

Factors Influencing Implementation of CRM Technology Among Small and Medium Sized Enterprises

B. Ramaseshan, Chia Peng Kiat, Curtin University of Technology

Abstract

This study aims to identify the factors that influence the implementation of customer relationship management (CRM) technology among small and medium-sized enterprises (SMEs). From the existing literature six factors: relative advantage, cost effectiveness, top management support, information technology (IT) knowledge, government support and competitive pressure were identified to influence CRM technology implementation in organizations in general. The effect and relative importance of these factors on CRM implementation was examined in the context of SMEs in Singapore. Top management support emerged as the most important factor followed closely by relative advantage. The influence of competitive pressure, government support, cost effectiveness and IT knowledge were found to be not significant.

Introduction

With customers becoming more discrete and demanding there is an increasing realization among firms that competing with cheaper, better or different products is not sufficient, and competitive advantage could not be achieved by mere product differentiation, but through enhanced customer relationships (Puschmann and Alt, 2001). Due to low switching costs, customers have been redirecting their loyalty from one firm to another easily (Massey et al., 2001). There is also an increasing recognition among firms that it costs more to attract new customers than retain existing customers due to high operating expenses incurred by companies in their advertising and marketing campaigns (Reichheld, 1993). Thus, companies should differentiate customers (Nykamp, 2001) instead of differentiating products and they should shift their focus from market share to customer share. Significant advances in information technology (IT) provided businesses with an opportunity to maintain and nurture customer relationships more effectively through CRM (Zineldin, 2000). Usage and benefits of CRM technology by large companies is well documented. Ramaseshan, et.al. (2006) pointed out that as the era of globalization continues to manifest through the emergence of global companies, the importance of customer relationship management in these companies has become increasingly significant. They identified the challenges in formulation and implementation of CRM across national boundaries as a source of sustained advantage. While the adoption of CRM technology is equally significant, if not, critical for SMEs to remain viable today, adoption of this technology among SMEs is slow (Wee, 2000). Given the relatively little research on CRM technology adoption among SMEs, the aim of this study is to determine the factors or variables that influence SMEs' intention to adopt CRM technology in Singapore. Specifically, the research objectives of the study are to (i) identify the factors that influence implementation of CRM technology among SMEs in Singapore; and (ii)

identify the relative importance of the factors that influence implementation of CRM technology among SMEs in Singapore.

Literature Review and Hypotheses

Premkumar and Roberts (1999) pointed out that companies would like benefits from the adoption of a new innovation to be commensurate with the costs associated with the adoption of the innovation. These costs include initial investment cost, operational costs and the cost of training the users to use the innovation. Ramaseshan (1997) and Premkumar et al., (1994) found cost to be an important variable in the adoption of EDI. For small businesses, the costs of hardware and software are still a big deterrent to adoption, and therefore firms evaluate the cost relative to the benefits before adopting a new technology. Hence, it is hypothesised that:

H1: Higher perceived cost effectiveness will have a positive influence on implementation of CRM technology.

Barriers in developing the necessary skills and technical knowledge have led many businesses to postpone adoption of the innovation. This suggests that overcoming the lack of knowledge about the innovation will increase the likelihood of adopting the innovation. Attewell (1992) indicated that decreasing knowledge barriers lead to the diffusion of complex technological innovations. Gable and Raman (1992) found that lack of basic knowledge and awareness of IT and benefits that IT could potentially offer led to small business owners rejecting the notion that IT could be of any use to their businesses. Reynolds et al., (1994) confirmed that owners and employees of small businesses tend to have limited skills and expertise especially when it comes to the use of IT. If these small businesses could be educated on the benefits of IT, they may be more willing to adopt such technology (Thong and Yap, 1995). Thus it is hypothesized that:

H2: Higher level of IT knowledge has positive influence on implementation of CRM technology.

New technologies are expected to provide relative advantage to adopters of these technologies. These advantages are essentially the benefits in terms of reduced turnaround time, better customer service, reduced costs and timely information availability for decision making. In a competitive market place, these benefits create significant motivations for adopting new technologies (Premkumar and Roberts, 1999). Ramaseshan (1997) and O'Callaghan et al., (1992) found that adoption of EDI is related to the perceived relative advantage of the technology while Cragg and King (1993) established that perceived relative advantage of IT is the most important factor for IT adoption in small businesses. Thong (1999) pointed out that decision-makers who perceive relative advantage in an innovation will be more likely to adopt the new technology. We therefore hypothesize that:

H3: Higher perceived relative advantage has positive influence on implementation of CRM technology.

Teo et al., (1997) pointed out that top management support is crucial in overcoming barriers and resistance to change and innovation. This is consistent with other studies which found top

management support to be critical for creating a supportive climate and providing adequate resources for adoption of new technologies (Grover and Goslar, 1993; Ang and Pavri, 1994; Rogers, 1995; Ramaseshan, 1997). In small business, the decision-maker is very likely to be in the top management team and therefore should have his/her support on the adoption of new technologies (Blili and Raymond, 1993). Thus, it is hypothesised that:

H4: Higher top management support has positive influence on implementation of CRM technology.

Government agencies play an important role as users and inducers of IT practices (Kim, 2001; Chan and AL-Hawamdeh, 2002; Tigre 2003). Many governments now recognise the potential for e-government to radically improve service delivery, enhance efficiency and better meet the needs of business, citizens and the community (Panneervel and Ramaseshan, 2006; Goh, 1996).

Therefore, it is hypothesised that:

H5: Higher government support has positive influence on implementation of CRM technology.

Competition and tough rivalry increases the innovation adoption (Porter, 1990). By adopting an innovation like IT, businesses would be able to change their competitive environment by changing the industry structure to alter the rules of competition, create competitive advantage by giving businesses new ways to outperform their rivals and create new businesses, often from within existing operations of the business. Therefore, a business in a very competitive environment would feel a greater need to turn to IT to gain a competitive advantage. In a less competitive environment there is not as much push to be innovative. This led to the hypothesis that:

H6: Higher competitive pressure has positive influence on implementation of CRM technology.

Method

The independent variables relative advantage, cost effectiveness and top management support were measured using the scales of Premkumar et al., (1994). IT knowledge was measured based on four items adapted from Gable and Raman (1992) and Thong (1999). The items assessed the level of technical knowledge and skills possessed by the firm in relation to its sales and performance. Government support was measured by four items that determined the government's effort to encourage the use of the technology through dissemination of information and financial support. These items were adapted from Crow (1988), Toh and Low (1993) and Tan and Teo (2000). Competitive pressure was measured by four items, adapted from Premkumar and Ramaurthy (1995). The items assessed whether it was a strategic necessity to use the technology and potential lost of customers due to erosion of competitiveness. The dependent variable intent to adopt CRM was measured based on one item adapted from Ajzen and Fishbein (1980) and Chwelos et al., (2001) that determined the length of time required to adopt an innovation

The unit of analysis here was the SME organization that currently does not have a CRM technology in operation. A pilot tested online questionnaire was sent to 250 SMEs that had a

web site and an e-mail address and listed in the Directory of SMEs. Fully completed questionnaire was received from 60 firms that currently do not have CRM technology.

Analysis

As many as on third (30%) of the sample firms had 51 to 100 employees while 6% have more than 100 employees. 26.67% have between 21 to 30 employees and 13.33% have fewer than 20 employees. Wholesale businesses accounted for 45% percent of the sample firms. This was followed by manufacturing, construction, service, communication/transport/storage and retail with 20%, 13.33%, 11.67%, 8.33% and 1.67% respectively. Nearly 70% of the sample firms were in business for more than 15 years, 15% have between 11 to 15 years while nearly 12% have been in business for 6 to 10 years.

Factor analysis using principal component method was performed on all the items included for the six variables viz. relative advantage, cost effectiveness, top management support, information technology (IT) knowledge, government support and competitive pressure. The individual items relating to the each of the six independent variables loaded onto separately into the respective factors.

A multiple regression analysis was conducted with intention to adopt CRM as criterion variable and the six predictor variables. Correlations among the variables has shown absence of multicollinearity. The adjusted R-Square was found to be .301 suggesting that the six predictor variables together explain 30.1 percent of the variation in intention to adopt CRM among SMEs. The results are presented in Table 1.

Table 1: Regression Coefficients

Variable	Unstandardized Coefficients	Std. Error	Standardized Beta	t-value	Sig.
(Constant)	.422	.898		.470	.640
Cost effectiveness	-.182	.183	-.120	-.997	.323
ITKnowledge	-.094	.236	-.051	-.397	.693
Relative Advantage	.519	.256	.350	2.029	.047
Top Management Support	.757	.304	.450	2.488	.016
Government Support	-.159	.263	-.080	-.603	.549
Competitive Pressure	-.157	.184	-.130	-.857	.395

Dependent Variable: Intention to implement CRM Technology

From Table 3 it could be seen that top management support had the major effect on SMEs' intention to adopt CRM technology with the highest beta coefficient of 0.450 and statistically significant ($p < 0.05$). Therefore, Hypothesis 4 was supported. This was followed by the factor

relative advantage which was found to be statistically significant with a coefficient of 0.350 ($p < 0.05$) and ranked second in terms of relative importance. Thus, Hypothesis 3 was supported. The remaining factors: cost effectiveness (beta coefficient of -0.120), IT knowledge (beta coefficient of -0.051), government support (beta value of -0.080) and Competitive pressure (beta coefficient of -0.308) were not found to be significant. Thus as not significant in relation to the intention to adopt CRM technology. Thus Hypothesis 1, Hypothesis 2, Hypothesis 5 and Hypothesis 6 were not supported.

Discussion and Implications

The findings from this study shows that the 6 factors, viz. cost effectiveness, IT knowledge, relative advantage, top management support, government support and competitive pressure together explained 30.1 percent of the variance in the adoption CRM technology among SMEs. Top management support had the major influence on SMEs' intention to adopt CRM technology with the highest beta coefficient of 0.450 and was significant. The factor of relative advantage was found to be statistically significant with a beta coefficient of 0.350 and ranked second in terms of relative importance. Cost effectiveness, IT knowledge, government support and competitive pressure did not have significant influence in the adoption of CRM technology among SMEs.

The results of the study show that SMEs' managers, IT consultants, vendors and government agencies should develop new approaches to promote CRM adoption among SMEs in Singapore. Firstly, in order to increase their chances of success, it would be appropriate for IT consultants and vendors to target their marketing efforts at top management especially CEOs of SMEs. It is likely that the owner is in the top management (Blili and Raymond, 1993) and if he/she is convinced of the technology, it is very likely to increase the firm's intention to adopt CRM (Thong and Yap, 1995; Premkumar and Roberts, 1999). IT consultants and vendors should take steps to create CRM awareness among these CEOs so as to educate them.

Secondly, IT consultants and vendors must be able to demonstrate the value addition - that CRM technology offers a better alternative to existing practices to the small and medium-sized firms. CEOs prefer not to adopt CRM unless they are sure that adoption of CRM is one way of doing things better and not doing things differently (Thong and Yap, 1995). With a better understanding of CRM and its potential benefits, these CEOs may develop positive attitudes towards the adoption of CRM technology. As their attitudes become more positive, they will be more receptive towards the idea of adopting CRM. Finally, government agencies which are responsible for promoting CRM adoption should focus their effort on raising CRM literacy. This can be achieved through seminars and training programmes specially designed for CEOs and employees of small and medium-sized businesses.

This study has several limitations. Firstly, the small sample size reduced the power of the statistical analysis. A large-scale field study could be used to collect data that can validate the model on a larger scale and provide greater generalizability of the results. Secondly, the study

needs to be replicated in other countries. Thirdly, as this study is cross-sectional, causality of relationships could not be demonstrated completely, and feedback from the respondents could not be investigated. Longitudinal studies are needed to confirm the direction of causality and test for feedback effects. Longitudinal studies are also needed to investigate the timeline (Zikmund, 2003) of CRM adoption in SMEs across industry sectors and adoption levels. Fourthly, instead of focusing across all industries, it may be useful to examine the intention to adopt CRM technology to specific industry sectors. A focused understanding of particular opportunities and challenges for SMEs' adoption within an industry would assist in developing policies or initiatives to encourage uptake among SMEs in critical industries.

Finally, significant percentage of the variance in the intention to adopt CRM remains unexplained. More research on this area is needed. This study has investigated a subset of the variables found to be important determinants of CRM adoption among SMEs in Singapore. Other independent variables that may provide explaining power include innovation characteristics such as trialability and observability, and individual characteristics such as CEO's innovativeness and CEO's attitude towards adoption of IT. Future research in this area could be designed to address the above limitations.

References

Ajzen, I., Fishbein, M., 1980. *Understanding Attitudes and Predicting Social Behaviour*, Englewood Cliffs, NJ: Prentice Hall.

Ang, J., Pavri, F., 1994. A Survey and Critique of the Impact of Information Technology. *International Journal of Information Management* 17, (3), 122-30.

Attewell, P., 1992. Technology Diffusion and Organisational Learning: The Case of Business Computing. *Organisation Science* 3, (1), 1-19.

Blili, S., Raymond, L., 1993. Information Technology: Threats and Opportunities for Small and Medium-Sized Enterprises. *International Journal of Information Management* 13, (6), 439-448.

Chan, B., Al-Hawamdeh, S., 2002. The Development of Ecommerce in Singapore: The Impact of Government Initiatives. *Business Process Management Journal* 8, (3), 278-288.

Chwelos, P., Benbasat, I., Dexter, A.S., 2001. Research Report: Empirical Test of An EDI Adoption Model. *Information Systems Research*, 12, (3), 304-321.

Cragg, P., King, M., 1993. Small-Firm Computing: Motivators and Inhibitors. *MIS Quarterly*, 12, (1), 47-60.

Crow, M.M., 1988. Assessing Government Influence on Industrial R&D. *Research Technology Management* 31, (5), 47-52.

Gable, G.G., Raman, K.S., 1992. Government Initiatives for IT Adoption in Small Businesses: Experiences of the Singapore Small Enterprises Computerisation Programme. *International Information Systems* 1, (1), 68-93.

Goh, H.P., 1996. *The Diffusion of Internet in Singapore: A Content Analytic Approach*. Faculty of Business Administration, National University of Singapore.

Grover, V., Goslar, M.D., 1993. The Initiation, Adoption and Implementation of Telecommunications Technologies in US Organisations. *Journal of Management Information Systems* 10, (1), 141-163.

Kim, S.B., 2001. Korea Ecommerce: Present and Future, *Asia-Pacific Review* 8, (1), 75-79.

Massey, A.P., Montoya-Weiss, M., Holcom, K., 2001. Re-Engineering the Customer Relationship: Leveraging Knowledge Assets at IBM, *Decision Support Systems* 32, (2), 155-170.

Nykamp, M., 2001. *The Customer Differential: The Complete Guide to Implementing Customer Relationship Management*. American Management Association, New York.

- O'Callaghan, R., Kaufmann, P.J., Konsynski, B.R., 1992. Adoption Correlates and Share Effects of Electronic Data Interchange Systems in Marketing Channels. *Journal of Marketing* 56, (2), 45-56.
- Panneervel, P., Ramaseshan, B., 2007. Spread of marketing to an Unlikely Entity: Ahmadabad Municipal Corporation. *Journal of Marketing & Communication* 2, Issue 3 (Jan-Apr), 4-13.
- Porter, M., 1990. *The Competitive Advantage of Nations*, The Free Press, New York.
- Premkumar G., Ramamurthy, K., 1995. The Role of Interorganisational and Organisational Factors on the Decision Model for Adoption of Interorganisational Systems. *Decision Sciences* 26, (3), 303-336.
- Premkumar, G., Ramamurthy, K., Nilakanta, S., 1994. Implementation of Electronic Data Interchange: An innovation Diffusion Perspective. *Journal of Management Information System* 11, (2), 57-186.
- Premkumar, G., Roberts, M., 1999. Adoption of New Information Technologies in Rural Small Businesses. *The International Journal of Management Science* 27, (4), 467-484.
- Puschmann, T., Alt, R., 2001. Customer Relationship Management in the Pharmaceutical Industry. *Proceedings of the 34th Hawaii International Conference on System Science*.
- Ramaseshan, B., 1997. Attitudes towards use of electronic data interchange in industrial buying: some Australian evidence. *Supply Chain Management-An International Journal* 2, (4), 149-157.
- Ramaseshan, B., Bejou, D., Jain, S.C., Mason, C., Pancras, J., 2006. Issues and Perspectives in Global Customer Relationship Management. *Journal of Service Research*, 9, (2), 195-207.
- Reichheld, F.F., 1993. Loyalty-Based Management. *Harvard Business Review* 71, (2), 64-73.
- Reynolds, W., Savage, W., Williams, A., 1994. *Your Own Business: A Practical Guide to Success*, ITP.
- Rogers, E. M., 1995. *Diffusion of Innovations*, 4th Edition, New York: The Free Press.
- Tan, M., Teo, T.S.H., 2000. Factors Influencing the Adoption of Internet Banking. *Journal of the Association for Information Systems* 1, (5), 1-42.
- Teo, T.S.H., Tan, M., Wong, K., 1997. A Contingency Model of Internet Adoption in Singapore. *International Journal of Electronic Commerce* 2, (2), 95-118.

Thong, J.Y.L., 1999. An Integrated Model of Information Systems Adoption in Small Businesses. *Journal of Management Information Systems* 15, (4), 187-214.

Thong, J.Y.L., Yap, C.S., 1995. CEO Characteristics, Organisational Characteristics and Information Technology Adoption in Small Businesses 23, (4), 429-442.

Tigre, P.B., 2003. Brazil in the Age of Electronic Commerce. *The Information Society* 19, (1), 33-43.

Toh, M.H., Low, L., 1993. The Intelligent City: Singapore Achieving the Next Lap. *Technology Analysis and Strategic Management* 5, (2), 187-202.

Wee, A., 2000. CRM Adoption Still Small in Singapore. *Business Times (Singapore)*, June 26. Retrieved May 12, 2008, from Factiva Database.

Zikmund, W.G., 2003. *Business Research Methods* (7th Edition), Ohio: South-Western.

Zineldin, M., 2000. Beyond Relationship Marketing: Technologicalship Marketing. *Marketing Intelligence and Planning* 18, (1), 9-23.