for them in the long run.</i>
<i>The computer technology is used in building customer relationships. Specially, electronic based instruments are used to gather the feedbacks, responses or complaints from customers.</i>
<i>Director of Hospitals receives complaints from customers over the phone. Hotel manager explained they have incorporated ICT based feedback mechanism through the website for experience sharing, rating, feedbacks etc.</i>

Based on the focused group discussion and interviews, the following themes were produced (Table 2).

Table 2: Themes of e-CRM

Factors	Variables
Customer contacts	e-CRM strategic integration
Proactive customer relationships development	
Information management integration	
Technical personnel	Technology-based CRM
Suitable software	
Suitable hardware	
Comprehensive database	
Point of concern of Sales	ICT-enabled CRM systems
Point of concern of Customer Service,	
Point of concern of Marketing	
Point of concern of Partner,	
Point of concern of Employee,	
Point of concern of Contact,	
Point of concern of Support	
Point of concern of Lead Management	

4.2 Exploratory factor analysis

The researcher received 284 responses, the response rate in this survey is 71%. Exploratory Factor Analysis (EFA) primarily uses for data reduction or summarization. In this research, a total of thirty-six items are present, all of which exhibit correlations with one another. These correlations have been effectively mitigated to a manageable level. EFA is also utilized to diagnose primary factors. Further, EFA explains the association among related variables and helps to identify a novelty and reduced set of uncorrelated items to exchange the original set of interrelated variables ( Malhotra & Dash, 2011). In this research, Promax rotation method was applied to identify the factors.

Bartlett’s Test of Sphericity and the Kaiser-Meyer-Olkin Test of Sampling-Adequacy (KMO) are applied to assess the strength of the relationships of the variables (Beavers et al.,2013). The accepted index of KMO & Bartlett’s Test of Sphericity should be over 0.5 (Kaiser,1974). Also, the Bartlett’s Test of Sphericity shows the suitability and validity of the responses composed to the research problem being addressed through this study.

Table 3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.908
Bartlett's Test of Sphericity	Approx. Chi-Square	7580.612
	df	406
	Sig.	.000

In this study, values for KMO of e-CRM for SME sector is 0.908, which falls under the range of marvelous and significant of chi-square is 0.000 for all constructs ( $p < 0.05$ ). Hence, data indicate the suitability and appropriateness. Above table summarizes the statistics derived from the analysis in relation to KMO measure and Bartlett's Test. The study employs the EFA to diagnose the dimension of each variable of Principal Component Analysis (PCA) extraction method. In this research, E-CRM construct includes thirty six items. Initially the items with low communalities which are below 0.50 are excluded, there are two items, viz, “Efficient management of sales territories/units” /and “My organization maintains a comprehensive database of our customers”. Then six cross loaded items are excluded, they are “Optimum allocation of media channels, Efficient marketing campaigns, Ensuring multichannel interactions via contact management, Efficient utilization of different support channels, Measuring return on investment in campaigning and Efficient utilization of different lead generation channels”. After excluded the eight items, remaining twenty eight items were analyzed by using Promax rotation method and following table was produced.

Table 4: Matrix of Variance explained of e-CRM

Description	Percentage of explained variance	Cumulative percentage of explained variance	Number of Items
Factor 1	35.200	35.200	10
Factor 2	15.984	51.184	9
Factor 3	9.316	60.500	6
Factor 4	8.842	69.342	3

In the above table ‘Matrix of variance’ explains four factor solution: factor1 (e-CRM in Marketing), factor 2 (e-CRM implementation), factor 3 (e-CRM strategic integration) and factor 4 (Technology-based CRM). These four factors are extracted together account for 69.342% of total variance with factor 1 (e-CRM in Marketing) contributing to 35.200%, factor 2 (e-CRM implementation) contributing to 15.984%, factor 3 (e-CRM strategic integration) contributing to 9.316% and factor 4 (Technology-based CRM) contributing to 8.842% on E-CRM. Table 5 depicts the four dimensions of loading structures, viz, e-CRM in Marketing, e-CRM implementation, e-CRM Strategic integration and Technology-based CRM. Four factors of e-CRM and reliability of each factor are explained by the table 5.

#### 4.3 Common method bias

The common method bias is related with the data of the construct which are collected form the same respondents. The common method bias is checked with the Harman one – factor test (Podsakoff & Organ, 1986). The Cumulative percentage of explained variance for four factor solution is 69.342 % and last factor is 8.842%. Because, a single factor is not accounted for the most of the variance explained. Hence, there is no the common method bias in this data.

#### 4.4 Construct validity

Hair et al., (2010) described the construct validity as “the extent to which a set of measured items actually reflects the theoretical latent construct which those items are designed to measure”. Construct validity is addressed the convergent validity.

Table 5: Factor loading of EFA and reliability of E-CRM

Items	Item No	Factor Loading	Cronbach's alpha
e-CRM in Marketing (SMC)			0.954
Optimum joint planning with partners	SMC11	.956	
Efficient coordination with partners	SMC12	.948	
Proper allocation of human resources for sales/ services	SMC13	.885	
sales/ service team understands customers' business	SMC14	.857	
Strategic, tactical and operational priorities by the sales team	SMC15	.816	
Investment in marketing resources	SMC16	.806	
ROI in marketing resources	SMC17	.769	
Resource management for contact points	SMC18	.573	
Maintenance of customers' business	SMC19	.537	
Delivery of service management	SMC110	.490	
E-CRM implementation(CRMI)			0.942
Information to Employees	CRMI21	.972	
Guidelines to employees	CRMI22	.885	
Training to employees and people	CRMI 23	.813	
Customer contacts	CRMI 24	.811	
Real-time support to the customers	CRMI 26	.749	
Running and maintenance of customer operations	CRMI 29	.737	
Lead generation	CRMI 25	.621	
Campaigning, generating a high number of leads	CRMI 27	.575	
Open networking system for sales force	CRMI 28	.438	
e-CRM Strategic integration (SI)			0.925
Contact through the electronic communication with customers	SI31	.799	
Electronic Information central to Decision- Making	SI32	.767	
proactively used to develop customer relationships	SI33	.748	
Internet Technology to relationship	SI35	.741	
Internet Technology Vital to Customer relationships	SI34	.736	
Individual customer information at every point of contact.	SI36	.588	
Technology-based CRM(TBC)			0.600
technical support for the utilization of computer technology	TBC41	.782	
Software to serve Customers.	TBC42	.772	
Hardware to serve our customers.	TBC43	.588	

#### 4.5 Convergent validity

The convergent validity is the degree to which the measures of the same construct are correlated (Hair et al.,2010). The standardized factor loading values need be above than 0.5 for the convergent validity of the constructs. The factor loading values of items of the e-CRM were above the value 0.5. Hence, convergent validity is the validated in this study frame, it implies that, the items within a single factor are highly correlated.

#### 4.6 Discriminant validity

Discriminant validity is the extent to which a construct is truly distinct from other constructs (Hair & Anderson, 2010). Two primary methods exist for determining discriminant validity during an EFA. The first method is to examine the pattern matrix. Variables should load significantly only on one factor. In line with this, items that demonstrated cross-loadings greater than 0.4, total six factor were dropped, assuming that no pure measures of a specific construct are provided. The second method is to examine the factor correlation matrix, Correlations between factors should not exceed 0.7. A correlation greater than 0.7 indicates a majority of shared variance. Correlation values between antecedents of e-CRM were perfectly below the value 0.7 (Table 6). Hence, the second method is also a validated one.

Table 6: Correlation Matrix among each constructs of e-CRM

Component	SMC	CRMI	SI	TBC
SMC	1			
CRMI	.634**	1		
SI	.686**	.638**	1	
TBC	.471**	.544**	.357**	1

\*\* . Correlation is significant at the 0.01 level

## 5. Discussion

The purpose of the research is to explore the dimensions of e-CRM application for the SME sector in Sri Lanka. The CRM theory and e-CRM theory were incorporated under this study. Researcher applied mixed method. Tashakori and Creswell (2007) stated mixed-method research requires the investigator to collect and analyze data, and then to integrate the findings and draw inferences using both qualitative and quantitative approaches. Under the qualitative research, in-depth interview and focus group discussions were conducted and fourteen themes were produced for the e-CRM, and they were categorized as three namely, e-CRM strategic integration, Technology-based CRM and ICT-enabled CRM systems.

The objective of the research is to explore the factors of e-CRM for SMEs in Sri Lanka. Researcher applied factor analysis try to identify the factors influencing e-CRM for SMEs in Sri Lanka. EFA is the suited technique in the initial stage to find the unique factors with significant factor loading without cross loading issues. EFA results ensured the unique and critical factors. The first e-CRM factor is *e-CRM in Marketing*, which is explored as the most important critical factor of e-CRM for the SME sector in Sri Lanka. E-CRM in marketing includes the optimum joint planning with partners, efficient coordination with partners, ensuring sales or service team, understands customers' business, proper allocation of human resources for sales or services, understanding strategic, tactical and operational priorities by the sales team, ensuring proper investment in marketing resources, ensuring proper return on investment in

marketing resources, ensuring optimum resource management for call center and contact operation, optimum maintenance of customers' business and efficient proper delivery of service management. This finding is supported by Chatterjee, et. al. (2020), they explained that the e-CRM of marketing is the major functional area in the Indian firms. SMEs have been working with their partners when they are getting more orders; jointly planning all the resources including the human resources; sales teams easily communicate with the strategic level or tactical level to invest in marketing resources such as advertising sales promotions etc.; return on investment is ensured through the proper contacts and service management. Jaber & Simkin (2017) and Harrigan et. al (2012) supported the e-CRM application for marketing of SMEs and they revealed e-CRM appears to be a suitable strategy for all the SMEs, and many are accessing international markets through their websites and through e-CRM. Nguyen & Waring, (2013) e-CRM involves ten CRM features: Call center. Customer service, Sales force automation, Loyalty program, Offline marketing. E-marketing, Partner/channel management, Data warehousing/customer intelligence/data mining and Multichannel/cross-channel marketing solutions.

Second vital factor is *e-CRM implementation, which includes* Information to employees, Provide efficient guidelines to employees, Optimum delivery of high impact training to employees and people, Efficiency in managing customer contacts, Ensuring real-time support to the customers, Ensure proper running and maintenance of customer operations, Helps optimum lead generation, Ensure highly efficient campaigning, generating a high number of leads and Open networking system for sales force. Chatterjee, et. al. (2020) supported this findings for the Indian firms. Harrigan, Ramsey and Ibbotson (2008) and Al-Dmour et. al. (2019) refers "implementation of e-CRM using the tools and techniques delivered over the Internet using technologies such as web sites and e-mail, data-capture, warehousing and mining with a specific aim to locate and build and improve long-term customer relationships to enhance their individual potential". This implementation requires a combination of skills such as technical, operational, cultural, and organizational and a team-based approach (Blery & Michalakopoulos,2006). They also mentioned that the implementation of e-CRM-*ad hoc* cross-functional strategy, utilize the existing customer information, teamwork and collaboration were needed and many technologically old legacy systems existed, helped the information flow within the organization as well as improving its relationships with customers' vision and the commitment from the management are needed. Strategic priority should be given, the appropriate technological background to understand the operation of the system, offer the right training to all users and the application of information and communication technology to increase the scale and scope of customer service.

Another important factor is *e-CRM strategic integration* which includes Electronic communication is one of way to keep in contact with customers, Electronic Information

central to Decision- Making, Electronic communication is proactively used to develop customer relationships, Internet Technology improves relations, Internet Technology Vital to Customer Relationships and Individual customer information is available at every point of contact. These findings are supported by Harrigan, Ramsey & Ibbotson (2008), they revealed that the “SMEs are adopting relatively simple IBTs to improve customer communication and information management capabilities and to create competitive advantage through e-CRM; SMEs must use technologies to compete with larger organizations in today’s global marketplace”. “These technologies may be relatively simple, but the focus must always be on how they can impact on the relationship with the customer making it more efficient without losing effectiveness” (Harrigan, Ramsey & Ibbotson,2009). Hong-kit Yim et al. (2004) described the application of computer technology to build customer relationships with the right software to serve our customers complaints (responsiveness).

Last important factor is *Technology-based CRM* which includes right technical personnel to provide technical support for the utilization of computer technology in building customer relationships, suitable software to serve our Customers and the right/suitable hardware to serve our customers. AlQershi, Mokhtar & Abas, (2020) supported this findings and explained that the CRM technology is essential for the success of the firms, these firms must use technologies to compete with larger organizations in today’s global marketplace. Harrigan, Ramsey & Ibbotson, (2009) and Harrigan et. al (2012) revealed that the “SMEs are adopting relatively simple IBTs to improve customer communication and information management capabilities and to create competitive advantage through e-CRM; SMEs must use technologies to compete with larger organizations in today’s global marketplace. These technologies may be relatively simple, but the focus must always be on how they can impact on the relationship with the customer making it more efficient without losing effectiveness”.

## **6. Implications**

This study contributes to generate a comprehensive model of e-CRM for the SME sector in Sri Lanka. This study enriches the literature of SME marketing by helping theorists and practitioners understand the e-CRM in SEM sector with various insights. This study supports the findings of existing studies and connect the scenario with new insights to fills a gap in the literature in relation to influence of supporting system of the SMEs. The implication of this study is to increase the understanding of the comprehensive view of most important and critical factors of e-CRM from the SME perspectives. The findings of this study provide the evidence that in factors of e-CRM are somewhat different from the western countries. While in the literature of e-CRM has been endorsed by the scholars with different dimensions, this study demonstrate the factors e-CRM in Marketing, e-CRM implementation, e-CRM Strategic integration and Technology-based CRM. This study reveals the evidence that e-CRM is strongly promoted by novel factors in Sri Lankan SME sector. This results also reveals the

important implications for SME sector. The expected implication is that, through a better understanding of e-CRM system, SMEs can increase the potential for having best return on investment and develop the SME sector more effectively. The significant e-CRM factors identified during this study can help SME sector to understand why these factors are critical in their organization.

## 7. Limitation and future research suggestions

This study covers the e-CRM application of SME sector commonly, future researchers can research for manufacturing sector, Service sector and trade sector separately. This study conducted qualitative study and then EFA analysis to explore the model of e-CRM for the SME sector, future studies can conduct CFA analysis and validate this e-CRM model. This model is not tested the benefits of e-CRM and Performance of e-CRM. In future e-CRM model of SME sector can be tested with the benefits and performance.

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