The adoption of customer relationship management (CRM) technology in SMEs

An empirical study

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Abstract

Purpose – The aim of this paper is to use an innovation decision process to examine CRM technology adoption in small to medium-sized enterprises and its intrinsic link to the nature of the organisation and the individuals within it.

Design/methodology/approach – A survey was administered to SMEs in Southern California to measure the organisational characteristics, specifically management characteristics, employee characteristics, IT resources and firm characteristics. The perception of CRM, decision to adopt CRM, and extent of CRM implementation were also measured. Previously validated instruments were used where required. The data were analysed using multivariate and logistic regression.

Findings – The results indicate that management's innovativeness affects the firm's perception of CRM systems, but age, education and gender do not. The decision to implement a CRM system is influenced by management's perception of CRM, employee involvement, the firm's size, its perceived market position, but not the industry sector. However, the number and types of CRM features implemented are affected by management's perception of CRM, employee involvement, the firm's size, the industry sector, but not its perceived market position.
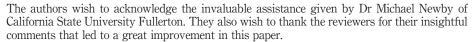
Research limitations/implications – This study is specific to Southern California and the sample size is relatively small, although sufficient for this analysis. The study should be replicated in more diverse geographic settings with a larger sample.

Practical implications – The study provides evidence of the need for management to be supportive of innovation and technology, to evaluate the available resources (IT knowledge, skills, infrastructure) within the organisation, to recognise the importance of employees' contributions, and to be aware of the features appropriate to their company's size and industry sector before undertaking CRM technology adoption.

Originality/value – The findings from this study extend the understanding of CRM adoption in SMEs and help in building a greater understanding of the factors associated with such adoption. It will be of great value to owners/managers in SMEs who are considering adopting CRM.

Keywords Customer relationship management, SMEs, CRM, Adoption process, Innovation decision, Organisation characteristics

Paper type Research paper

Introduction

Research into customer relationship management (CRM) technology adoption in the small and medium-size (SME) sector shows that there is a slow rate of adoption, with more than half of all adoptions ending in failure (Ismail *et al.*, 2007; Reijonen and Laukkanen, 2010). Many studies suggest that SMEs lack knowledge, understanding and the capability to deploy CRM applications (Özgener and Iraz, 2006, Peltier *et al.*, 2009). Most research on CRM has been undertaken within large organisations and there are few studies which have investigated CRM adoption within SMEs (Krasnikov *et al.*, 2009; Lukkari, 2011). Where technology adoption of CRM has been the focus, models such as the Technology Acceptance Model (TAM), the Diffusion of Innovation (DoI) or the Technology, Organisation and Environment (TOE) framework have provided insight into key barriers that affect organisational adoption, while also providing frameworks around which critical factors for adoption can be grouped (Ko *et al.*, 2008; Peltier *et al.*, 2009; Venkatesh and Davis, 2000). One aspect of SME businesses that can differentiate them from larger organisations is their tendency to be risk averse and this has been suggested as a major reason for low adoption and success rates (Nguyen, 2009). Other factors which are considered to influence CRM adoption include user acceptance and the extent of CRM integration with existing systems and the overarching business orientation (Richard *et al.*, 2007). When making a business case for CRM adoption, organisations often argue that as a result of CRM investment consumer behaviour will change in a positive way and this will in turn lead to increased revenues through increased sales or efficiency savings (Maklan and Knox, 2009). The concept of relationships is particularly prominent within SMEs with the key decision makers often having close connections with the customer base. Where CRM can make a positive contribution to SMEs is by using technology to manage relationships. CRM allows for a wider reach of the "relationship marketing" approach by utilising information technology to take over the labour-intensive aspects of developing meaningful relationships, thereby making it feasible across a wide range of different customers (Goodhue *et al.*, 2002). However, for risk adverse organisations the concept of investing considerable resources into integrating a CRM system is not considered to offer a good return on investment, especially given the widely reported high failure rates. Even though CRM has the potential to deliver benefits to SMEs, studies focusing on CRM success rates in SMEs have reported less success in terms of the realisation of those benefits (Bull, 2003; Mitussis *et al.*, 2006). Also, research demonstrating the benefits of CRM in SMEs has shown that effective adoption is hard to achieve and that expected benefits in over half of the cases are not realised (Ismail *et al.*, 2007; Reijonen and Laukkanen, 2010). Nevertheless, the demand for CRM technology has grown as more organisations see the value of better customer relationships, customer knowledge and customer retention and if SMEs are to successfully adopt and implement CRM technology it is important to better understand their specific needs (Greenberg, 2010).

The target populations for this research were SMEs in Southern California in the United Stated of America, as this is where the highest growth companies within the state are located (California Business Portal, 2007). California is the largest state in the US with a population of over 37 million, representing about 12.5 per cent of the US population (State of California, 2009), where SMEs represented 95 per cent of all exporters in California in 2005, exporting 43 per cent of all goods and employing about

half of the state's workers (Arambula, 2008). These figures demonstrate the importance of this sector to the California, and hence to the US economy. There has been much research carried out into the adoption of CRM technology in larger firms (Lukkari, 2011), but CRM adoption in SMEs is an area that is under-researched (Wahlberg *et al.*, 2009). Given the benefits of CRM technology (Nguyen *et al.* 2007) and the importance of SMEs to the US economy, it is essential that the adoption and implementation of CRM in these businesses is better understood.

In this paper we examine the critical role of a firm's organisational capabilities using the DoI in the adoption process. In particular, we identify the factors that are associated with management characteristics (age, gender, education and innovativeness), staff involvement and information technology (IT) resources and the firm characteristics (size, industry sector and perceived market position), and in doing so, the paper offers empirical evidence that demonstrates the degree to which these factors whether CRM technology is adopted and the extent of the implementation within these SMEs in Southern California. The findings from the study make the following contributions the study extends Ko *et al.*'s (2008) CRM adoption model (applied to the fashion industry) to retail, service and manufacturing industry sectors, the study identifies the different CRM features that apply the most in the context of the business needs of SMEs and this is the first study into the CRM technology adoption process in SMEs in California.

The remainder of the paper is organised as follows: the next section gives the theoretical background of the research followed by the development of the research model and the hypotheses. The subsequent sections include the research methodology, the findings and the implications of the research. The paper concludes with the limitations of the study and directions for future research.

Customer relationship management

CRM is referred to as a customer-focused business strategy. The concept has traditionally been seen as a set of philosophies, strategies, systems and technologies that would effectively and efficiently manage the transactions of customers with companies and the subsequent relationships with those customers (Greenberg, 2010; Payne and Frow, 2006). According to Zablah *et al.* (2004), the main purpose of CRM is to build and maintain a profit maximising portfolio of customer relationships. However, the benefits that customers receive from a firm via this relationship should add value to their service experience beyond that provided by the core product offering (Wilson *et al.*, 2002; Zineldin, 2006). These may include social benefits, greater confidence and special treatment (Dagger *et al.*, 2011). Schultz (2000) suggests that before deciding to develop CRM, organisations need to recognise the "two faces" of CRM. One is the "North American" version, which is a technology driven solution to sales, marketing and management. This version focuses on the flow of information between parties, sellers and buyers and seeks for efficiency and cost reductions. It also focuses on new customer acquisition, relationship to customers, which are to be generated by marketers and the management of these relationships through various contacts. The other version is the "Nordic School" or "Scandinavian and Northern European" one. This version developed from marketing, and focuses on how organisations exploit and sustain relationships with their customers over time. Thus, the primary focus in this version is on building customer loyalty and retention. Here,

Schultz (2000) contends that choosing CRM that fits the organisation's needs is important and how it is done also depends on the organisation's abilities. Studies such as those by Xu and Walton (2005), Nguyen *et al.* (2007) define CRM as the use of advanced technology involving databases, data warehouses and data mining informed by the organisation's strategies and philosophies, aimed at increasing customer retention rates and profitability.

From the above discussion, it may be seen that CRM is a highly contested concept and consequently there is no universal agreement on what it is (Ngai, 2005; Reijonen and Laukkanen, 2010). For some researchers, CRM is a technology or enterprise application (Harrigan *et al.*, 2009; Özgener and Iraz, 2006; Zwick and Dholakia, 2004), while for others, CRM is a sophisticated concept, expensive to implement and entails a high level of financial investment and the long-term commitment of a company, in the same way as Enterprise Resource Planning, Supply Chain Management and other enterprise systems (Nguyen *et al.*, 2007; Teo *et al.*, 2006). Within the context of this article we adopt the definition of Payne and Frow (2005, p. 168):

> CRM is a strategic approach that is concerned with creating improved shareholder value through the development of appropriate relationships with key customers and customer segments. CRM unites the potential of relationship marketing strategies and IT to create profitable, long-term relationships with customers and other key stakeholders. CRM provides enhanced opportunities to use data and information to both understand customers and co-create value with them. This requires a crossfunctional integration of processes, people, operations and marketing capabilities that is enabled through information, technology and applications.

Thus, in this study, CRM is taken to be a philosophy inculcated within an organisation and supported by an information system founded on a large database of customers (Zwick and Dholakia, 2004). This technology has been attractive to many large companies who have struggled to gain a better understanding of their customer needs, to identify valuable customers and to develop strategies for customer acquisition and retention (Gummesson, 2004; Shin, 2006). Studies such as those of Cooper *et al.* (2005), Ismail *et al.* (2007), Özgener and Iraz (2006) and Ko *et al.* (2008) investigate the various aspects that contribute to the success of CRM adoption, centred on an organisation's innovation, resources (financial, workforce, culture of innovation), and technology, while the studies of Mitussis *et al.* (2006) and Sophonthummapharn (2009) centred around a firm's marketing orientation, attitude toward customers and deployment of CRM technology.

It follows that in order to understand the factors surrounding the adoption and implementation process, it is important to investigate a number of organisational factors including their understanding of the CRM adoption process as well as the characteristics of the organisation such as IT resources, management and firm characteristics. This is particularly important in the SME environment. There is little research that provides insight into the adoption process, an exception being the work of Ko *et al.* (2008), which investigates the CRM adoption process using Roger's (1983) Diffusion of Innovation (DoI) in the SME fashion industry in South Korea.

Customer relationship management adoption process
For many SME organisations CRM is viewed as an IT innovation which can enhance their business and provide them with strategic advantage. Nevertheless

they are often unprepared for the process and many have misconceptions regarding the capabilities of these systems (Mazurencu-Marinescu *et al.*, 2007). One of the issues that appears to be pertinent is the lack of understanding of the adoption and diffusion process.

DoI research and practice originates from many diverse fields of study. Generically an innovation may be viewed as something that is new to an adopting organisation but not necessarily new in its own right. Rogers (1983) over the course of several decades has developed and refined a DoI framework. Diffusion is defined as the process by which an innovation is communicated through certain channels over time among the members of a social system and that an innovation is an idea, practice or object perceived as new by an individual or other unit of adoption. Key concepts of his framework are "attributes of innovation", the "innovation decision process" and the "types of innovation decisions". Table I shows the relationship between these concepts as they relate to the diffusion of innovation process.

In terms of SME CRM innovation research studies have tended to incorporate a number of these innovation concepts into their research. For example Cooper *et al.* (2005) looked at the relative advantage of, the importance of and the knowledge of CRM to companies in the decision process. Özgener and İraz (2006) studied the adoption of CRM and they investigated the characteristics of management and the purpose of the CRM adoption. What emerged was that firms adopted CRM for cost reduction, sustaining competitive advantage, improving customer service, customer retention, acquiring new customers and increasing profits. However when looking at the innovation decision process, the lack of CRM knowledge and the failure to get management buy-in and poor communication prevent successful implementation.

The innovation decision process is extremely important when studying CRM. Bull (2003) and Koh and Maguire (2004) have identified that management and leadership play key roles in delivering an adoption project and must show their commitment and involvement throughout. However Mazurencu-Marinescu *et al.* (2007) argue that managers are often unclear as to what approach should be taken towards CRM. They lack knowledge and expertise and may make decisions based on vendor promises of strategic advantage for the company. In terms of IT many SMEs lack the IT skills with which to implement CRM (Nguyen, 2009; Peltier *et al.*, 2009) and this has led to a number of initiatives to develop CRM applications to assist the SME sector (Baumeister and Kosiuczenko, 2000; Baumeister, 2002). However the lack of IT resources is an issue for most SMEs.

Attributes of innovation	Innovation decision process	Types of innovation decisions
Relative advantage	Knowledge	Optional (independent choices)
Compatibility	Persuasion	Collective (consensus)
Complexity	Decision	Authority (power enforced by a few members)
Trialability	Implementation	Contingent (choices made after a prior decision)
Observability	Confirmation	

Source: Adapted from Waring and Wainwright (2007)

Table I.
A summary of Rogers' DoI theory

In summary it is our contention that the innovation decision and CRM adoption process are intrinsically linked to the nature of the organisation and the individuals within it. The next section explores what is understood by organisational characteristics in terms of owner/manager characteristics, firm characteristics and IT resources.

Organisational characteristics and CRM technology

Despite the willingness of a large proportion of SMEs to engage with CRM systems, many CRM integration and adoption activities are flawed not by the CRM system itself, but by the capabilities of the organisation to adapt to changing processes and activities resulting from the adoption of these systems. It can be further argued that dynamic capabilities are grounded in a manager's tacit knowledge of the business and are therefore often difficult to identify and embed in the processes (Maklan and Knox, 2009). Organisational capabilities include the people within the firm (their attitudes, culture and identity), innovation ability and knowledge (Battor and Battor, 2010; Fletcher, 2002). Thus, these elements have direct impact on the nature of the firm and its willingness to accept new ideas and change. Firms that are open to accept new, challenging activities and embrace learning cultures and recognise the strength of their culture are likely to advance innovation and gain advantage over their competitors (Denison *et al.*, 2004; Pansiri and Temtime, 2010). This suggests that the firm itself needs to have the ability to absorb knowledge, transform it and use it to generate new knowledge, which, in turn, promotes innovation (Gray, 2006).

In SMEs, the structure of an organisation is centralised where the top management or owner-manager's attitude, personality and values play a vital role in business decision making (Bruque and Moyano, 2007; Denison *et al.*, 2004). Studies have been carried out to investigate the social behaviour and frames of reference of top management in relation to IT, and this would suggest that the greater their understanding of IT, the more likely it is that they will adopt IT, and the more successful that adoption will be (Chao and Chandra, 2012; Cooper *et al.*, 2005; DeLone, 1988; Pansiri and Temtime, 2010). Management's innovativeness is also related to accepting new IT. Research carried out by Thong and Yap (1995) indicates that managers who are highly innovative and have a positive attitude toward IT together with a competent IT background are more likely to be successful in adopting new IT. Moreover, they tend to pursue new IT for competitive purposes (Guan *et al.*, 2006). In light of this, our first two hypotheses are:

H1a. Management characteristics will significantly influence a firm's perception regarding CRM technology.

H1b. Management characteristics will influence the likelihood of CRM technology being adopted.

While management or the owner-manager are the people who contribute to the success of the business in SMEs, employees' knowledge and the degree and form of their involvement contribute to the success of the IT adoption process (Anderson and Huang, 2006; Elmuti *et al.*, 2009). The company characteristics are vitally important to the adoption of innovation. Ko *et al.* (2008) suggest that large companies tend to adopt innovative technology more easily than smaller ones because they have many more resources, they manage risk well and have resilient infrastructure. In contrast smaller

companies work in highly competitive environments, lack resources, suffer from cash flow issues and do not have the professional staff who have experience in adopting innovative systems.

Nevertheless innovative SMEs who are successful in adopting CRM have employees who understand the purpose behind the adoption, their role within the adoption and their contribution to the adoption (Nguyen, 2009). As a result SME management must nurture a culture which recognises that employees are an asset, can make a contribution, can have a major impact on the organisation, and are a resource that needs to be developed (Hotho and Champion, 2011; Reid *et al.*, 2002). Keeping employees informed of and engaged in organisational change is essential for the success of any new project, especially where IT is involved (Anderson and Huang, 2006). Preece (1995) contends that staff are the firm's "human capital" and when they are engaged at all levels of the organisation in new IT adoption, they can facilitate higher success rates. Regardless of the potentially positive outcomes of employee engagement in IT projects SMEs need to be aware of staff concerns (Bull, 2003; Shum *et al.*, 2008). These have been articulated as doubts over job security, and the possibility that the new system will not improve the business or staff jobs (Anderson and Huang, 2006). It is important that SME managers are apprised of all of the issues around staff involvement in new IT innovations and choose a communications strategy specific to their own organisation along with sufficient training and development to overcome the change management difficulties (Fuller-Love, 2006; Shum *et al.*, 2008). As the result, we formulated our third and fourth hypotheses:

H2a. The more involvement the employees are seen to have with the CRM technology adoption process, the more likely the CRM technology will be adopted.

H2b. The more involvement the employees are seen to have with the CRM technology adoption process, the greater the extent to which CRM technology will be adopted.

When considering the information technology resources within SMEs the focus is on the IT abilities, capabilities and capacities of a firm. IT abilities refer to the skills, capabilities to the resources and strategies, and capacities to the ability of firms to absorb, process, and present the information that the firm holds (Gray, 2006). The key ingredients for understanding IT adoption in the small enterprise sector are organisational competencies, organisational and technical processes, technical, managerial and business skills, and the allocation of resources within firms (Caldeira and Ward, 2003; Nguyen, 2009). IT managers should not only understand the reasons why IT needs to be implemented in their businesses, but also the importance of taking into account the needs of their suppliers and customers (Guan *et al.*, 2006; Mata *et al.*, 1995). As IT can assist firms in enhancing their business practices, it is important that the reason for pursuing new IT should be identified before any key decisions on IT adoption are made. The IT innovation capability of a firm comprises technology infrastructure, production, process, knowledge, experiences and organisation, so it cannot be measured by a single dimension (Guan and Ma, 2003). It involves an articulation between internal experience and experimental acquisition, and includes a wide variety of assets and resources. Hence, the IT abilities, capabilities, and capacities

of the organisation play a key role in the IT adoption process (Búrca *et al.*, 2005), and hence with the CRM adoption process. This leads to our next two hypotheses:

H3a. The stronger the IT resources of the firm, the greater the chance that CRM technology will be adopted.

H3b. The IT resources of the firm influence the extent to which CRM technology will be adopted.

In terms of a firm's characteristics, much of the literature regarding IT adoption in SMEs acknowledges that the size of the firm and the industry sector are factors that both play a role in the adoption process (Bruque and Moyano, 2007), and even more so in the case of CRM technology adoption (Shin, 2006). This is because, as firm size increases, the scale, scope, and complexity of the adoption increase (Peltier *et al.*, 2009), and different industries have different requirements (Reijonen, 2010). Ko *et al.* (2008) suggest that there is much literature highlighting the benefits of CRM adoption and that these perceived benefits vary by organisational size, geographical location and industry sector. Their study found that size was significant factor, but it only looked at one industry. Cooper *et al.* (2005) found that whether size or industry was a significant predictor of adoption depended on the stage of development. However, studies by Peltier *et al.* (2009) and Sophonthummapharn (2009) suggest that firm size has no significant effects on the adoption of CRM. Since it is unclear whether size and industry affect CRM adoption in SMEs, we have included both size and industry type variables in our analysis.

In addition to size and industry, innovativeness is another characteristic of a firm. Innovativeness of a firm, as defined by McDonald (2002, cited in Tajeddini *et al.*, 2006, p. 533) is "the willingness and ability to adopt, imitate or implement new technologies, processes, and ideas and commercialise them in order to offer new, unique products and services before most competitors". However, Shin (2006) argues that many SMEs lack the ability to adopt new technology and practices. Thus, it is suggested that innovation capabilities are crucial, especially when it comes to customer engagement technology and in particular CRM systems, as many studies have found that innovation outcomes can be obtained through integrating and embracing technological and organisational innovation (Edwards *et al.*, 2005; Gray, 2006). In a closely related area, the way a firm perceives itself in the market (in relation to other companies within the same industry) plays an important role when it comes to new technology adoption. It is suggested that an SME is more likely to engage in CRM technology when it sees itself as a front runner (Ismail *et al.*, 2007; Özgener and İraz, 2006). Hence:

H4a. A firm's characteristics (size, industry, perceived market position, innovativeness) influence the decision to adopt CRM technology.

H4b. A firm's characteristics (size, industry, perceived market position, innovativeness) influence the extent to which CRM technology will be adopted.

H5. Employee characteristics, IT resources and a firm's characteristics (size, industry, perceived market position, innovativeness) influence the extent to which CRM technology will be adopted.

Research method
The study presented in this paper investigates CRM technology adoption by examining the relationship between organisational characteristics and the process of adoption in SMEs in California. The intention is to extend the work of Ko *et al.* (2008) who developed a framework of study based on Rogers' (1983) innovation decision process (see Table I). The framework consists of three stages perception of CRM, adoption of CRM and implementation of CRM. These three stages are set to be dependent on the organisational characteristics of strategy, IT infrastructure, firm size, products, fashion position, seasonality and CEO's age. The framework is specific to the fashion industry. We adapted their idea but expanded it further so that it can be generalised in the wider context of SMEs. Also, in this study, the term CRM technology refers to an IT-based customer relationship management application that can be integrated with an organisation's business information systems to provide organisational insight into customers' expectations via communication and information management. It includes CRM application packages that organisations integrate into their business systems either physically (purchased software that are installed and maintained in-house) or virtually (purchased memberships/user licenses and used via an interface supplied by service providers such as those from Microsoft, SAP, SaleForces.com or Oracle).

Sample and data collection
The sample was taken from owners and managers of companies classified as SMEs in the retail, manufacturing and services (IT consulting, legal and law, financial lending, healthcare and logistic transportation) sectors in Los Angeles and Orange Counties in Southern California. The companies were selected from those registered on the Orange County Register (ca.ocregister.com) and the Los Angeles County Business Directory (www.losangelescountybusinesses.com). These web sites contain details of over 750,000 SMEs, but as registration is not mandatory, this is not the total population of all SMEs in Los Angeles and Orange Counties. An initial contact was made by telephone to a number of companies selected from one of the identified sectors. The purpose of this was to determine if they had or had not implemented CRM, and to ask if they would be willing to participate in the survey. Of the companies contacted, 568 agreed to participate. Of these, 256 (45.1 per cent) had adopted CRM technology and the remainder, 312 (54.9 per cent) had not. In terms of industry sector, 201 (35.4 per cent) were from retail, 117 (20.6 per cent) from manufacturing, and 250 (44.0 per cent) from services.

There were 156 responses, but only 126 sets of questionnaires were usable; this gives an overall response rate of 22.2 per cent. Of these, 74 firms had adopted CRM and 52 had not. From this, we observed that those companies who had implemented CRM were more likely to complete the questionnaire. This resulted in having 58.7 per cent of the usable responses from firms that had implemented CRM, and 41.3 per cent from those who had not. These percentages differ significantly from those in the original sample of 568, and could be caused by non-response bias (Freedman, 2004). However, the percentage of all SMEs in Los Angeles and Orange Counties who have adopted CRM is unknown, so it is not possible to state whether this apparent bias will affect the findings. To investigate this further, the observed data were modified using weights

(Carlson and Williams, 2001) to see if this affected the results, and this is reported at the end of the Findings section.

Of the firms who responded to the survey, the industry breakdown is as follows: 33.3 per cent were from retail, 19.0 per cent from manufacturing, and 47.6 per cent from services; these percentages are not significantly different from those in the original sample of 568. In terms of size, this study used the generally accepted measurement of a headcount of 100 or less to be small and between 101 and 250 to be medium-sized, and data collected was the actual number of employees. The rationale behind this classification of ranges for different size companies is because in the US, the Small Business Administration US gives specifications for what constitutes a small businesses and it can go up to a 500 headcount and also involves their annual income; this covers a very broad range of companies (US Small Business Administration, 2008). Results in Table II give details of the distribution of the sample.

In terms of personal characteristics of the respondents, 57.9 per cent were male and 42.1 per cent were female. The age breakdown of the responders is as follows: 13.4 per cent were 25 and under, 41.3 per cent between 26 and 35, 10.3 per cent between 36 and 45, and 34.9 per cent over 45 years of age. Table II gives further descriptive statistics on the sample.

Criteria/values	Adopter N (%)	Non-adopter N (%)
Gender		
Male	39.7	18.3
Female	19.0	23.0
Age		
25 or under	4.8	8.8
Between 26-35	5.6	4.8
Between 36-45	22.2	19.0
Over 45	26.2	8.7
Education		
High School Diploma	0.8	1.6
Associate degree or equivalent	6.3	5.6
College degree	8.7	10.3
Post graduate	28.6	15.9
Professional certificate	14.3	7.9
Size (no. of employees)		
10 or less	8.7	10.3
Between 11-50	17.5	11.9
Between 51-100	10.3	4.0
Between 101-150	19.0	6.3
Between 151-250	3.2	8.7
Industry		
Retail	20.6	12.7
Manufacturing	9.5	9.5
Services	28.6	19.0
Market position		
Market leader (perceived)	19.8	3.2
Medium	21.4	8.7
Small	17.5	29.4

Table II.
Descriptive statistics of
overall sample

The data were tested for potential effects associated with the specific industry sector (retail, manufacturing and services), and the results suggest that there are no significant differences in the responses.

Measurement

The first dependent variable is the perception of CRM. It assesses the perception of the benefit and usefulness of the CRM application. The instrument to measure this was adapted from Peltier *et al.* (2009, p. 320), and consists of a single scale of 1 to 5 (strongly disagree to strongly agree). The six questions are:

- CRM systems help manage customers' information more effectively.
- CRM systems give us competitive advantage over non-user.
- CRM systems help improve our sales/service effectively.
- CRM systems help improve our products/services effectively.
- CRM systems are becoming industry standard.
- CRM systems are essential for our business.

Although the items were taken from a well tested instrument in a similar environment, Cronbach's alpha reliability test for internal consistency was performed. The alpha value is 0.87, which is within accepting range (Nunnally, 1978). The level of perception is calculated by averaging the scores of the responses, and this represents the perception of CRM variable. The technique of averaging the scores was chosen for its simplicity and because for small samples, unit weighting has similar predictive validity when compared with using regression weights (Bobco *et al.*, 2007). It is hypothesised to be dependent on the management characteristics variable. The second dependent variable is the likelihood to adopt CRM. It is a single variable which looks into whether the business does or does not adopt CRM technology; this variable is dichotomous. Following the example from Thong and Yap (1995), this variable is hypothesised to be dependent on positive perception of CRM, the management characteristics, IT resources and the firm's characteristics. The last dependent variable is the CRM implementation. The measurement of this variable follows Cooper *et al.* (2005). It is the extent to which CRM technology is being adopted. This measure indicates the degree to which CRM has been adopted by assessing the different CRM functionalities being used in the organisation. Based on ten criteria of specific CRM features (listed in Table III), using 1 for using and 0 for not using, the composite score was measured by totalling number of features have been implemented in the firm. The questions for implementation were adapted from Cooper *et al.* (2005, p. 251), and involves ten CRM features:

- Enterprise-wide.
- Call centre.
- Customer service.
- Sales force automation.
- Loyalty program.
- Offline marketing.
- E-marketing.

- Partner/channel management.
- Data warehousing/customer intelligence/data mining.
- Multichannel/cross-channel marketing solutions.

There are four independent variables, management characteristics, employee characteristics, IT resources and firm characteristics. The management characteristics variable comprises gender, age, education background, their innovativeness and their positive attitude toward CRM (Kirton, 1976; Ko *et al.*, 2008; Thong and Yap, 1995), where gender, age, education background and positive attitude toward CRM are single variables. The management innovativeness scale comprises four items assessing the individual's openness to new ideas, risk-taking and creativity. The IT resources variable describes the IT abilities, capacities and capabilities of the firm (Caldeira and Ward, 2003; Nguyen, 2009). This scale has four items assessing the extent to which organisation is committed to IT infrastructure support, IT training, IT skills and resources. The employee characteristics variable covers the management's view of their employee involvement, contribution and acceptance of changes (adapted from Davis, 1989). This scale has five items assessing perception of how employees are involved in the adoption process, how useful they perceive the application to be, and their acceptance of the new application. Finally, the variables under the firm characteristics are: the industry sector, firm size (by number of employees), its perceived market position, and the firm's innovativeness (Cooper *et al.*, 2005; Kirton, 1976; Ko *et al.*, 2008; Peltier *et al.*, 2009). The perceived market position measures how management see the firm in relationship to other companies within the same industry. The measurement of this variable is on the scale of 1 to 3 (market leader, medium and small). Because perceived market position is a categorical measure, we used dummy variables for the three levels and used market leader as the baseline. Innovativeness has four items and measures the innovative capabilities of a firm, which focus on continuously seeking improvement and investment into quality of products and services that leads to business expansion and/or growth.

Validation of the scales
Exploratory factor analysis using principal component analysis with varimax rotation was performed on the collected data to extract the factors that were hypothesised. The

CRM features	Adopter N (%)
Call center	39.2
Customer service	62.1
Data warehousing/customer intelligence/data mining	54.0
E-marketing	62.1
Enterprise-wide	59.4
Loyalty program	52.8
Multichannel/cross-channel marketing solutions	37.8
Offline marketing communication	43.2
Partner/channel management	31.2
Sales force automation	35.1

Table III.
Descriptive statistics for implemented CRM features ($N = 74$)

Kaiser-Meyer-Olkin sampling adequacy measurement (Kaiser, 1958) was 0.824. This is classed as meritorious (Hutcheson and Sofroniou, 1999), while Bartlett's Test of Sphericity is significant at 0.000, both indicating that the matrix is factorable, and so the assumptions for carrying out factor analysis were met. Using eigenvalues greater than 1 as the criterion, four factors were extracted. Two of the factors were as postulated, with the items for management innovativeness and firm innovativeness loading onto their a priori scales. For the other two scales, all items of the employee and IT resources also load onto their a priori scales with the exception of "IT application usefulness to employee". This was originally hypothesised to be part of the employee scale, but loads onto the IT resources scale (see Table IV).

Findings

Multiple regression analysis was employed to examine the influence of management's characteristics toward perception of CRM technology. The results indicate that the

Items	Factor 1	Factor 2	Factor 3	Factor 4
Management innovativeness ($\alpha = 0.72$)				
The management has his/her original ideas				0.785
The management would something new than improve something existence				0.851
S/he often take risk doing things differently				0.775
The management are prepared to try new ideas or products				0.683
Employee ($\alpha = 0.72$)				
Our staff are well trained in their IT skills			0.758	
Our staff are comfortable with their computer usage			0.724	
Our staff are aware of the changes in IT applications			0.753	
Our staff involve in the adoption process			0.506	
IT resources ($\alpha = 0.84$)				
IT applications help our staff to perform their duties better[b]		0.594		
We invest in IT infrastructure (harware/software)		0.600		
We have our own IT support team		0.801		
Our IT applications involve all functions within our organization		0.809		
Our IT applications meet/exceed industry standard	0.791			
Firm innovativeness ($\alpha = 0.85$)				
We always find way to improve the quality of our products and services	0.783			
We always find way to improve service to our customers	0.824			
We share ideas among our staff	0.770			
We collaborate with our vendors/business partners to share ideas and improve business process	0.724			
VE[c]	32.41	18.92	7.12	6.63
Eigenvalue	5.51	3.22	1.21	1.13

Table IV.
Factor loadings rotated component matrix[a]

Notes: Extraction method: principal component analysis; rotation method: varimax with Kaiser normalization; [a]rotation converged in seven iterations; [b]originally part of the employee scale; [c]variable explained in percentage

overall model supports hypothesis *H1a* that management characteristics significantly influence a firm's perception on CRM technology. However, for individual coefficients, only innovativeness and positive attitude toward CRM are significant while age, gender and education are not in terms of contribution to perception of CRM (see Table VI). Removing insignificant coefficients, the overall value of the coefficient of determination (R^2) of the model does not change very much (from 0.419 to 0.410); hence, it can be assumed that, in this sample, gender, age, and education of management in SMEs have little influence on attitude toward CRM technology adoption.

To test hypotheses *H1b* (management characteristics will influence the likelihood of CRM technology being adopted), H2a (the more involvement the employees are seen to have with the CRM technology adoption process, the more likely the CRM technology will be adopted), *H3a* (the stronger the IT resources of the firm, the greater the chance that CRM technology will be adopted) and H4a (a firm's characteristics influence the decision to adopt CRM technology), direct logistic regression was performed to assess the impact of the given predictors on the likelihood that respondents would report that they had adopted CRM. For the categorical variable perceived market position, dummy variables were used with Market Leader as the baseline reference. Since the dependent variable is of categorical dichotomous type, logistic regression is the appropriate method to be used (Everett and Dunn, 2001). The full model containing all predictors was statistically significant with $\chi^2(9, n = 126) = 45.23, p < 0.001$, indicating that the model was able to distinguish between respondents who had reported to have adopted CRM and those who had not. The Hosmer and Lemeshow Goodness-of-Fit value is 4.99 with a significance of 0.759 ($p > 0.05$). This supports that our model as being worthwhile. The model as a whole explained between 30.2 per cent (Cox and Snell R^2) and 40.6 per cent (Nagelkerke R^2) of the variance, and correctly classified 75.4 per cent of the cases. Overall, as shown in Table V, the hypothesis that management characteristics will influence the likelihood of CRM technology being adopted (*H1b*) was supported with both coefficients showing a significant contribution to the prediction of CRM adoption. The predictions that the greater the involvement the employees are seen to have with the CRM technology adoption process (*H2a*) and the

Hypothesis	Independent variables	Coef (B)	Exp(B)	Sig.
H1b	Management characteristics			
	Positive attitude	1.005	2.732	0.047
	Innovativeness	0.278	1.321	0.016
H2a	Employee	0.023	1.023	0.021
H3a	IT resources	1.262	3.532	0.018
H4a	Firm characteristics			
	Innovativeness	0.622	1.863	0.029
	Industry sector	−0.326	0.722	0.228
	Size (no. of employee)	2.152	8.603	0.016
	Perceived market position (medium)	−1.556	0.211	0.047
	Perceived market position (small)	−3.108	0.045	0.001

Notes: $R^2 = 30.2$ percent (Cox and Snell) and 40.6 per cent (Nagelkerke); model $\chi^2(9, n = 126) = 45.23$; dependent variable: CRM adoption (0,1); the overall model fit is significant ($p < 0.001$)

Table V.
Logistic regression results: market leader = perceived market position reference

stronger the IT resources of the firm (*H3a*) will both increase the likelihood that CRM technology will be adopted were both supported (p-values $= 0.021$ and 0.018). Finally, the hypothesis that the firm's characteristics (size, industry, perceived market position, innovativeness) influence the decision to adopt CRM technology (*H4a*) was supported with all variables except for the industry sector making a significant contribution.

Tolerance and variance inflation factor (VIF) were examined to detect multicollinearity. The results (in Tables VI, IX and X) are within the cut-off points (above 0.1 for tolerance and under 10 for VIF) indicating that multicollinearity does not seem to be present in the sample (Tabachnick and Fidell, 2007). To test *H2b*, *H3b* and *H4b*, simple and multiple regression analyses were used to assess the extent to which CRM was implemented (see Tables VII, VIII and IX). The results showed the employee involvement is significant (t-value $= 4.273, p < 0.001$), which results in acceptance of hypothesis 2b, the more involvement the employees are seen to have with the CRM technology adoption process, the greater the extent to which CRM technology will be adopted. Hypothesis 5 is testing the influences of all factors (employees' involvement, IT resources and firm characteristics) on the extent to which CRM technology will be adopted. Removing perceived market position as an independent variable, and using multiple regression produces the results shown in Table X. These can be seen to be similar to those from the simple regression on the individual independent variables (see Table VII and VIII). Examination of the t-values in Table X suggests that the extent to which CRM is being implemented is highly influenced first by a firm's innovativeness,

Table VI.
Results of regression analysis on management characteristic toward perception of CRM (without age, gender and education)

Measurement	B	Std error B	β	t-value	Tolerance/VIF
Positive attitude	0.939	0.083	0.467***	6.528	0.790/1.266
Innovativeness	0.272	0.075	0.335***	4.686	0.790/1.266

Notes: $R^2 = 0.410$; adjusted $R^2 = 0.401$; $F(2, 122) = 42.804$***; Sig. ***$p < 0.001$. $\beta =$ unstandardized coefficient; $\beta =$ standardized coefficient

Table VII.
Simple regression analysis of employee involvement toward the extent to which CRM is implemented (adopters only)

Measurement	B	Std error B	β	t-value	Tolerance/VIF
Employee involvement (*H2b*)	0.512	0.120	0.450***	4.273	N/A

Notes: $R^2 = 0.202$; adjusted $R^2 = 0.191$; $F(1, 72) = 18.261$***

Table VIII.
Simple regression analyses of IT resources toward the extent to which CRM is implemented: (adopters only)

Measurement	B	Std error B	β	t-value	Tolerance/VIF
IT resources (*H3b*)	0.651	0.072	0.729***	9.050	N/A

Notes: $R^2 = 0.532$; adjusted $R^2 = 0.526$; $F(1, 72) = 81.899$***

second, by its IT resources, followed by employee involvement, size of the firm and its industry sector.

In terms of assessing the number of CRM features SMEs in this sample adopted for their organisations, Table III reports the percentage of adopters for each feature. The results from CRM features adoption show that the majority of organisations in this sample use it for customer service and e-marketing (62.1 per cent). Second on the list is enterprise-wide applications (59.9 per cent) followed by data warehousing/customer intelligence/data mining (54.0 per cent). The least popular adoption is partner/channel management (31.2 per cent), followed by sales force automation (35.1 per cent), and multichannel/cross-channel marketing solutions (37.8 per cent).

In order to investigate the possible effects of non-response bias, the observed values from the respondent sample of 126 were weighted (Carlson and Williams, 2001) so as to give the same expected values as the original selected sample of 568. The only analyses that look at both adopters and non-adopters, hence the ones affected by this weighting, are the regression reported in Table VI, and the logistic regression reported in Table V, Both the multiple regression and logistic regression analyses were repeated with this adjusted data. In both cases, the results showed a better model fit to the data. For the regression reported in Table VI, with the adjusted data, R^2 was 0.64 (up from 0.41), significant with $p < 0.001$; for the logistic regression in Table V, χ^2 would change from 45.23 to 54.71, still significant at $p < 0.001$. However, as the actual percentage of

Measurement	B	Std error B	β	t-value	Tolerance/VIF
Firm characteristics (*H4b*)					
Innovative	0.682	0.063	0.806***	10.776	0.940/1.064
Industry sector	0.327	0.150	0.279*	2.176	0.878/1.139
Size (no. employee)	0.373	0.145	0.326*	2.541	0.722/1.384
Perceived market position (medium)[a]	−0.188	0.150	−0.118	−1.256	0.599/1.669
Perceived market position (small)[a]	−0.137	0.155	−0.085	−0.890	0.581/1.722

Notes: $R^2 = 0.643$; adjusted $R^2 = 0.616$; $F(5, 68) = 24.446$***; Sig. *$p < 0.05$, ***$p < 0.001$; [a]dummy variables; B = unstandardized coefficient; β = standardized coefficient

Table IX.
Multiple regression analyses of firm characteristics toward the extent to which CRM is implemented: market leader = perceived market position reference (adopters only)

Measurement	B	Std error B	β	t-value	Tolerance/VIF
Employee involvement	0.281	0.091	0.255**	3.075	0.584/1.714
IT resources	0.189	0.093	0.212*	2.028	0.367/2.722
Firm characteristics					
Innovative	0.440	0.080	0.520***	5.508	0.452/2.215
Industry sector	0.125	0.057	0.160*	2.041	0.880/1.137
Size (no. employee)	0.161	0.054	0.182*	2.176	0.852/1.174

Notes: $R^2 = 0.726$; adjusted $R^2 = 0.706$; $F(5, 68) = 36.083$***; Sig. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$; B = unstandardized coefficient. β = standardized coefficient

Table X.
Results of multiple regression analysis of employee involvement, IT resources and firm characteristics toward the extent to which CRM is implemented (adopters only)

adopters of CRM in the whole population is unknown, the findings and discussion are based on the analyses of the unadjusted data, as these results are more conservative.

Discussion and managerial implications

Previous research indicates that CRM technology can provide firms with a sophisticated business tool where personal relationships with customers can be developed and maintained, and this can lead to future business success (Mazurencu-Marinescu *et al.*, 2007; Ngai, 2005; Peltier *et al.*, 2009). However, SMEs have experienced high failure rates when it comes to CRM adoption, as it is not easy to integrate this business philosophy into everyday business (Shin, 2006). Adapting from Ko *et al.*'s (2008) study, our study assessed how the management's Perception of CRM (perception of benefits and usefulness of the CRM technology), Likelihood to Adopt CRM (whether the business is or is not proceeding toward adopting CRM technology) and CRM Implementation (the extent to which CRM technology is being implemented) interrelated with organisational characteristics (management characteristics, employee involvement, IT resources and a firm's characteristics). This was done for a sample of SMEs in Southern California in retail, manufacturing and services industry sectors.

Perception of CRM

H1a predicted management characteristics would significantly influence a firm's perception regarding CRM technology. The results from the multiple regression analysis (see Table VI) indicate that management's innovativeness and the degree of CRM benefits they perceived contribute to a positive attitude toward CRM technology. This is consistent with the studies by Anderson and Huang (2006), Chao and Chandra (2012) and Thong and Yap (1995). Although many studies have found a significant relationship between gender, age and background education and technology adoption (Morris and Venkatesh, 2000; Ko *et al.*, 2008; Rogers, 1983), the results from Table VI indicates that these variables make no significant contribution to how CRM technology is perceived. This lack of significance could be the result of the majority of the respondents in this study being from a similar age groups (36 and above) and having a college degree or a higher qualification (see Table II).

Likelihood to adopt CRM

In SMEs, the likelihood of adopting new IT applications depends on various factors. Previous studies have indicated that these factors include management's characteristics, employee's involvement, IT resources adequacy and the firm's characteristics (Caldeira and Ward, 2003; Nguyen, 2009; Thong and Yap, 1995). Our study examined the likelihood that CRM technology would be adopted based on (*H1b*) management characteristics (innovativeness and positive perception toward CRM technology) (*H2a*) the perceived involvement of the employee in the adoption process (*H3a*) the stronger IT resources, and (*H4a*) the firm's characteristics (size, industry, and perceived market position). Logistic regression results in Table V show positive predictive power from management's innovativeness and positive attitude toward CRM, employee's involvement and IT resources of a firm. Our results suggest that a firm that has adopted CRM will have adequate IT resources, will have employees' involvement in the business, and will exhibit a positive attitude towards CRM and support from the owners or top management. These findings are in line with Anderson

and Huang (2006), Bull (2003) and Shum *et al.* (2008) that the involvement and commitment of both management and employees contribute to whether CRM technology will be adopted, while IT resources should be sufficient and ready to support the new application.

As with previous studies (Harrigan *et al.*, 2009; Ko *et al.*, 2008; Ramdani *et al.*, 2009), our findings support the influence of the innovative organisation on the likelihood of CRM adoption, as it enables the use of more sophisticated business tools and technology that allows for the collection, analysis and dissemination of customer and competitor information. This view is reinforced by the significance of the perceived market position factor in terms of contributing to whether CRM technology is adopted (see Table V). The findings support Rogers's (1983) DoI, which, in this case, implies that the way a firm sees itself in the market affects the likelihood of CRM adoption, with those perceiving themselves to be market leaders more likely to adopt that those who see themselves as either medium or small (see Table V).

In terms of industry sector, our results show its contribution to the likelihood of CRM adoption is not significant. This means that the likelihood of adopting CRM technology has little to do with the industry sector that the firm is in. However, our results show that size of the firm is significant at $p < 0.05$. This supports the findings of Ko *et al.* (2008), who suggest that the larger a firm, the more likely CRM will be adopted and Ramdani *et al.* (2009), who suggest that the size of the firm is a significant determinant of adoption.

CRM implementation
The extent to which CRM features are being implemented was postulated to be dependent on perceived employee involvement (H2b), IT resources (H3b), and a firm's characteristics (H4b). The regression results in Tables VII-X indicate that both employee involvement and IT resources make a significant contribution. As suggested by Gray (2006), the people within a firm are the drivers to innovation. Hence, the people within the firm who are willing to accept new challenging activities and embrace a learning culture, and are able to recognise the strength of that culture are likely to advance innovation and gain advantage over their competitors (Denison *et al.*, 2004). In addition, the firm's IT resources will include knowledgeable, highly skilled IT staff and the necessary infrastructure with the capabilities to acquire, process and manage information (Caldeira and Ward, 2003; Nguyen, 2009).

As with the features of CRM technology to be adopted, a firm's innovativeness and its size contribute to the features being adopted. However, here, the industry factor is also significant in terms of contributing to the different features, while perceived market position is not significant (see Table IX). This could be that once the decision to adopt a CRM application has been made, the different features implemented depend on the industry sector of a firm. This association could be explained by the fact that companies in different industries have different customer relationships and their business practices reflect this. Manufacturing companies tend to have relatively fewer customers but long-term relationships, whereas in retail, the relationships are more short-term with a greater number of customers. Service sector companies are somewhere in between. This result supports Payne and Frow (2006) and Reijonen and Laukkanen (2010) that each SME is unique in its business practice, will have different

issues they need to address according to their industry sector, and the choice of CRM application should fit within the context of the goals and objectives of the organisation.

According to the results in Table III, the majority of SMEs in this sample implemented CRM for customer service and e-marketing. The findings suggest that these SMEs are using CRM applications to enhance their front-end focussing on e-marketing and customer service in their business processes. These are communication and interaction channels that can make or break a business (Özgener and Iraz, 2006; Peltier *et al.*, 2009). The next top three are enterprise-wide applications, data warehousing/customer intelligence and loyalty programs. These results fit into the context of SMEs exploiting the benefits of CRM in terms of information management and relationship management, which could allow for a wider reach of the "relationship marketing" approach by utilising information technology to take over the labour-intensive aspects of developing meaningful relationships, thereby making it feasible across a wide range of different customers by understanding how they behave (Goodhue *et al.*, 2002; Greenberg, 2010).

The results in Table III also show the least implemented features, which are partner/channel management, sales force automation and multichannel/cross-channel marketing solutions. It could be that these features are more for larger organisations and are not suitable for SMEs, as their business does not have the needs and/or requirements for such features. The findings support those of Bull (2003) and Shin (2006) that SMEs appear to follow only the basic objectives and principles of CRM. The findings also are consistent with Cooper *et al.* (2005) findings that certain features of CRM such as self-service, automated feedback and responses are for large-scale enterprises and require high investment. SMEs often cannot afford such investment in complex and expensive IT to support CRM activities. In addition, SMEs have limited access to multi-channel and customer interactions; hence, these features are undesirable to SMEs.

Conclusion and limitations

The findings from this study have implications for CRM adoption in SMEs, as they demonstrate a relationship between organisational characteristics and whether a firm has adopted CRM. In firms that have adopted CRM, management, regardless of gender, age or education level, would be supportive, innovative and have a positive attitude towards new IT applications such as CRM systems. In addition, there would be innovation within the organisation with a team of management and employees who are involved in the adoption process so that the firm has the ability to absorb knowledge and to use it. Within the firm, there would also be IT resources available, both infrastructure and skills to support change. These characteristics are important when it comes to the likelihood to adopt and the extent to which different CRM features are adopted. This implies that owner-mangers of SMEs that are considering adopting CRM technology must be supportive of new technology and innovation, recognise the contribution that employees make to the business, provide support for the employees during the adoption process, and ensure that the IT resources are sufficient. The likelihood to adopt is also influenced by the size of the firm and how it sees itself in the market, as different size SMEs will have different requirements (Reijonen, 2010). However, when it comes to choice of specific applications, the industry sector has greater influence because different industries have need for different features and this

is governed by the nature of the industry. From a management perspective, this means they have to ensure that any CRM features that they implement must be appropriate for the size of the firm and their industry sector.

The findings from this study extend the understanding of CRM adoption in SMEs and give greater insight into the factors associated with the adoption of CRM. It is also the first study of its kind in Southern California covering SMEs in the retail, manufacturing and service industries. However, like most empirical research, this study has limitations. First, the sample was geographically specific to Southern California, and as mentioned previously, it is a convenience sample. The original sample was taken from firms that are registered voluntarily on two web sites. Although the web sites contain in excess of 750,000 firms, it is not the whole population of SMEs in Southern California. Second, the sample size, although it is above the recommended minimum for this type of analysis (Everett and Dunn, 2001; Hair *et al.*, 2005), is relatively small. In addition, the percentage of adopters in the final sample is significantly greater than the percentage of adopters in the original sample selected from the web sites. This would indicate that there may be non-response bias, which limits the generalisation of the findings beyond the respondents, although adjusting the scores to take this bias into account actually improved the model fit for both the multiple regression and the logistic regression. Finally, only one respondent was surveyed from each firm. This means that the questions relating to employees are responded to by management, so it measures the management's view of how employees perceive things. Replication of this study using a probability sample would be of value, and would allow the generalisation of the findings to the entire population of small enterprises with greater confidence. It would also be valuable to survey both management and employees within a firm, so as to capture the employees' views more directly. The size of the SME is associated with the likelihood to adopt, and it is recommended that a future study looks specifically at small business to determine if there are other factors affecting such firms. This study was carried out in Los Angeles County and Orange County in Southern California, and it is suggested that future research should now be undertaken to test the model by applying it in other SME contexts (for example, different location and industry), particularly as different countries (for example, the US and UK) define SMEs in slightly different ways.

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