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Organisational, technical and data quality factors in CRM adoption — SMEs perspective

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ABSTRACT

Like large organisations, many Small and Medium-sized Enterprises (SMEs) have implemented Customer Relationship Management (CRM), so that they can compete effectively in today's highly changeable economic and market climate. However, studies indicate that there are mixed results as to how successful SMEs have been in adopting CRM solutions. It is also reported in the literature that CRM implementation is influenced by issues that relate to organisational, technical and data quality factors. To this end, there is limited research conducted in this area which mainly focuses on including these dimension in the evaluation of factors that influence CRM adoption in the SME sector. In seeking to address this issue, this research uses an investigative study aimed at identifying the organisational, technical and data quality related factors influencing CRM adoption by SMEs. This will enhance the quality of the evaluation process, and help support SME decision makers in exploring the implications surrounding CRM adoption. The findings of this study confirm that factors affecting the adoption of CRM in SMEs are largely similar to the factors affecting CRM adoption in previously studied other types of organisations.

1. Introduction

This research tries to identify and validate the main factors that relate (directly or indirectly) to the adoption of Customer Relationship Management (CRM) systems by Small and Medium-sized Enterprises (SMEs). In doing so, the work provides deeper and broader understanding, which not only allows other practitioners to relate their experiences to those reported in this work, but also serve as a frame of reference for decision makers responsible for adoption of CRM innovations. While seeking to identify and validate the factors influencing CRM adoption in SMEs, it is outside the scope of this paper to discuss the actual direct effects of these factors on the adoption process or investigate their inter-relationships.

2. CRM and SMEs

The shift from a product-oriented business strategy to a customer-focused relationship strategy has been identified as a major change agent in companies in prior literature (Barnes, 2001; Goodhue, Wixom, & Watson, 2002; Hopkins, 2000; Knox, Maklan, Payne, Peppard, & Ryals, 2003; Ryals, Knox, & Maklan, 2001). Business organisations have been investing heavily in business intelligence technologies, to enable a customer-focused relationship strategy (Swift, 2002). As a result, Customer Relationship Management (CRM) emerged, promising to significantly improve the implementation of relationship marketing principles (Ryals et al., 2001). The attention of software vendors has moved recently to Small and Medium-sized Enterprises (or SMEs), offering them a wide range of CRM systems which were formerly adopted by large firms only. SMEs are considered as major economic players and a potential source of national, regional and local economic growth (Taylor & Murphy, 2004). SMEs differ from large enterprises mainly in their limited financial abilities affecting their information-seeking practices, and they do not normally have the same burden of large legacy systems to integrate their CRM (Lang & Calantone, 1997). Thus, the adoption of CRM in SMEs cannot be a miniaturised version of larger organisations.

Like in large organisations, CRM provides SMEs with opportunities that are still largely unexploited (Horowitz, 2005). However, without a better understanding of the complex issues involved, the drive to implement CRM will not successfully contribute to SMEs' competitiveness (King & Burgess, 2008). To survive in the global markets, many Small and Medium-sized Enterprises (SMEs) have implemented CRM, so that they can compete effectively (Ramdani, Kawalek, & Lorenzo, 2009). Moreover, studies indicate that there are mixed results as to how successful organisations have been implementing CRM solutions (Goodhue et al., 2002; Alferoff & Knights, 2008). Clearly, the challenge of managing the complex data quality issues involved has been raised as a potentially important factor affecting the successful outcome of CRM efforts (Friedman, 2009). In fact, it is reported that more than half of CRM projects are failing because of the complex data quality issues involved (Kaila & Goldman, 2006).

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3. Technology adoption

Several studies on the adoption of enterprise Information and Communication Technologies (ICT)-based technologies such as CRM and ERP (Hashim, 2007; Irani & Love, 2001; Themistocleous, 2004), indicate that there is a number of different factors that can influence the adoption of ICT-based innovations in organisations. Studies by Lin (2006) indicate that the size of organisation, among other factors, has a strong influence on how these factors affect the adoption process. In addition, Kimberly and Evanisko (1981) and Chen and Popovich (2003) reported organisations' size as an important factor for the adoption of technological, administrative innovations and web services in organisations. However, as Levy, Powell, and Yetton (2001) find, size is not a determinant of ICT adoption, but the owners' knowledge of ICT and attitude to growth dominate.

Hashim (2007) reports that studies by (Pavic, Koh, Simpson, & Padmore, 2007) show that the adoption of ICT-based technologies by SMEs is still lower than expected and several barriers to ICT adoption have been identified by (Blackburn & Athayde, 2000; Cavalcanti, 2006; Ndubisi & Jantan, 2003; Utomo, 2001). These barriers include lack of knowledge about the potential of ICT-based technologies, shortage of resources such as financial and expertise, lack of necessary operating skills among staff and lack of management support. Many organisations conduct a Cost Benefit Analysis (CBA) before adopting a new technology. Thus, several authors such as Iacovou, Benbasat, and Dexter (1985), and Wu (2004) have identified cost as a factor for the adoption of technologies, which facilitates the organisation to evaluate these costs prior to adoption. In doing so, Themistocleous (2004) evaluate enterprise application integration (EAI) costs, and classify them using the costs classification proposed by Irani, Ezingeard, and Grieve (1997).

Studies that focused on identifying external factors that influence ICT adoption in organisations indicate that external factors such as government policies, as well as competition, suppliers, software vendors, and customers attitude pressures have a direct influence on the adoption and implementation of ICT technologies, especially in CRM and e-commerce related applications (Hashim, 2007; Wilson, Danial, & McDonald, 2002; Dasgupta, 2000; Lai & Hsieh, 2007; Scupola, 2003). A study by Themistocleous (2004) identified organisational factors such as organisation support and management support which can influence the adoption of enterprise ICT integration. Lucchetti and Sterlacchini (2004) identify financial resources and technical skills as factors affecting ICT adoption among SMEs. Seyal, Abd Rahman and Hj Awg Mohamad (2007) find that management support, government support, and perceived benefits are significant predictors that influenced SMEs to adopt ICT. Levy et al. (2001) add that adoption of ICT related technologies relate to the organisation strategic focus and customer domination.

Several authors have reported the ICT infrastructure as a factor in their integration technologies adoption models. Grimson, Grimson, and Hasselbring (2000) reported non-integrated IT infrastructures in organisations as a key obstacle in providing better performance. The level of integration between processes was also identified by Chen (2003) as an important factor to achieve successful CRM adoption. Benefits refer to the level of recognition of the advantages that ICT technologies could provide to organisations, and Shang and Seddon (2002) introduced a benefit classification model developed by for the adoption of enterprise systems. Iacovou et al. (1985), in their model of Electronic Data Interchange (EDI) adoption, classified perceived benefits into direct and indirect. In the context of organisational system integration adoption in multinational and public organisations, Themistocleous (2004) categorised the benefits as: (a) operational (b) technical (c) strategic (d) managerial and (e) organisational. King and Burgess (2008) proposed a model of CRM innovation in their study of critical success factors for CRM adoption which indicates that organisational context and top management support play a role in CRM innovations. Wilson et al. (2002) also emphasise the importance of considering the project management perspective besides the IT perspective when implementing CRM and ERP technologies, and argue that overlooking implementation related management can have severe consequences despite the employment of modern technology. Few studies have examined the relationship between ICT skills and ICT adoption. Shiels, Mclvor, and O'Reilly (2003), for example, assert that strong ICT capability including the specific ICT skills of small firm owners/managers has significant influence on the adoption of ICT. In fact, Wainwright, Green, Mitchell, and Yarrow (2005) add that managerial ICT skills, ICT knowledge, and ICT practices are important determinants of whether ICT is adopted or rejected by the SMEs. This is also supported by Levy and Powell (2003) who found that owner attitude influences ICT adoption, particularly in Internet related technology, and by Hashim (2007) who states that the level of ICT knowledge among managers has a leaner relationship with how early (or late) the adoption of new innovations can take place.

Due to the diversity of EAI products and technologies available, there appears to be a market confusion surrounding the adoption of ICT related technologies and packages. In addressing this issue, Themistocleous (2004) indicates that the adoption of evaluation frameworks facilitates organisations to overcome the confusion regarding the selection of ICT related technologies and packages. As a result, these evaluation frameworks are considered as a factor for the adoption of ICT technology.

4. The relationship between data quality and CRM

Researchers and practitioners studying or dealing with the impact of data quality on Business Intelligence (BI) applications in general, and enterprise-wide CRM efforts in particular, often assume that the common language provided by data quality tools and processes exists, or that they will be developed because of the benefits increased communication within (or across) the whole organisation (Malone, Yates, & Benjamin, 1987; Huber, 1990; Goodhue, Wybo, & Kirsch, 1992). However, there is evidence that this common language of logically compatible data does not exist in a great many organisations that have implemented BI applications in general, and CRM in particular (Gartner Report, 2002; Nelson, Singhal, Janowski, & Frey, 2001; Goodhue et al., 2002; Eckerson, 2004).

It is widely reported that poor data quality can have a severe impact on the overall performance of an organisation (Eckerson, 2002). For example, within a single organisation even minor inconsistencies in key business entities identifiers, such as customer, product and sales attributes, can cause major problems when firms ask questions that span multiple data storage systems or organisation's different departments, thwarting their ability to make coordinated, organisation-wide CRM responses to today's business needs (English, 1999). In spite of the conceptual appeal of methods and programs for achieving data quality, many organisations undertaking a CRM strategy are unaware of customer's data quality problems (Abbott, Stone, & Buttle, 2001; Eckerson, 2002), or not investing enough efforts in improving data quality processes to support their CRM applications (Gartner Report, 2002; Goodhue et al., 2002; Millard, 2003; Missi, Alshawi, & Fitzgerald, 2005; Ryals & Knox, 2001; Siegele, 2002).

CRM is built upon the foundation of a single definitive view of customers which spans functions, channels, products and customer data types and drives every customer interaction. CRM purports to recreate the 'traditional corner shop' experience to millions of clients (Goodhue et al., 2002). CRM's lifeblood is the ability to deploy knowledge at the right time, in the right format to the right person (King & Burgess, 2008).

Since data are the foundation of every CRM initiative (English, 1999; Goodhue et al., 2002; Missi & Alshawi, 2004), it is imperative to put in place a data strategy before the CRM project begins. According to a study published by the Gartner Group (Gartner Report, 2006),

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almost 70% of CRM failures were attributed to issues with data reliability. The Data Warehousing Institute (TDWI) reports that poor data quality is costing companies more than $600 billion a year (Eckerson, 2002). The Data Warehousing Institute published an industry study where it reports that 'managing *data quality* and *consistency*', and '*reconciling* customer records' were the top two technical challenges cited by companies implementing CRM solutions (Eckerson & Watson, 2000). In addition Xu, Nord, Brown, and Nord (2002) stipulate that when planning a CRM project, few organisations account for data quality related factors, resulting in the problem becoming apparent at a later stage of the CRM implementation.

Indeed, the issue of data quality is emerging as one of the greatest challenges to confront the CRM industry (Thompson & Sarner, 2009). And the challenge is huge. According to Gartner Group's Beth Eisenfeld, customer data degrade at a rate of 2% per month, which translates to almost a quarter of the entire customer database annually. Inaccurate and low-quality data costs U.S. businesses $611 billion each year in bad mailings and staff overhead alone, according to a recent report by The Data Warehousing Institute in Seattle (TDWI Report, 2008). Additionally, a Gartner Group's recent study (Thompson & Sarner, 2009), citing poor data quality as the biggest inhibitor to successful CRM implementation has brought the issue to the forefront.

5. Factors influencing CRM implementation

After analysing the normative literature, the factors identified or considered to be potential influencers in SMEs CRM adoption innovations are classified into three main factor groups. Namely these are organisational, technical and data quality. Table 1 lists the factor groups with the corresponding literature sources where they were reported, discussed and/or analysed.

The factor groups are outlined as follows for the better understanding of the context and to indicate the factors belonging to each group.

Organisational factors refer to the factors that relate directly or indirectly to the structural, operational, human, and managerial sides of the business entity of the SME, and include: Benefits; Staff ICT skills; Managerial ICT skills; Organisation size; Internal barriers; Support; Funding; Strategy; Business objectives; Customer response/attitude; Government; Competitive pressure; External barriers; and Suppliers.

Technical factors refer to the factors that relate to the soft and hard aspects of the ICT/CRM technology being adopted, and include: ICT infrastructure; Purchase, implementation and integration cost; System evaluation and selection criteria; Complexity; Integration; Vendor after sale support; and Software selection criteria.

Data quality factors refer to the factors that relate directly to the concept of data quality and how it is being conducted in the context of CRM adoption, and include: Evaluation of the Data Quality Tools & Processes; Evaluation of the quality of customer data; Customer data infrastructure; Customer data types classification; and Customer data sources classification.

Based on the literature suggestions and the previously described factor group classification, the research proposition adopted by this work indicates that each of the factors under the three groups previously stated, has an influence or effect on the adoption and implementation of CRM and ICT innovations. Hence, it is anticipated that the same factors play an influencing role in the case of SME-based innovations of similar nature.

To test and validate the identified factors covered by the proposition in a real world setting, a research model is adopted where the groups represent the main issues, while the factors within each group represent the dimensions that will be investigated.

Table 1
Factor groups and literature sources.

Factor groups	Literature sources
Organisational	Abbott et al., 2001; Cooper, Watson, Wixom, & Goodhue, 2000; Eckerson, & Watson, 2000; Goodhue et al., 2002; Wixom and Watson 2001; Themistocleous, 2004; Goodhue et al., 2002; Lin, 2006; Wainwright et al., 2005; Lucchetti, & Sterlacchini, 2004; Goodhue et al., 1992; Kalakota, & Robinson, 1999; Linthicum, 2000; Davenport, 1998; Glass and Vessey, 1999; Graham and Hardaker, 2000; Makey, 1998; Daniel, & Wilson, 2002; Dasgupta, 2000; Lai, & Hsieh, 2007; Chen, 2003; Chen, & Popovich, 2003; Scupola, 2003; Levy et al., 2001; Irani, & Love, 2001; Shang, & Seddon, 2002; Wilson et al., 2002.
Technical	Emery 1982; Marschak, 1959, 1968, 1971; Mendelson and Saharia, 1986; Lucchetti, & Sterlacchini, 2004; Siegele, 2002; Athayde, 2000; Cavalcanti, 2006; Ndubisi & Jantan, 2003; Utomo, 2001; Buonanno et al., 2005.
Data quality	English, 1999; Abbott et al., 2001; Eckerson, 2002, Gartner Report, 2002; Goodhue et al., 2002; Millard, 2003; Missi et al., 2005; Nelson et al., 2001; Ryals, & Knox, 2001; Siegele, 2002; Berry, & Linoff, 2000; Xu et al., 2002; (Goodhue et al., 2002; Alferoff, & Knights, 2008; Friedman, 2009.

6. Research methodology

The scope of this paper is to increase the understanding around the adoption of CRM in SMEs. To fulfil that, the authors follow an interpretive, qualitative approach utilising interviews as the primary data collection method. An interpretive stance is chosen because it helps the authors navigate and understand the complex issues that are associated with the data quality concept, and its relation to the factors affecting CRM implementation. The authors evaluated a variety of research strategies as proposed by Yin (2003), and in doing so, decided to adopt an approach based on selected multi-case study interviews supported by secondary literature data. Case studies investigate the issue within a real life context, drawing on the views of a number of sources (Yin, 2003), and provides the means to review theory and practice iteratively. Multiple cases ensure that common patterns are identified rather than generalised from what might be chance occurrences (Eisenhardt, 1989). Interviews are considered to be the main tool of the qualitative research for data collection (Denzin & Yvonna, 1998; Janesick, 2000).

The authors suggest that in the context of this research a qualitative approach is more appropriate as such approach can be used to: (a) investigate little-known phenomena like data quality, (b) examine in depth complex processes such as CRM implementation, (c) examine the phenomenon in its natural setting, and (d) learn from practice.

The case studies employed in this research are 30 UK-based SMEs that were selected from a prepared list of 150 (from a related wider research work). Careful selection criteria were used to insure inclusion of both small and medium size organisations that have already implemented a CRM or Business Intelligence (BI) related system. For confidentiality reasons, the names of these organisations are withheld, and only basic information about the case studies that is relevant to this study is presented in Appendix A (labelled C1 to C30). This research strategy was adopted to test and validate the factors identified in previous sections. Since the authors cannot generalise the data derived from UK-based case studies only, they suggest that the research findings will allow others to relate their experiences to those reported herein, acting as a frame of reference that will allow others in this and associated areas of research to ground their understanding within the presented context. Hence, this paper offers a broader understanding of the phenomenon of CRM adoption in SMEs.

7. Data collection

The interviews were designed to be conducted with someone familiar with the organisation's CRM initiatives, preferably at

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managerial/decision making level. Accordingly, interviews were conducted with IT managers, sales managers, marketing managers and managing directors.

The interviews were on a one-to-one basis, and varied in length depending on the interviewees/case exact circumstances. Every interview was tape-recorded and later transcribed, so that a full record of the conversation was obtained. In the cases where further information or clarification was required, follow ups of telephone calls and e-mails were used.

The interview structured part was divided into theme sections corresponding to the three factor groups (organisational, technical and data quality). This sectioning (coding) is necessary for the qualitative content analysis approach adopted for the data analysis stage. The open part of the interview was left for ad hoc questions and open discussions.

8. Data analysis results

The authors adopted qualitative data analysis (Miles & Huberman, 1994), which involved descriptive and content analysis to verify the factors identified from the literature and gain deeper insight into the problem area itself. Content analysis particularly helps with effectively analysing narrative interview data. Using a combination of these methods helped in the analysis of data that have resulted from the semi-structure way the case studies interviews were conducted. It was apparent from the empirical data that several factors have influenced the CRM adoption. Results of the main findings drawn from the evaluation of case study interviews are summarised as follows (sample quotes from the interview transcripts are labelled with their case number).

8.1. Organisational

8.1.1. Benefits dimension

The interviewees were asked to identify the benefits of CRM. All agreed that perceived benefit was a major attributer to the adoption of the CRM system at the first place. For actual benefits, 10 of the cases indicated enjoying real benefits, 13 expressed some benefits while the other seven saw no tangible benefits. These results were reflected when asked about their attitude towards future adoption of the technology. It was clear that 'rejoicing' benefits will motivate and positively affect adoption of further CRM technology in the future.

"The CRM package proved its worth, and I can say that it has significantly improved understanding of our customer behavioural trends" [C1];

"Certainly worth the investment" [C5];

"We cannot identify apparent benefits, but we anticipated some when we bought the package" [C14].

The findings from empirical data are in line with the normative literature which indicates that perceived benefits is a factor influencing the adoption of ICT technologies like CRM, ERP and web technologies (Shang & Seddon, 2002; Themistocleous, 2004; Iacovou et al., 1985; Seyal et al., 2007).

8.1.2. ICT skills dimension

ICT skills were in investigated on two levels; staff and managerial. All cases indicate that they have specialist ICT operational staff. However, when it comes to general staff, there is a distinct difference in the level of ICT skill between the cases depending on the type of business. In 19 of the cases, members of staff with a suitable level of ICT skill were identified before adopting a CRM system, which contributed to the timely implementation of the system. There are also indications that in 11 cases training of staff was necessary, which incurred delays in CRM implementation of between 2 weeks and 6 months.

"We had to make sure we have people that can operate the package" [C26];

"Generally speaking all of my staff have good day to day ICT skills, but non had enough skills to operate the system fully" [C15];

"We had to send to send one of our technical staff for a training course" [C10].

At the managerial level, results from the interviews show that 10 of the cases had managers with high level professional ICT skills, while in the other 20 cases skills ranged from good to poor. The observation here is that in 14 of the enterprises where the ICT skills were good or high, the adoption initiative was management driven, while the rest (including all of the 'poor' cases) of the CRM system was considered only after outside advice was received.

"I personally participated in the decision process involved in choosing the CRM system" [C5];

"I studied CRM in my MSc, so I knew the potential benefits" [C21];

"To be honest with you, one of our customers suggested CRM for us" [C11].

The empirical data validate the ICT skills dimensions as it is in accordance with the literature which suggests that staff and management skills have significant influence on the adoption (Wainwright et al., 2005; Hashim, 2007; Shiels et al., 2003; Levy et al., 2001).

8.1.3. Size dimension

The majority of surveyed cases were small enterprises with C5, C10, C19, C21, C26 and C31 being of medium size (more than 50 employees). All the interviewees indicated that the number of employees was appropriate to the business at hand. The researchers found that in general the interviewees from larger size enterprises agreed that size affects ICT adoption, attributing that to increased internal demand on electronic services, but they could not relate it directly to the adoption of CRM.

"I cannot link the size of our company to the adoption of the CRM system in particular" [C5];

"The CRM package is useful to improve performance whatever your size" [C1].

The data from the case studies are validated as it is on the same lines reported in the literature that suggest size is not a determinant of ICT adoption in SMEs (Levy et al., 2001). The data differ with the literature that suggests size has a strong influence on ICT related technologies (Kimberly & Evanisko, 1981; Chen, 2003; Lin, 2006); however, the literature in this case mainly reports on large organisation cases.

8.1.4. Funding and management support dimension

The funding was found to be the most 'difficult' issue to discuss in all the case studies, perhaps due to the sensitivity of the subject. All the interviewees linked this dimension to the cost and perceived benefits dimensions, and indicated that generally management is reluctant to invest any funding before perceived benefits were justified. However, 25 of the enterprises indicated that once they have decided on the system to be purchased, funding did not present a problem. The remaining 5 indicated that they had to delay their CRM adoption for a short period until funds were available. Some of the interviewees attributed this to the large number of reasonably priced CRM packages available on the market. However, it must be noted that 2 of the enterprises that opted for rather advanced systems, found out they were unable to find funding for extra or add on capabilities. The analysis also indicated that managerial support was generally present due to the fact that in most cases, the adoption is initiated by the management itself or was a personal decision by the managing director.

"We had a choice of four systems to choose from, and all were within our budget" [C18];

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"We decided on the system we believed we need, but the budget had run out for the year, so we had to wait a while" [C19];

"I had no problem in convincing top management, and they seem to understand even the technical aspects" [C5].

The case data are validated according to the literature that suggests managerial support for initiatives in SMEs (Seyal et al., 2007; Themistocleous, 2004; Levy et al., 2001) and the enterprise financial resources affecting ICT adoption (Lucchetti & Sterlacchini, 2004).

8.1.5. Business strategy and objectives dimensions

Results from the interviews indicate that all managers claim that CRM adoption was part of their organisation strategy. However, deeper analysis showed that not all managers were able to describe how and why they considered such adoption as part of their business strategy. The results show that in 9 cases where the management of the organisations indicated adoption success, the managers have a clear vision of customer-centric business philosophy and are able to link this to their enterprise strategy and objectives. All 9 managers indicated that they believe that CRM adoption helped in achieving the enterprise objectives.

"A CRM system should be useful for any business, really" [C6];

"We are convinced that the system helped us achieve better sales performance through better understanding of our customer's needs" [C5].

This dimension is validated according to the literature which suggests that business strategies and objectives influence the adoption of ICT innovations, and that CRM adoption require a customer centric strategy to be in place (English, 1999; Goodhue et al., 2002; Seyal et al., 2007; Themistocleous, 2004).

8.1.6. Customer and supplier dimension

The analysis revealed that all the 10 case studies experiencing successful implementation link that with the concept of customer satisfaction, and indicate that the CRM system helped in facilitating this. They also link this to the perceived benefits dimension. The enterprises that experienced neutral or unsuccessful implementation also agreed that customer satisfaction influenced their decision to adopt CRM. Depending on the enterprise business activity, Suppliers were either considered as customers or were dealt with by other systems.

"We have many suppliers and before implementing the system, their data was all over the place, but now we have a much better consolidated picture" [C10];

"I know exactly what my customers want and when" [C1].

The data validate the customer dimension, as this is according to the literature which suggests that external pressure has significant influence on CRM adoption (Daniel & Wilson, 2002; Dasgupta, 2000; Lai & Hsieh, 2007; Scupola, 2003; Themistocleous, 2004).

8.2. Government dimension

All interviewees agreed that although government incentives and/or policies play an encouraging role in the adoption of ICT, they have no clear influence on the adoption of a CRM system.

"They encourage us to deal with them electronically" [C16];

"I am aware that we have guidelines regarding the use of electronic services, but I can not see the connection between the government guidelines and our decision to implement the CRM system" [C5];

"I guess the only connection with CRM is the data protection act" [C21].

The government dimension is validated as a direct external influencer on ICT adoption according to the literature (Daniel & Wilson, 2002; Dasgupta, 2000; Lai & Hsieh, 2007; Scupola, 2003; Themistocleous, 2004). In the case of CRM, the data suggest impartiality, but the indirect influence is present as CRM is an ICT related technology.

8.2.1. Competitive pressure dimension

All interviewees agreed that market competition directly affected their decision to adopt a CRM system. The fact that a competitor has already employed a CRM system bears a significant influence on the urgency the enterprise attaches to adopting such a system.

"We learned – name of business withheld – had a CRM system because we employed one of their ex-staff, and now we have a better system" [C19];

This dimension is also validated as an external influencing factor on CRM implementation in line with the literature (Daniel & Wilson, 2002; Dasgupta, 2000; Lai & Hsieh, 2007; Scupola, 2003).

8.3. Technical

8.3.1. Purchase cost dimension

This include system, training and integrations costs. There was a clear indication in the responses to the influence of this dimension on the CRM adoption decision. However, all interviewees agreed that cost has a stronger influence on 'what CRM system to purchase' rather than 'whether to adopt CRM or not'. Cost included system, training and integration costs.

"Based on our requirements, we narrowed our choice to two options, which offered the same capabilities, and we went for the cheapest one" [C5];

"There were several packages around with a wide range of prices, so we decided to purchase one that basically satisfied our small businesses needs, and was within our assigned budget" [C25].

This dimension is validated according to the literature that suggests cost to be a significant factor that influences ICT and CRM adoption (Hashim, 2007; Irani & Love, 2001; Themistocleous, 2004; Iacovou et al., 1985, and Wu, 2004).

8.3.2. System/software evaluation and selection criteria dimension

All interviewees agreed that selection of the software presented some problems associated with large number of products available on the market. This problem is aggravated by the lack of clear and agreed selection criteria, as indicated by 24 enterprises. Only 4 indicated that they were guided by selection criteria.

"Some of the services offered by the software suited us, but we were not sure about many other capabilities that we couldn't even understand their usefulness" [C11];

"It is a pretty confusing situation" [C24];

"They all seemed to do the same job" [C28];

"We made our decision solely based on our business requirements" [C6].

The findings are along similar lines with the literature which, indicates that the adoption of evaluation frameworks facilitate organisations to overcome the confusion regarding the selection of ICT technologies and packages (Themistocleous, 2004).

8.3.3. Complexity dimension

All interviewees agreed that high complexity had an effect on the selection and implementation of the CRM system. All interviewees indicated they preferred simple to use systems in order to reduce implementation periods and training costs. 6 managers directly related user friendly systems to the success of their CRM adoption.

"I wanted a package that all my small ICT team members could quickly learn and use" [C21];

"The system interface is friendly and easy to use by anyone who has reasonable computer skills" [C13].

The dimension is validated according to the literature that suggests system complicity has a direct effect on the adoption of ICT

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and CRM technologies (Cavalcanti, 2006; Ndubisi & Jantan, 2003; Utomo, 2001; Themistocleous, 2004; Eckerson, 2004).

8.3.4. ICT infrastructure and integration dimensions

All case studies indicate they owned an ICT infrastructure before adopting a CRM system. They agreed that without this existing infrastructure, the implementation would have been delayed. In 15 enterprises integration with the existing systems did represent some teething problems that took between 1 to 6 weeks to completely resolve. No major problems or break down of the infrastructure occurred, and all the interviewees attributed that to the generally simple ICT networks they operate, and the straight forward process associated with uploading modern CRM packages.

"We had only a small number of integration problems, but mind you, our network is rather simple" [C6];

"The package was flexible and fitted on one of our servers without any pre-installment adjustments" [C21].

These related dimensions are validated as the data support the literature suggestion that introduction of new ICT technologies often represents several barriers, which an organisation needs to address given that a stable infrastructure is in place (Grimson et al., 2000; Themistocleous, 2004; Cavalcanti, 2006; Ndubisi & Jantan, 2003; Buonanno et al., 2005).

8.3.5. Vendor support dimension

This is the dimension that all the interviewees expressed some or high concern about. All the case studies (23) that adopted small stand alone packages experienced bad, very bad, or no after sale support. The 7 enterprises that employed an add on CRM to their existing database software had better experience, but still were not totally happy with the level of service provided. All interviewees indicated that after sale service was too expensive, and this cost was not clearly specified by vendors during the purchase process.

"Although they are one of the biggest vendors on the market, all I can say is that we normally have bad experience with their after sale service. The lead times before they respond to our requests are long and their services are not cheap either" [C5].

This dimension is validated according to the literature that suggests that after sale support level and cost have an influence on the adoption of ICT related technologies (Lai & Hsieh, 2007; Wilson et al., 2002).

8.4. Data quality

8.4.1. Customer data infrastructure and quality of customer data dimensions

These dimensions relate to issues such data definitions; data sharing problem(s); unique customer identifier; logical data consistency problems; and state of the existing customer databases. The analysis shows that only 3 enterprises had staff that have full database skills and are able to understand and deal with such issues. Four other enterprises employed new staff for this purpose, and 3 acquired external consultancy help. The results clearly reveal that staff belonging to the other 10 enterprises show significant lack of knowledge for the customer data issues.

"Maintaining the customer database in a consistent state proved difficult. We have problems with almost every update" [C6];

"We only realised we had problems when customers started to complain. Our staff were unable to iron out all problems" [C19].

This dimension is validated according to the literature that suggests that customer data quality issues have a direct influence on the adoption of CRM, and that the importance of this issue is widely underestimated in industry (English, 1999; Abbott et al., 2001; Eckerson, 2002, Gartner Report, 2002; Goodhue et al., 2002; Millard, 2003; Missi et al., 2005; Nelson et al., 2001; Ryals & Knox, 2001; Siegele, 2002; Berry & Linoff, 2000; Xu et al., 2002; Friedman, 2009).

8.4.2. Evaluation of the data quality tools and processes dimension

This dimension relates to the enterprise ability to realise the capabilities of the data quality tools associated with the adopted CRM systems. Two of the enterprises showed full appreciation of the full power and range of the data quality tools associated with their systems. Twenty only used default system settings, and the rest were unable or incapable of even use system default power.

"What do you mean by data quality? There is nothing in the system that requires that" [C28];

"The system takes care of data quality automatically for us" [C22];

"After we installed the quality add on tool, we are experiencing dramatically less errors in our marketing prediction" [C10].

The finding are in line with the literature that suggests that the ability to utilise and operate the ICT related system can affect the system adoption, and that data quality tools have a direct affect of the performance of the adopted CRM (Shiels et al., 2003; Friedman, 2009).

8.4.3. Customer data sources classification

This dimension relates to how the CRM customer database is populated and updated from internal or external sources. The analysis revealed that only two enterprises needed external data to enhance their customer CRM database, not only due to the nature of their business, but also because the systems they use offer the ability to deal with extracting outside data. The other 28 enterprises expressed that customer data they generate from daily operations were satisfactory for their business requirements. However, there is no indication that they have tried to investigate the usefulness of external data.

"The external data we obtained proved to be very complementary to our customer database. The system's data integration tool works well" [C10];

"I think we have all the data that we need internally" [C14];

"We have not tried using external data yet, although we are aware our system has data integration capability. We plan to consider this in the future" [C7].

This dimension is validated according to the literature suggestion that customer data sources (internal and external) have an effect on the performance of the adopted CRM by providing the customer database with updated data (Goodhue et al., 2002; Alferoff & Knights, 2008).

9. Conclusions

This paper has explored organisational, technical and data quality related factors influencing CRM adoption in SMEs. Through critically reviewing the normative literature, the authors identified several factors considered to be influential during the adoption of CRM and ICT. The key factors extrapolated include: Benefits; Staff ICT skills; Managerial ICT skills; Organisation size; Support; Funding; Strategy; Business objectives; Customer response/attitude; Government; Competitive pressure; Suppliers; ICT infrastructure; Purchase, implementation and integration cost; System evaluation and selection criteria; Complexity; Integration; Vendor after sale support; Software selection criteria; Evaluation of the Data Quality Tools and Processes; Evaluation of the quality of customer data; Customer data infrastructure; and Customer data sources classification. These factors can provide other researchers and practitioners with an understanding of issues that need due-consideration and can act as a frame of reference associated with CRM adoption in SMEs.

To test and validate these factors empirically, a multi-case study approach was adopted, involving key decision makers in 30 SMEs in the UK. The findings from the case studies confirmed and validated the identified factors when grounded within an SME environment. In doing so, this paper offers further understanding of the phenomenon surrounding the evaluation of CRM adoption in the context of SMEs.

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The paper therefore provides improved support to decision makers associated with the evaluation and adoption of CRM in this type of organisations.

Hence, the contribution of this study is to provide a frame of reference that can be used as a theoretical basis for further studying SME adoption of CRM, and other related ICT technologies.

The findings of this study confirm that except for the organisation size dimension, the majority of factors influencing the adoption of CRM are similar in nature to factors influencing SME adoption of other previously studied ICT innovations. Moreover, the study confirms that there is a distinct similarity between the data quality factors that affect SMEs and those that affect large organisations when implementing CRM innovations. These findings are also in line with the research proposition stated in this paper.

9.1. Future work

The results presented in this paper represent the first stage of research concerned with identifying and validating the factor that influence CRM adaptation in SMEs. The next stage will involve a wider study to explore the factors' effects and their inter-relationships.

Appendix A

Case studies SMEs.

Case	Business description	Size
C1	Medical equipment supplier	18
C2	Agriculture equipment	22
C3	Industrial waste disposal	33
C4	Entertainment club	17
C5	Food manufacturer	198
C6	Electronic chip manufacturer	78
C7	Office furniture	62
C8	Financial brokers	14
C9	Building supplies	12
C10	Car spare part imports chain	138
C11	Organic food supplies	20
C12	Software house	25
C13	Specialist electronic boards	16
C14	Heavy lift equipment	36
C15	Electronic equipment repairs	11
C16	Hospital catering	33
C17	Security equipment	17
C18	Mobile car servicing	12
C19	Food supplies	102
C20	Landscaping	14
C21	Airline catering	66
C22	Storage	11
C23	Courier services	33
C24	Food packaging	40
C25	Overseas shipping	36
C26	Double glazing	82
C27	Bodywork repairs	18
C28	Cash and carry	15
C29	Electrical and bathroom supplies	30
C30	Building contractors	74

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