Analyzing the Mediating Effects of Market Orientation on CRM Practices and Organizational Performance

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Abstract: Customer Relationship Management (CRM) is an important topic discussed by managers and scholars in recent years. Despite the evidence provided by numerous empirical studies, organizations that practice market information and implement market orientation will gain more competitive advantage and dynamic environments. Based on theoretical considerations, this study investigates the mediating effects of market orientation on CRM practices and organizational performance of the food manufacturing industry. A structural equation modelling was used to test a developed model on a sample of 364 organizations. The findings depict that infrastructural CRM resources and technological CRM resources affect the market orientation which in turn determine organizational performance. Further test showed that market orientation fully mediates the relationship between infrastructural CRM resources and organizational performance while in contrast the relationship between technological CRM resources and organizational performance only provides partial mediation. The implication for managerial concern which food manufacturer that practiced CRM in order to get better organizational performance was partly dependent on using market orientation to maintain and create long term channel relationship. The impact of market orientation as a mediating medium in this study provides ample opportunities for further research on marketing issue.

Key words: CRM practices, market orientation, organizational performance, food manufacturing industry, mediating effects

INTRODUCTION

The importance of managing customer relationship is increasingly gaining attention amongst organizations, hence driving the efforts by organizations to adopt CRM to better serve customers and to get closer to them (Teo *et al.*, 2006). CRM uses emerging technology that allows organizations to provide fast and effective use of customer database information systems. As a concern, CRM has grown into the plan of many organizational strategies. Many organizations in different part of the world have been practicing CRM based on their political, cultural, technological and industrial situations. In this competitive world market, manufacturers have to go beyond manufacturing and provide aftermarket service to maintain their competitive edge and retain the customer (Lin *et al.*, 2010). A previous study has mentioned that the number of manufacturers in the manufacturing industry that practice CRM is still low and they have a problem with retention of customers. Furthermore, the mode of relationship marketing has shifted from product orientation to customer orientation as it is deemed to be

more profitable to retain existing customers instead of attracting new customers (Javadi and Azmoon, 2011). Moreover, organizations are always creating a good customer relationship to generate profitable customer retention and loyalty in business (Galitsky and Rosa, 2011).

Additionally, manufacturing industry has incurred a high cost in managing customer retention and many manufacturers are still using a manual system in managing customer relationship. Furthermore, the term of CRM in the food manufacturing industry is still new (Anuar and Mohamad, 2012) and the method is not fully practiced in Malaysia (Mohamad *et al.*, 2014). Therefore, examining the practices of CRM in Malaysian food manufacturing industry is essential as it can develop the understanding of CRM elements which will subsequently improve organizational performance. However, so far there is very few studies done on CRM practices by Malaysia's food manufacturing industry. Therefore, the intention of this study is to investigate the mediating effects of market orientation on CRM practices and organizational performance of food manufacturing industry.

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Literature review

Theoretical background: The first CRM term was introduced by the IT industry in mid 1990s. In 1950s, the introduction of marketing concept by Drucker (2010) argued that the existence of customers is very reasonable foundation of an organization. Furthermore, the concept of CRM is not new as the main idea in creating the concept was based on marketing concept and the customer relationship activity is an essential activity in daily management practice in the organization (Coltman, 2007). This concept has been debated over the years and it remains unresolved until today with no agreement especially on the strategic value of IT (Oh and Pinsonneault, 2007).

RBV is an applicable multi dimensional perspective of CRM implementations and its relations between organizational performance and organization's resource are valuable and imitable (Coltman, 2007). Basically, RBV is very useful in the context of CRM and it is superior to former theories mentioned in previous studies (Keramati *et al.*, 2010).

Based on RBV of the firm, this study has developed a model of CRM practices and adopted the elements of CRM practices from previous studies (Keramati *et al.*, 2010) that are classified as infrastructural CRM resources and technological CRM resources. The fast development of CRM technology grants organizations to be motivated to implement them in order to develop robust interactions and enrich valuable customer (Day and Bulte, 2002).

Conceptual model: Customer relationship should be managed selectively and resource allocations should be based on customer value. In this view, the goal of CRM is to maximize organizational performance by managing the customer relationship portfolio (Zablah *et al.*, 2004). The marketing strategy in an organization is too focused on customer profitability and using technology in CRM will help organization to achieve this goal. This study hypothesized that CRM practices are a multi-dimensional construct consisting of two elements which are TCR and ICR that have been developed based on RBV theory. Additionally, the market orientation concept has been viewed as an actual implementation of the marketing concept. The implementation of market orientation has influenced the need to specify and control the mediating variables. Hence, it can be reasoned that in more dynamic and competitive market environment, a combination of market orientation and CRM practices might help organizations to achieve a competitive advantage. Thus, this study has developed a model of conceptual framework and it's presented in Fig. 1.

Hypotheses development

CRM practices and organizational performance: A firm's comprehensive strategy includes an action to develop firm's human resources, improve internal processes, restructure the internal organization and practice infrastructural resources (Mills and Smith, 2011). The changes in an organization directly affect the organization's performance (Farhanghi *et al.*, 2013). Therefore, it is argued that infrastructural resources are becoming a preferred comprehensive strategy to increase competitive advantage in the market are valuable to fulfill customer needs and hence provide greater experience in organizational performance. Accordingly, the following is predicted:

- H_1: The infrastructural CRM resources are significantly related to the organizational performance

Empirical findings suggest that the uncertainty in a firm's operating environment influences the relationship between CRM technology and organizational performance (Wade and Hulland, 2004). The findings depicted that technological resources have a significant impact on organizational performance to influence customer loyalty. Thus, if the implementation of CRM increases the efficiency of marketing, sales and customer service operations, it will eventually give direct positive influence on organizational performance. Based on these argument, the following is posited:

- H_2: The technological CRM resources are significantly related to the organizational performance

Market orientation and organizational performance: Past research indicated that the market orientation is positively impacting customer retention, profitability (Storbacka *et al.*, 1994) and customer satisfaction (Singh and Ranchord, 2004). Furthermore, other studies by Wang and Feng (2012) and Micheels and Gow (2012) concluded that market orientation directly impacts organizational performance. However, there was a different point of view that stated that market orientation is negatively related or has insignificant relationship with organizational performance (Nwokah, 2008). Many analysts now argue that the positive and strong relationship between market orientation and organizational performance needs to specify and control the mediating variables. Hence, this argument leads to the following hypothesis:

- H_3: Market orientation through customer relationship management practices will lead to positive relationship with organizational performance
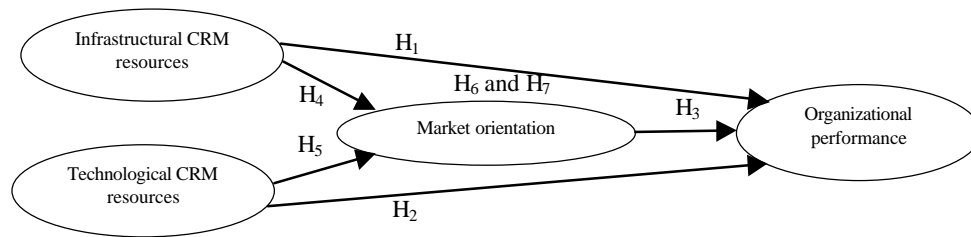
Fig. 1: Conceptual framework of CRM practices, market orientation and organizational performance

CRM practices and market orientation: There are some arguments about the market orientation role in the service industry. There are some selected theoretical views that service industry is inclined to be a less market oriented than manufacturing industry (Quintana *et al.*, 2007). Through the organizational learning and resources, a direct impact exists in the increase of market orientation theory and its implementation (Massa and Testa, 2009). Therefore, supported by Mavondo *et al.* (2005) concluded that the relationship between infrastructural CRM resources and market orientation is reliable. Additionally, Adhikari and Gill (2011) found that in developed countries, firm's resource initiatives have a significant effect on market orientation of the firm in business to business transaction. Hence, the following is posited:

- H_4: The infrastructural CRM resources are significantly related to the market orientation

Driven by advances in information technology, the use of CRM technology and resources delivers efficiencies for business change (Bose, 2012). The information technology of CRM is more likely to be adopted by a firm with a high degree of system openness in which a firm can establish their networking to the outsider that includes all their marketing activities (Musa, 2014). The superior the way the firm deals with the market, the further CRM technology will support activities that increase the firm's value in the customer perception. Thus, this study hypothesis that:

- H_5: The technological CRM resources are significantly related to the market orientation.

The mediating effects of market orientation on CRM practices and organizational performance: Market orientation is not capable to impact the organizational performance directly and it can only be done via a medium effect and by the modification of some variables that are essential to human resources and technology in a business (Mahmoud, 2010). Similarly, Zhu and Nakata

(2007) found that a technology resource interacts with market orientation to positively influence market performance. This study suggests CRM resources will be deployed throughout the organization and integrated more deeply into customer-facing business processes in firms that exhibit a market-oriented philosophy and culture. Hence, the two corresponding hypotheses are as follows:

- H_6: Market orientation fully mediates the relationship between infrastructural CRM resources and organizational performance
- H_7: Market orientation fully mediates the relationship between technological CRM resources and organizational performance

MATERIALS AND METHODS

Data collection: This study used the Malaysian External Trade Development Corporation (MATRADE) online directory database of Malaysian manufacturers as a sampling frame. The MATRADE online directory provides the details of food manufacturer's organization for 2,315 firms registered in Malaysia and used stratified random sampling with annual revenue <RM25 million and with number of employee <150 employees. A pilot study was conducted in order to assess the validity of measurement items with 10 respondents comprising six academicians and four executives in the food industry. An adjustments was made based on pilot study result, thus the final questionnaire was sent to selected respondents through online survey.

The respondents in this study was top level management of the food industry sector who have the information about the organization's marketing strategy (Lee-Kelley *et al.*, 2003). Besides, the top management plays essential roles in a process of decision making for technology adoption in a firm (Musa, 2014). Top level managers were contacted through online surveys and responses were obtained from 453 organizations and only

Table 1: Result of frequency analysis of respondents by sector

Manufacturing	Respondents		Population	
	Frequency	(%)	Frequency	(%)
Prepared food products	164	45.1	1,298	46.3
Beverages products	100	27.5	764	27.2
Agricultural produce products	76	20.9	474	16.9
Palm oil products	24	6.6	269	9.6
Total	364	100.0	2,805	100.0

364 data were usable. This represented a 12.98% response rate which compared well to past studies (Akroush *et al.*, 2011).

Table 1 indicates a frequency of various food manufacturing sectors of the respondents and population. This table indicates that there are relative connections in the scattering of sample respondents as compared to the total population. In ensuring that the responses of the early and late respondents represent the larger population, a non-response bias test was adopted as a tool for comparison. The non-response bias test is considered as not a concern as the χ^2 tests indicated there are no significant differences between both groups.

Research instrument development measures: The measurement of four constructs in this study used multiple-item scales and was adapted from the past research. The measurement item was a seven-point Likert scales ranging from strongly disagree (1) to strongly agree (7). The developments of infrastructural CRM resources were based on RBV theory with eight items and they formed two sub-categories: organizational resources and human resources. All items were adapted from previous studies such as Powell and Dent-Micallef (1997). A second construct is Technological CRM Resources (TCR) that were measured using eight items. All items assessing the technological CRM resources were adapted from Xu and Walton (2005) and Sin *et al.* (2005).

A market orientation was measured as mediation in this study. This construct was measured using twelve items adapted from Slater and Narver (1998). Finally, organizational performance constructs measured thirteen items from a marketing perspective adapted from various studies. There are two reasons that affect the managers' subjective basis evaluation for the organizational performance assessment. First, subjective and objective assessment can be employed to assess the organizational performance. Second, the literature advocated that the subjective approach is a reliable and valid method to measure performance.

RESULTS AND DISCUSSION

Analysis procedure: This study employed the data analysis procedures suggested by Joreskorg. First, the full sample of 364 respondents was divided into two

Table 2: Measures of construct reliability

Constructs	No. of items	α
Infrastructural CRM Resources	8	0.92
Technological CRM Resources	8	0.89
Market orientation	12	0.92
Organizational performance	13	0.94

sets: calibration and validation samples. The calibration sample consisted of 164 respondents and the remaining 200 respondents were treated as the validation sample. The calibration samples were examined using Exploratory Factor Analysis (EFA) as a first step in the analysis. Subsequently, the validation sample was analyzed using Structural Equation Modelling (SEM) to test Confirmatory Factor Analysis (CFA). Next, a full measurement model which employed the full sample of 364 respondents, was tested through measurement and finally structural model to observe the hypothesized relations among constructs of this study. For mediation analysis, this study used the nested comparison model to test a mediating effect in the relationship between the independent variable to the dependent variable.

Reliability and validity of the measurement scales: The first step, in order to create the internal consistency of the measures, this study calculated Cronbach's alpha coefficients to estimate the reliability of each scale and items-to-total correlation. Table 2 shows a summary of the reliability results of this study. All the constructs achieved the coefficient values of >0.70 which were in line with the acceptance level suggested by Grabner-Kraeuter and coauthors.

The next step of the analysis is EFA test using a method of principal axis factoring and rotation of direction oblimin that will measure a primary structure for 31 items. Total 16 items that comprise two constructs were tested together. The KMO results for these construct were 0.92 and for Bartlett's test sphericity, χ^2 (df = 91, n = 164) = 1668.82; p<0.001.

All factors loading were acceptable and the item with 0.89 was the lowest loading. Any loading with 0.45 and below should be considered for deletion as suggested by Hair *et al.* (2010). The 12 items of market orientation's measure and 13 items of organizational performance's measure in the conceptual framework were also exposed to the method of principal axis factoring. Each construct contributed one-factor generic with eigenvalue above 1 and the extracted factors for market orientation and organizational performance were 64.44 and 65.84% of the total variance, respectively.

The third step, after deleting the lowest item during EFA was to conduct CFA. CFA goal is to test each measurement item in term of validity and to test the

construct in one-factor congeneric models. This technique was employed to directly test the dimensionality of the constructs (Hult *et al.*, 2004).

The following Goodness-of-FIt indices (GFIs) were employed as recommended by Byrne (2013) where the acceptable value is 0.90. The Tucker Lewis index (TLI) was also used and is acceptable at the value of 0.90 (Bentler, 1990), the Comparative Fit Index (CFI) is acceptable at 0.90 (Bagozzi and Yi, 1988) and Normal Fit Index (NFI) is acceptable at 0.90 or more (Bentler, 1990).

Furthermore, the minimum value of the Root Mean Square Error of Approximation (RMSEA) is 0.08 and Standardized Root-Mean-Square (SRMR) below 0.05 is acceptable. Table 3 indicates the CFA results of latent variables in this study. All constructs were uni-dimensional. Given that Mardia's coefficient signifies a value of >3 which suggests that the data have a high level of multivariate non-normality (Mardia, 1970), the Bollen-Stine bootstrap p would be a more appropriate statistic for the evaluation of fit for the measurement and full structural models (Bollen and Long, 1993). The next step was to test a measurement model. This step comprised all constructs and used full data of 364 samples to assess the measurement model. Results show the data did not fit the model well, $\chi^2 = 188.98$, df = 84, p<0.001. Then, the procedure of Bollen Stein bootstrapping was used which resulted in an adjusted χ^2, p = 0.09 indicating the data fits the model well. Other fit indices include: GFI = 0.93, TLI = 0.96, NFI = 0.95, CFI = 0.95, SRMR = 0.04 and RMSEA = 0.06. Based on the result, the square root of the Variance Extracted Estimates (AVE) of each construct were acceptable and discriminant validity did not exist for each construct. The result of discriminant validity test is presented in Table 4.

Table 3: CFA of latent variables

Constructs	Infrastructural CRM resources	Technological CRM resources	Market orientation	Organizationa performance
χ^2	24.770	32.690	12.840	42.220
df	2.000	13.000	2.000	19.000
p	0.001	0.002	0.002	0.002
Bollen-Stine p	0.050	0.090	0.120	0.100
RMSEA	0.240	0.080	0.170	0.080
SRMR	0.040	0.030	0.050	0.040
GFI	0.950	0.960	0.970	0.950
TLI	0.840	0.960	0.840	0.940
NFI	0.940	0.960	0.940	0.930
CFI	0.950	0.980	0.950	0.960

Table 4: Discriminant validity test

Constructs	M	SD	MO	TCR	ICR	OP
Market Orientation (MO)	5.86	1.03	0.76			
Technological CRM	5.42	1.35	0.35	0.86		
Infrastructural CRM Resources (ICR)	5.49	1.18	0.49	0.59	0.81	
Organizational Performance (OP)	6.02	0.91	0.57	0.32	0.33	0.83

Finally, to test the hypothesis on the relationship between constructs, a structural equation modelling was performed by utilizing AMOS 18.0. Using the bootstrapping procedure, the data fitted the structural model well with $\chi^2 = 188.98$, df = 84, Bollen-Stine p = 0.09, GFI = 0.94, TLI = 0.96, NFI = 0.952, CFI = 0.97, SRMR = 0.04 and RMSEA = 0.06. The result indicates that CRM practices of infrastructural CRM resources and market orientation have a significant and positive relationship to organizational performance (H_1 and H_3), whereas technological CRM resources have no significant impact on organizational performance (H_2). Similarly, there was no significant relationship between infrastructural CRM resources and market orientation (H_4) and it was found that the technological CRM resources have a significant impact on market orientation (H_5). These relationships and the hypotheses results are summarized in Table 5.

Nested-model comparisons for mediating analysis: The mediating effects of market orientation were analyzed by conducting nested model comparisons. Mediation analysis is a hypothesized causal relationship in which one constructs affect a second construct and subsequently affects a third construct. To explain the mediation effects of organizational performance, a technique developed by Baron and Kenny (1986) was useful to the path analysis results. Meanwhile, a mediating model which includes latent constructs can be tested by structural equation modelling. In a situation where explanatory variable (X) has no more effects that are dependent to variable (Y) after the mediating variable (M) has been controlled and the direct path is zero, the situation is defined as full mediation. On the other hand, if the path from X-Y is reduced to absolute size but not up to zero when the mediator is controlled, it is defined as partial mediation.

First, to test mediation of market orientation between infrastructural CRM resources and organizational performance, 3 models were proposed and they are presented in Table 6. Model 1 (partially mediated model) is nested with the presence of all direct and indirect pathways to organizational performance. In this model, infrastructural CRM resources were significant predictor of market orientation ($\beta = 0.33$; p<0.001) and organizational performance ($\beta = 0.50$; p< 0.001) and infrastructural CRM resources were not significant predictor of organizational performance ($\beta = -0.01$; p>0.05). Model 2 tested the fully mediated model of infrastructural CRM resources for organizational performance. The results showed significant χ^2 difference when compared

Table 5: Hypotheses and results

Predictor variables	Criterion variables	β	t-values	p-values	Hypotheses	Results
Infrastructural CRM resources	Organizational performance	0.33	5.85	-	H_1	Supported
Technological CRM resources	Organizational performance	0.07	1.46	0.15	H_2	Not supported
Market orientation	Organizational performance	0.50	7.93	-	H_3	Supported
Infrastructural CRM resources	Market orientation	-0.01	-0.10	0.92	H_4	Not supported
Technological CRM resources	Market orientation	0.10	2.26	0.02	H_5	Supported

Table 6: Results of multi-model analysis: nested model comparisons to test for mediating relationship

	Model 1 (partial mediation)			Model 2 (full mediation)			Model 3 (no mediation)		
Paths	χ^2	df	β	χ^2	df	β	χ^2	df	β
Infrastructural CRM Resources and organizational performance									
ICR→MO			0.33***			0.33***			0.00
MO→OP	188.90	84	0.50***	188.99	85	0.50***	224.06	85	0.48***
ICR→OP			-0.01			0.00			0.03
Technological CRM Resources and organizational performance									
TCR→MO			0.42***			0.36***			0.00
MO→OP	188.98	84	0.50***	188.99	85	0.45***	191.07	85	0.38***
TCR→OP			0.25**			0.00			0.28***

***$\Delta\chi^2$ = 0.10 (1) p = 0.92; 35.08 (1) p<0.001; **10.50 (1) p<0.001; 17.44 (1) p<0.001

to Model 1 ($\Delta\chi^2$ = 0.10 (1); p = 0.92) and Model 3 ($\Delta\chi^2$ = 35.08 (1) p<0.001), suggesting that the full model was a better fit to the data. The acceptance of Model 1 was based on its p-value which was 0.92 and this was more than that of Model 3 which was <0.001. Based on the nested model comparison, the results indicated that market orientation fully mediated the relationship between infrastructural CRM resources and organizational performance. Therefore, these results did support H_6.

Second, to test mediation of market orientation between technological CRM resources and organizational performance, 3 models are presented in Table 6. Model 1 presented a significant relationship between technological CRM resources and market orientation with (β = 0.42; p< 0.001), market orientation and organizational performance (β = 0.50, p<0.001) and technological CRM resources and organizational performance (β = 0.25; p<0.05). Model 2 presented a relationship between technological CRM resources and market orientation with (β = 0.36; p<0.001) as well as market orientation and organizational performance (β =0.45; p <0.001). Model 2 tested the fully mediated model of technological CRM resources to organizational performance. The results showed a significant χ^2 difference when compared to Model 1 ($\Delta\chi^2$ = 10.50 (1); p< 0.001) suggesting that the partial mediated model was a better fit to the data. Model 3 presented the relationship between market orientation and organizational performance (β = 0.38; p< .001) as well as technological CRM resources and organizational performance (β = 0.28; p<0.001). Model 3 tested for no mediation between TCR and organizational performance. The results showed a significant χ^2 difference when compared to Model 1 ($\Delta\chi^2$ = 17.44; p<0.001) suggesting that the partial mediated model was still a better fit to the

data. Based on the nested model comparison, the results indicated that market orientation partially mediated technological CRM resources and organizational performance. Therefore, these results did not support H_7.

This study demonstrated that RBV can influence the model in the relationships between CRM practices, market orientation and organizational performance. In order to effectively improve organizational performance, firms should develop their infrastructural CRM resources and technological CRM resources strategy to support the implementation of the CRM system. Additionally, it is proven that market orientation plays a mediating role in the relationship between CRM practices and organizational performance.

Theoretical implications: The investigation of CRM practices has been approached from various theoretical viewpoints. Some studies have merged some factors from these theories into a single study; not many researchers have successfully embodied these theories together with market orientation into an integrated model. With these theories, many academicians and practitioners have shown a growing interest in this concept and in how the implementation of this concept can improve performance. However, market orientation theory, although pertinent to CRM practices, has received very little attention in such studies. These findings support the literature that advocated the view that infrastructural CRM resource will enable organizations to reduce costs and increase resources and the view that technological CRM resources will affect the CRM activity in the organization.

This research contributes to the literature that stated that successful application of CRM will enhance firms' success in managing customer relationship. A firm must reinforce its market orientation strategies and develop the

infrastructure resources to support the strategies. This strategy will allow the firm to obtain larger number of total useful real time customer information from inside and outside of the firm. High quality customer information enables CRM to be more effective and enable the firm to facilitate one-on-one personalized in-depth marketing relations, hence it manages the management of customer relationship. The successful implementation of a CRM practice will help firms acquire information on their customers and quickly respond to customer demands, thereby enables them to achieve their marketing goals.

CONCULSION

Finally, operational measures did not differentiate between the functionality of the integration of the actual CRM resources and relationship marketing. The results of the exploratory factor analysis indicate that the scales did not adequately measure the functionality and integration constructs. Hence, this study believes that future comparative studies on CRM would be choosing a good user of CRM system and activity may benefit to further understand the model proposed.

IMPLICATIONS

The rising organizations' intention and efforts in increasing organizational performance are led by the belief that relationship between infrastructural CRM resources, technological CRM resources and market orientation is important in increasing customer retention and profitability. As a business discipline, this study could be directed toward helping managers and practitioners decide on how CRM can be practiced to increase both business developments and competitiveness.

Moreover, the study provides a technique to overcome tough competitive environments, to create strategic decisions and to plan the best internal resource allocations. This study affords strategic perception into why organizations with the same aggregate of resources differ from each other with regard to organizational performance level. Not withstanding the strength of market orientation and technological CRM resources towards organizational performance is relatively different, a poor handling of resource allocation can affect unstable projects and cause low efficiency which will subsequently lead to poor performance. Therefore, marketing executives should pay attention on how to designate their limited resources as it may be significant to their organizational performance.

Finally, technology plays a major role in assigning and describing CRM resources, as technology is one of the first and last step in CRM. Musa *et al.* (2015) describes the benefits of the technology as relative advantage, in which will affect the decision to adopt it by managers. In fact, managers ought to understand what CRM goals they are going to follow, what procedures they want to maintain and which profits they want to accomplish. Thus, based on the technology and benefits associated with CRM, managers could leverage their expenditure on a suitable combination of infrastructural and technological CRM resources in order to build support for their CRM activity.

LIMITATIONS

Similar to other studies, this research also has several limitations. Firstly, the sampling frame in this study was limited to food manufacturers industry in Malaysia. Mostly food manufacturers in Malaysia are mainly small and medium enterprises and they don't have good CRM system and marketing capabilities compared to that of the multinational companies. Further research is strongly encouraged to focus on heavy industry that uses CRM system.

Secondly, this study focuses on the mediating role of market orientation on the relationship between CRM practices and organizational performance. Future studies may examine other potential mediating effects of contingency factor that might affect the practice of CRM and organizational performance.

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