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Strategic Change

A taxonomy of e-business adoption and strategies in small and medium sized enterprises

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- *Contemporary research has shown the need for a strategic approach when undertaking a new investment such as e-business (Pleitner, 1989; Schindehutte and Morris, 2001; Whipp, 1996). In this context, small and medium enterprises (SMEs) face special problems as they are often dependent on larger enterprises where they are suppliers of products (goods or services) or buyers of products (Kalakota and Robinson, 1999; Mehrtens et al., 2001). They also tend to neglect strategies more than large enterprises and cannot adopt the strategies of large enterprises because of their different situation (Curran and Blackburn, 2001; Beaver, 2002; Jones and Tilley, 2003).*
- *This paper examines the e-business adoption of SMEs and their attitude towards the use of strategies when adopting e-business technology. A comprehensive literature review shows that research in this area is deficient. While the subjects of SMEs, e-business and strategy are adequately covered in the academic literature, there is not sufficient research available linking all three subjects. A taxonomy that describes e-business adoption and the use of business strategies and e-business strategies of SMEs should be used as a starting point for further research.*

Introduction

The use of e-business can provide an important source of competitive advantage in the current business environment (DTI, 2002; Hawkins, 1998; IBM, 2003a; Kalakota and Robinson, 2000; Zott *et al.*, 2000) and it is likely that not using e-business will be a disadvantage in the future. The new e-business environment has developed since the Internet started being used commercially. It is gaining greater importance because of the increasing numbers of Internet users who buy online and the increasing numbers of enterprises that buy and sell online. In December 2002 online shopping grew 19 times faster than bricks-and-mortar retailing and in January 2003, with a turnover of £1 billion, it represented 6% of all UK retail sales (IMRG, 2003). Estimates from eMarketer (NUA, 2003) predict that worldwide Business-to-Business revenues will surpass US$1.4000 billion by the end of 2003.

Besides opening new markets for the enterprises, e-business also has the potential to:

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- have a positive impact on existing business processes, including improved speed and reduced cost (DTI, 2002) and
- renew business activities, e.g. integrate the supply chain (DTI, 2002).

An increasing number of governments have realized the importance of e-business and are trying to ensure that their enterprises are not left behind in international competition. The problem when entering e-business or undertaking an e-business investment is that enterprises and especially SMEs tend to neglect formal strategies (Storey, 1994; Beaver, 2002). In a fast-paced arena like e-business, this could prove to be more critical than in the normal business environment. Where SMEs act too slowly and without careful planning there is a risk that their decisions might soon be outdated. Also, because of their perceptions of the Internet, there is a risk that they do not use its full potential. These concerns highlight a need to investigate whether and how SMEs plan an investment in e-business. This may provide the basis to develop a model to help SMEs to strategically plan for this type of investment.

E-business

There are many different explanations and definitions of e-business (Huff *et al.*, 2000; IBM, 2001, 2003a,b; Kalakota and Robinson, 1999, 2000; Lindgren, 2001). The following are illustrative:

- 'The ability to buy and sell products and services over the Internet, including online display of goods and services, ordering, billing, customer service and all handling of payments and transactions.' (IBM, 2001)
- 'The transformation of key business processes through the use of Internet technologies.' (IBM, 2003b) 'E-business is the evolution of traditional business into electronic business. It uses Web technologies to streamline your processes, improve productivity and increase efficiencies.' (IBM, 2003a)
- 'E-business is not just about e-commerce transactions or about buying and selling over the Web; it is the overall strategy of redefining old business models, with the aid of technology, to maximize customer value and profits.' (Kalakota and Robinson, 2000)
- An electronic approach to business is not simply a small addition to the traditional business as it has the potential to renew the whole business process of an enterprise (Hawkins, 1998; PWC, 2002).

All key business processes can be affected by e-business, while subsets with labels such as e-commerce and e-marketing are confined to certain key business processes.

SMEs

SMEs are a vital component for the economic success of the UK given their importance in terms of numbers, employment and revenue generation. According to the Small Business Service (SBS, 2002), 99.9% of all enterprises in the UK are SMEs and they account for some 45% of the sales turnover generated in the UK.

For the research presented here, we have used the definition of SMEs as originally defined by the Commission of the European Communities (Commission of the European Communities, 1996). The European Commission classifies SMEs as medium, small and micro enterprises and includes companies where the total number of employees is less than 250.

SMEs can be classified according to their level of e-business adaptation. We have used the ladder model from the DTI (2001). Most research uses similar ladders to classify the enterprises (Amor, 2000; APEC and PWC, 1999; Lindgren, 2001; Stroud, 1998), although the number of possible levels and the e-business integration per level varies. It also provides an illustration of the business benefits with progressing organizational change during the transition from a 'traditional' enterprise to an 'e-business' enterprise.

Strategic importance of e-business decisions to SMEs

In his seminal work, Chandler (1962) defined the term *strategy* as 'the determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals'. Strategic decisions are 'concerned with the long-term health of the enterprise', whereas '*tactical* decisions deal more with the day-to-day activities necessary for efficient and smooth operations' (Chandler, 1962).

Discussing the potential development of the strategy and organization fields, Whipp has written that 'the strategy field has clearly defined information technology as a critical feature to be managed and that strategies for international business are another area where strategy may develop' (Whipp, 1996). While e-business relies on information technology, it also facilitates to some extent doing business internationally, thus combining two of Whipp's areas for strategy development.

Although much research about strategies has been undertaken for large enterprises, this research cannot be assumed to be valid for SMEs, since as described by Curran and Blackburn (2001), a small business is not merely a scaled-down version of a large business. Pleitner stated that '*Many small-business entrepreneurs are successful even without explicitly practising the kind of management usually described as strategic*' (Pleitner, 1989, p. 72). He also noted however that '*by the time a firm has grown too big for one person to manage, management by instinct alone will no longer be enough*', thus showing that there is the need for strategies in SMEs of a certain size.

The research outlined here aims to address the current gap by seeking to identify how SMEs use strategy when entering the e-business area. It is hoped that in future work a model will be developed that enables SMEs to find a suitable e-business strategy for their particular situation.

Literature review

Much of the current research, especially the quantitative surveys published (Fletcher Advisory, 2001; Sadowski *et al.*, 2002), appears to develop its own SME definition, instead of using that provided by the European Commission. This appears to be for reasons of convenience. Even if the official SME definition is employed, surveys sometimes use different size classifications for subgroups or they reduce their SME definition to the number of employees only without considering additional criteria (Lindgren, 2001; Preece, 2000). These problems make it hard to compare results from the different studies or to try to find common characteristics.

As described by Hawkins (1998), technological reasons are often secondary to commercial considerations for most enterprises that want to start with e-business. With e-business becoming more and more popular and common, it also increasingly becomes a competitive necessity. Hawkins (1998) indicates: '*That as more large firms embrace electronic commerce, more small firms are being compelled to follow suit in order to be able to do business with larger firms.*' Kalakota and Robinson (1999) also state that e-business can be a necessity: '*If any entity in the value chain begins doing business electronically, companies up and down that value chain must follow suit or risk being substituted.*' Mehrtens *et al.* (2001, p. 169) discovered a similar phenomenon in their qualitative study. They highlight the external pressure to adopt the Internet, similar to the pressure in the past to adopt EDI. However this time the pressure is from customers, potential customers and competitors. This can be seen as a problem for SMEs, which are frequently not in a position to dictate terms and are dependent on larger companies where they are suppliers of products (goods or services) or buyers of products.

In this reactive context, two of the major problems that arise for SMEs are:

- Disproportionate implementation costs because they have to adapt to the IT solution of the large company. The solution

would most likely have to be implemented from scratch and would be tailored to the needs of the large company rather than the SME.
- Technological 'lock-in' with specific trading partners when the IT solution of the large company involves proprietary rather than open standards.

In this case SMEs cannot control the terms of entry into the electronic marketplace and have difficulties controlling the terms of exit. They may have used too many of their resources to follow their business partners and cannot afford to leave this market.

Bellamy (2003) has stated that the general strategic management literature is '*generally oriented towards application to large organisations, mentioning SMEs relatively superficially*' but that Mintzberg's 10 schools (Mintzberg and Lampel, 1999) 'may act as a range for comparative markers for the consideration of the nature of strategy formulation within small firms'.

In Lindgren's survey (Lindgren, 2001) of e-business strategies conducted in Northern Denmark, 75% of the SMEs had no e-business strategy at all and 20% had an e-business strategy that was not written down. A survey of the manufacturing sector in Middlesex (Sainidis *et al.*, 2001) found that 73% of SMEs did not necessarily keep records of what was defined as the current manufacturing strategy. The e-Reality 2000 survey (Strauss and Schoder, 2000) in Germany, Austria and Switzerland found that only about 23% of the enterprises had an e-commerce strategy.

Having a defined strategy can provide a crucial advantage for any enterprise. Following only short-term tactics can lead firms without a strategy into unforeseen situations. Strauss and Schoder (2000) show the importance of strategy and found that strategy-employing enterprises are in general more successful than those that do not use strategies, but even the enterprises that employ strategies often develop them without sufficient thought.

Levy *et al.* (1999) state that the development of IS strategy is often '*performed in an ad hoc manner, though it may be undertaken with the support of frameworks*'. All these surveys support Walters *et al.* (2000), who state that SMEs are reluctant to carry out strategic analysis. This makes it difficult to build historical records of past strategic decisions and options. These are necessary to analyse past aims and objectives and to learn from previous mistakes. Without written aims and objectives it is easy to 'adjust' the aims to the results afterwards. Enterprises might do this to appear successful, but this misleads management into not taking strategy seriously, and acting without aims and objectives.

Entering the world of e-business is comparable to undertaking a new investment such as the location of a new building, or the launch of a new product, or entering a new market. Undertaking these investments is a major decision by a company, although experience suggests that many companies, especially SMEs, are reluctant to spend any time carrying out formal analysis beforehand. Many do not have a written strategy, or they specify the strategy in very general terms (Schindehutte and Morris, 2001). Undertaking such an approach to investment decisions has a high chance of failure. Compounding this, e-business is a very uncertain area and in this way it is not similar to many other investments undertaken by a company.

In this context SMEs face a problem when it comes to the introduction or increased use of e-business. The approach that they adopt cannot be modelled on the approaches of large enterprises since the resources of SMEs in terms of budget and human resources are normally much smaller than those of their large counterparts. This raises the question how SMEs can use strategic thinking and planning at relatively low cost.

Most models or frameworks that could be used by European SMEs for developing e-business strategies were originally created for other enterprises. The problem here is 'the majority of IS research is of large organizations' (Levy *et al.*, 1998). Levy *et al.* (1999) report that SIS frameworks are predominantly based on models of strategic behaviour of US

business culture and large organisations but that there are a number of key differences between large organisations and SMEs. Although Frizelle (2001) writes about similar situations for SMEs and large corporations in some areas (e.g. diversity of business), he is also talking about the differences in the situation of SMEs and large enterprises. Reports from the DTI (PWC, 2002) show that a 'digital divide' is already emerging between the retailers and manufacturers, with retailers being not as likely to use e-commerce as manufacturers. Another digital divide is also emerging, where some sectors of the retail industry are not as likely to use e-commerce as others.

Methodology

The research undertaken at the University of Central Lancashire (UCLAN) and presented here investigated the decision-making behaviour of SMEs with the focus on strategic decisions for e-business. This research followed a functionalist approach to the development of management knowledge. As described by Gioia and Pitre (1990), 'the functionalist paradigm seeks to examine regularities and relationships that lead to generalizations and (ideally) universal principles'. Such an approach builds upon a scientific, rational approach to theory building and should produce some useful information about SMEs and the e-business strategies that they follow.

The research started with a literature review of the three main areas of importance: e-business, SMEs and strategic management. A detailed investigation with the focus on recent quantitative surveys in the area of SMEs and e-business strategies was undertaken to gain more knowledge about the current situation regarding the use of strategies for e-business adoption in SMEs. The review found that several surveys had been conducted by other researchers to collect information about SMEs in general, e-business or ICT use in general (PWC, 2002; DTI, 2001), SMEs and their attitude towards e-business (PWC, 2002; Fletcher Advisory, 2001; Lindgren, 2001) and SMEs and their attitude towards strategy (Sainidis *et al.*, 2001). Recent research investigating SME e-commerce/e-business strategies (Daniel *et al.*, 2002; Drew, 2003) like previous research mentioned above was geographically specific and usually took the form of self-administered questionnaires or telephone interviews.

After evaluating different methodologies, it was decided to adopt a survey approach for the collection of empirical data. The significance of the data was evaluated according to the initial problems found in the literature review. As noted by Curran and Blackburn (2001), there are special difficulties when researching SMEs, one being the nature of the data source. They indicate that there are rarely up-to-date lists of relevant small businesses available from which a convincing representative sample could be recruited, and that there is 'no single publicly accessible register of businesses in the UK'. Although there is an official Inter-Departmental Business Register since 1998 (National Statistics, 2003), Curran and Blackburn state that it fails to pick up many micro or small businesses and that it is not up-to-date.

It was decided that the research would be regionally based in the North West of England to make it possible to conduct more in-depth interviews with selected key enterprises at a later stage. A database from the UCLAN Business Services was selected in March 2002 as the data source for the survey. The main benefits of this database were:

- It covered SMEs from all sectors and sizes.
- It contained the number of employees for each enterprise (which ensured that large enterprises could be filtered out).
- The enterprises in the database are constantly validated by Business Services to ensure that it does not contain too many outdated entries.
- It was electronically accessible.

The main disadvantage of this database was that it concentrated on Lancashire and Cumbria and that it only contained 5800 enterprises. Although some of the other available databases contained more entries, they had

Table 1. Size classification of enterprises

Size class	No. of enterprises	% of enterprises	Criteria
Micro	69	22.7	(Employees <9) and (Turnover <4.5 M£)
Small	141	46.5	((Employees ≥10) or (Employees <49)) and (Turnover <4.5 M£)
Medium	70	23.0	((Employees ≥50) or (Turnover ≥4.5 M£)) and ((Employees <250) and (Turnover <25 M£))
Not an SME	14	4.6	(Employees ≥250) or (Turnover ≥25 M£)
Insufficient information	10	3.3	

disadvantages compared to the UCLAN Business Services database. One factor was that they were too easily accessible (all Dun & Bradstreet databases, kompass directories) and a concern was that the enterprises listed in these databases were therefore too often employed for surveys. Using enterprises that are over-exposed to surveys could therefore result in a reduced response rate. Many databases also tend to concentrate on large enterprises or do not contain micro enterprises (Dun and Bradstreet Business Register Lancashire Summer 2001 and Dun and Bradstreet Europa 2002). Some of the databases were unsuitable because the data related to earlier years (Lancashire Business Directory 1999/2000, Database Business Link North and Western Lancashire, Kompass Directory of British Companies 2001/2002). This is a very serious disadvantage. The enterprises might have moved or closed down and if the questionnaires sent to them are not returned as undelivered these companies will be counted as non-respondents although they should in fact not have been included in the sampling frame and can therefore be deleted (Hoinville and Jowell, 1977). Another problem is the additional bias, as enterprises that are 'new' would be missing completely in the survey and therefore limit the findings to 'established' enterprises, which might have in general a different attitude towards strategy and e-business.

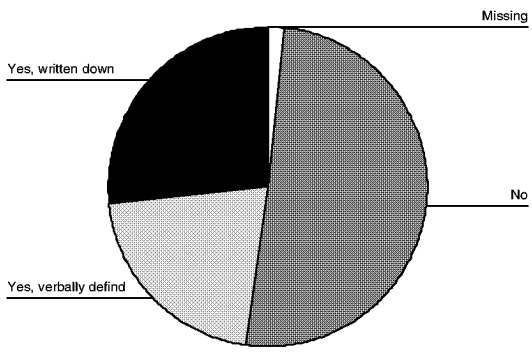
Two survey types were considered: self-administered questionnaires and interviews. Fink and Kosecoff (1998) and Hussey and Hussey (1997) also list other data collection methods which are, however, more suitable for research with different requirements and presuppositions. The survey conducted for this research took the form of a self-administered questionnaire. Clark *et al.* (1998) describe questionnaires as more versatile than most techniques, but also as having less qualitative depth than some alternatives. The purpose of this survey was to examine the position of SMEs towards strategy and e-business. This made the questionnaire the best choice as it has the potential to provide a picture of the current situation.

Results

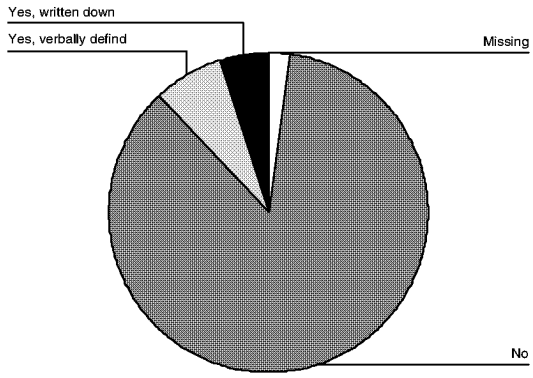
The analysis of the data so far has suggested three important findings. SMEs are neglecting e-business strategies and they enter the e-business arena without careful planning. Additionally, the data has indicated that the choice of strategic models, if any, is to a large extent confined to the use of one only. As a third finding, the data suggests that the SMEs can be

Table 2. Strategies in SMEs

% with formal strategy



% with formal e-business strategy



	With a formal strategy (%)	With a formal e-business strategy (%)
No	50.9	86.2
Yes, verbally defined	20.8	6.7
Yes, written down	25.1	3.5
No reply	3.2	3.5
Total	100	100

grouped into five different clusters, according to their adoption of e-business technology and their use of general business and e-business strategies.

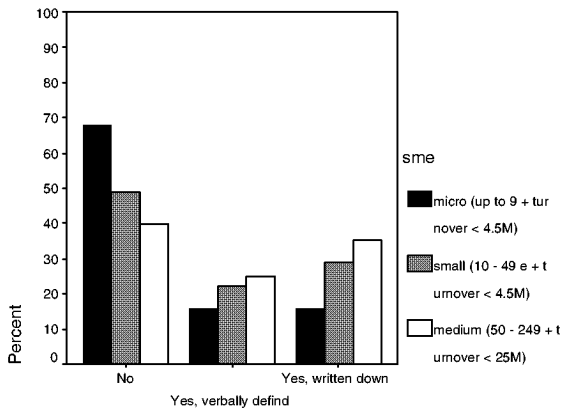
The analysis of the data supported the hypothesis that SMEs are neglecting e-business strategies even more than their normal business strategies. Some 50.5% of enterprises had no business strategy, 20.9% had a verbally defined business strategy and only 26.7% wrote their business strategy down (see **Table 2**). Although only 28.5% of the enterprises answered that they do not do any form of e-business (see **Table 3**), 85.9% of the enterprises had no e-business strategy at all, only 6.9% had a verbally defined e-business strategy and a further 5.1% a written down e-business strategy (see **Table 2**).

Although there are fewer enterprises with an e-business strategy, the relation between size of the enterprise and use of strategy/e-business strategy shows a similar trend. Bigger enterprises are not neglecting both formal strategies and e-business strategies as much as smaller enterprises (see **Table 3**). The bigger the enterprise, the less likely it has no formal strategy or no e-business strategy. Medium-sized enterprises were about twice as likely to have a strategy or an e-business strategy as micro enterprises.

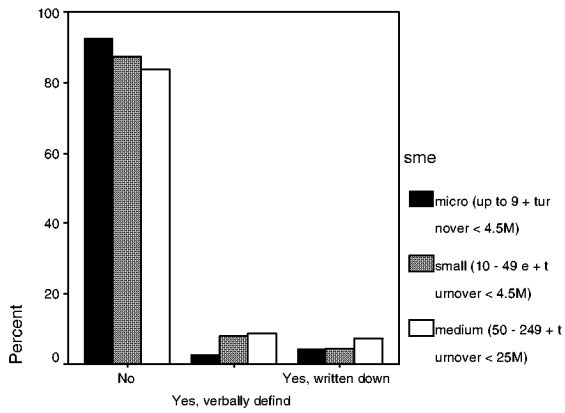
The SMEs that have a formal strategy use existing well-known strategic models (see **Table 4**). SWOT (Strengths, Weaknesses, Opportunities and Threats) is the simplest and most well-known strategic model that is used most often by the SMEs, followed by critical success factors and PEST analysis. Useful strategic models like the value chain analysis and Porter's five forces model appear hardly used, which is a surprising finding.

Cluster analysis, which is a multivariate technique with the objective of grouping respondents or cases with similar profiles on a defined set of characteristics (Hair *et al.*, 1998), was used to classify SMEs into groups with similar attitudes towards the use of business strategies, the use of e-business strategies and the adoption of e-business technology according to the DTI's e-adoption ladder. Everitt *et al.* (2001) describe cluster analysis

Table 3. Use of strategy by SME size



formal strategy



formal e-business strategy

Formal strategy	Enterprise size (%)			Formal e-business strategy	Enterprise size (%)		
	Micro	Small	Medium		Micro	Small	Medium
No	69.7	50.0	40.3	No	95.5	89.4	86.6
Verbally defined	16.7	22.0	25.4	Verbally defined	3.0	8.3	9.0
Written down	13.6	28.0	34.3	Written down	1.5	2.3	4.5

Table 4. Use of strategic models

Model	Reference % of cases (multiple selections possible)
SWOT	67.1
Critical success factors	19.7
PEST	18.4
Business excellence model	14.5
Others	11.8
Value chain analysis	11.8
Five forces	7.9
Product portfolio analysis	6.6
Balanced scorecard	3.9
Total	161.8

Table 5. Cluster analysis

Cluster	% of cases
E-business strategy leaders	10.2
Old-fashioned SMEs	21.5
Blind e-business users	29.7
E-adoption leaders	17.6
Formal strategy leaders	21.1

as a range of methods that can uncover or discover groups or clusters of homogeneous observations.

Five groups of SMEs were discovered (see **Table 5**) that could be classified as follows:

- *The e-business strategy leaders.* This group is the only group containing SMEs that use e-business strategies. The SMEs in this group belong to a group with the longest experience with technology used for e-business and with a very high standard in their use of technology used for e-business.
- *The old-fashioned SMEs.* The SMEs in this group are neither using business strategies nor e-business strategies and they do not use any kind of e-business technology. They do business more locally as they have more local and less regional/national/international customers and suppliers than average SMEs and they have the fewest uses of technology.
- *The blind e-business users.* These have no business strategy and no e-business strategy but despite this they are still using e-business technology.

- *The e-adoption leaders*. These have the highest level of e-adoption without having an e-business strategy. They have a high technological standard and the highest use of technology for their work. This group contains SMEs without a formal business strategy as well as SMEs with a formal business strategy.
- *The formal strategy leaders*. They use business strategies but no e-business strategies and their level of e-adoption is generally low. Although they have the technology available they have the lowest use of technology by their employees.

The further interesting findings are related to the current level of adoption of e-business in SMEs.

Most enterprises started adopting a kind of e-business, if e-mail and websites can be seen as an initial step in the e-adoption process (see **Table 6**). Only 28.5% of the enterprises replied that they do not do any form of e-business. A large number of enterprises are using e-mail (25.6%), or have a website (33.9%), but only 3.6% are doing e-commerce and only 2.2% undertake e-business. None of the enterprises saw themselves as a transformed organization, the final stage in the DTI's e-adoption ladder.

The SMEs that started using e-business seem to keep their commitment for the web separate from their normal work. More than half of these SMEs outsourced the creation of their web presence (see **Table 7**). In higher stages of the DTI's e-adoption ladder, when old business processes should be redefined with the aid of technology, it could however be useful to integrate these outsourced activities into the normal business activities.

Although most of the results from the data analysis are not surprising, there appeared to be no empirical research in the academic literature that combined SMEs and e-business strategies. The findings clarify that SMEs are generally neglecting e-business strategies even more than normal business strategies, and that the SMEs can be classified according to their similarities regarding their business and e-business strategy and their adoption of e-business technologies. This classification created from the data analysis will allow their different situations to be taken into account and can be used as a starting point for the development of a model.

Table 6. E-adoption

	% of responses
No e-business	28.6
E-mail	25.4
Website	33.6
E-commerce	3.9
E-business	2.1
Transformed organization	0
No reply	6.4
Total	100

Table 7. Creation of web presence

Creation of web presence	% of cases (multiple selections possible)
External company	58.4
Dedicated staff	18.3
Don't know	11.0
Staff, additionally assigned to this task	10.5
Staff from a related department	5.0
Partnership	3.7
Total	106.8

Conclusions

The paper has surfaced valuable empirical data on the relationship between strategy development and e-business implementation in SMEs. The results confirm that the SMEs that take part in e-business are most often doing so without any strategic analysis. The limited numbers of SMEs that do undertake any strategic analysis are using a very limited 'strategic' toolset. The research has also identified a number of clusters of SMEs that are differentiated by their levels of adoption of e-business and their use of formal business and formal e-business strategies.

The literature review has identified that the majority of empirical research and theoretical models on strategy and e-business deals with

large-scale organizations. There is some research dealing with the particular issue of strategy and SMEs (Frizelle, 2001; Levy *et al.*, 1999), but this does not show how the various strategic models can be efficiently used in SMEs. No literature relating strategy and e-business to SMEs was found.

The next stage in this research will be to address this gap by developing a model that will enable SMEs in different contexts to develop a strategy tailored to their intended future e-business commitment.

Biographical notes

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