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THE EFFECTIVE MEASUREMENT OF SME E-COMMERCE PERFORMANCE IN THE WESTERN CAPE

by

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DECLARATION

I, Nolan Eric Daniel, declare that the contents of this dissertation represent my own unaided work, and that the dissertation has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

Signed **Date**

ABSTRACT

The importance of e-commerce for SMEs has been well established. However, it remains an area of strategic concern amongst organisations across all industries. Furthermore, there is distinct lack of strategic planning in the majority of SMEs. Performance measurement has been identified as an important mechanism for making strategic decisions and it has been suggested that organisations align their strategic planning with their performance measurement systems. However, a large percentage of SMEs have no formal performance measurement systems in place. This has therefore been identified as a potential growth area for SMEs on which the success of the informal sectors depends.

Despite the importance of SMEs throughout all economies, to-date limited research has been conducted on SMEs and e-commerce performance measurement. The aim of the present study was to investigate the manner in which the lack of e-commerce performance measurement is influencing the effective management of SMEs in the Western Cape province of South Africa. To achieve this aim, an electronic survey, investigating various aspects of e-commerce performance measurement, was compiled and sent via electronic mail to SMEs of various industries in the Western Cape. A total of 31 SMEs responded. Results indicated that the majority (67.7%) of SMEs in the Western Cape were not currently measuring their e-commerce performance. It was, however, considered highly important to a large percentage of the respondents and 65% of the respondents indicated that they do plan to measure e-commerce performance in the future; however, they need to overcome a number of obstacles to do so. These obstacles were identified and a list of e-commerce performance measurement critical success factors was compiled to guide SMEs in future strategic planning.

The present research has proved that SMEs in the Western Cape Province of South Africa are no different from the rest of the world in that they are lagging behind their larger counterparts in terms of e-commerce performance measurement and therefore are lagging behind in terms of strategic concern and the ultimate growth of the organisation is therefore at risk. E-commerce performance measurement is thus an important area that SMEs need to align with their organisations' strategy.

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CHAPTER 1: SCOPE OF THE RESEARCH

1.1 BACKGROUND TO THE RESEARCH PROBLEM

Electronic commerce (e-Commerce) has created competitive market environments, new business opportunities and challenges across all industries (Lee, 2004:215). E-commerce is an area of strategic concern to organisations (Hasan & Tibbits, 2000:442), especially to Small, Medium and Micro sized Enterprises (SMEs) as their ability to benefit from e-commerce is of significant importance in ensuring their stability and continued existence (Stansfield & Grant, 2003:16). However, it should be noted that "…there is a distinct scarcity of strategic planning in the majority of SMEs" (Hudson, Smart & Bourne, 2001:1109). SMEs tend to plan on an informal, short-term basis, which may lead to difficulties (Barry & Milner, 2002:320). Zinger (2002:24), states that time and resource constraints are major contributors to the lack of effective strategic management evident in SMEs.

Although it is recognised that performance measurement is an important mechanism for making strategic decisions and that organisations should align their strategic planning with their performance measurement systems (Parker, 2000:64; Hudson *et al.,* 2001:1112), evidence suggests that performance measures are not used in strategic decision-making and that many SMEs have no formal performance measurement systems in place (Dubelaar, Tsarenko & Gabbott, 2003:346).

Although SMEs account for 80% of global economic growth (Lin, Huang & Stockdale, 2011:3), comprise a sizeable percentage of employment in all countries (Oldsman, 2000:9) and play a vital role within economies throughout the world (Stansfield & Grant, 2003:32), limited research has been conducted on small business and e-commerce (Cloete, Courtney & Fintz, 2002:7). In spite of the importance of e-commerce and the strategic consequence for its successful implementation, research in this respect is limited, in particular as it pertains to SMEs (Karagozoglu & Lindell, 2004:293). Zhu and Kraemer (2002:276), claim that relatively little knowledge is available about the impact of e-commerce on most organisations. In addition, there is limited understanding of how SMEs use e-commerce as a strategic business support tool (Gide & Wu, 2007:309).

1.2 STATEMENT OF RESEARCH PROBLEM

The lack of e-commerce performance measurement is influencing the effective management of SMEs in the Western Cape. Extensive research has shown that SMEs are not measuring the performance of their e-commerce initiatives, nor are they using any performance measurement techniques. Against this background, the research problem reads as follows:
The lack of e-commerce performance measurement is adversely impacting upon the effective management of SMEs in the Western Cape.

To date, the author has not found any noteworthy evidence of widespread performance measurement taking place in SMEs for e-commerce initiatives. Within the context of the proposed research, the author intends to investigate and determine the prominence of performance measurement techniques within the ambit of SME e-commerce in the Western Cape. A review of the literature will focus on a number of key issues, namely the concept of performance measurement and its value and usage within the SME sector. Furthermore, current e-commerce knowledge, and its importance to SMEs, will be elaborated upon. Finally, performance measurement within the e-commerce arena will be investigated.

1.3 RESEARCH QUESTION

Literature reviewed clearly indicates that the problem of e-commerce performance measurement is adversely impacting upon the effective management of SMEs. Against this background, the research question reads as follows:

What e-commerce performance critical success factors and associated measurement would facilitate the effective management of SMEs?

1.3.1 Investigative questions

The following investigative questions in support of the research question will be researched:

- What measurement criteria are currently being used to measure e-commerce performance in SMEs?
- To what extent are existing performance measurement approaches applied to measure e-commerce performance in SMEs?
- How relevant are existing performance measurement approaches to effectively measure e-commerce performance in SMEs?

- What are the perceived and actual benefits of e-commerce relevant to the SME sector?

1.4 OBJECTIVES OF RESEARCH

The key research objectives are to:

- Identify a list of e-commerce performance measurement critical success factors (CSFs) relevant to the SME sector in the Western Cape province of South Africa.
- Identify the financial and non-financial measures being used within SMEs to measure performance.
- Identify a list of perceived and actual benefits of e-commerce relevant to the SME sector in the Western Cape province in South Africa.

1.5 RESEARCH DESIGN AND METHODOLOGY

The research will employ a case study approach which will focus on the accumulation and interpretation of qualitative and quantitative data. Some of the more salient aspects of case study research described by Yin (1994:18), are listed below for ease of reference:

- A case study is an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident.
- Case study research aims not only to explore certain phenomena, but also to understand them in a particular context.
- “How” and “why” questions are explanatory, and likely to be used in case study research.
- A case study illuminates a decision or set of decisions – why they were taken, how they were implemented, and with what result.
- The case study as a research strategy comprises an all-encompassing method – with the logic of design incorporating specific approaches to data collection and data analysis. In this sense, the case study is not either a data collection tactic or merely a design feature alone, but a comprehensive research strategy.
- Case study research uses multiple methods for collecting data, which may be both qualitative and quantitative.
- A case study is typically used when contextual conditions are the subject of research.

Avison and Myers (2002:18), are of the opinion that, “there is no standard definition of a case study”. The definition of a “case study” presented by these authors, is drawn from the definitions attributed to the concept by a number of academics, and reads as follows:

“A case study examines a phenomenon in its natural setting, employing multiple methods of data collection to gather information from one or a few entities (people, groups or organizations)”.

In the proposed dissertation, literature will be reviewed to establish the status of current knowledge in the area of SME e-commerce performance measurement. A questionnaire will be developed to capture information considered to be commercially useful to existing and potential SMEs interested in conducting e-commerce. Survey questions will be formulated in such a way that the combination of answers allows for extensive extrapolation of further data and conclusions to be drawn.

Participants

Participants to form the sample were limited to SMEs in the Western Cape province of South Africa. One thousand five hundred questionnaires were emailed to SMEs of which 31 SMEs responded. This gave a response rate of 2.06%.

Inclusion criteria

- Size of organisation: Small and medium size enterprises
- Number of employees: As allowed per the Schedule to the National Small Business Act no. 102 of 1996 (See Appendix A)
- Location: Western Cape province, South Africa

Exclusion criteria

- Size of organisation: Large organisations
- Number of employees: As excluded per the Schedule to the National Small Business Act no. 102 of 1996 (See Appendix A)
- Location: All other provinces of South Africa

Information to be gleamed from the survey will include the following:

- Sector and size of SME.
- Time period that SME has been conducting e-commerce.
- Motivation for investing in e-commerce.
- Performance measurement techniques utilised.

- Shortcomings of current performance measurement techniques with regard to e-commerce.

Procedure

Questionnaires were sent out to the organisations in the sample by means of an electronic mail (email). Within the email, participants were required to follow a link to a website containing the questionnaire. Contact information was optional, allowing participants the option of remaining anonymous. Once the questionnaire was completed, an automated email was sent to the primary investigator which contained all the participant's responses. The primary investigator then gathered all the data from all the completed questionnaires.

1.6 DELINEATION OF THE RESEARCH

The research will be limited to 31 SMEs in the Western Cape falling within the definition of SMEs.

1.7 SIGNIFICANCE OF THE RESEARCH

The research into the effective measurement of SME e-commerce performance is of particular importance to SMEs in the Western Cape as the potential growth of the area is primarily dependent on the success of its informal sector. The research is furthermore important as viable performance measurement criteria will be established to the benefit of the SME industry as a whole. Furthermore, the research will improve SME productivity and increase uptake of e-commerce by SMEs.

1.8 EXPECTED OUTCOMES, RESULTS AND CONTRIBUTIONS OF THE RESEARCH

- Mitigation of the research problem.
- A structured approach to SME e-commerce performance measurement will have been established.

1.9 CHAPTER AND CONTENT ANALYSIS

The chapter and content analysis pertaining to this dissertation:

Chapter 1 – Scope of the research

Chapter 2 – A holistic perspective of the research environment

Chapter 3 – Performance measurement – a literature review

Chapter 4 – Survey design and methodology

Chapter 5 – Data analysis and interpretation of results

1.10 INTERCHANGEABLE USE OF TERMS.

In this dissertation, the terms “e-commerce performance measurement” and “performance measurement” will be used interchangeably.

CHAPTER 2: A HOLISTIC PERSPECTIVE OF THE RESEARCH ENVIRONMENT

2.1 SMEs AND PERFORMANCE MEASUREMENT

While the importance of performance measurement has been clearly established, many studies have found that the use of performance measurement systems by small and medium-size enterprises remain low (Sousa, Aspinwall & Rodrigues, 2006:126). There is widespread acceptance of the value of strategic performance measurement amongst the SMEs, however there are substantial barriers to performance measurement in SMEs (Hudson *et al*., 2001:1112).

Building awareness of business performance is particularly important for SMEs as they are frequently most likely to fail but also least likely to employ structured performance measurement systems (Gunawan, Ellis-Chadwick & King, 2008:363). Taking into account the importance of SMEs for an economy, the survival of these organisations is an area of concern. Research that can assist in identifying factors associated with survival is thus of great importance to owner–managers and policy makers (Maes, Sels, & Roodhooft, 2005:17). Garengo, Biazzo and Bititci (2005:26), state that although SMEs are enhancing their technical competencies to meet market needs, they continue to adopt low formalised managerial practices. Performance measurement systems are particularly important for supporting the managerial development required in these companies to manage increasing complexity.

SMEs that do make use of performance data are using a wide range of indicators and the uptake of individual indicators varies significantly (Gunawan *et al.*, 2008:367). In addition to this, many SMEs still focus their performance measurement systems (PMS) on financial measures, despite the abundance of evidence that suggests focussing on non-financial measures to be more beneficial to measuring true business performance.

In a study conducted by Hudson *et al.* (2001:1098), investigating whether current approaches for the design and implementation of strategic performance measurement systems are appropriate for SMEs, it was found that none of the SMEs investigated had measures covering all the dimensions of performance measurement (quality, time, flexibility, finance, customers satisfaction and human resources). The majority of the companies had an abundance of financial measures, however, none of them attempted

to measure flexibility. While few companies had human resource measures, these were extremely rudimentary and only covered limited aspects of this dimension (Hudson *et al.*, 2001:1104).

SMEs differ significantly from larger firms and it is therefore vital that the relevance of the strategic performance measurement development process is assessed for its applicability to the SME context (Hudson *et al.*, 2001:1114). Garengo *et al.* (2005:26), identified that small and large organisations are different from one another and mentions aspects such as uncertainty, innovation and evolution. When there is a high demand for constraints, SMEs conduct less performance measurement since resources are scarcer and SMEs have less capacity to measure. (Lin et al., 2011:7). The main difference between large and small organisations is the significant external uncertainty of the small organisation's environment, as well as the internal consistency of the small organisation's actions and motivations (Garengo *et al.*, 2005:26). Therefore performance measures should be clearly defined, have an explicit purpose, be relevant and simple to understand and easy to use and maintain.

2.2 SME DEFINITIONS AND CHARACTERISTICS

There appears to be no single definition of SMEs within the literature reviewed. Definitions of SMEs differ across the literature and from country to country; however, most definitions are based on the size of the organisation. In South Africa, the definition of SMEs is determined by the National Small Business Act of 1996. The act defines a small business as "a separate and distinct business entity, including cooperative enterprises and non-governmental organisations, managed by one owner or more, which including its branches or subsidiaries, if any, is predominantly carried on in any sector or sub-sector of the economy" according to the schedule attached to this document as Appendix A. The National Treasury defines SMEs as all non-large organisations (Esselaar, 2006:49).

Significant differences exist between SMEs and larger firms with regards to business structure and philosophy. Some of the characteristics of SMEs that differ from larger companies include the following; "personalized management, with little devolution of authority; severe resource limitations in terms of management and man power, as well as finance; reliance on a small number of customers and operating in limited markets; flat, flexible structures; high inventory potential; reactive, fire-fighting mentality; informal, dynamic strategies" (Hudson *et al.*, 2001: 1105).

Furthermore, MacGregor and Vrazalic (2005:512), characterise small businesses according to a number of internal and external features. Internal features of small businesses include having a centralised management, the decision making process is intuitive rather than based on detailed planning; small business owners have a strong influence in the decision making process and decisions may be influenced by family values and concerns, (Bunker & MacGregor, 2000; as cited by MacGregor & Vrazalic, 2005:519), a strong desire for independence and avoid business ventures that impinge on their independence, small business owners often withhold information from colleagues, reluctant to spend on Information Technology (IT) and therefore have limited use of technology (Dennis, 2000; as cited by MacGregor & Vrazalic, 2005:523). External features of small businesses include a narrow product or service range, small businesses are product-oriented while larger businesses are more customers-oriented (Bunker & MacGregor, 2000; as cited by MacGregor & Vrazalic, 2005:524), and small business are more reluctant to take risks (Dennis, 2000; as cited by MacGregor & Vrazalic, 2005:526). Similarly, Parker and Castleman (2009:170), point out that SME owner-managers have disparate business goals and that family members can influence their business goals and e-business adoption decisions.

Moreover, Archer, Wang and Kang (2008:73), state that SMEs are characterized by their flexibility, agility, and ability to use ad hoc solutions when necessary in order to adapt to the changing business environment. It is this that sets them apart from larger firms. Small firms are also highly idiosyncratic and highly influenced by social contexts (Parker & Castleman, 2009:170).

2.3 THE IMPORTANCE OF SMES IN THE SOUTH AFRICAN ECONOMY

The invention of the internet has been one of the most revolutionary technologies that has changed the business environment and has had a great impact on the future of electronic commerce (Wen, Lim & Huang, 2003:706).

In South Africa, there were high expectations regarding the internet and how it would help small businesses compete on an equal level with larger organisations, however, this did not materialise. While it can be said that this failure was partly due to limited knowledge of the technology being implemented, it was also partly due to a lack of understanding of some general aspects of business such as human resources, marketing and finance. Technological and information systems (IS) management

mistakes were as much to blame as general business incompetence. (Pather, Remenyi & de la Harpe, 2006:20).

The importance of SMEs is widely documented; their absence augments unemployment, low economic growth and may lead to a lack of innovation (Barry & Milner, 2002:319),. SMEs play a key role in the economies of developed and developing countries throughout the world (Stansfield & Grant, 2003:18; Grandon & Pearson, 2004:99). In some countries, SMEs constitute more than 90% of business (Chong, 2008:473). It has been recognized that SMEs account for a substantial percentage of employment and value added in many countries (Oldsman, 2000:3). Rao, Metts and Mora Monge (2003:13), state that, “SMEs are considered the life blood of modern economies”.

A developing country such as South Africa faces many challenges, particularly high unemployment, skills shortages, poverty and violent crime. Encouraging the development of SMEs is important in order to address some of these challenges and improve the level of skills in South Africa thereby contributing towards economic growth. Information and communication technologies play a vital role in increasing productivity levels of SMEs (Harrison *et al*, 1997; as cited in Cloete, 2002:3).

The National Treasury has estimated that approximately 62% of employment is provided by SMEs and that between 52 and 57% of GDP is contributed by SMEs. The number of SMEs in South Africa has been estimated at between 1.8 and 2.6 million. Of the formal SMEs operating, approximately 46% are operating in Gauteng and 18% in Western Cape. These two provinces combined, represent 64% of all SMEs operating within the country (GOVS, 2005; as cited by Esselaar, 2006:51).

Esselaar (2006:48), in a research report on SME e-access and usage across 14 African countries, describes South Africa as having a split economy. Baumann (2004; as cited in Esselaar, 2006:48) suggests that South Africa has become a classic “two economies” society. The first segment of the economy is globally integrated and competitive and consists of large corporations and formal SMEs; however, these tend to be the minority. The second segment, consisting of the majority of the economy, is characterized by survivalist, micro and small enterprises. It is strongly believed that the informal second economy is getting larger.

Information and communication technologies (ICTs) such as broadband are vital for SMEs in the formal economy. ICTs can also act as intermediaries between the first and second economies through two avenues. Firstly by reducing business costs, for e.g. improving communication with customers and suppliers, and through cheaper applications such as mobile banking, and secondly by providing greater information on a segment of the economy about which little is known (Esselaar, 2006:49).

Small manufacturing businesses in the Western Province of South Africa have been slow in their adoption of sophisticated e-commerce procedures and many are unlikely to adopt these procedures without some kind of incentive or governmental assistance (Cloete *et al.*, 2002:4).

2.4 E-COMMERCE CRITICAL SUCCESS FACTORS

In a study investigating CSF's for implementing knowledge management in SMEs, Wong (2005:262), contends that CSF's can be seen as practices and activities that should be addressed in order to ensure successful implementation. These practices must be nurtured if they already exist, alternatively they must be developed if they are not in place. Similarly Saraph *et al.* (1989; as cited by Wong, 2005:262), view CSFs as "...those critical areas of managerial planning and action that must be practised in order to achieve effectiveness".

Gide and Wu (2007:311), contend that e-commerce is about strategy, rather than technology and that the measurement of e-commerce success is based on deployment of technology, strategy and people to improve and increase profit margins. In a study relating to the establishment of an e-commerce business satisfaction model, Gide and Wu (2007:320), identified 73 critical success factors associated with e-commerce measurement (appendix J). These critical success factors were categorised into 10 categories namely human resource, technology, website, security, management, relationship, finance, marketing, ethics and law, and culture. The authors noted that it was unclear whether all the success factors identified will be crucial for e-commerce success in SMEs (Gide & Wu, 2007:321).

Various obstacles challenge the e-commerce success in SMEs and are becoming the critical factors leading to successful e-commerce adoption (Gide & Wu, 2007:309).

A case study was conducted by Pather *et al*. (2006:18), examining a well-known South African e-Commerce venture, Kalahari.net, which is one of the most successful businesses in the e-commerce environment. The authors identified a number of critical success factors (CSFs) as central to the company's success. Firstly database management was identified as a major CSF. Secondly, it is important that the website is user-friendly and that searches are run efficiently. Therefore the search engine must be constantly modified and improved. Thirdly, the relationship between the business and IT must be well maintained. Fourthly, the relationship between the business and the suppliers is very important. This ensures that suppliers understand that they must provide accurate product data. It was important also for Kalahari.net to be open 24/7/365. And finally, the agility of the IS as well as trust and security with regards to the IS system were vital critical success factors.

In their research on e-commerce success and failure, Razi, Tarn and Siddiqui (2005:30), mention that organisations must understand technology and customer behaviour. Razi *et al* (2005:31), mention that multiple surveys have concluded that users want sites that are easy to use and quick to load. Customers require a high level of security when transacting online and have high expectations. If orders can be placed "with a click", customers expect items to be cheaper, to be delivered quicker and with nominal shipping costs. Razi *et al* (2005:31), state that customer retention is important and list several vital customer retention strategies (Table 2.1).

Table 2.1: Customer retention strategies influencing e-commerce success (**Source**: Razi *et al*, 2005:31)

Customer retention strategies influencing e-commerce success
Personalization
Clearly accessible privacy policies
Easy product searches
Effortless check-out, i.e. purchasing
Fast order confirmations
Order tracking facilities
Excellent customer support

Table 2.2 lists the success factors identified as playing an important role in relation to e-commerce adoption and implementation (Cohen & Kallirroi , 2006:53).

Table 2.2: Success factors for the e-commerce appraisal process (**Source**: Cohen & Kallirroi, 2006:53)

Factor	**Mean** 1 = very small significance 5 = great significance
Proper selection of the planning and development team	4.27
E-commerce application development by experienced personnel	4.26
Alignment with corporate strategy	4.19
Top management support	4.13
Rational allocation of resources	3.92
Systematic personnel training	3.90
E-commerce follow up at frequent intervals	3.85
Clear mechanisms of evaluation and reward	3.51
Accurate cost estimation	2.85

Simpson, Tuck and Bellamy (2004:483), argue that researchers do not factor in the problems such as dissimilar objectives, characteristics, qualities and disparity between industries specific to SMEs when identifying critical success factors. There are substantial differences between SMEs in terms of start-up, objectives, motivations, the seeking of support, and reasons for discontinuation. The problem stems from the lack of a single definition of success. Some definitions characterise success in terms of growth, sustainability and turnover; others focus on entrepreneurial traits contributing to success (Simpson *et al.*, 2004:483). SME owner-managers have their own individual perceptions of success and measuring success in an agreed and relevant way is challenging. The authors conclude that traditional measures of success are inappropriate for SMEs and can be misleading (Simpson *et al.,* 2004:486).

2.5 IMPORTANCE OF E-COMMERCE

Recent studies suggest that the value of services and goods exchanged via e-commerce is expected to grow into the trillions of dollars worldwide (Mora-Monge, Azadegan & Gonzalez, 2010:774). E-commerce is an important strategy for many organisations and an evolution of traditional business practices that allows organisations to gain benefit from the Internet age (Gide & Wu, 2007:309). E-commerce technology has become a vital source of competitive advantage to small businesses, thereby providing a platform from which to compete on par with larger organisations (MacGregor & Vrazalic, 2005:511). Through the use of e-commerce, SMEs can conduct business without previous territorial market limitations, level the playing field by being more competitive in their markets and establish a commercial

presence in foreign markets (Gide & Wu, 2007:309). The improved transactional efficiency of e-commerce has led many companies to investigate new ways to sell more goods and services in a less amount of time (Wen *et al.*, 2003:706). Negotiating deals through email has limited the number of phone calls and faxes, thereby increasing the speed at which transactions are completed. From the perspective of the buyer, e-commerce has assisted distributors in finding new suppliers that provide lower costs, resulting in a better deal for the buyer (Wen *et al.*, 2003:704).

2.6 BENEFITS OF E-COMMERCE

The advent of e-commerce enables organisations to alter their current perceptions of what services they are able to provide now and in the future (Gide & Wu, 2007:308). According to Cohen and Kallirroi (2006:45), the Internet in general is typically perceived as an opportunity for SMEs to level the playing field and to reduce transaction costs. A high degree of readiness and an awareness of e-commerce benefits will encourage e-commerce activity and improve operational performance (Lin *et al.,* 2011:4).

Although, widespread coverage of e-commerce promotes a myriad of benefits such as cost savings, access to expanded markets, improved communications and increased competitiveness, SMEs continue to exhibit an inability to manage and recognise the benefits of e-commerce (Lin *et al.*, 2011:4). Various difficulties for instance “unrealistic expectations” and inability to measure effectively (Stockdale & Standing, 2006:384) can lead to disappointment in realized benefits (Lin *et al.*, 2011:4) and lowers SME confidence in the realisation of perceived benefits (Stockdale & Standing, 2006:384).

If SMEs recognise that innovation can offer advantages over current systems and practices, it is predictable that the adoption of such innovation will be positively promoted (Ifinedo, 2011:6). Poon & Swatman (1997:387), determined that organisations adopt e-commerce based on the perceived benefits associated with adoption. Perceived benefits refer to the relative advantage that can be gained by adopting an innovation (Ifinedo, 2011:6).

Poon and Swatman (1997:387), conducted a study investigating Internet use among small businesses. Specifically they wanted to analyse small businesses that were early adopters of the internet and identify common denominators. The authors conducted interviews and site visits with 23 Australian small businesses. Results indicated that participants did not actually gather data on the benefits of using the internet. It was

therefore necessary to identify “perceived benefits” of how the internet has helped the business in the past and how it will help in the future.

Perceived benefits were classified into direct and indirect benefits. Direct benefits are quantifiable by using techniques such as data analysis and measuring for example the number of new customers as a result of e-commerce implementation. Indirect benefits have a positional effect on the business and are not easily measured such as customer loyalty and goodwill as a result of added value and services provided online (Poon & Swatman, 1997:388).

Direct and indirect benefits can further be divided into short term benefits, which should be realized within a few months, and long term benefits, which take longer to realise and evolve into different forms. The authors also found that the majority of the small businesses in their study were not reaping significant short-term benefits. The participants realised that short term benefits such as online purchases and transactions were not the only ways in which their businesses could benefit from using the internet and expressed the view that indirect benefits were keeping them connected to the internet. Long term benefits might include additional customer enquiries, establishing new networks, and reaching previously unexploited markets (Poon & Swatman, 1997:388).

In addition to increased sales, improved communications with customers, better responses to customer inquiries and enhanced order tracking (Stansfield & Grant, 2003:16), Cohen and Kallirroi (2006:53) identified the following perceived benefits namely facilitation of customer informing, means of entering new markets, approaching new customers, acquisition of competitive advantage, increase of sales, reduction of operating costs, exploitation of new distribution channels, flexibility in customer service, quality in customer service, reduction of selling and administrative costs and reduction of order handling time.

Previous research highlights numerous benefits of e-commerce such as improved information exchange with customers and suppliers, improved customer service, expanded business reach, access to international markets, and reducing costs (Harrison *et al*., 1997 & Iacovou *et al*., 1995; as cited by Cloete *et al.*, 2002:9). Likewise, Cohen and Kallirroi (2006:45), mention expanded marketing scope, improved communications, reaching new markets, reducing operational costs and strategic partnerships as benefits obtained. Ifinedo (2011:6), is of the opinion that benefits to be

achieved from e-commerce include improved relationships with customers and partners, enhanced revenue generation, and increased operational efficiency.

2.7 E-COMMERCE ADOPTION BY SMES

Many researchers contend that SMEs are slow adopters of e-commerce which negatively impacts them on a strategic level (Gide & Wu, 2007:309). They grapple to overcome adoption constraints, lack understanding of how to enhance their e-commerce readiness and have no experience of measuring their e-commerce investments (Lin *et al.,* 2011:4). Cohen and Kallirroi (2006), state that various empirical studies focus on the level of e-commerce adoption by SMEs and that "...the full implementation of e-business solutions is still in its infancy for the majority of SMEs".

Businesses can utilise a range of e-commerce activities. Cloete *et al.* (2002:4), mention that these activities begin with basic activities such as websites and email and progress to more complex activities such as online purchases and payments, and video-conferencing. It follows that a business must adopt basic e-commerce activities before progressing to more complex activities (Cloete *et al.*, 2002:4). This progression takes place over three distinct stages. The first stage involves static pages for advertisement and email communication with clients. The second stage involves database integration, including complete and interactive catalogues; and the third stage involves fully fledged e-commerce. This includes all the information processing of the previous stages as well as more complex, interactive features (Cloete *et al.*, 2002:4). Martin and Matlay (2001; as cited by Taylor & Murphy, 2004:282), call this an "adoption ladder" whereby "engagement with the technology of e-business is sequential and progressive". The sequence starts with the use of email and progresses to website development and then to the buying, selling and payment methods of e-commerce and to the supply chain management of e-business and then to the new business models built on complete immersion in the technology.

Characteristics of SMEs can often be factors that affect the use of e-commerce amongst SMEs (Cloete *et al.*, 2002:12). Considering that SMEs are usually owned by just one or two people, e-commerce adoption is heavily reliant on these people's acceptance of the technology. An individual's acceptance of technology depends on many factors such as whether the user is convinced of the associated benefits and whether it is easy to use (Cloete *et al.*, 2002:12). Similarly, organisations are more likely to adopt technological innovations if they have sufficient knowledge about those

technological innovations; however SMEs tend to not lack sufficient knowledge of IT and e-business (Infinedo, 2011:7).

Moreover, Wong (2005:266), state that resource availability in SMEs is critical since it can govern the quality and quantity of organisational efforts. SMEs have a scarcity of resources (such as financial, human resources or lack of time) which differentiates them from bigger counterparts.

Cloete *et al.* (2002:13), conducted a study focusing on SME e-commerce acceptance and adoption in the Western Cape province of South Africa. Their research investigates perceptions of small manufacturing businesses in the Western Cape towards e-commerce and helps determine the extent to which e-commerce will be adopted in the future. Results from their study indicated that most small manufacturing businesses surveyed were not utilizing advanced e-commerce capabilities.

Stockdale and Standing (2006:383), divide SMEs into five categories with regards to e-commerce adoption. Firstly, the “landlubbers”, consist of few businesses that have no interest in e-commerce and have no intention of adopting any e-commerce activities. They are content with the manner in which they run their business and see no reason to own a computer. Secondly, the “toe dippers”, consist of quite a large number of businesses that have basic computer needs, but limited knowledge on how to meet these needs. They have limited ambition and are somewhat content with their businesses as they are. They also tend to have a common distrust of the IT industry and perceive it as being overpriced and inefficient. Thirdly, the “paddlers”, have limited computer knowledge and utilize basic e-commerce activities such as internet and email. However, they lack confidence in their ability to move towards more complex e-commerce activities. Fourthly, the “waders” make considerable use of e-commerce activities. They may have been pushed into following e-commerce trends to remain competitive. The “wader’s” learning curve is usually quite steep and they often have many challenges to overcome with regards to maximizing the benefits that e-commerce offers them. Finally, the “swimmers” are completely comfortable with most e-commerce activities and online trading is a central component of their businesses.

2.8 FACTORS AFFECTING E-COMMERCE ADOPTION

SMEs are not a homogeneous group and various factors such as size, age, sector, motivation, mode of organisation and innovative capacity determine the level of e-

commerce adoption (Taylor & Murphy, 2004:281). These factors are important when determining the reasons why an SME is at a particular stage. Firstly, the owner's characteristics, in terms of his/her level of computer literacy and technological knowledge, play a vital role (Kirby & Turner, 2003; as cited by Cloete *et al*., 2002:10). Furthermore, Julien and Raymond (1994; as cited by Cloete *et al*., 2002:10, found that the owner's decision making skills, in terms of assertiveness and rationality, can influence their adoption of e-commerce. Owners also tend to be more hesitant to make substantial investments when short-term returns are not guaranteed (Cloete *et al.*, 2002:12).

Secondly, the characteristics of the organisation also affect e-commerce adoption. If an organisation deals with large amounts of data it will be more likely to adopt e-commerce activities that can assist in streamlining operations and improve efficiency of processes. Organisations may also adopt e-commerce in order to remain competitive. (Thong & Yap, 1995; as cited by Cloete *et al*., 2002:12).

Lastly, there are also contextual characteristics that have an effect on e-commerce adoption. There are economic benefits associated with transferring business activities from fax, telephone and post to the Internet and email. The internet can reduce costs and therefore improve a business' competitive advantage. Products and services can be ordered online and payments can also be made online. Technology is providing increasingly more sophisticated methods of doing business (Cloete *et al*., 2002:13).

In a study to determine whether Greek SMEs consider the cost dimensions of e-commerce investments, Cohen and Kallirroi (2006:53), found that Greek SMEs do not perceive cost reduction as a main driving force for the introduction of e-commerce, although the reduction of cost is a common reason in relation to IT investments (see Table 2.3).

Table 2.3: Motives for e-commerce adoption (**Source**: Cohen & Kallirroi, 2006:53)

Motives	**% of respondents**
Preservation of competitive position	75.0%
Entering into new markets	62.5%
Technological modernization	58.3%
Differentiation	37.5%
Cost reduction	37.5%

A number of other factors that affect e-commerce adoption negatively have been identified. These include the following; low use of e-commerce by customers and suppliers, security concerns, legal and liability concerns, high costs associated with computer and networking technologies, limited technical knowledge, a lack of available resource, a general distrust of the IT industry, and a lack of perceived benefits (Courtney & Fintz 2001; as cited by Cloete *et al*., 2002:7; Stockdale & Standing, 2006:390; Taylor & Murphy, 2004:282).

2.9 BARRIERS TO E-COMMERCE ADOPTION

MacGregor and Vrazalic (2005:517), conducted an empirical survey of 477 small businesses in Sweden and Australia regarding e-commerce adoption and implementation. The purpose of the study was to develop a model of e-commerce adoption barriers to small businesses. Based on the results from that study, the authors grouped barriers according to two different factors. The first factor was termed “Too Difficult” and was related to factors that make e-commerce difficult to implement such as the complexity of e-commerce implementation techniques, the difficulty in deciding which standard to implement because of the large number of e-commerce options, the difficulty of obtaining funds to implement e-commerce, the lack of technical knowledge and the difficulty of finding time to implement e-commerce. The second factor was termed “Unsuitable” and was related to the unsuitability of e-commerce to small businesses such as the unsuitability of e-commerce to the organisation’s products and services, the manner in which it conducts business and the manner in which its clients conduct business, and the lack of perceived advantage of e-commerce implementation. Security issues also emerged as a dominant barrier to e-commerce adoption; however, it was unclear as to which group it belonged. In the case of Sweden, this barrier was related more closely with the “Too Difficult” factor. However, in the case of Australia, this barrier was related to the “Unsuitable” factor. Security issues, therefore, can be related to both factors (Stockdale and Standing, 2006:391)

SMEs require organisational capabilities to measure e-commerce investments in order to overcome barriers to e-commerce adoption (Lin et al., 2011:5). Archer *et al.* (2008:76), suggest that many barriers to e-commerce adoption are not necessarily barriers, but rather common perceptions of the limitations of e-commerce. The authors conducted a telephone survey of 173 Canadian SMEs in order to identify and measure the perceived importance of barriers in the SME community to the adoption of e-commerce. Research data revealed the following common perceptions regarding e-

commerce; it was not seen as easy to meet major needs or sell major products online; lack of knowledge regarding the right e-commerce solution for the organisation; many employees prefer traditional ways of conducting business, and there is also a high cost associated with e-commerce solutions. Similarly, Stansfield and Grant (2003:23), published a list of barriers to electronic commerce take-up for SMEs and listed lack of knowledge, lack of time, lack of staff with IT skills, lack of advice and support, too expensive, too complex, not relevant to business, a fear of being 'ripped off', business too insecure, few suppliers are on-line, business too slow and disorganised and no wish to expand.

The authors concluded that many SMEs still lack the perceived need to adopt e-commerce and that the main difference between adopters and non-adopters lies in their perceptions regarding what e-commerce can and cannot do for their organisations (Archer *et al.*, 2008:79).

2.10 E-COMMERCE AND PERFORMANCE MEASUREMENT

The ability to measure the effectiveness of e-commerce investments is an important step for SME e-commerce development and can influence recognition of benefits. SMEs with have high levels of identified benefits are more likely to be satisfied with their e-commerce activities (Lin, Huang & Stockdale, 2011:5).

Zhu and Kraemer (2002:275), state that very little empirical data exists to measure the characteristics and scale of Internet-based initiatives and their subsequent effects on organisational performance. While considerable investments are being made in e-commerce, practitioners and researchers are struggling to determine how to measure e-commerce initiatives mainly due to the complexity involved in determining what data to collect and the difficulty of collecting the data (Zhu & Kraemer, 2002:275). Organisations are under increasing pressure to find reliable means to ensure that they benefit from their e-commerce investments (Lin *et al.*, 2011:5). Organisations lack a defined framework for measuring readiness, assessing potential impact and identifying the mediocre e-business initiatives (Gide & Wu, 2007:310).

In their research on web-based systems, Hasan and Tibitts (2000:444), found that the system's effectiveness and efficiency was not generally measured. This finding, mapping a previous study was undertaken by the same authors, indicated that the system was considered successful by virtue of it still being operational (Hasan & Tibitts,

2000:445). Van Der Merwe and Bekker (2003:336), claim that organisations conducting e-commerce have limited ability to measure their performance based on objective criteria. Dubelaar *et al*. (2003:338), warn that performance measurement should "extend beyond the mere measurement of technology". There is a lack of understanding of how to measure the benefits and costs of e-commerce systems, a view which is supported by Hasan and Tibitts (2000:442). The key qualities of e-commerce, such as convenience, diversity and effortlessness of access of information, are complex to measure (Hasan & Tibitts, 2000:447).

Gide and Wu (2007:310), discuss five reasons why organisations should measure e-commerce success. Firstly, organisations should measure e-commerce success in order to learn from previous experiences. Developing new systems is complex and organisations that have not yet adopted e-commerce will benefit from the experiences of those organisations that have already adopted e-commerce. The second reason is to indicate the actual business benefits obtained. Various SMEs do not exploit the benefits of e–commerce due to a lack of awareness of the potential opportunities. Numerous SMEs identify only a small number of measurable benefits from e-commerce adoption. The third reason to measure e-commerce success is to champion the requirement for adoption guidelines. The vast majority of organisations believe that structural guidelines for making viable investment and implementation choices are needed. Further improvement and development is highlighted as the fourth reason. E-business applications should be evaluated in order to identify further enhancements, management strategies and technology deployments critical for the success of future e-commerce systems. Lastly, organisations should measure e-commerce success to avoid future failure. Even "best practice" organisations will display areas of weakness in some areas of systems management.

CHAPTER 3: PERFORMANCE MEASUREMENT – A LITERATURE REVIEW

3.1 INTRODUCTION

The emergence of the information age, in the last decades of the twentieth century, transformed the manner in which business was conducted. Organisations could no longer gain sustainable competitive advantage by simply deploying new technology into physical assets, and by exceptional management of financial assets and liabilities. New capabilities for success were required. More recently, an organisation's ability to mobilise and exploit its intangible or invisible assets has become far more imperative than investing and managing physical, tangible assets. In order to remain competitive in the information age, organisations are making more attempts at improving themselves through a variety of initiatives (Kaplan & Norton, 2006:73). Performance measurement is a vital part of ensuring the survival of an organisation in the information age.

Performance measurement has witnessed a revolution over the last 2 decades (Neely and Bourne, 2000:3) with performance measurement systems featuring prominently in the business and research agenda (Najmi, Rigas & Fan, 2005:114; Toni & Tonchia, 2001:47; Kennerley & Neely, 2003:215). Organisations realised the significance of utilising multi-dimensional performance measurement systems as strategic tools (Najmi *et al.*, 2005:116). Najmi *et al.* (2005:116), point out that strategic alignment of the organisation can be achieved by using correctly defined measures and it serves to communicate the strategy throughout the organisation. Similarly, Elg (2007:220), mentions that performance measurement systems serve as a link between units of an organisation and promotes the circulation of plans and goals across the organisation.

According to Elg (2001) and Kazandijan and Lied (1999; as cited by Elg, 2007:220), a performance measurement system can be defined as a system capable of transforming input data into information usable in organisational decision making processes. Similarly Garengo *et al.* (2005:25), state that a performance measurement system is a "…balanced and dynamic system that is able to support the decision-making process by gathering, elaborating and analysing information".

"Performance measurement" is defined as the process of determining the effectiveness and efficiency of action while "performance measure" is a metric used to quantify the action (Sousa *et al.*, 2006:123).

Franco-Santos *et al* (2007:797), argue that the different approaches towards performance measurement have led to numerous definitions of business performance measurement systems. These authors mention that business performance measurement systems are defined from diverse perspectives using different types of characteristics to derive the definition. Content analysis of 17 definitions illustrate that the basis of the definitions uses either the features of the system, i.e. the properties of elements which constitute the system, the role(s) that the system plays, i.e. the purposes or functions performed by the system, or, the processes that are part of the system, i.e. the series of actions that come together to form the system; or a combination of the above.

The characteristics obtained as a result of the content analysis as well as the occurrence as a percentage of the total definitions are presented in Tables 3.1 – 3.3.

Table 3.1: Main features of business performance measurement systems (**Source**: Franco-Santos *et al*., 2007:792)

Feature	**Occurrence Percentage**
Performance measures (including features such as multi-dimensional, leading/lagging, efficiency/effectiveness, internal/external, vertically and horizontally integrated, multi-level)	53
Objectives/goals (often referring to strategic objectives)	35
Supporting infrastructure (which can include data acquisition, collation, sorting, analysis, interpretation, and dissemination)	29
Targets	24
Causal models	12
Hierarchy/cascade	12
Performance contract	2
Rewards	12

Table 3.2: Main roles of business performance measurement systems (**Source:** Franco-Santos *et al*., 2007:793)

Role	**Occurrence Percentage**
Strategy implementation/execution	59
Focus attention/provide alignment	41
Internal communication (communicating performance, and priorities/objectives)	41
Measure performance/performance evaluation	41
Monitor progress	35
Planning	29
External communication	24
Rewards	18
Performance improvement	18
Managing relationships	12
Feedback	12
Double-loop learning	12
Strategy formulation	6
Benchmarking	6
Compliance with regulations	6
Control	6
Influence behaviour	6

Table 3.3: Main processes of business performance measurement systems (**Source:** Franco-Santos *et al*., 2007:794)

Process	**Occurrence Percentage**
Information provision (feed-forward and feedback)	53
Measures design/selection	29
Data capture	29
Target setting	18
Rewards	18
Identify stakeholders needs and wants	12
Strategic objectives specification	12
Data analysis	12
Decision making	12
Performance evaluation	12
Interpretation	6
Review procedures	6
Planning	6

3.2 WHY MEASURE PERFORMANCE?

Parker (2000:65), mentions that performance measurement is an important aid to making decisions and lists reasons why organisations measure performance. Whilst the reasons for measuring performance vary between organisations, the following were found to be the most commonly reported: identifying success; determining if the organisation is meeting customer expectations; assisting a better understanding of processes; highlighting potential problem and improvement areas; assisting with decision making; and determining if planned improvements were realised (Parker, 2000:66). Similarly, Elg (2000:221), suggested that measuring performance allows continuous follow up and improvement, ad hoc analysis, creation of goal deployment processes and reporting to various stakeholders.

Neely (2004:1022; in conversation with Sarah Powell), states that performance measurement is vital to the success of any organisation. The act of deciding what should be measured forces an organisation to clarify its objectives. Once clear measures have been defined, these can be communicated to employees thereby influencing their behaviour and ensuring an understanding of the vision of the organisation. It will also be possible for the management team to check whether or not objectives are being achieved. The data obtained through measurement can also be used to challenge the organisations strategy, thereby constantly improving the way in which the organisation operates (Neely, 2004:1022).

3.3 PERFORMANCE MEASUREMENT IN SMES

Although the importance of performance measurement in SMEs is recognised, there are almost no models or tools catering for the specific needs of SMEs. This highlights a major gap in the theory and points to the importance of PM systems supporting the characteristics of SMEs. SMEs have an informal approach to performance measurement that is unplanned and not based on a recognised model (Garengo *et al.*, 2005:29). Garengo *et al.* (2005:29), highlights factors influencing performance measurement in SMEs as lack of human resources, managerial capacity, limited capital resources, reactive approach, misconception of performance measurement and SMEs' tacit knowledge and little attention given to the formalization of processes.

In a more recent study, Sharma and Bhagwat (2006:11), developed a framework for information systems which measured IS performance from six different perspectives, namely, operational efficiency of the IS function, down time of IS, responsiveness of IS,

timeliness of information, accuracy of information and overall competitive position. The authors conducted an empirical analysis of 147 Indian SMEs. The methodology was based on a questionnaire survey and personal interviews. In terms of the six perspectives mentioned above, it was found that the majority of SMEs reported either achieved operational efficiency or great improvements in operational efficiency. Down time of IS was reduced in 44% of SMEs, since implementation. Fifty four percent of SMEs reported an impact on responsiveness after IS implementation. Timeliness of information flow was improved in 49% of SMEs, not only within the organisation, but also with the strategic supply chain trading partners. Quality of information flow in terms of accuracy was improved in 53% of SMEs, particularly in the areas of product development, manufacturing, purchasing, shipping, customer care and sales. Fifty four percent of SMEs experienced an impact on overall competitive position after the implementation of IS. The authors concluded that proper management and performance measurement of IS are necessary for any SME that wants to remain competitive in a global economy (Sharma & Bhagwat, 2006:13).

Gide and Wu (2007:309), suggest a number of reasons why it is important to measure e-commerce success. They state that it is beneficial to organisations to learn from the experiences of other organisations already utilising e-commerce. Measuring e-commerce success indicates the actual benefits to the business of adopting e-commerce. It is also necessary for e-commerce applications to be measured for further improvement, management strategies and the utilisation of technological development, which is essential for the successful implementation of future e-commerce systems. Feedback from measuring e-commerce success can also prevent potential failure of future e-commerce initiatives (Gide & Wu, 2007:312).

3.4 WEAKNESSES OF TRADITIONAL PERFORMANCE MEASUREMENT SYSTEMS

The accelerating pace of change in the global economy has made it imperative for organisations to move past lagging financial performance indicators and to take up lead variables that contribute to lasting value generation (Anderson & McAdam, 2004:465). Traditional methods of measuring an organisation's performance are financial by nature and have the advantage of being objective and accurate (Parker, 2000:65). However, traditional performance measures by financial indices alone have virtually disappeared (Sousa *et al.*, 2006:127) as they tend to be inward-looking, fail to include less tangible factors and are lagging indicators (Parker, 2000:65). Najmi *et al.*

(2005:119), state that traditional financial performance measures' shortcomings include the inability to communicate strategies and priorities effectively within an organisation, encouraging short-term thinking, reluctance to change and a partial picture of organisational performance. Likewise Anderson and McAdam (2004:467), criticise financial measures of performance and mention that they lack strategic focus, encourage short term thinking, are not externally focused in relation to competitors and customers and provide misleading signals for continuous improvement and innovation.

According to Chia, Goh and Hum (2009), financial indicators are outcome measures and if relied on too heavily, could hamper future competitive advantage. Anderson and McAdam (2004:467) state that financial measures report on outcome and the consequences of historical actions. These limitations led to the development of performance measurement frameworks which viewed business performance through more than one perspective. Examples of these frameworks are the balanced scorecard and the EFQM Excellence Model (Najmi *et al.,* 2005:119).

Non-financial measures of performance are more timely than financial measures and are accurate and easier to measure. Furthermore, non-financial measures are meaningful to stakeholders and are consistent with company goals and strategies (Anderson & McAdam, 2004:467)

3.5 NEGATIVE ASPECTS OF PERFORMANCE MEASUREMENT

Whilst performance measurement is helpful it does draw scepticism as to why, when and how it is utilised (Parker, 2000:64). According to Parker (2000:64), there are concerns about selecting relevant measures and comparing "like with like". Anderson and McAdam (2004:469), suggest that certain non-financial criteria are regarded as being less important than others. The criteria are outlined in Table 3.4.

Table 3.4: Non-financial metrics (**Source**: Anderson & McAdam, 2004:469)

Most valuable	Least valuable
Strategy execution	Compensation ratios
Management credibility	Use of employee teams
Quality of strategy	Process quality awards
Innovations	Social policies
Ability to attract talented people	Published investor materials
Market share	Quality of customer service organisation
Management experience	Quality analyst guidance
Quality of executive compensation	Quality of investor relations
Quality of major processes	Number of customer complaints
Research leadership	

According to Elg (2007:218), several practical studies have indicated that many performance measurement systems experience a variety of data quality problems. The author mentions that these problems may stem from vague definitions of the performance measures, a shortage of validation strategies, software limitations, complexity, data conversion faults, visualisation mistakes, and computation failures. Additional critique on the practise of performance measurement include the potential stifling of creativity; the role that systems of performance measures play in highlighting the differences between planners and doers; and the failure of performance measures to capture what is truly taking place in the organisation (Elg, 2007:218). Many criticisms centre on the high costs associated with performance measurement of what can amount to hundreds of measures at any one time. In addition to this, many authors argue whether performance measurement systems actually have much of an impact on organisational performance (Franco & Bourne, 2003; as cited by Hinton & Barnes, 2009:332).

In addition to this, when attempting to adopt a new performance measurement system, there are a number of obstacles to be overcome. Such obstacles include, training of employees, difficulty in defining new measures, IS currently in place, costs involved, leadership and the flexibility of the present quality system (Sousa *et al.*, 2006:129). These are factors which have to be taken into consideration when changing a performance measurement system.

3.6 PERFORMANCE MEASUREMENT SYSTEM FRAMEWORKS

In order for an organisation to remain competitive in today's business environment, it is vital that they focus on quality. It is therefore imperative that companies embrace the

principles of total quality management (TQM). The basic premise of TQM is continuous improvement (Madu, Aheto, Kuei & Winokur, 1996:61) with a strong customer focus at the core of the TQM philosophy (Khan, 2003:374).

McAdam (1999:306), reviewed the literature on TQM and formed a five-point framework containing the principles of TQM. The first principle states that TQM is strategically linked to business goals. The second principle states that customer understanding and satisfaction are vital. The third principle states that employee participation and understanding at all levels are required. The fourth principle states the need for management commitment and consistency of purpose and the fifth principle refers to the importance of processes and measures.

According to Khan (2003:375), the four principles of TQM include absolute customer focus, employee empowerment, involvement and ownership, continuous improvement and use of systematic approaches to management. These principles help organisations achieve increased customers satisfaction and reduce costs (Khan, 2003:375).

As highlighted in figure 3.1, a close relationship exists between the four principles of TQM as identified by Khan (2003:375), and the five-point framework of TQM as listed by McAdam (1999:306).

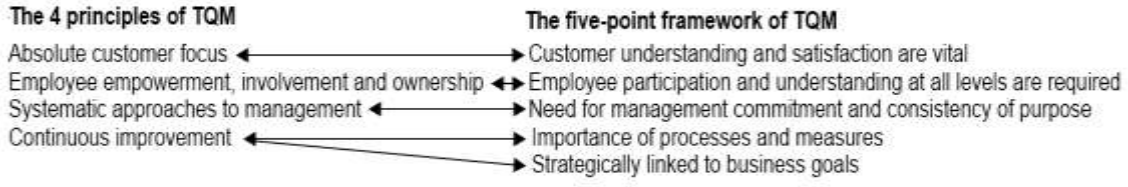

Figure 3.1: Similarities between the four principles of TQM and the Five-point framework of TQM (**Source**: Khan, 2003:375; McAdam, 1999:306)

The concept of performance measurement was borne out of the TQM philosophy. Various frameworks and models for measuring performance have been developed due to the need for better structured, more relevant, strategic and integrated performance measurement systems (Bititci, Turner & Begemann, 2000:698). The following section provides a more detailed insight into a number of frameworks and models for performance namely Activity Based Costing, the Balances Scorecard, the Business Excellence Model and the Performance Prism. All of these frameworks subscribe to the TQM philosophy. Figure 3.2 shows a timeline illustrating when these frameworks were developed.

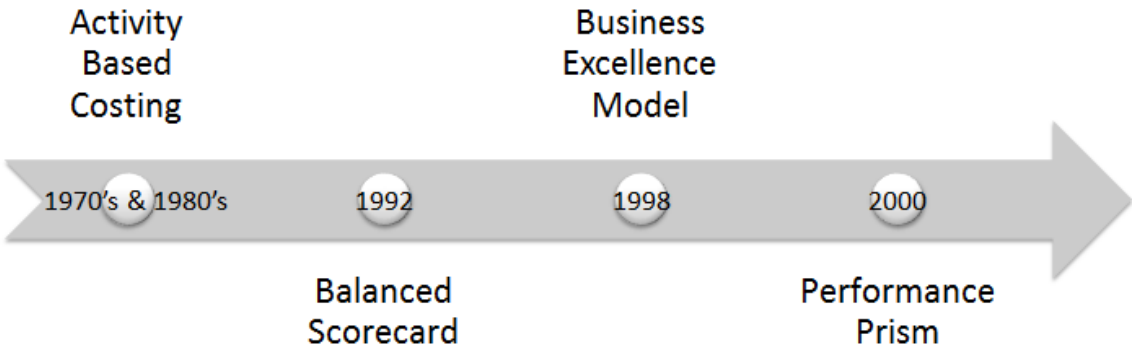

Figure 3.2: Timeline representing performance measurement frameworks and when they were developed (**Source:** Anderson & McAdam, 2004:466)

3.6.1 Activity Based Costing (ABC)

Conventional cost systems focus on the units of specific products and can report incorrect product costs. Size and batch-size diversity can affect the accuracy of reported product costs (Chia *et al*., 2009:606). Activity Based Costing (ABC) aims to preserve financial measures, whilst addressing the shortcomings of traditional measures. The information supplied by traditional measures regarding which products are profitable is often misleading. ABC therefore provides a more accurate measure of profit margins (Parker, 2000:65).

ABC calculates the costs of activities within an organisation and aids in decision making on operational policies. This method helps improve the utilisation of resources while minimising the costs of production. ABC is differentiated from other costing methods, as it takes into consideration the fact that the role of direct labour in manufacturing environments has been drastically reduced and that there is a greater need for support services. While ABC was originally designed as a method of cost calculation, it can also provide management information. It allows management to see exactly where the primary costs occur and what produces them. ABC provides a means for decisions regarding product design, pricing and marketing, to be made more efficiently (Gunasekaran, Marri & Yusuf, 1999:291).

3.6.2 Balanced Scorecard

The balanced scorecard (BSC) takes into consideration an organisation's mission and strategy when determining a comprehensive set of performance measures that can provide a framework for a strategic measurement and management system. While the BSC maintains a focus on achieving financial objectives, it also includes a focus on the performance drivers of these financial objectives. It measures performance across four

balanced perspectives: financial, customers, internal business processes, and learning and growth (Kaplan & Norton, 2006:27).

The BSC is “the most influential and dominant concept in the field” (Marr & Schuima, 2003:680, as cited by Hinton & Barnes, 2009:336). According to Parker (2000:63), the BSC presents an alternative to traditional financial performance measures. It enables organisational stakeholders to view an organisation from various perspectives such as financial, customers, internal processes, and learning and growth (Anderson & McAdam, 2004:472; Parker, 2000:64; McAdam, 1999:316)

Furthermore, Hudson *et al.* (2001:1103), suggest that the BSC comprehensively covers all the dimensions of performance measurement (quality, time, flexibility, finance, customer satisfaction and human resources); however, the authors note that it provides no mechanism for maintaining the relevance of defined measures. The authors further criticise the BSC for its lack of integration between the top level, strategic scorecard, and operational-level measures (Ballantyne & Brignall, 1994; as cited by Hudson *et al.*, 2001:1103), thereby rendering the execution of strategy problematic. This framework also “fails to specify a user-centred development process” (Hudson *et al.*, 2001:1102).

Furthermore, Neely, Adams and Crowe (2001:7), suggest that, while the BSC was pioneering in its day, the ever-changing business environment required a new model. The BSC was the first generation of performance measurement frameworks. The authors suggest a second generation framework, the performance prism.

3.6.3 Business Excellence Model

There are a number of excellence models that have been established out of the need for strategically aligned performance measurement. The BEM was originally developed by a consortium of large organisations working with the European Foundation for Quality Management (EFQM), in Brussels (McAdam, 1999:308). The BEM was also the first systematic approach developed for the effective measurement of TQM within an organisation (McAdam, 1999:308). The EFQM Excellence Model is a non-prescriptive framework that emphasises self-assessment. This model is based on nine criteria which “represent a common language for communicating best practices among organisations” (Wongrassamee, Gardiner & Simmons, 2003:17). These nine criteria can be divided into “enabler” criteria and “result” criteria. The “enabler” criteria refer to leadership, people management, policy and strategy, resources and processes. The “result” criteria refer to people satisfaction, customer satisfaction, impact on society and

business results. Each of these criteria is scored and given a percentage which provides a means by which to better understand the organisation and to identify areas to focus on in order to achieve business excellence (Khan, 2003; McAdam, 1999; Wongrassamee *et al.*, 2003:26).

3.6.4 Performance Prism

The performance prism (PP), being the second generation of performance measurement frameworks, "explicitly asks critical questions and encourages managers to think through the links between measures in a way that other frameworks do not intuitively suggest. It provides a comprehensive and adaptable framework from which to measure performance (Neely *et al.*, 2001:4).

There are five key features of the performance prism. Firstly, stakeholder satisfaction considers all stakeholders such as shareholders, customers, employees, suppliers, alliance partners, intermediaries, regulators, the local community and pressure groups. The BSC, on the other hand, only considers the first two in this list which is a major drawback considering all these parties play a role in the performance and success of an organisation. Secondly, the PP focuses on strategies. The aim of strategy is to deliver value to stakeholders. Therefore, strategies need to ensure that the wants and needs of stakeholders are met. Thirdly, processes need to be considered. These processes include developing new products and services, generating demand, fulfilling demand as well as planning and managing the organisation. Processes must work effectively and efficiently. The fourth feature of the PP considers the capabilities within an organisation. Capabilities include the combination of people, practises, technology, and infrastructure. These capabilities enable the implementation of the organisations processes. Finally, the fifth feature considers the stakeholders' contribution. A reciprocal relationship exists between the organisation and the stakeholder. Many other frameworks fail to recognise this relationship.

According to Hudson *et al.* (2001:1105), the PP provides a clear link between strategy and operations, and, unlike the BSC, encourages a user-centred design. However, the authors criticise this model for failing to specify the detailed form of the measures or the process used for developing them. Furthermore, the PP does not include two important dimensions of performance, namely customer satisfaction and human resources. It therefore does not provide a completely balanced view of performance (Hudson *et al.*, 2001:1106).

3.6.5 E-commerce Business Satisfaction (EBS)

Another model to measure e-commerce success was suggested by Gide and Wu (2007:308). The authors define EBS as "a measurement for overall satisfaction that a business has with an e-commerce system meeting its requirements and expectations". The EBS model evaluates business success according to the following factors: Human resources; technology; website; security; management; relationships; finance; marketing; culture; and ethics and law.

There are a number of expected outcomes for using the term EBS for measuring e-commerce success. EBS enables SMEs that have not yet adopted e-commerce systems to improve the planning and implementation of those systems. It also enables SMEs already using e-commerce systems to measure the effectiveness and efficiency of those systems in order to improve on them. EBS enables SMEs to improve their business processes, have a better understanding of CSFs and therefore to be more equipped to anticipate future business demands and expectations in the adoption and use of e-commerce systems (Gide & Wu, 2007:310). In conclusion, the best model to use to measure e-commerce performance is one that takes into account the most vital facets and dimensions of e-commerce performance.

3.7 FACETS AND DIMENSIONS OF PERFORMANCE MEASUREMENT

There are a number of facets that e-business performance measurement systems should consider. Sousa *et al.* (2006:126) found that the most important performance measures to be, on time delivery, in process quality, unit production costs, cost vs. budget, delivery lead time, field failure under warranty and incoming parts quality. More recently, Hinton and Barnes (2009:331), reviewed the literature and found the following facets of PM important: the performance of the website, performance of business processes, performance of customers and linking e-business performance to business strategy.

Similarly, a number of authors discuss various dimensions of performance measurement. Hudson *et al.* (2001:1113) suggest a number of dimensions of performance measurement. These include time, quality, flexibility, finance, customer satisfaction and human resources (See Table 3.5).

Table 3.5: Dimensions of performance (**Source:** Hudson, Smart & Bourne, 2001:1102)

Quality	Time	Flexibility	Finance	Customer Satisfaction	Human Resources
Product performance	Lead time	Manufacturing effectiveness	Cash flow	Market share	Employee relationships
Delivery reliability	Delivery reliability	Resource utilisation	Market share	Service	Employee involvement
Waste	Process throughput time	Volume flexibility	Overhead cost reduction	Image	Workforce
Dependability	Process time	New product introduction	Inventory performance	Integration with customers	Employee skills
Innovation	Productivity	Computer systems	Cost control	Competitiveness Innovation	Learning
	Cycle time	Future growth	Sales	Delivery reliability	Labour efficiency
	Delivery speed	Product Innovation	Profitability		Quality of work life
	Labour efficiency		Efficiency		Resource utilisation
	Resource utilisation		Product cost reduction		Productivity

Moreover, Gunawan *et al.* (2008:374) grouped performance indicators together into groups of key dimensions of performance measurement. These dimensions are as follows: financial, market, customer, web and process (See Table 3.6)

Table 3.6: Dimensions of performance indicators (**Source**: Gunawan, Ellis-Chadwick & King, 2008:374)

Financial	Market	Customer	Web	Process
Profit margin	Total sales	Conversion rate visitor to purchase	Number of visits	On time delivery (promised v. actual)
Revenue per transaction	Number of orders	Number of newsletter subscribers	Page views Unique visitors	% error in goods picked and delivered to customer
Fulfilment cost	Number of customers	Repeated sales per customer	Usability Information quality	% error in delivery destination
Revenue per customer	Sales value per transaction	Conversion rate visitor to registration	Service	Online enquiry to response time
Customer maintenance cost	Ratio of sales overseas	Customer churn (withdrawal) rate	Interaction quality	Return notification to refund time
	Market share	Customer extension (buy another product category)		% error in charge made to customers

In an earlier study conducted by Jarvis, Curran, Kitching and Lightfoot (1999:126), investigating the performance measures of small firms in the UK, it was found that owner-managers were using the following performance measures: cash such as money in the bank, investments, assets with high liquidity; cash flow (any measurable increase or decrease in cash or cash equivalents resulting from an economic transaction); profit; number of telephone enquiries; busyness; product quality; leadership ability; quantity purchased; speed with which buyers settle debt; enthusiasm of buyers; 'spirit' of the sales transaction (enthusiasm, amount sold, regularity of buying).

3.8 HOW TO SETUP A PERFORMANCE MANAGEMENT SYSTEM

Criticisms that traditional PM systems are financially driven and historically focussed, led to the development of the concept of strategic PM. In order to develop a strategic PM system it is necessary to identify the properties of an effective development process (Hudson *et al.*, 2001:1099). Platts (1990; 1994, as cited by Hudson *et al.*, 2001:1099), developed a framework for examining the manufacturing strategy development process. This author suggested that an organisation begin with a 'point of entry' where an evaluation or audit of the existing PM system is completed in order to highlight any areas of deficiency. Next, the participation of staff, who will be the key

users of the performance measurement system, is vital. A procedure must then be developed for maintaining the new PM system. And finally, project management is imperative to the success of the implementation of the new PM system. Here, key principles include top management support, everybody must be on board and objectives must be clear and explicit.

Moreover, Bitici *et al.*(2000:692), developed a model for an integrated and dynamic performance measurement system. The authors considered the following as critical to setting up a performance measurement system:

- *An external control system which uses performance measures to continuously monitor the critical parameters in the external environment for changes*
- *An internal control system which uses performance measures to continuously monitor the critical parameters in the internal environment for changes*
- *A review mechanism that uses the performance information provided by the internal and external monitors and the objectives and priorities set by higher level systems to decide internal objectives and priorities*
- *A deployment system which deploys the revised objectives and priorities to business units, processes and activities using performance measures*
- *A system which facilitates the management of the causal relationships to quantify criticality and priorities*
- *A system which ensures that gains made as a result of improvement initiatives are maintained through local performance measures used by the people who work within activities and processes*
- *A system which facilitates identification and use of performance limits and thresholds to generate alarm signals to provide early warning of potential performance problems*

(Bititci, Turner & Begemann, 2000:697)

In an earlier study, conducted by Bititci, Carrie and McDevitt (1997:524), the authors propose a reference model that organisations can use in order to review their current performance measurement systems and possibly design a more flexible and integrated performance measurement system. According to these authors, the performance management process is the manner in which the organisation uses its various systems to manage its performance. Central to the performance management process is an information system. “The information system is the performance measurement system which should integrate all relevant information from the relevant systems” (Bititci *et al*.

1997:524). Figure 3.3 below is a diagrammatic representation outlining how these processes are related.

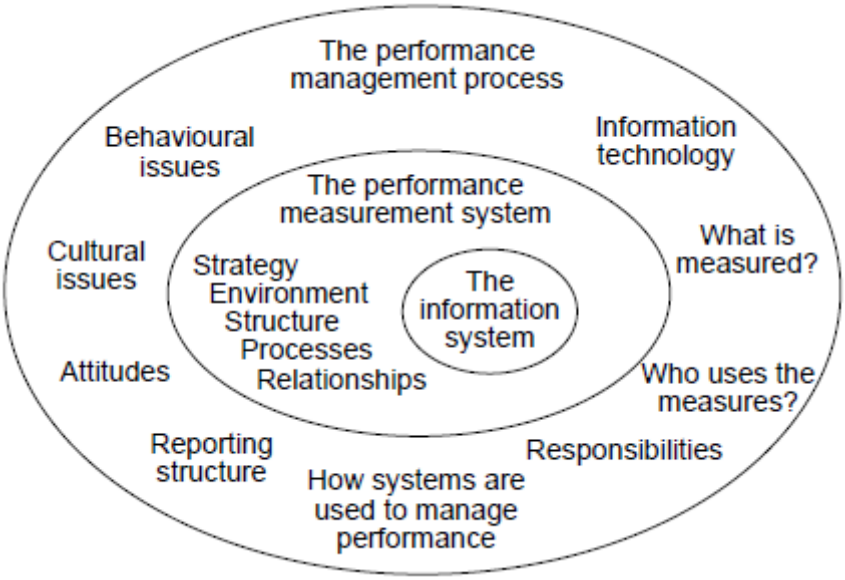

Figure 3.3: The performance management process and the position of the performance measurement system (**Source**: Bititci *et al*., 1997:525).

When setting up a performance measurement system, it is imperative to consider the integrity of the system and deployment (Bititci *et al*., 1997:525). The integrity of the system refers to the ability of the performance measurement system to promote integration between the various sectors of the organisation. The viable systems model (VSM) is a framework created in order to asses a system's integrity (Bititci *et al*., 1997:526).

The VSM suggests that a system must have 5 subsystems in order for it to be viable. System 1 consists of the operational units which produce the goods or services. Business processes such as order fulfilment and product development are included in this system. This system consists of performance measures which measure the performance of a particular business process objectively. System 2 acts as a supervisory system which coordinates the activities of operational units within the organisation. This system is representative of the business process which coordinates the activities of system 1. System 3 manages the operations of systems 1 and 2. This is the tactical management system responsible for implementing change where necessary. In terms of the performance measurement system, this system deploys strategic policies and priorities. Its main aim, therefore, is to deploy targets to the measures under system 1 and 2. System 4 focuses on improving futures processes.

Performance measures are externally focused and comparative in this system. They are comparative in the sense that they consider the activities of their competitors. Improvements under this system are made in line with business strategy and objectives. System 5 identifies the policies and strategies that the organisation will be adopting in the future. In terms of the performance measurement system, this system sets targets by relating the improvement areas from system 4 to the business objectives and priorities. Finally, there is a meta-system which consists of systems 3, 4 and 5. This system identifies and manages change within the organisation (Bititci *et al*., 1997:526).

Deployment refers to "the deployment of business objectives and policies throughout the hierarchical structure of the organisation" (Bititci *et al*., 1997:527). Deployment must ensure that business objectives and policies are reflected through the performance measurement system. Deployment should also be consistent throughout the hierarchy of the organisation as well as relevant and correct in terms of its impact on individual business sectors.

More recently, Najmi *et al.* (2005:113), suggest a number of characteristics of the performance measurement system design process. The authors state that performance measures should be derived from the organisation's strategy. The purpose of each performance measure should be made explicit. Data collection and methods of calculating the level of performance must be made clear. It is also important that everyone involved (i.e. customers, employees and managers) should be involved in the selection of the measures. The performance measures that are selected must take account of the organisation. And finally, the process should be easily revisitable (i.e. measures should be flexible and able to change as circumstances change).

3.9 DETERMINING PERFORMANCE MEASURES

Bititci (1994:16), recognised the need for performance measures to shift focus from traditional financial measures such as profit, growth and return on investment, towards non-financial measures based on top-level business objectives. The author describes a methodology for developing integrated performance measures, based on the TQM concept of the internal and external customer/supplier relationship. These measures are driven from the business vision and objectives and ensure the integration of business, functional, and personal objectives.

There are six phases in the development of integrated performance measures. The first phase involves defining business objectives. This may take the form of a vision and/or mission statement. The management team can facilitate in identifying these objectives through a SWOT (strengths, weaknesses, opportunities and threats) analysis. The second phase involves identification of the strategic performance measures as well as the development of a business strategy. The third phase facilitates the definition of the functional performance measures. This phase may be run in parallel with phase one as they are independent of one another. During this phase key functional roles and responsibilities of operational staff are outlined. The fourth phase involves integration of the strategic performance measures with the functional performance measures. The fifth phase prioritises functional measures according to their potential impact on strategic measures. Realistic targets are then set against high priority measures. The sixth and final phase involves continuous improvement and review. As a result of this discipline, the integrated strategic and functional performance measures serve as a useful management tool (Bititci, 1994:17).

There are a number of characteristics of performance measures that are important to consider when developing a performance measurement system. According to Neely (2004:1021), performance measures should: be derived from strategy; be simple to understand; provide timely and accurate feedback; be based on quantities that can be influenced, or controlled, by the user alone or in co-operation with others; reflect the 'business process'; relate to specific goals (targets); be relevant; be part of a close management loop; be clearly defined; have visual impact; focus on improvement; be consistent (in that they maintain their significance as time goes by); provide fast feedback; have an explicit purpose; be based on an explicitly defined formula and source of data; employ ratios rather than absolute numbers; use data which are automatically collected as part of a process whenever possible; be reported in a simple consistent format; be based on trends rather than snapshots; provide information; be precise – be exact about what is being measured; be objective – not based on opinion.

Moreover, Hudson *et al.* (2001:1112), suggest that performance measures should be derived from strategy, clearly defined with an explicit purpose, relevant and easy to maintain, simple to understand and use, provide fast and accurate feedback, link operations to strategic goals, and stimulate continuous improvement. Within a strategically aligned performance measurement system, there are six dimensions of performance for which measures should be developed. These dimensions include

operational dimensions which consist of time, quality and flexibility. There are three additional dimensions including finance, customer satisfaction and human resources.

Najmi *et al.* (2005:114), suggest numerous characteristics of performance measures. Performance measures should be simple and easy to use, provide fast feedback, facilitate benchmarking, and stimulate continuous improvement rather than just monitor the situation. Ratio based performance measures are preferable to absolute numbers and objective criteria are preferable to subjective ones. The authors also suggest that performance criteria should be directly under the control of the evaluated organisational unit. Once performance measures to be included in the performance measurement system have been agreed upon, the performance measurement system must then be developed.

3.10 PERFORMANCE MEASUREMENT PHASES

Kueng, Meier and Wettstein (2001:13), argue that performance measurement systems have two distinct cycles, namely the “creation” and the “use” cycle. Elg (2007:221), citing various authors, mentions that a performance measurement system consists of phases, with two of the phases being the “development phase” and the “continued existence” phase. While the performance measurement system in the development phase, emphasis is placed on features such as assembling and configuring the required resources (Elg, 2007:221). During the continued existence phase, resources will be added, modified or discharged. Similarly, Wisner and Fawcett (1991:8), state the need for a “periodic re-evaluation” of the appropriateness of the established performance measurement system in their nine-step approach to designing a performance measurement system. Lingle and Schiemann (1996:58) suggest the inclusion of a periodical review process in a performance measurement system, reflecting possible changes to the competitive environment.

Kueng *et al*. (2001:17), mention that there are certain circumstances when it is appropriate to go back from the second cycle to the first. These circumstances include a modified business strategy, new stakeholder requirements, the implemented performance indicators are not useful, new operational IT systems are put in place, or new IT opportunities emerge. This revisiting of the second cycle leads to the lifecycle of the performance measurement system.

3.11 PERFORMANCE MEASUREMENT LIFE CYCLE

Bititci, Turner and Begemann (2000:693), suggest that the life cycle of performance measurement has 4 stages.

Stage 1

The first stage involves the design of the performance measurement system. Bourne *et al*. (2000:757) suggest simply that there are two requirements when designing a performance measurement system. Firstly, key objectives to be measured must be identified, and secondly, the measures must be designed. Moreover, Najmi *et al.* (2001:114), suggest three basic elements of the design process. The element of 'direction' implies that the organisation has defined its mission and vision as well as clearly defined objectives. The element of 'processes' implies that the organisation is being managed by processes and that process improvement practices are familiar. The final element, 'measures', implies that the organisation has decided on what to measure and that these measures are derived from strategy.

According to Neely (2000 as cited by Najmi *et al.,* 2001:113), the design stage involves deriving performance measures that have been derived from strategy and the purpose of each measure must be made explicit. The manner in which data is to be collected and interpreted must also be made clear. Customers, employees and managers should be involved in selecting performance measures and these measures must be aligned with the objectives of the organisation. And finally, the process should be flexible where measures are able to change as circumstances change (Najmi *et al.*, 2001:113).

Stage 2

The second stage involves implementing the performance measurement system. According to Bourne *et al*. (2000:757), implementation is defined as 'the phase in which systems and procedures are put in place to collect and process data that enable the measurements to be made regularly (Bourne *et al*., 2000:758). Performance measures are used in two ways. Firstly, because they are derived from strategy, the success of the implementation of that strategy must be measured. Secondly, the data from the measures should test the validity of the strategy as well as challenge the assumptions of the strategy. Implementation therefore involves the simple process of data collection. Preferably, computer programmes should be written that can collect the data automatically (Bourne *et al*., 2000:758).

Stage 3

In terms of stage 3 of the life cycle of performance measurement, Kennerley and Neely (2003:1224) suggest that there are three phases to effective evolution. Phase one consists of a reflection on the existing performance measurement system to identify where it is no longer appropriate and where enhancements need to be made. Phase two involves a modification of the PM system to ensure alignment to the organisations new circumstances. The final, third phase, involves deployment of the modified PM system in order for it to be utilised to manage the performance of the organisation (Kennerley & Neely, 2003:1237).

Stage 4

The review stage, according to Najmi *et al.* (2005:118), helps an organisation prepare for any adjustments after the preceding stages of the life cycle. An effective and efficient means of reviewing the PM system is vital. This review system must also be sustainable and have the ability to adapt to the changing business environment.

3.12 HOW TO SELECT A PERFORMANCE MANAGEMENT FRAMEWORK

Performance measurement systems assist management to follow up, coordinate, manage, and enhance specific aspects of organisational activities (Elg, 2007:217). A key factor for using performance measurement is the production of possibilities to increase knowledge pertaining to the organisation as well as the direct future behaviour of the organisation (Elg, 2007:217).

The attention has shifted from examining the measurements themselves to how they are used in organisations. Some studies suggest that various performance measurement systems suffer from data quality problems (Elg, 2007:218). It is therefore imperative that an organisation makes use of the performance measurement system that produces good quality data.

A provisional model of the elements and facets of a performance measurement system consists of resources, internal dynamics, and context (Elg, 2007:221). Resources determining the system's capability to produce information are information technology, people, information, time and space. Furthermore, internal dynamics can also be a characteristic of the system. These characteristics include personal cognition and motives, rules and procedures of registration, functional activities, transformation and presentation of data. The performance measurement system's context may be structured through its environmental factors (e.g. legal systems, culture and economy),

the history of the performance measurement system, management context, and the system's network.

The literature on performance measurement has been extensively reviewed and the importance of performance measurement has been well established. It has been suggested that organisations should determine performance measures necessary for their success in business and then develop a performance measurement management framework that will assist the successful measurement of e-commerce performance. The present study aims to investigate these aspects of performance measurement in a South African context.

CHAPTER 4: RESEARCH DESIGN AND METHODOLOGY

4.1 INTRODUCTION

The aim of this chapter and the survey contained herein is to determine the prevalence of e-commerce performance measurement within SMEs in the Western Cape province of South Africa; the ultimate objective being to solve the research problem as defined in Chapter 1, Paragraph 1.2, and which reads as follows: “The lack of e-commerce performance measurement is adversely impacting upon the effective management of SMEs in the Western Cape”.

4.2 BACKGROUND

Yin (1994:19), defines a research design as, “… the logical sequence that connects the empirical data to the study’s initial research question and ultimately to its conclusions. According to Collis and Hussey (2003:55), the term ‘methodology’ refers to the overall approaches and perspectives to the research process as a whole and is concerned with the following main issues:

- **Why** you collected certain data.
- **What** data you collected.
- **Where** you collected it.
- **How** you collected it.
- **How** you analysed it.

According to White (2003), cited by Sammy (2008:6), there are three types of research functions, namely basic research, applied research and evaluation research. According to Collis and Hussey (2003:66), descriptive research refers to research which describes phenomena as they exist, while analytical research is a continuation of descriptive research, and aims to understand phenomena by discovering and measuring causal relations among them. De Vos (2001:69), cited by Sammy (2008:6), describes applied research as research directed towards providing solutions or shedding light on practical problems. Collis and Hussey (2003:66), describes applied research as the type of research in which the results or findings can be used to solve a specific, existing problem. Based on the definitions of De Vos and Collis and Hussey, the proposed study to be conducted within the ambit of this dissertation will be a combination of ‘descriptive’ and ‘applied’ research.

Research has indicated that there is much overlap between qualitative and quantitative research methods. Babbie (2005:25), expresses the opinion that, "... recognizing the distinction between qualitative and quantitative research doesn't mean that you must identify your research activities with one to the exclusion of the other. A complete understanding of the topic often requires both techniques". Against this background, the research study will be conducted within the ambit of the 'social world'. A theoretical research approach will primarily be followed, while both the positivistic as well as the phenomenological research paradigms will be employed.

The case study research method will be utilised for this research study, as it is a type of research method, which is suitable specifically as in the case of the research, where in-depth data concerning the current governance mechanisms within the target organisation can be established. It promises to allow for an in-depth, detailed understanding of this specific phenomenon within a bounded system.

Collis and Hussey (2003:68), point out that case studies are often described as exploratory research, used in areas where there are few theories or a deficient body of knowledge. The following types of case studies can be identified:

- **Descriptive case studies:** Where the objective is restricted to describing current practice.
- **Illustrative case studies:** Where the research attempts to illustrate new and possibly innovative practices adopted by particular companies.
- **Experimental case studies:** Where the research examines the difficulties in implementing new procedures and techniques in an organization and evaluating the benefits.
- **Explanatory case studies:** Where existing theory is used to understand and explain what is happening.

The author is of the opinion that the descriptive case study will be the most suitable option for the research to be undertaken.

According to White (2003:88) cited by Sammy (2008:10), a questionnaire is an instrument with open and closed questions or statements to which a respondent must react. The questionnaire used in this research will comprise of closed questions only, based on the well-known Likert scale (Likert, 1932:1-55).

Collis and Hussey (2003:122), point out that a unit of analysis could refer to the following:

- An individual.
- An event.
- An object.
- A body of individuals.
- A relationship.
- An aggregate.

The unit of analysis in this case study is the current governance structure as a body of individuals within the target organisation.

Collis and Hussey (2003:152), explain that the identification of variables refer to an attribute of the entity one has chosen as the unit of analysis. A 'quantitative variable' refers to a numerical attribute of an individual or object, while a 'qualitative variable' refers to a non-numerical attribute of an individual or object.

4.3 THE TARGET POPULATION/CHOICE OF SAMPLING METHOD

It is required with any survey, that the target population be clearly defined, which Collis and Hussey (2003:56), define as follows: "... A population is any precisely defined set of people or collection of items which is under consideration". According to Collis and Hussey (2003:155-160), a sample is made up of some of the members of a 'population' (the target population), the latter referring to a body of people or to any other collection of items under consideration for the purpose of research. The 'sampling frame' according to Vogt (1993), and cited by Collis and Hussey (2003:155), represents a list or record of the population from which all the sampling units are drawn.

4.4 DATA COLLECTION

Emory and Cooper (1995:278), distinguish between three primary types of data collection (survey) methods namely:

- Personal interviewing.
- Telephone interviewing.
- Self-administered questionnaires/surveys.

The data collection method used fall within the ambit of the concept 'survey'. Remenyi *et al*. (2002:290), define the concept of 'survey' as: "…the collection of a large quantity

of evidence usually numeric, or evidence that will be converted to numbers, normally by means of a questionnaire", while according to Gay and Diebl (1992:238), 'survey', is an attempt to collect data from members of a population in order to determine the current status of that population with respect to one or more variables.

As is the case with most academic research, the collection of data forms an important part of the overall dissertation content. The primary data collection method used in this survey is the self-administered questionnaires/surveys.

Leedy and Ormrod (2001:185), points to the fact that a questionnaire allows the participants to respond to questions with assurance that their responses will be anonymous. This means the respondents can be more truthful than they would be in a personal interview.

4.5 MEASUREMENT SCALES

The survey is based on the Likert scale, where respondents are asked to respond to questions or statements (Parasuraman 1991:410). The Likert scale (Likert, 1932:1-55), is chosen as the scale can be used in both respondent-centred (how responses differ between people) and stimulus-centred (how responses differ between various stimuli) studies, and it is most appropriate to glean data in support of the research problem in question (Emory & Cooper 1995:180-181). According to Emory and Cooper (1995:180-181), the following are the advantages of the Likert scale:

- Easy and quick to construct.
- Each item meets an empirical test for discriminating ability.
- The Likert scale is probably more reliable than the Thurston scale, and it provides a greater volume of data than the Thurston differential scale.
- The Likert scale is also treated as an interval scale.

Remenyi *et al.* (2002:153-154), is of the opinion that interval scales facilitate meaningful statistics when calculating means, standard deviation and Pearson correlation coefficients.

4.6 SURVEY DESIGN

Collis and Hussey (2003:60-66), express the opinion that research should be organised in order to make the best of opportunities and resources available. Furthermore, to provide a coherent and logical route to a reliable outcome, research must be conducted

systematically, using appropriate methods to collect and analyse the data. The survey should be designed according to the following stages:

- **Stage one:** Identify the topic and set some objectives.
- **Stage two:** Pilot a questionnaire to find out what people know and what they see as the important issues.
- **Stage three:** List the areas of information needed and refine the objectives.
- **Stage four:** Review the responses to the pilot.
- **Stage five:** Finalise the objectives.
- **Stage six:** Write the questionnaire.
- **Stage seven:** Re-pilot the questionnaire.
- **Stage eight:** Finalise the questionnaire.
- **Stage nine:** Code the questionnaire.

The survey design to be used in this instance is that of the descriptive survey as opposed to the analytical survey. The descriptive survey is according to Collis and Hussey (2003:60-66), frequently used in business research in the form of attitude surveys. The descriptive survey as defined by Ghauri, Grønhaug and Kristianslund (1995:60), has furthermore the characteristics to indicate how many members of a particular population have a certain characteristic. According to Patel, Tony and Elliot (2005) citing Leedy and Ormrod (2005), questionnaire construction is a very demanding task, which requires not only methodological competence, but also extensive experience with research in general and questioning techniques in particular.

The statements within the survey have been designed with the following principles in mind:

- Avoidance of double-barrelled statements.
- Avoidance of double-negative statements.
- Avoidance of prestige bias.
- Avoidance of leading statements.
- Avoidance of the assumption of prior knowledge.

4.7 VALIDITY AND RELIABILITY ISSUES

Denzin (1998:328), is of the opinion that qualitative research is biased, because interpretation produces understandings which are shaped by class, gender, race, and ethnicity. Malterud (1998:329-330), expresses the view that qualitative research

presents a perspective that is always partial, and findings that represent only a temporary and limited view.

According to Babbie (2005:285), survey research is generally weak on validity and strong on reliability. In support of this, Berenson, Levine and Krehbiel (2004:21-22), state that surveys are subject to potential errors. Good survey design attempts to reduce or minimise these errors:

- **Coverage error or selection bias:** Occurs if certain groups or subjects are excluded from the sampling frame.
- **Non-response error or non-response bias:** Non-response error arises from the failure to collect data on all subjects in the sample and results in a non-response bias.
- **Sampling error:** Reflects the heterogeneity between samples based on the probability of selection of individuals or items for particular samples
- **Measurement error:** Refers to inaccuracies in the recorded responses that occur because of a weakness in question wording, an interviewer's effect on the respondent, or the effort made by the respondent. There are three types of measurement error: ambiguous wording of questions, the halo effect, and respondent error.

The researcher has endeavoured to minimise the effect of survey errors in the following ways:

- **Coverage error:** Although this error can never be completely eliminated, the author believes that the choice of sampling frame reflects the individuals with the broadest knowledge of, and responsibilities with regard to the subject matter. Increasing the sampling frame may in fact increase sampling error and/or measurement error in the case where an individual has limited knowledge of the subject of governance.
- **Non-response error or non-response bias:** The objective is to have a 100 percent return on questionnaires issued. Non-responses have been followed up on a regular basis.
- **Sampling error:** Refer to coverage error.
- **Measurement error:**
    - **Ambiguous wording of questions:** Respondents have been provided with operational definitions for key terms to foster common understanding. Questions have also been derived from the governance principles provided

by best practise publications, as these publications normally reflect the colloquial speech, the possibility for error should be reduced.

- **The halo effect:** The use of the self-administered questionnaires should minimise this effect.
- **Respondent error:** This error may be reduced to some extent by inspecting of the responses for obvious errors but will never be completely eliminated.

In spite of the above, the researcher acknowledges that "…descriptions and explanations involve selective viewing and interpretation, and that they cannot be neutral, objective or total" (Mason, 1996:6).

4.8 THE RESEARCH QUESTIONNAIRE

In the opinion of Sammy (2008:85), a questionnaire is a quantitative data collection method, which has several advantages, namely:

- It is relatively economical.
- It can ensure anonymity.
- It contains questions for specific purposes.
- Existing questionnaires can be used, or modified.

The objective of this survey is to determine the opinions of SME owners and managers about various aspects relating to performance measurement of e-commerce systems.

The questionnaire in this research study is divided in three steps, namely:

- **Step 1:** Organisational information such as size, industrial classification as well as optional contact details.
- **Step 2:** The importance of e-commerce to the organisation.
- **Step 3:** The current state of e-commerce performance measurement.

A list of the questions in the research questionnaire is included as Appendix B and Appendix C for ease of reference.

4.8.1 E-Commerce performance measurement survey

The survey contains a number of statements about respondent perceptions and views of e-commerce performance measurement within the organisation.

The researcher distributed the email to SME owners and managers, and requested that a survey be completed online at www.smesurvey.com. The researcher provided respondents with an overview of the dissertation objectives and emphasised the confidentiality of the information provided.

The respondents made their choices by selecting the option that most accurately matched the extent of agreement with the statement description from a pre-populated list of options. For instance where the Likert scale is used:

- Not important is coded as 1 ranging to
- Critical which is coded as 7.

Thus the numbers in between will indicate the values between not important and critical. Should a respondent completely agree with a statement, he or she would select the number 7 in the answer column of the appropriate statement. Conversely, should a respondent disagree with the statement, he or she would select the number 1 in the answer column.

4.9 CONCLUSION

In this chapter, the 'e-commerce performance measurement' survey design and methodology was addressed under the following functional headings:

- Introduction.
- Background.
- Survey environment.
- Target population / Choice of sampling method.
- Data collection.
- Measurement scales.
- Demand for a qualitative research strategy.
- Survey design.
- Validity and reliability issues
- Research Questionnaire.

In Chapter 5, a data analysis and subsequent interpretation of results using descriptive and inferential statistics will be conducted on the data gleaned from the research survey.

CHAPTER 5: DATA ANALYSIS AND INTERPRETATION OF RESULTS

5.1 INTRODUCTION

This chapter focuses on the analysis of the survey conducted under SMEs in the Western Cape province of South Africa to determine whether the lack of e-commerce performance measurement is influencing the effective management of these organisations. To serve the purpose of this research, descriptive and inferential statistics were used to analyse the data.

Data analysis is “the process of bringing order, structure and meaning to the mass of collected data” (de Vos 2002:339). This chapter discusses the results of the data analysis of the survey conducted within the SMEs. The aim of this study is to determine:

- What measurement criteria are currently being used to measure e-commerce performance in SMEs;
- To what extent existing performance measurements are applied to measure e-commerce performance in SMEs;
- How relevant the existing performance measurement are to effectively measure e-commerce performance in SMEs;

The data obtained from the completed questionnaires will be presented and analysed by means of various analyses (uni-variate, bi-variate and multivariate) as it comes applicable.

In most social research the analysis entails three major steps done in the following order:

- Cleaning and organising the information that was collected which is called the data preparation step,
- Describing the information that was collected (Descriptive Statistics); and
- Testing the assumptions made through hypothesis and modelling (Inferential Statistics).

This information has been analysed by using SAS software. Frequency tables displayed in paragraph 5.2 shows the distributions of biographical variables and

statement responses. As a measure of central tendency, table 5.3 shows the means and standard deviation of the statement responses (Likert scale is an ordinal scale but are sometimes treated as an interval scale in the literature) of the 2 ordinal questions Q2.1 and Q2.2 which will indicate that the higher the value the more important to critical the aspect will be.

5.2 ANALYSIS METHOD

5.2.1 Validation Survey Results

A descriptive analysis of the survey results returned by the research questionnaire respondents are reflected below. The responses to the questions obtained through the questionnaires are indicated in table format for ease of reference. Each variable is tested to fall within the boundaries.

5.2.2 Data Format

The data was captured online by the respondents and compiled in Microsoft Excel format indicating the value descriptions for each question (statement). The boundaries were set electronically and the respondents couldn't capture answers that were not available. For example where the Likert scale is used, "not important" is coded as 1 ranging to "critical" which is coded as 7. Thus the numbers in between will indicate the values between "not important" and "critical". This means that the higher the value the more important and thus at level 7 a factor will be critical. Only 1, 2, 3, 4, 5, 6, or 7 could be captured and any other number would not let the respondent proceed to the next question/statement. This file was subsequently imported into SAS through the SAS ACCESS module and analysed.

5.2.3 Preliminary Analysis

The reliability of the statements in the questionnaire is measured by using the Cronbach Alpha test. (See paragraph 5.3.1). Descriptive statistics were performed on all variables; displaying means, standard deviations, frequencies, percentages, cumulative frequencies and cumulative percentages. These descriptive statistics are discussed in paragraphs 5.3.2 and 5.3.3. (See also computer printout in Appendix E).

5.2.4 Inferential Statistics

The following inferential statistics are performed on the data:

- Cronbach Alpha test. Cronbach's Alpha is an index of reliability associated with the variation accounted for by the true score of the "underlying construct". Construct is

the hypothetical variables that are being measured (Cooper & Schindler, 2001:216-217). Another way to put it would be that Cronbach's alpha measures how well a set of items (or variables) measures a single uni-dimensional latent construct.

- Chi-square tests for nominal data. Pearson Chi-square as a measure of association between the groups where nominal data was encountered and an expected frequency of more than 5 were displayed in the cells. The technique is used to test for significant differences between the observed distribution of data among categories and the expected distribution based on the null hypothesis (equal proportions). It has to be calculated with actual counts rather than percentages (Cooper & Schindler, 2001:499).

5.2.5 Technical report with graphical displays

A written report with explanations of all variables and their outcome has been compiled. A cross analysis of variables, where necessary, was performed, attaching statistical probabilities to indicate the magnitude of differences or associations.

All inferential statistics are discussed in paragraph 5.3.4.

5.2.6 Sample

The target population is SMEs with existing e-commerce initiatives in the Western Cape. The total sample of responses is 31 SMEs with e-commerce out of the Western Cape (1500 emails were sent out and 31 responses were received). This can indicate some biasness in the research as only businesses which tend to use performance measurement in e-commerce may have answered. This sample was thus a purposive non probability sample.

5.3 ANALYSIS

In total 31 respondents from the SMEs with e-commerce initiatives in Western Cape returned a completed questionnaire. The items (statements) in the questionnaires will be tested for reliability in the following paragraph.

5.3.1 Reliability Testing

The reliability test (Cronbach's Alpha Coefficient) was done on all the items (statements) which represent the measuring instrument of this questionnaire, with respect to the responses rendered in this questionnaire. When the original measuring instrument was used very low Cronbach alpha coefficients were present. This however

indicates that the questionnaire may by multi-dimensional and it measures more than one construct. This problem can be dealt with, by determining whether there are more dimensions in which this questionnaire operates in (in other words that the statements describe more than one latent variable), by doing a factor analysis on the questionnaire or by deleting the items that add to the inconsistency of the questionnaire. The latter path was followed due to the low number of respondents (too low to do factor analysis).

The way the questions were formulated can also have an influence on the outcome. As questions 2.4, 2.5, 3.3 and 3.4 were questions indicating which of the 3 different rating aspects were preferred they were transformed in questions that indicate 'yes' or 'no' on an aspect. New questions were derived from the original questions 2.4, 2.5, 3.3 and 3.4. The results of the Cronbach Alpha analysis can be found in Appendix D. It illustrates the correlation between the respective item and the total sum score (without the respective item) and the internal consistency of the scale (coefficient alpha) if the respective item would be deleted. By deleting the items (statements) one by one each time with the statement with the highest Cronbach Alpha value, the Alpha value will increase. In the right-most column (Appendix D), it can be seen that the reliability of the scale would be higher if any of these statements are deleted. Thus, the items (statements) will be deleted from the scale, one by one, until a final set that makes up a reliable scale is attained. (Note that fewer items in a scale can also make the scale less reliable)

After deleting statements q2.2, q2.42, q2.41, q2.45, q2.54, q2.1, q2.51 in the mentioned order, the alpha coefficients were calculated on the remaining items (statements). This results in an overall Cronbach's alpha coefficient of more than 0.70 which indicates that the statements in the measuring scale are reliable. The resulting printouts are also displayed in Appendix E.

5.3.2 Descriptive Statistics

Appendix G shows the descriptive statistics for the questionnaires with the frequencies in each category and the percentage out of the total number of questionnaires. Take note that the descriptive statistics are based on the total sample. These descriptive statistics are also shown in Appendix F. Appendix H shows the descriptive statistics for the transformed variables. These transformed variables were created to determine which of indications in questions 2.4, 2.5, 3.3 and 3.4 were preferred by the respondents. A breakdown can be seen in Appendix I. Where a one was calculated

from the “IF” statements then it means “yes” for that particular choice, else it signifies a “no”.

Table 5.1 shows the descriptive statistics like mean, standard deviation and range for the continuous variables (or in our case for question 2.1 and 2.2 which will show the higher the mean (average) the more critical / important performance measurement and e-commerce is as an area of strategic concern to the organisation).
On certain statements, the respondents could give a list of 3 answers, indicating their top three preferences. To analyse these statements, they were transformed into new questions which indicate whether a choice was preferred or not. Less effort is needed to count the number of responses for the different choices available.

Table 5. 2: Descriptive statistics for the ordinal variables

Variable	N	Mean	Median	Standard Deviation	Range
2.1 How important is performance measurement to your organisation?	31	5.00	5.00	1.5492	6
2.2 How important is e-commerce as an area of strategic concern to your organisation?	31	5.19	6.00	1.6415	5

5.3.3 UNI-VARIATE GRAPHS

The largest group (38.7%) of the respondents was from the finance and business sector as can be seen in figure 5.1.

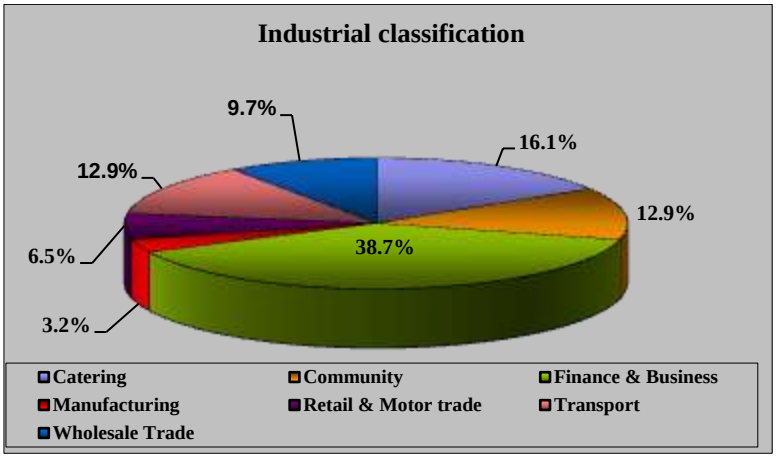

Figure 5.1: Industrial classification

Nearly a third of the response companies have less than 5 employees in their employ. Note must be taken that more than a quarter of the respondents didn't indicate how many employees they have. This is represented below in figure 5.2.

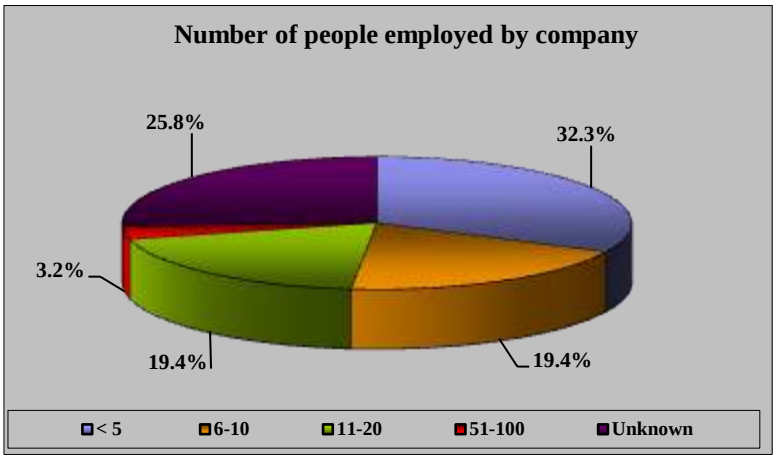

Figure 5.2: Number of employees

Although a high percentage of the organisations indicated that performance measurement is important to critical for the organisations it seems that more organisations indicated that e-commerce as a strategic concern to the organisation is critical to them. This is represented below in figure 5.3.

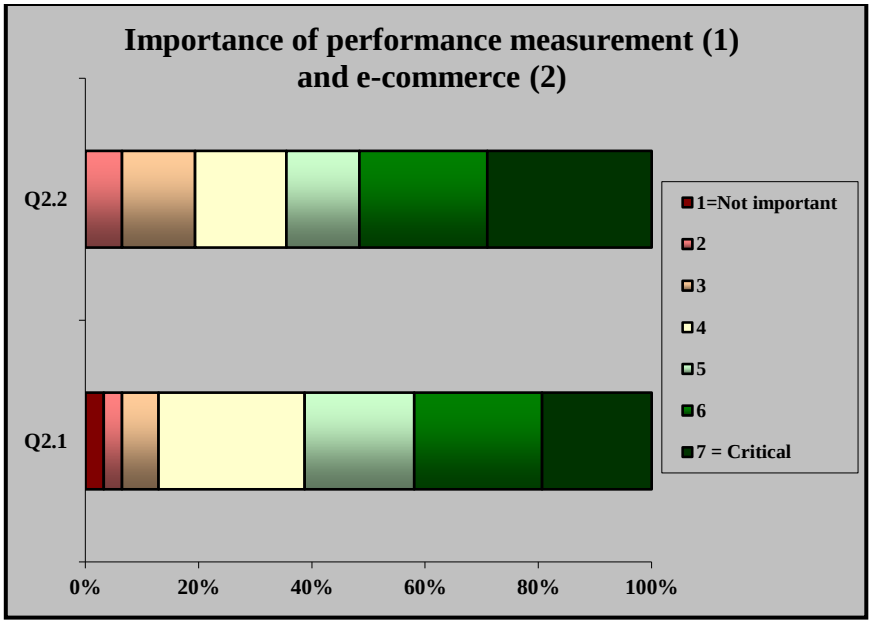

Figure 5.3: Importance of Performance measure and e-commerce

A third of the respondents started utilising e-commerce less than 2 years ago in their organisations, 30% started 3-5 years ago and 36.7 % started more than 5 years ago as indicated in figure 5.4.

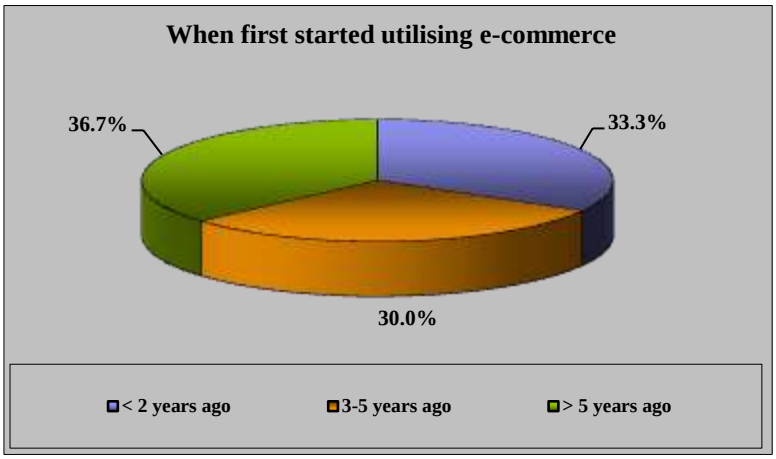

Figure 5.4: Number of years since start of e-commerce utilisation

The top 3 perceived benefits that were expected to be obtained with the e-commerce initiative are:

- Increased sales
- Expand markets beyond geographical reach 24 hour per day, 7 days a week operation.

Figure 5.5 highlights the perceived benefits as expected to be obtained by organisations with their e-commerce initiatives.

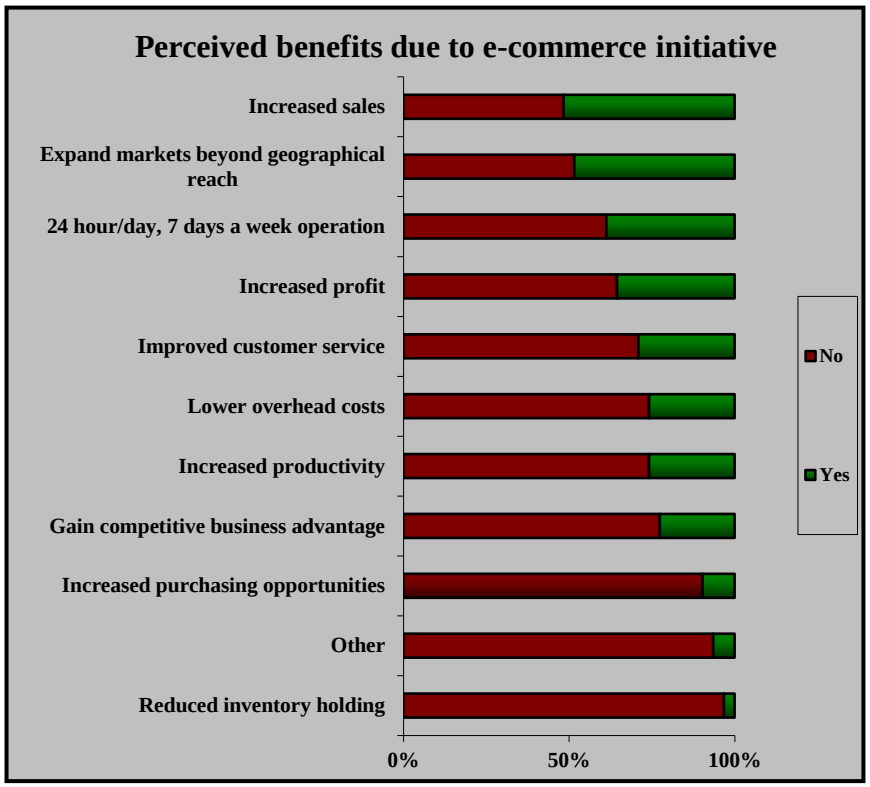

Figure 5.5: Perceived benefits expected

The top 3 actual benefits that were obtained with the e-commerce initiative are:

- Expand markets beyond geographical reach
- Increased sales
- Improved customer service
-

Figure 5.6 highlights the actual benefits realized by organisations with their e-commerce initiatives.

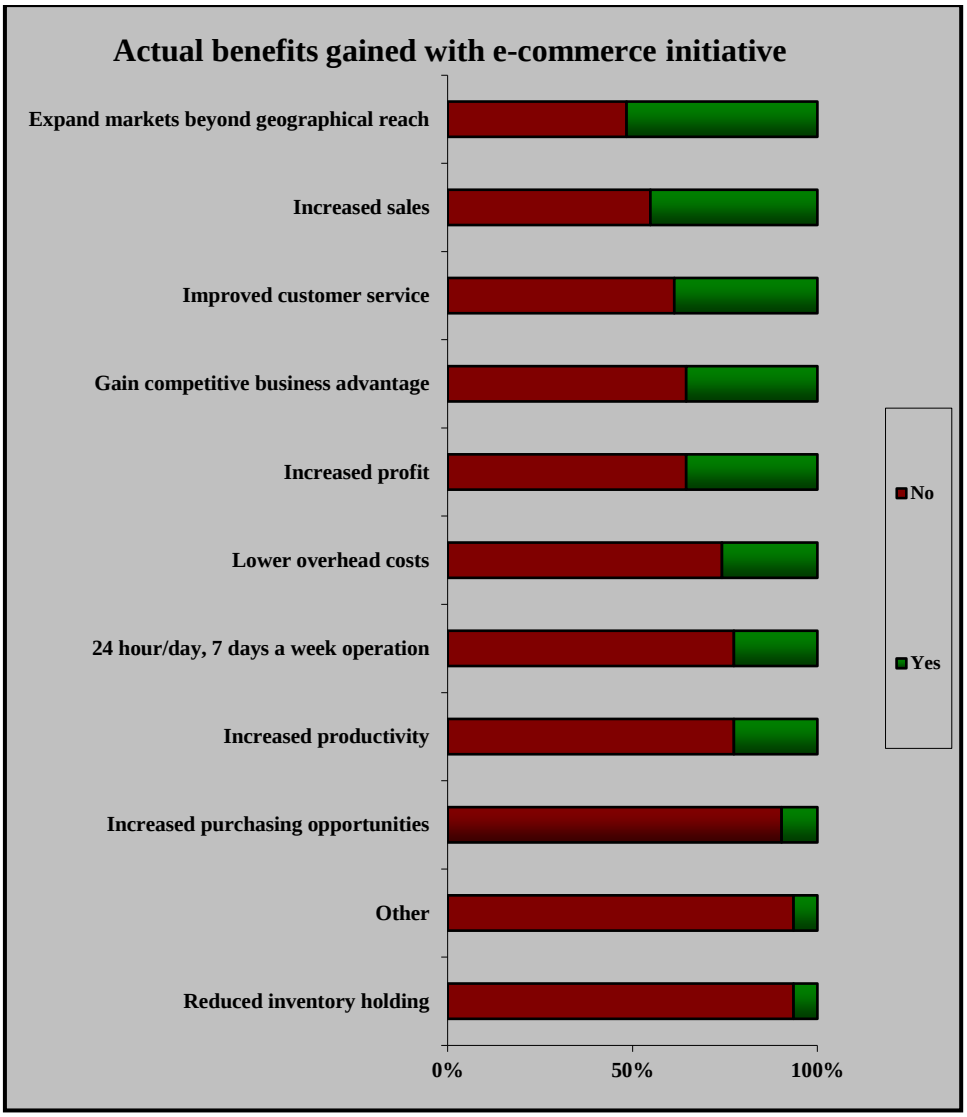

Figure 5.6: Actual benefits gained

Just more than a third of the respondent organisations measure e-commerce performance. This is represented below in figure 5.7.

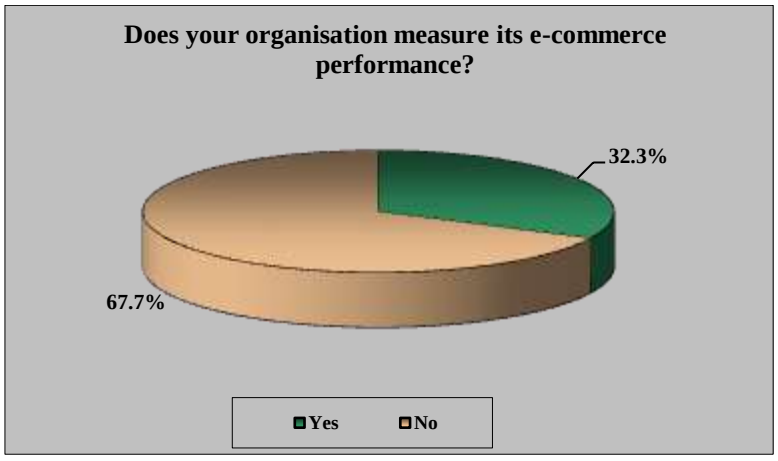

Figure 5.7: Current e-commerce performance measurement taking place

Nearly one third of the organisations that did not measure their e-commerce performance, did not consider it a priority, whilst 20% indicated that they have insufficient knowledge and 20% indicated that it is time consuming. This is represented below in figure 5.8.

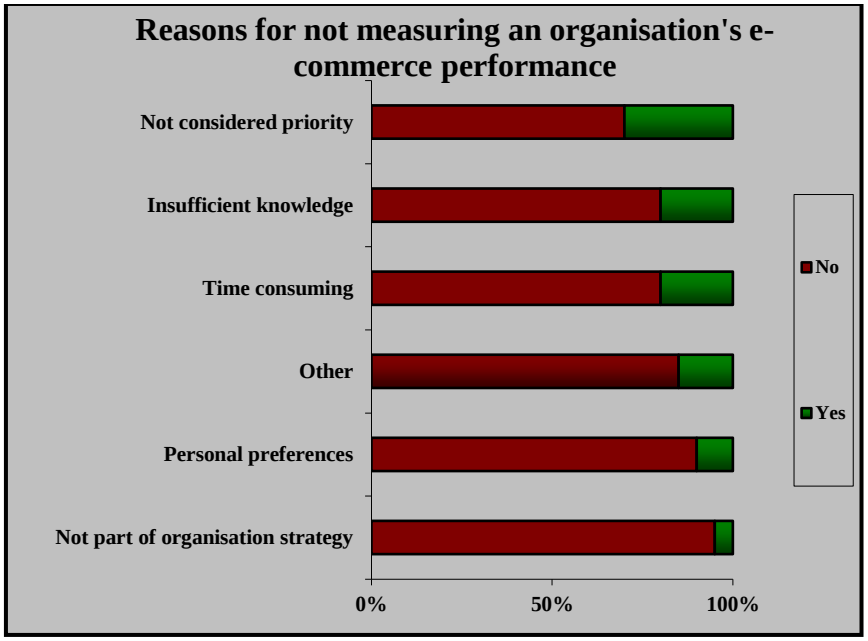

Figure 5.8: Reasons not measuring e-commerce performance

65% of the organisations who did not measure e-commerce performance currently plan to measure it in future. 10% of the respondents did not respond to the question.

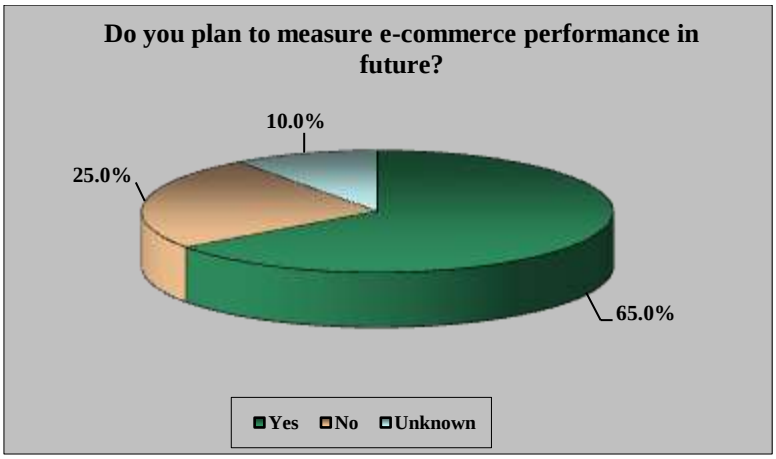

Figure 5. 9: Future e-commerce performance measurement

More than half of the organisations who measure their e-commerce performance, started to measure e-commerce performance less than 2 years ago.

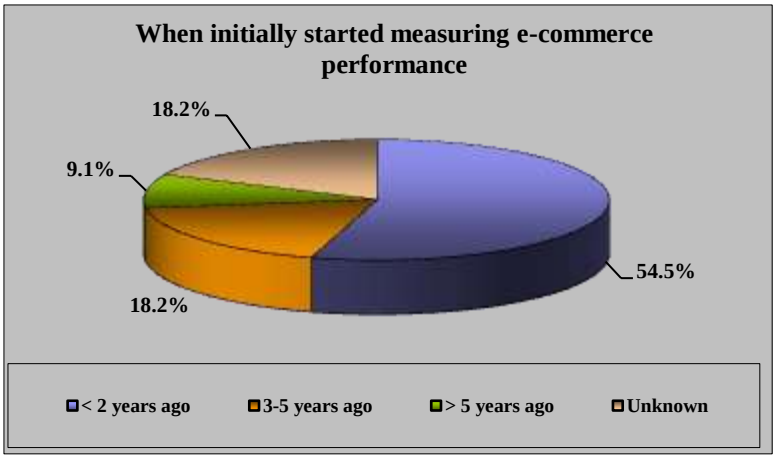

Figure 5.10: Initial start of measuring e-commerce performance

The organisations that measure their e-commerce performance mostly used performance measurement frameworks other than those listed in the questionnaire. These other performance measurement frameworks are mostly self-developed measurements that were developed internally. It also seems that some of the organisations do not know these more recognised performance measurement frameworks.

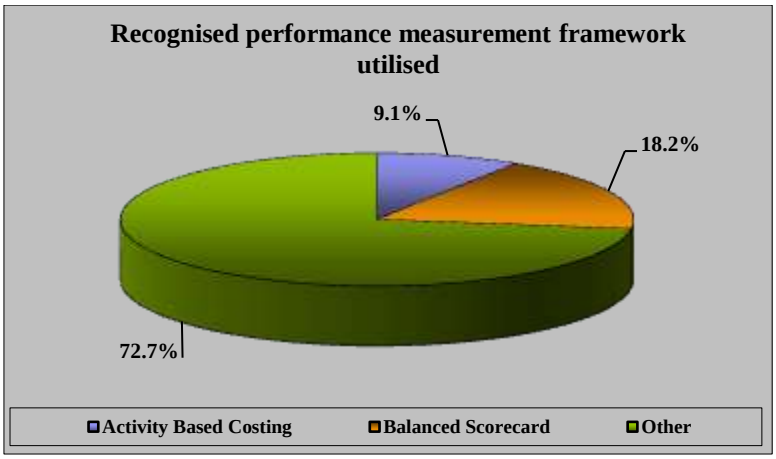

Figure 5.11: Performance measurement frameworks utilised

As highlighted in figure 5.12, the organisations that measure their e-commerce performance indicated three positive aspects of using a performance measurement framework, namely:

- Increased financial returns.
- Improved productivity.
- Enhanced competitiveness.

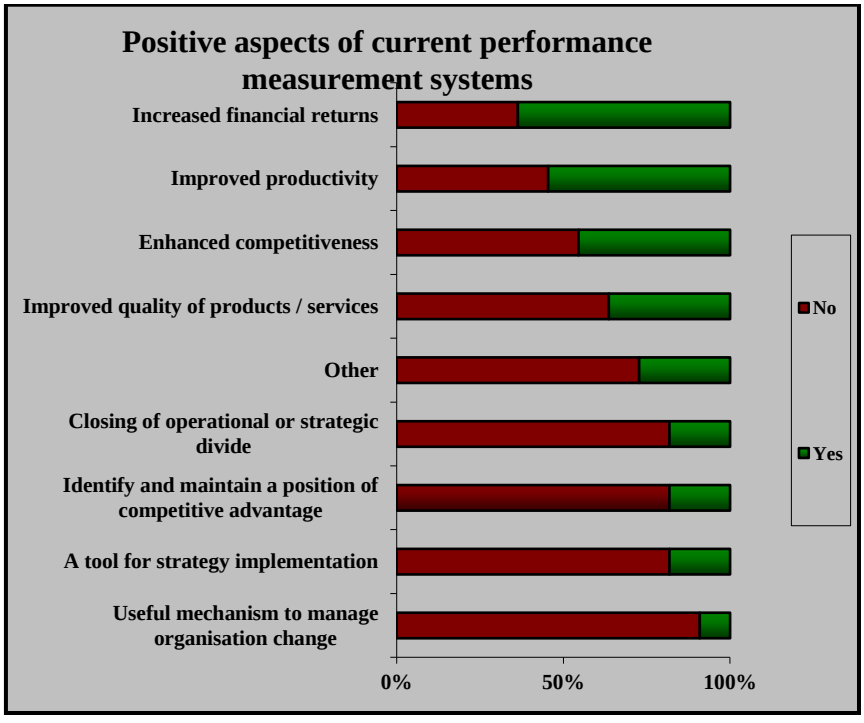

Figure 5.12: Positive aspects of current performance measurement systems

The organisations that measure their e-commerce performance indicated that the three negative aspects of using a performance measurement framework were:

- Time consuming.
- Other.
- Too expensive.

Where the category “Other” includes for instance “Unsure whether measurements are always accurate”, “Not enough staff”, “Does not provide all the information needed”. This is represented below in figure 5.13.

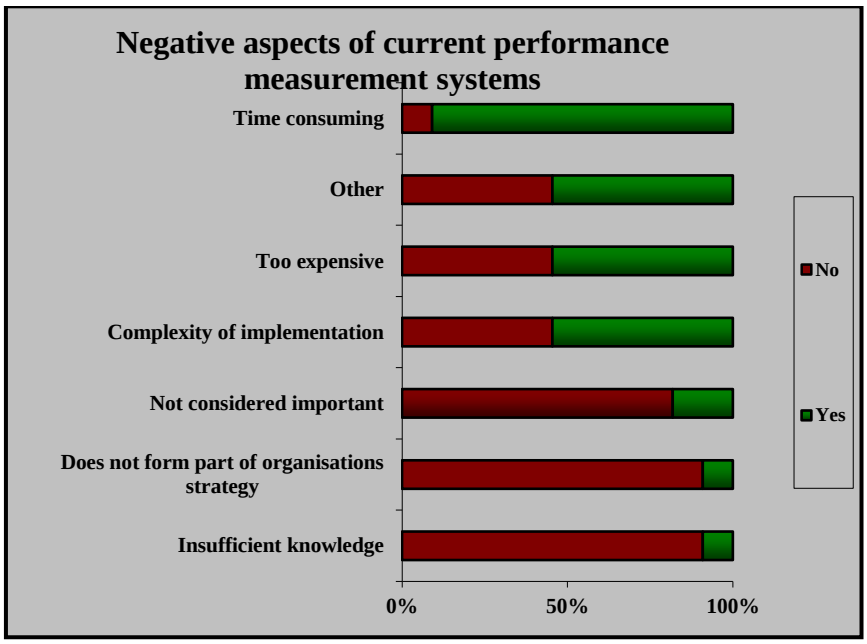

Figure 5.13: Negative aspects of current performance measurement systems

All the organisations who measure e-commerce performance (*n*=10) used financial performance as a performance measure. The most important financial measures identified are:

- Sales
- Turnover
- Profit margins
- Gross revenue
- Total expense
- Bank balance
- Cost (of sales, per client)
- Return on Investment (ROI)

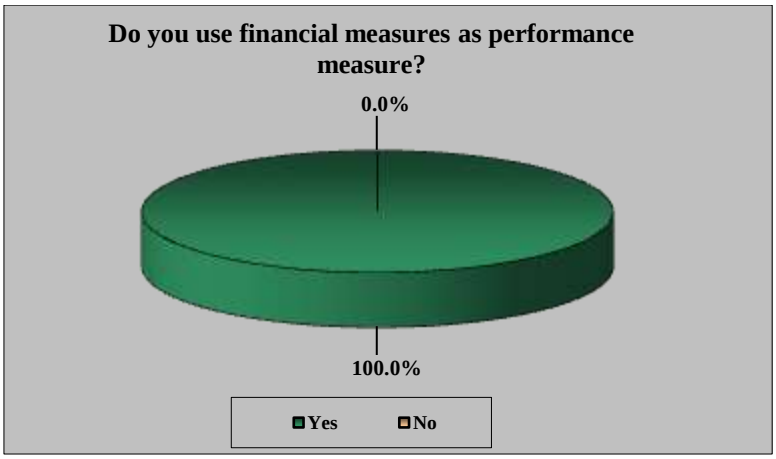

Figure 5.14: Financial performance measurement

More than 80% of the organisations (*n*=10) who measure e-commerce performance used non-financial performance as a performance measure. The most important non-financial measures identified are:

- Extensive monitoring of website traffic
- Number of page hits
- Number of website hits and number of unique site visitors
- Orders by geographical region
- Productivity versus deliverables
- Comparison of units sold with previous periods.
- Customer service rating
- Number of new clients / cancellations
- Performance
- Speed of delivery

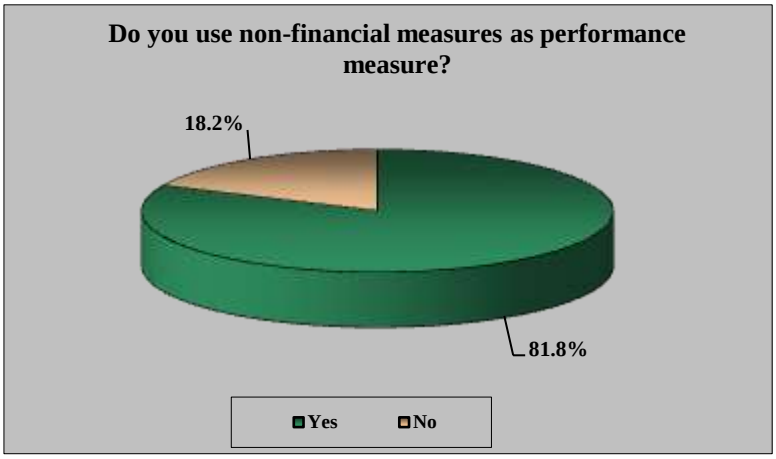

Figure 5.15: Non-financial performance measurement

Future measurements that the organisations would like to have:

- Performance versus profit per project
- All performance
- More focus on non-financial measurements (which would require better skills and more time and bigger budget).
- Customer satisfaction.
- Effectiveness in terms of goals i.e. expansion, customer service, increased sales and profits.
- Exact data on improved revenue and repeat business.
- Need proper defined strategy with measurable goals and objectives that can be tracked on a monthly or quarterly basis.
- Basic measures like acquisition cost of new clients, lifespan of clients, average spend per client and tracking of market expense would help.
- Like to forecast certain aspects and then measure company's actual performance against the forecasts.
- Would like to measure real time, readily available data.
- Page specific results.
- Productivity, Efficiency.
- Profitability of online offerings.
- Staff efficiency with clients on online chat facility / sales conversions.
- More financial (what if situations) and non-financial.
- Benefits of e-commerce.
- Total order value, customer geographic and demographics.
- Website stats, like abandoned baskets, tracking campaigns, repeat visits, repeat orders and customer lifetime.

5.3.4 COMPARATIVE STATISTIC

Comparisons were not made between the different industries that responded or between the size of the business (number of employees employed) as the number of respondents would be insufficient to perform categorical tests. Although chi-square tests to determine the differences in the proportions of the answers for each statement are shown in Annexure B. Note must be taken to the warnings when making assumption if there is insufficient number of responses to a category.

SAS computes a P-value (Probability value) that measures statistical significance which automatically incorporate the chi-square values. Results will be regarded as

significant if the p-values are smaller than 0.05, because this value presents an acceptable level on a 95% confidence interval ($p \leq 0.05$). The p-value is the probability of observing a sample value as extreme as, or more extreme than, the value actually observed, given that the null hypothesis is true. This area represents the probability of a Type 1 error that must be assumed if the null hypothesis is rejected (Cooper & Schindler, 2001:509).

The p-value is compared to the significance level (α) and on this basis the null hypothesis is either rejected or accepted. If the p-value is less than the significance level, the null hypothesis is rejected (if p-value $<\alpha$, reject null). If the p-value is greater than or equal to the significance level, the null hypothesis is accepted (if p-value $\geq\alpha$, don't reject null). Thus with α=0.05, if the p-value is less than 0.05, the null hypothesis will be rejected. The p-value is determined by using the standard normal distribution. The small p-value represents the risk of rejecting the null hypothesis.

A difference has statistical significance if there is good reason to believe the difference does not represent random sampling fluctuations only. Results will be regarded as significant if the p-values are smaller than 0.05, because this value is used as cut-off point in most behavioural science research.

5.4 SURVEY DISCUSSION AND CONCLUSIONS

As for the results obtained through this survey the following analogies can be drawn from this research:

- The industry that is most apparent in this study is the finance and business sector.
- The companies that responded were mostly smaller companies with less than 20 employees.
- Although performance measurement is very important, e-commerce as a strategic concern seems to be more important to these organisations.
- More of the organisations started less than 5 years ago to utilise e–commerce in their companies.
- The perceived benefits that were mostly expected to be obtained with the e-commerce initiative were:
    - Increased sales
    - Expand markets beyond geographical reach
    - 24 hour per day, 7 days a week operation.
- The actual benefits that were mostly obtained with the e-commerce initiative were:

    - Expand markets beyond geographical reach
    - Increased sales
    - Improved customer service
- As there are not many of the companies who measure e-commerce performance currently the main reason for that is:
    - Not considered to be a priority,
    - Insufficient knowledge and
    - Time consuming.
- Companies who do not measure their e-commerce performance currently plan to measure it in future.
- Companies who do measure their e-commerce currently only started a short while ago and they mostly use other performance measurement frameworks which are self-developed measurements that were developed internally. The only recognised performance measurement frameworks that the companies utilise are balanced scorecard and activity based costing.
- The positive aspects of using a performance measurement framework were mostly:
    - Increased financial returns,
    - Improved productivity and
    - Enhanced competitiveness.
- The negative aspects of using a performance measurement framework were mostly:
    - Time consuming,
    - Other and
    - Too expensive.
- The financials identified as performance measurement of e-commerce which were the main measurement being used as performance measurement in these companies were:
    - Sales,
    - Turnover,
    - Profit margins,
    - Gross revenue,
    - Total expense,
    - Bank balance
    - Cost (of sales and per client) and
    - ROI.
- The non-financials identified as performance measurement of e-commerce were:

- Extensive monitoring of website traffic,
- Number of page hits,
- Number of website hits and number of unique site visitors,
- Orders by geographical region,
- Productivity versus deliverables,
- Comparison of units sold with previous periods,
- Customer service rating,
- Number of new clients / cancellations,
- Performance and
- Speed of delivery.

5.5 RECOMMENDATIONS TO MITIGATE THE RESEARCH PROBLEM

5.5.1 The research problem revisited

The lack of e-commerce performance measurement is adversely impacting upon the effective management of SMEs in the Western Cape.

Question 3.1 in the survey, pertaining to whether or not organisations measure e-commerce performance, resulted in 67.7% of respondents stating that they did not measure e-commerce performance, while 32.3% did measure their e-commerce performance. This is in accordance with research conducted by Sousa *et al.* (2006:126) indicating that the use of performance measurement systems by SMEs remain low. Moreover, SMEs have severe resource limitations such as man power and finance (Hudson *et al.*, 2001: 1105) which causes them to conduct less performance measurement (Lin *et al*., 2011:7).

Question 2.1 contains a 7 point Likert scale (1 being not important and 7 being critical) requiring respondents to indicate the importance of performance measurement. Considering the high number of respondents that do not measure their e-commerce performance, it is important to note that 87% of respondents indicated either 4, 5, 6, or 7 on this question. Therefore the majority of respondents indicated a high level of importance with regards to performance measurement ($\mu=5$, $\sigma=1.5492$). One respondent (3%) indicated that performance measurement was not important. This is in alignment with literature (Hudson et al., 2001:1112) where it is clearly stated that there is widespread acceptance of the value of strategic performance measurement amongst the SMEs.

Question 2.2 also contains a 7 point Likert scale (1 being not important and 7 being critical) requiring respondents to indicate the importance of e-commerce as an area of strategic concern. Again, these results are important to note, considering the high number of respondents that do not measure their e-commerce performance. More than 80% of respondents indicated either 4, 5, 6, or 7 on this question. Therefore the majority of respondents indicated a high level of importance with regards to e-commerce as an area of strategic concern (μ=5.19, σ=1.6415). No respondents indicated that e-commerce, as an area of strategic concern, was not important. The findings in this regard are consistent with those reported elsewhere stating that SMEs understand the importance of embracing and benefiting from electronic commerce (Stansfield & Grant, 2003:16).

5.5.2 The research question revisited

What e-commerce performance critical success factors and associated measurement would facilitate the effective management of SMEs?

In the present study, the survey question referring to reasons for not measuring organisational e-commerce performance is interchangeable with obstacles to measuring e-commerce performance. Gide and Wu (2007:309), suggest that various obstacles and issues are challenging the success of e-commerce in SMEs and are thus becoming the critical success factors. In order to increase the survey response rate, the number of CSF's was consolidated to formulate the list of obstacles below.

The obstacle identified by the majority of the respondents, 30%, was "Not considered priority". Given that top management is responsible for "establishing rational objectives" and "demonstrating commitment" (Dezdar, 2011:8) there is a clear relationship between the obstacle selected by the respondents and the Management CSF factors of "top management/the decision-maker support" and "senior management support" as identified by Gide and Wu (2007:318).

"Insufficient knowledge" and "Time consuming" were both identified by twenty percent of the respondents as obstacles to measuring e-commerce performance. This is consistent with Gide and Wu's (2007:317) "human resource" CSF category, listing "CEO's IT/e-business knowledge", "employees' IT/e-business knowledge", "hiring IS/IT staff", "hiring specific e-commerce staff", "staff with relevant IT skills" and "training programmes" as CSF's.

The obstacles termed “Personal preferences and leadership style” and “Not part of the organisational strategy” were identified by 10% and 5% of respondents respectively. Security CSF’s, as suggested by Gide and Wu (2007:318), such as “trust in the web”, “trust in the information/ e-channel” and “security and privacy” can be affected by “Personal preferences and leadership style” which has been identified as an obstacle in the present research. Furthermore, MacGregor and Vrazalic (2005:513), state that family values and concerns may intrude with the decision making processes of SMEs. This is also consistent with the present finding.

Gide and Wu (2007:318), suggest that Culture CSF’s include items such as “organisational readiness for e-commerce adoption” and “organisational/internal culture for e-commerce adoption”. “Not part of the organisational strategy” is an obstacle to achieving these Culture CSF’s.

Fifteen percent of respondents selected “Other” which necessitated them to enter the obstacles in a free-text format. One respondent mentioned that way they “define and implement e-commerce was not along mainstream understanding”. This suggests that there is variability in definitions of e-commerce. The next respondent selecting “Other” stated that they previously measured performance; however their performance measures proved insufficient and they are looking for more comprehensive measures. Lastly, a respondent indicated that the SME was just starting to trade.

Interestingly, “too expensive” was not selected as an obstacle by any of the respondents which implies that cost does not appear to be an obstacle to e-commerce performance measurement. This is contrary to previous research that identified a number of financial CSF’s namely cost of e-business and financial resources priority, cost benefit or realisation of return on Investment (ROI), Internet affordable access, financial help from external parties and cost associated with keeping up to-date (Gide and Wu, 2007:319). However, in the present research, question 3.4 requires respondents who currently measure e-commerce performance to list the negative aspects of doing so. Results revealed “too expensive” as the second most selected option (after “time consuming") in the list of negative aspects of performance measurement. This indicates the importance of financial CSF’s in e-commerce performance measurement.

5.5.3 The research investigative questions revisited

What measurement criteria are currently being used to measure e-commerce performance in SMEs?

Of the 32.3% of SMEs that stated that they do currently measure their e-commerce performance, 100% use financial performance as a performance measure. The financial measures identified by the respondents include, sales, turnover, profit, margins, gross revenue, total expenses, bank balance, cost (of sales, per client) and ROI. These results are in accordance with research conducted by Jarvis *et al.* (1999:126). The author investigated the performance measures of SMEs and found that owner-managers were using the following performance measures: cash such as money in the bank, investments, cash flow (any measurable increase or decrease in cash or cash equivalents resulting from an economic transaction), profit and quantity purchased. Similarly, Bititci (1994:16), mentions financial measures such as profit, growth and return on investment. More recently, Hudson *et al.* (2001:1098), found that majority of SMEs had an abundance of financial measures.

Of the 32.3% of SMEs that stated that they do currently measure their e-commerce performance, 81.8% use non-financial performance as a performance measure. The non-financial measures identified by the respondents include, extensive monitoring of website traffic, number of page hits, number of website hits and number of unique site visitors, orders by geographical region, productivity versus deliverables, comparison of units sold with previous periods, customer service rating, number of new clients / cancellations, performance and speed of delivery. These non-financial measures are in line with the dimensions of performance indicators identified by Gunawan *et al*. (2008:374), namely number of website visits, page views, unique website visitors, service, interaction quality, on time delivery, number of orders, number of customers, customer churn, repeated sales per customer, percentage error in goods picked and delivered to customer and percentage error in delivery destination. Similarly, Hudson *et al*. (2001:1102) mentions delivery reliability, productivity, delivery speed, labour efficiency, manufacturing effectiveness and customer service.

Garengo *et al.* (2005:26), state that although SMEs are enhancing their technical competencies to meet market needs, they continue to adopt low formalised managerial practices and are least likely to employ structured performance measurement systems (Gunawan *et al.*, 2008:367). Furthermore, many SMEs still focus their performance

measurement systems on financial measures, despite the abundance of evidence that suggests focussing on non-financial measures to be more beneficial to measuring true business performance (Gunawan *et al.*, 2008:367).

To what extent are existing performance measurement approaches applied to measure e-commerce performance in SMEs?

The study found that only 32.3% of respondents currently measure their e-commerce performance. Similarly, previous research (Sousa *et al.*, 2006:126) has concluded that the use of performance measurement systems by SMEs remains low. Recent research has found that e-commerce adoption readiness is often associated with the adoption of e-commerce performance measurement. SMEs with higher levels of adoption readiness are more likely to be capable of measuring e-commerce performance successfully (Lin et al., 2011:7). Our results indicate that more than half of the organisations that currently measure e-commerce performance have been doing so for less than 2 years. This is consistent with the literature (Dubelaar *et al.*, 2003:346) and highlights that performance measurement is still immature within the SME sector and not used in the strategic decision-making process.

Nearly a third of the respondents (32.3%) that do not currently measure e-commerce performance at all, do not consider it a priority. Given that performance measurement is of strategic nature and vital for SMEs' continued existence (Sousa *et al.*, 2006:126), it is evident that awareness should be raised regarding the long term benefits of performance measurement. On the other hand, 65% of the organisations who do not currently measure their e-commerce performance plan to measure it in future. Taking this high percentage into consideration and the fact that 20% of the respondents indicated that they have insufficient knowledge to measure e-commerce performance, it is clear that there is willingness to measure. There is however a knowledge-gap and many SMEs simply do not know how to measure e-commerce performance.

It was found that the majority (72.7%) of SMEs that measure their e-commerce performance do not use recognised performance measurement systems, but rather relied on an ad hoc, informal performance measurement systems to track organisational performance. This is illustrated by the results of the present study where it was found that only 18.2% of the survey respondents utilised the balanced scorecard and 9.1% of the survey respondents utilised activity based costing. This is consistent with the literature whereby it is evident that SMEs have unplanned, informal

approaches to performance measurement that is not based on recognised models (Barry & Milner, 2002:320). SMEs continue to adopt low formalised managerial practices (Garengo *et al.,* 2005:26) and performance measures are often developed in an ad hoc manner (Hudson *et al.*, 2001:1108).

How relevant are existing performance measurement approaches to effectively measure e-commerce performance in SMEs?

It has been established in the present research that the majority of SMEs that measure their e-commerce performance do not use recognised performance measurement systems. Results indicate that only 3 of the survey respondents used recognised performance measurement systems.

In an attempt to understand the relevance of existing performance measurement approaches for SMEs, Hudson *et al.* (2001:1096), suggests that performance measurement systems have been designed mainly for use in medium to large organisations. SMEs display specific characteristics that differentiate them from their larger counterparts. SMEs have a scarcity of resources (such as financial, human resources or lack of time) which sets them apart from bigger organisations (Wong, 2005:266). Consistent with the present research study, human resource constraints and lack of time were also identified as main obstacles to performance measurement.
In addition, Hudson *et al.* (2001:1112), found that resource implications particularly that of management time means that the performance measurement implementation process is decidedly more challenging for SMEs than larger organisations.

Due to the fact that SMEs still measure performance in an ad hoc fashion with little reference to strategy, existing performance measurement approaches are not relevant to SMEs. In order to apply existing performance measurement approaches to SMEs, measures should be derived from strategy, clearly defined/explicit purpose, relevant and easy to maintain, simple to understand and use, link operations to strategic goals and stimulate continuous improvement (Hudson *et al.*, 2001:1109).

What are the perceived and actual benefits of e-commerce relevant to the SME sector?

The present research aims to distinguish between perceived benefits of e-commerce and the actual benefits realised. Question 2.4 required respondents to select the top 3 perceived benefits that they expected to obtain with their e-commerce initiative. Based

on the survey results, the top 6 overall perceived benefits that were expected to be obtained with the e-commerce initiative were (in order of importance) “increased sales”, “expanded markets beyond geographical reach”, “24 hour per day/ 7 days a week operation”, “increased profit”, “improved customer service” and “lower overhead costs”. The findings in the present research are consistent with perceived benefits reported by Cohen and Kallirroi (2006:53), namely facilitation of customer informing, entering new markets, approaching new customers, acquisition of competitive advantage, increase of sales and reduction of operating costs.

Question 2.5 required respondents to select the top 3 actual benefits realised with their e-commerce initiative. Based on the survey results, the top 6 overall actual benefits realised with the e-commerce initiative were (in order of importance) expand markets beyond geographical reach, increased sales and improved customer service, gain competitive advantage, increased profit and lower overhead costs were selected. The findings in the present research are consistent with actual benefits highlighted by various authors (Cloete *et al.*, 2002:9., Cohen & Kallirroi, 2006:45., Lin *et al.*, 2011:4)

While the order of importance varied, the survey results indicate that 5 out of the top 6 perceived benefits matched those of the top 6 actual benefits realised. The 5 actual and perceived benefits, as indicated in table 5.2, were increased sales, expand markets beyond geographical reach, increased profit, improved customer service and lower overhead costs. The perceived benefit not in the list of actual benefits realised was 24 hour per day/ 7 days a week operation. The actual benefit realised, not in the list of perceived benefits was gain competitive advantage.

Table 5. 2: Top 6 perceived and actual benefits realised from e-commerce initiatives

Top 6 perceived benefits in order of importance	**Top 6 actual benefits in order of importance**
Increased sales	Expand markets beyond geographical reach
Expand markets beyond geographical reach	Increased sales
24 hour per day/ 7 days a week operation	Improved customer service
Increased profit	*Gain competitive advantage*
Improved customer service	Increased profit
Lower overhead costs	Lower overhead costs

5.5.4 The research objectives revisited

Identify a list of e-commerce performance measurement critical success factors (CSFs) relevant to the SME sector in the Western Cape province of South Africa.

Based on the obstacles identified in the present research and drawing similarities between those and CSF's previously identified by Gide and Wu (2007:1098), the following performance measurement critical success factors were found to be relevant to the SME sector in the Western Cape province of South Africa.

- Priority of owners/top management
- IT/e-business knowledge
- Appreciate development time
- Trust in e-commerce
- Incorporate into strategy
- Organisational readiness
- Financial resources priority

SMEs should consider these CSF's in the implementation of e-commerce performance measurement to ensure success.

Identify the financial and non-financial measures being used within SMEs to measure performance.

The following financial measures have been identified by the present research.

- Sales/Turnover/ Gross revenue
- Profit margins
- Total expense
- Bank balance
- Cost of sales
- Customer acquisition cost

The following non-financial measures have been identified by the present research.

- Extensive monitoring of website traffic
- Number of page hits
- Number of website hits and number of unique site visitors
- Orders by geographical region
- Productivity versus deliverables
- Comparison of units sold with previous periods.
- Customer service rating
- Number of new clients / cancellations

- Performance
- Speed of delivery

Identify a list of perceived and actual benefits of e-commerce relevant to the SME sector.

The following top 7 perceived benefits of e-commerce, listed in order of priority, have been identified though the present research.

- Increased sales
- Expand markets beyond geographical reach
- 24 hour/day, 7 days a week operation
- Increased profit
- Improved customer service
- Lower overhead costs
- Increased productivity

The following top 7 actual benefits of e-commerce, listed in order of priority, have been identified though the present research.

- Expand markets beyond geographical reach
- Increased sales
- Improved customer service
- Competitive business advantage
- Increased profit
- Lower overhead costs
- 24 hour/day, 7 days a week operation

5.6 FINAL CONCLUSION

The research presented in this paper investigated the prominence of performance measurement techniques within the ambit of SME e-commerce in the Western Cape province of South Africa. Although e-commerce and performance measurement have been well documented in the literature, relatively little research focus has been given to SME e-commerce performance measurement.

A questionnaire was formulated which synthesised current theoretical developments with respect to SME performance measurement of e-commerce initiatives. The questionnaire investigated current practise and was completed by SME managers and owners in the Western Cape, enabling the author to draw certain conclusions. It was

illustrated that widespread e-commerce performance measurement is not taking place in SMEs.

The research has highlighted various approaches to performance measurement; however no common framework was apparent in SMEs. Although there was acceptance of the value of performance measurement evident among the survey respondents, only 3 of the respondents were following a recognised performance measurement system for their e-commerce initiatives. This contributes to current theory and suggests that there are substantial barriers to implementing performance measurement practices in SMEs in the Western Cape.

It is in the interest of SMEs to align their performance measures with their strategic goals and measure the outcomes of their e-commerce initiatives. The challenge for policy makers and industry leaders is to create awareness of the benefits of e-commerce performance measurement within the SME sector and strengthen the capabilities of those already measuring their e-commerce performance.

This study makes a contribution in the following ways:

1. it has empirically examined the state of e-commerce performance measurement in SMEs in the Western Cape;
2. it has highlighted critical success factors of successful e-commerce adoption which can be utilised as possible performance measures by SMEs planning to adopt and measure e-commerce initiatives.

In assessing the present study's findings, it is imperative to interpret the results in the light of certain limitations. The first limitation is the small sample size. Furthermore, the composition of the sample may be an uneven representation of the different SME sectors as defined in the National Small Business Act no 102 of 1996 and may induce a form of bias to the conclusions.

Future research may evaluate the CSFs identified and utilise them to establish a performance measurement model to measure e-commerce business success. The research can also be extended to a wider population and other provinces in South Africa.

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CLARIFICATION OF BASIC TERMS AND CONCEPTS

Critical Success Factor (CSF)	The limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for an organisation (Rockart, 1979:82).
e-Commerce	The electronic exchange of goods, services, information and payments. E-commerce incorporates all transaction types relating to commercial activities that utilise processing and transmission of digitised data like sound, text and visual images. Electronic-commerce comprises, but is not limited to,the Internet, extranets, intranets and electronic data interchange (Fruhling & Digman, 2000).
Performance Measurement	A collection of related activities designed to identify, collect and transform data into usable, comprehensible and actionable performance information that facilitates accurate assessment of the extent to which strategic, tactical and operational objectives have been attained (Kuwaiti, 2004).
SME	Small, Medium Enterprises. For the purpose of the proposed research, an enterprise is classified as an SME in accordance to act 102 of the National Small Business Act (1996). The Schedule to the Small Business Act is appended as Appendix A.

APPENDIX A: SCHEDULE TO THE NATIONAL SMALL BUSINESS ACT NO. 102 OF 1996

Sector or sub-sectors in accordance with the Standard Industrial Classification	Size / class	Total full-time equivalent of paid employees: (Less than)	Total annual turnover: (Less than)	Total gross value (fixed property excluded): (Less than)
Agriculture	Medium	100	R 4 000 000	R4 000 000
	Small	50	R 2 000 000	R2 000 000
	Very small	10	R 400 000	R400 000
	Micro	5	R 150 000	R150 000
Mining and Quarrying	Medium	200	R30 000 000	R10 000 000
	Small	50	R7 500 000	R4 500 000
	Very small	20	R3 000 000	R1 800 000
	Micro	5	R150 000	R100 000
Manufacturing	Medium	200	R40 000 000	R15 000 000
	Small	50	R10 000 000	R3 750 000
	Very small	20	R4 000 000	R1 500 000
	Micro	5	R150 000	R100 000
Electricity, Gas and Water	Medium	200	R40 000 000	R15 000 000
	Small	50	R10 000 000	R3 750 000
	Very small	20	R4 000 000	R1 500 000
	Micro	5	R150 000	R100 000
Construction	Medium	200	R20 000 000	R4 000 000
	Small	50	R5 000 000	R1 000 000
	Very small	20	R2 000 000	R400 000
	Micro	5	R150 000	R100 000
Retail and Motor Trade and Repair Services	Medium	100	R30 000 000	R5 000 000
	Small	50	R15 000 000	R2 500 000
	Very small	10	R3 000 000	R500 000
	Micro	5	R150 000	R100 000
Wholesale Trade, Commercial Agents and Allied Services	Medium	100	R50 000 000	R8 000 000
	Small	50	R25 000 000	R4 000 000
	Very small	10	R5 000 000	R500 000
	Micro	5	R150 000	R100 000
Catering, Accommodation and other Trade	Medium	100	R10 000 000	R2 000 000
	Small	50	R5 000 000	R1 000 000
	Very small	10	R1 000 000	R200 000
	Micro	5	R150 000	R100 000
Transport, Storage and Communications	Medium	100	R20 000 000	R5 000 000
	Small	50	R10 000 000	R2 500 000
	Very small	10	R2 000 000	R500 000
	Micro	5	R150 000	R100 000
Finance and Business Services	Medium	100	R20 000 000	R4 000 000
	Small	50	R10 000 000	R2 000 000
	Very small	10	R2 000 000	R400 000
	Micro	5	R150 000	R100 000
Community, Social and Personal Services	Medium	100	R10 000 000	R5 000 000
	Small	50	R5 000 000	R2 500 000
	Very small	10	R1 000 000	R500 000
	Micro	5	R150 000	R100 000

APPENDIX B: PERFORMANCE MEASUREMENT QUESTIONNAIRE

Step 1

1.1 **Organisation Name** (*optional*): _____

1.2 **Contact Person Name** (*optional*): _____

1.3 **Contact Number** (*optional*): _____

1.4 **Contact Email Address** (*optional*): _____

1.5 **Industrial classification of organisation:**

☐ Agriculture
☐ Catering, Accommodation and other trade
☐ Community, Social and Personal Services
☐ Construction
☐ Electricity, Gas & Water
☐ Finance and Business Services
☐ Manufacturing
☐ Mining and Quarrying
☐ Retail and Motor Trade and Repair Services
☐ Transport, Storage and Communications
☐ Wholesale Trade, Commercial Agents and Allied Services

1.6 **How many people, including the owner(s), does your business employ?**

☐ less than 5
☐ 6 – 10
☐ 11 – 20
☐ 51 – 100
☐ 101 – 200

Step 2

		1 = Not Important *7 = Critical*						
2.1	**How important is performance measurement to your organisation?**	1	2	3	4	5	6	7
2.2	**How important is e-commerce as an area of strategic concern to your organisation?**	1	2	3	4	5	6	7

2.3 **How many years ago did your organisation first start utilising e-commerce?**

☐ less than 2 years ago
☐ 3 - 5 years ago
☐ more than 5 years ago

2.4 **Rate the top 3 perceived benefits that you expected to obtain with your e-commerce initiative.**

- Increased sales
- Increased profit

- Increased productivity
- Improved customer service
- Gain competitive business advantage
- Expand markets beyond geographical reach
- 24 hours per day, 7 days per week operation
- Reduced Inventory holding
- Lower overhead costs
- Increase purchasing opportunities
- Other *(If '**Other**' please specify)* _____

2.5 **Select the top 3 actual benefits that you gained with your e-commerce initiative**.

- Increased sales
- Increased profit
- Increased productivity
- Improved customer service
- Gain competitive business advantage
- Expand markets beyond geographical reach
- 24 hours per day, 7 days per week operation
- Reduced Inventory holding
- Lower overhead costs
- Increase purchasing opportunities
- Other *(If '**Other**' please specify)* _____

Step 3

3.1 **Does your organisation measure its e-commerce performance?**

☐ Yes *(if '**Yes**', skip to 3.1c)*
☐ No *(if '**No**', complete 3.1a and 3.1b)*

3.1a **Why is your organisation's e-commerce performance not currently being measured?**

3.1b **Are you planning to measure your organisation's e-commerce performance in the future?**

3.1c **When did you initially start measuring your e-commerce performance?**

☐ Less than 2 years ago
☐ 3 - 5 years ago
☐ More than 5 years ago

3.2 **Which of the following recognised performance measurement frameworks does your organisation utilise?**

☐ Activity Based Costing
☐ Balanced Scorecard
☐ Business Excellence Model
☐ Performance Prism
☐ Other (*If '**Other**' please specify*) _____

3.3 **Rate the top 3 positive aspects of the performance measurement framework that you currently use.**

- Useful mechanism for managing organisational change
- A tool for strategy implementation
- Identify and maintain a position of competitive advantage
- Improved quality of products/services
- Improved productivity
- Enhanced competitiveness
- Increased financial returns
- Closing of operational/strategic divide
- Other (*If '**Other**' please specify*) _____

3.4 **Rate the top 3 negative aspects of the performance measurement framework that you currently use**.

- Complexity of Implementation
- Too Expensive
- Time Consuming
- Insufficient knowledge
- Not considered important
- Does not form part of the organisation's strategy
- Other (*If '**Other**' please specify*) _____

3.5 **Do you use financial performance as performance measure?**

☐ Yes *(if '**Yes**', complete 3.5a)*
☐ No *(if '**No**', skip to 3.6)*

3.5a **List the 2 most important financial measures as identified by your organisation**

1. _____
2. _____

3.6 **Do you use non-financial measures as performance measure?**

☐ Yes *(if '**Yes**', complete 3.6a)*
☐ No *(if '**No**', skip to 3.7)*

3.6a **List the 2 most important non-financial measures as identified by your organisation**

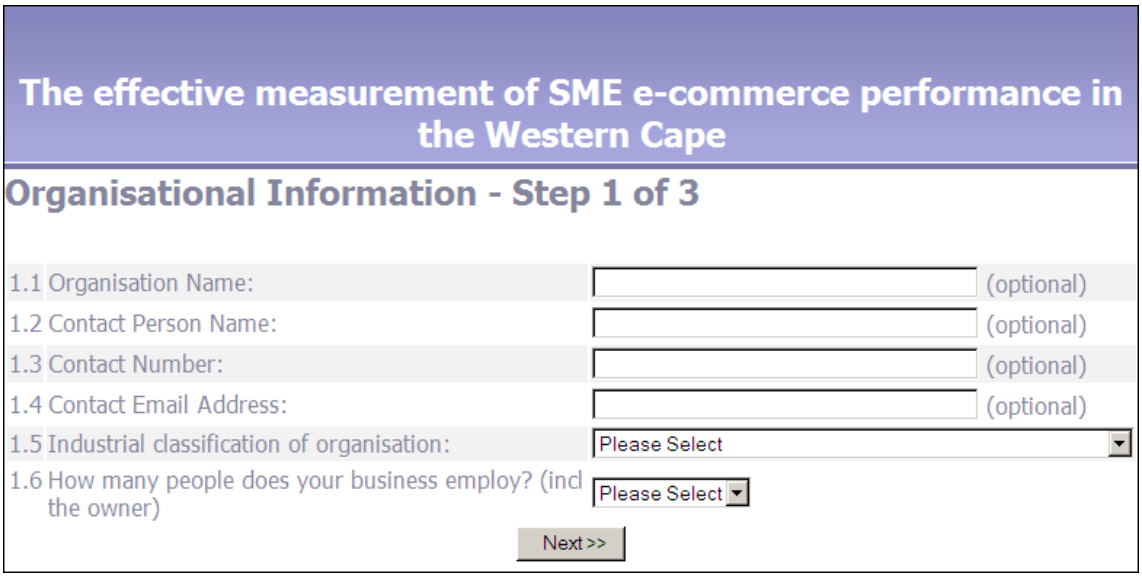
1. _____
2. _____

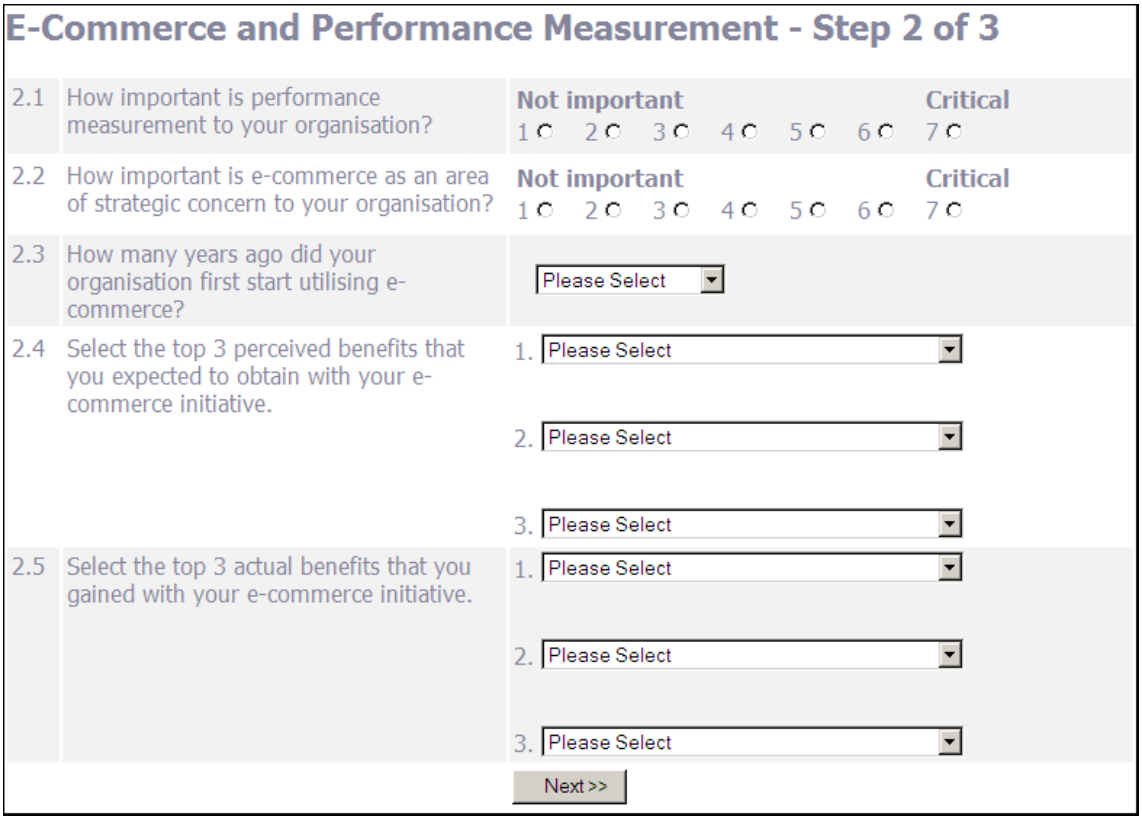
3.7 **What would you like to measure in the future?** (*optional*)

_____
_____

APPENDIX C: PERFORMANCE MEASUREMENT

QUESTIONNAIRE – WEBSITE SCREENS





E-Commerce and Performance Measurement - Step 3 of 3

3.1	Does your organisation measure its e-commerce performance?	yes ◉ no ○
3.1c	When did you initially start measuring your e-commerce performance?	Please Select
3.2	Which of the following recognised performance measurement frameworks does your organisation utilise?	Please Select
3.3	List 3 positive aspects of the performance measurement framework that you currently use.	1 Please Select 2 Please Select 3 Please Select
3.4	List 3 negative aspects of the performance measurement framework that you currently use.	1 Please Select 2 Please Select 3 Please Select
3.5	Do you use financial performance as performance measure?	yes ◉ no ○
3.5a	List the 2 most important financial measures as identified by your organisation	1. 2.
3.6	Do you use non-financial measures as performance measure?	yes ◉ no ○
3.6a	List the 2 most important non-financial measures as identified by your organisation	1. 2.
3.7	What would you like to measure in the future?	

Finish >>

APPENDIX D: CRONBACH'S ALPHA COEFFICIENTS FOR QUESTIONNAIRE RESPONSES.

	Statements	*Variable number*	*Correlation with total*	*Cronbach's Alpha Coefficient*
2.44	Selection of "Improved customer services" as one of the top 3 perceived benefits that you expected to obtain with your e-commerce initiative. .	Q2_44	-0.0878	0.7486
2.46	Selection of "Expand markets beyond geographical reach" as one of the top 3 perceived benefits that you expected to obtain with your e-commerce initiative. .	Q2_46	0.4255	0.7125
2.47	Selection of "24 hour/day, 7 days/week operation" as one of the top 3 perceived benefits that you expected to obtain with your e-commerce initiative. .	Q2_47	0.3420	0.7192
2.48	Selection of "Reduced inventory holding" as one of the top 3 perceived benefits that you expected to obtain with your e-commerce initiative. .	Q2_48	0.2964	0.7268
2.49	Selection of "Lower overhead costs" as one of the top 3 perceived benefits that you expected to obtain with your e-commerce initiative. .	Q2_49	-0.0526	0.7455
2.410	Selection of "Increased purchasing opportunities" as one of the top 3 perceived benefits that you expected to obtain with your e-commerce initiative.	Q2_410	0.0070	0.7370
2.411	Selection of "Other" as one of the top 3 perceived benefits that you expected to obtain with your e-commerce initiative.	Q2_411	0.0426	0.7345
2.52	Selection of "Increased profit" as one of the top 3 actual benefits that you gained with your e-commerce initiative.	Q2_52	-0.1928	0.7571
2.53	Selection of "Increased productivity" as one of the top 3 actual benefits that you gained with your e-commerce initiative.	Q2_53	-0.0711	0.7457
2.55	Selection of "Gain competitive business advantage" as one of the top 3 actual benefits that you gained with your e-commerce initiative.	Q2_55	-0.1676	0.7554
2.56	Selection of "Expand markets beyond geographical reach" as one of the top 3 actual benefits that you gained with your e-commerce initiative.	Q2_56	0.0071	0.7445
2.57	Selection of "24 hour/day, 7 days/week operation" as one of the top 3 actual benefits that you gained with your e-commerce initiative.	Q2_57	0.1555	0.7318
2.58	Selection of "Reduced inventory holding" as one of the top 3 actual benefits that you gained with your e-commerce initiative.	Q2_58	0.0758	0.7333
2.59	Selection of "Lower overhead costs" as one of the top 3 actual benefits that you gained with your e-commerce	Q2_59	0.1753	0.7308

	initiative.			
2.510	Selection of “Increased purchasing opportunities” as one of the top 3 actual benefits that you gained with your e-commerce initiative.	Q2_510	-0.0204	0.7382
2.511	Selection of “Other” as one of the top 3 actual benefits that you gained with your e-commerce initiative.	Q2_511	-0.2998	0.7468
3.1	Does your organisation measure its e-commerce performance?	Q3_1	0.9290	0.6718
3.31	“Usefulmechanism for managing organisational change” as a positive aspect of the performance measurement framework that you currently use.	Q3_31	0.2495	0.7281
3.32	“A tool for strategy implementation” as a positive aspect of the performance measurement framework that you currently use.	Q3_32	0.2968	0.7251
3.33	“Identify and maintain a position of competitive advantage” as a positive aspect of the performance measurement framework that you currently use.	Q3_33	0.3655	0.7224
3.34	“Improved quality of products or services” as a positive aspect of the performance measurement framework that you currently use.	Q3_34	0.4508	0.7154
3.35	“Improved productivity” as a positive aspect of the performance measurement framework that you currently use.	Q3_35	0.5492	0.7070
3.36	“Enhanced competitiveness” as a positive aspect of the performance measurement framework that you currently use.	Q3_36	0.4988	0.7113
3.37	“Increased financial returns” as a positive aspect of the performance measurement framework that you currently use.	Q3_37	0.5799	0.7038
3.38	“Closing of operational or strategic divide” as a positive aspect of the performance measurement framework that you currently use.	Q3_38	0.1610	0.7301
3.311	“Other” as a positive aspect of the performance measurement framework that you currently use.	Q3_311	0.3187	0.7231
3.41	“Complexity of implementation” as a negative aspect of the performance measurement framework that you currently use.	Q3_41	0.6420	0.7009
3.42	“Too expensive” as a negative aspect of the performance measurement framework that you currently use.	Q3_42	0.5722	0.7055
3.43	“Time consuming” as a negative aspect of the performance measurement framework that you currently use.	Q3_43	0.8204	0.6821
3.44	“Insufficient knowledge” as a negative aspect of the performance measurement framework that you currently use.	Q3_44	0.1098	0.7318

3.45	"Not considered important" as a negative aspect of the performance measurement framework that you currently use.	Q3_45	0.3655	0.7224
3.46	"Not part of organisations strategy" as a negative aspect of the performance measurement framework that you currently use.	Q3_46	0.2495	0.7281
3.411	"Other" as a negative aspect of the performance measurement framework that you currently use.	Q3_411	0.5034	0.7099
3.6	Do you use non-financial measures as performance measure?	Q3_6	-0.0278	0.7423
Cronbach's Coefficient Alpha for raw variables				**0.7326**

APPENDIX E: DESCRIPTIVE STATISTICS AND CRONBACH ALPHA

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum	Label
q2_44	31	1.70968	0.46141	53.00000	1.00000	2.00000	
q2_46	31	1.51613	0.50800	47.00000	1.00000	2.00000	
q2_47	31	1.61290	0.49514	50.00000	1.00000	2.00000	
q2_48	31	1.96774	0.17961	61.00000	1.00000	2.00000	
q2_49	31	1.74194	0.44480	54.00000	1.00000	2.00000	
q2_410	31	1.90323	0.30054	59.00000	1.00000	2.00000	
q2_411	31	1.93548	0.24973	60.00000	1.00000	2.00000	
q2_52	31	1.64516	0.48637	51.00000	1.00000	2.00000	
q2_53	31	1.77419	0.42502	55.00000	1.00000	2.00000	
q2_55	31	1.64516	0.48637	51.00000	1.00000	2.00000	
q2_56	31	1.48387	0.50800	46.00000	1.00000	2.00000	
q2_57	31	1.77419	0.42502	55.00000	1.00000	2.00000	
q2_58	31	1.93548	0.24973	60.00000	1.00000	2.00000	
q2_59	31	1.74194	0.44480	54.00000	1.00000	2.00000	
q2_510	31	1.90323	0.30054	59.00000	1.00000	2.00000	
q2_511	31	1.93548	0.24973	60.00000	1.00000	2.00000	
Q3_1	31	1.64516	0.48637	51.00000	1.00000	2.00000	Q3_1
q3_31	31	1.96774	0.17961	61.00000	1.00000	2.00000	
q3_32	31	1.93548	0.24973	60.00000	1.00000	2.00000	
q3_33	31	1.93548	0.24973	60.00000	1.00000	2.00000	
q3_34	31	1.87097	0.34078	58.00000	1.00000	2.00000	
q3_35	31	1.80645	0.40161	56.00000	1.00000	2.00000	
q3_36	31	1.83871	0.37388	57.00000	1.00000	2.00000	
q3_37	31	1.77419	0.42502	55.00000	1.00000	2.00000	
q3_38	31	1.93548	0.24973	60.00000	1.00000	2.00000	
q3_311	31	1.90323	0.30054	59.00000	1.00000	2.00000	
q3_41	31	1.80645	0.40161	56.00000	1.00000	2.00000	
q3_42	31	1.80645	0.40161	56.00000	1.00000	2.00000	
q3_43	31	1.67742	0.47519	52.00000	1.00000	2.00000	
q3_44	31	1.96774	0.17961	61.00000	1.00000	2.00000	
q3_45	31	1.93548	0.24973	60.00000	1.00000	2.00000	
q3_46	31	1.96774	0.17961	61.00000	1.00000	2.00000	
q3_411	31	1.80645	0.40161	56.00000	1.00000	2.00000	
Q3_6	11	1.18182	0.40452	13.00000	1.00000	2.00000	Q3_6

Cronbach Coefficient Alpha

Variables	Alpha
Raw	0.732599
Standardized	.

Cronbach Coefficient Alpha with Deleted Variable

Deleted Variable	Raw Variables: Correlation with Total	Raw Variables: Alpha	Standardized Variables: Correlation with Total	Standardized Variables: Alpha	Label
q2_44	-.087849	0.748642	.	.	
q2_46	0.425532	0.712498	.	.	
q2_47	0.341953	0.719195	.	.	
q2_48	0.296434	0.726814	.	.	
q2_49	-.052651	0.745548	.	.	
q2_410	0.007003	0.737018	.	.	
q2_411	0.042581	0.734510	.	.	
q2_52	-.192810	0.757060	.	.	
q2_53	-.071117	0.745735	.	.	
q2_55	-.167608	0.755385	.	.	
q2_56	0.007087	0.744457	.	.	
q2_57	0.155473	0.731764	.	.	
q2_58	0.075811	0.733290	.	.	

q2_59	0.175268	0.730804	.	.	
q2_510	-.020405	0.738215	.	.	
q2_511	-.299809	0.746789	.	.	
Q3_1	0.929039	0.671828	.	.	Q3_1
q3_31	0.249481	0.728079	.	.	
q3_32	0.296766	0.725052	.	.	
q3_33	0.365510	0.722443	.	.	
q3_34	0.450836	0.715359	.	.	
q3_35	0.549200	0.706964	.	.	
q3_36	0.498838	0.711335	.	.	
q3_37	0.579921	0.703750	.	.	
q3_38	0.161020	0.730140	.	.	
q3_311	0.318742	0.723061	.	.	
q3_41	0.642019	0.700926	.	.	
q3_42	0.572240	0.705475	.	.	
q3_43	0.820380	0.682102	.	.	
q3_44	0.109791	0.731812	.	.	
q3_45	0.365510	0.722443	.	.	
q3_46	0.249481	0.728079	.	.	
q3_411	0.503443	0.709901	.	.	

APPENDIX F: DESCRIPTIVE STATISTICS FOR EACH VARIABLE OF THE STAFF SURVEY

Q1_5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Catering, Accomodation and other trade	5	16.13	5	16.13
Communication, Social and Personal Services	4	12.90	9	29.03
Finance and Business Services	12	38.71	21	67.74
Manufacturing	1	3.23	22	70.97
Retail and Motor Trade and Repair Services	2	6.45	24	77.42
Transport, Storage and Communications	4	12.90	28	90.32
Wholesale Trade, Commercial Agents and Allied Services	3	9.68	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	17.5484
DF	6
Pr > ChiSq	0.0075

WARNING: The table cells have expected counts less than 5. Chi-Square may not be a valid test.

Sample Size = 31

Q1_6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
< 5	10	43.48	10	43.48
6-10	6	26.09	16	69.57
11-20	6	26.09	22	95.65
21-50	1	4.35	23	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	7.0870
DF	3
Pr > ChiSq	0.0692

Effective Sample Size = 23

Frequency Missing = 8

WARNING: 26% of the data are missing.

Q2_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	3.23	1	3.23
2	1	3.23	2	6.45
3	2	6.45	4	12.90
4	8	25.81	12	38.71
5	6	19.35	18	58.06
6	7	22.58	25	80.65
7	6	19.35	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	12.1290
DF	6
Pr > ChiSq	0.0592

WARNING: The table cells have expected counts less than 5. Chi-Square may not be a valid test.

Sample Size = 31

Q2_2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	2	6.45	2	6.45
3	4	12.90	6	19.35
4	5	16.13	11	35.48
5	4	12.90	15	48.39
6	7	22.58	22	70.97
7	9	29.03	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	5.9677
DF	5
Pr > ChiSq	0.3094

Sample Size = 31

Q2_3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
< 2 yrs ago	10	33.33	10	33.33
3-5 yrs ago	9	30.00	19	63.33
> 5 yrs ago	11	36.67	30	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	0.2000
DF	2
Pr > ChiSq	0.9048

Effective Sample Size = 30
Frequency Missing = 1

Q2_4_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Increased sales	8	25.81	8	25.81
Increased profit	4	12.90	12	38.71
Increased productivity	1	3.23	13	41.94
Improved customer service	2	6.45	15	48.39
Gain competitive business advantage	1	3.23	16	51.61
Expand markets beyond geographical reach	8	25.81	24	77.42
24 hours per day, 7 days per week operation	3	9.68	27	87.10
Reduced inventory holding	1	3.23	28	90.32
Lower overhead costs	1	3.23	29	93.55
Other	2	6.45	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	22.2258
DF	9
Pr > ChiSq	0.0082

WARNING: The table cells have expected counts less
than 5. Chi-Square may not be a valid test.

Sample Size = 31

Q2_4_1_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Build client portals, not for own use	1	50.00	1	50.00
Increased visibility	1	50.00	2	100.00

Frequency Missing = 29

			Cumulative	Cumulative

Q2_4_2	Frequency	Percent	Frequency	Percent
Increased sales	6	19.35	6	19.35
Increased profit	4	12.90	10	32.26
Increased productivity	3	9.68	13	41.94
Improved customer service	1	3.23	14	45.16
Gain competitive business advantage	3	9.68	17	54.84
Expand markets beyond geographical reach	4	12.90	21	67.74
24 hours per day, 7 days per week operation	7	22.58	28	90.32
Lower overhead costs	2	6.45	30	96.77
Increase purchasing opportunities	1	3.23	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	9.9355
DF	8
Pr > ChiSq	0.2696

WARNING: The table cells have expected counts less
than 5. Chi-Square may not be a valid test.

Sample Size = 31

Q2_4_3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Increased sales	2	6.45	2	6.45
Increased profit	4	12.90	6	19.35
Increased productivity	4	12.90	10	32.26
Improved customer service	6	19.35	16	51.61
Gain competitive business advantage	3	9.68	19	61.29
Expand markets beyond geographical reach	3	9.68	22	70.97
24 hours per day, 7 days per week operation	2	6.45	24	77.42
Lower overhead costs	5	16.13	29	93.55
Increase purchasing opportunities	2	6.45	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	4.7097
DF	8
Pr > ChiSq	0.7881

WARNING: The table cells have expected counts less
than 5. Chi-Square may not be a valid test.

Sample Size = 31

Q2_5_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Increased sales	11	35.48	11	35.48
Increased profit	2	6.45	13	41.94
Increased productivity	1	3.23	14	45.16
Improved customer service	4	12.90	18	58.06
Gain competitive business advantage	1	3.23	19	61.29
Expand markets beyond geographical reach	4	12.90	23	74.19
24 hours per day, 7 days per week operation	4	12.90	27	87.10
Lower overhead costs	2	6.45	29	93.55
Increase purchasing opportunities	1	3.23	30	96.77
Other	1	3.23	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	27.3871
DF	9
Pr > ChiSq	0.0012

WARNING: The table cells have expected counts less
than 5. Chi-Square may not be a valid test.

Sample Size = 31

Q2_5_1_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Increased visibility	1	100.00	1	100.00

Frequency Missing = 30

Q2_5_2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Increased profit	7	22.58	7	22.58
Increased productivity	4	12.90	11	35.48
Improved customer service	4	12.90	15	48.39
Gain competitive business advantage	5	16.13	20	64.52
Expand markets beyond geographical reach	6	19.35	26	83.87
24 hours per day, 7 days per week operation	2	6.45	28	90.32
Reduced inventory holding	1	3.23	29	93.55
Lower overhead costs	1	3.23	30	96.77
Increase purchasing opportunities	1	3.23	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	12.2581
DF	8
Pr > ChiSq	0.1401

WARNING: The table cells have expected counts less than 5. Chi-Square may not be a valid test.

Sample Size = 31

Q2_5_3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Increased sales	3	9.68	3	9.68
Increased profit	2	6.45	5	16.13
Increased productivity	2	6.45	7	22.58
Improved customer service	4	12.90	11	35.48
Gain competitive business advantage	5	16.13	16	51.61
Expand markets beyond geographical reach	6	19.35	22	70.97
24 hours per day, 7 days per week operation	1	3.23	23	74.19
Reduced inventory holding	1	3.23	24	77.42
Lower overhead costs	5	16.13	29	93.55
Increase purchasing opportunities	1	3.23	30	96.77
Other	1	3.23	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	12.6452
DF	10
Pr > ChiSq	0.2442

WARNING: The table cells have expected counts less than 5. Chi-Square may not be a valid test.

Sample Size = 31

Q2_5_3_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
None	1	100.00	1	100.00

Frequency Missing = 30

Q3_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	11	35.48	11	35.48
No	20	64.52	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	2.6129
DF	1
Pr > ChiSq	0.1060

Sample Size = 31

Q3_1_a	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Time Consuming	4	20.00	4	20.00
Insufficient Knowledge	4	20.00	8	40.00
Not considered priority	6	30.00	14	70.00
Not part of organisations strategy	1	5.00	15	75.00
Personal preferences and leadership style	2	10.00	17	85.00
Other	3	15.00	20	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	4.6000
DF	5
Pr > ChiSq	0.4666

WARNING: The table cells have expected counts less
than 5. Chi-Square may not be a valid test.

Effective Sample Size = 20
Frequency Missing = 11
WARNING: 35% of the data are missing.

Q3_1_a_other	Frequency	Percent
Start up business	1	33.33
The way we define and implement e-commerce is not along mainstream understanding	1	33.33
We did briefly but now we need thorough measuring	1	33.33

Q3_1_a_other	Frequency	Cumulative Frequency	Cumulative Percent
Start up business	1	1	33.33
The way we define and implement e-commerce is not along mainstream understanding	1	2	66.67
We did briefly but now we need thorough measuring	1	3	100.00

Q3_1_b	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	13	72.22	13	72.22
No	5	27.78	18	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	3.5556
DF	1
Pr > ChiSq	0.0593

Effective Sample Size = 18
Frequency Missing = 13
WARNING: 42% of the data are missing.

Q3_1_c	Frequency	Percent	Cumulative Frequency	Cumulative Percent
< 2 yrs ago	6	66.67	6	66.67
3-5 yrs ago	2	22.22	8	88.89
> 5 yrs ago	1	11.11	9	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	4.6667
DF	2
Pr > ChiSq	0.0970

WARNING: The table cells have expected counts less
than 5. Chi-Square may not be a valid test.
Effective Sample Size = 9
Frequency Missing = 22
WARNING: 71% of the data are missing.

Q3_2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Activity based costing	1	9.09	1	9.09
Balanced Scorecard	2	18.18	3	27.27
Other	8	72.73	11	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	7.8182
DF	2
Pr > ChiSq	0.0201

WARNING: The table cells have expected counts less
than 5. Chi-Square may not be a valid test.
Effective Sample Size = 11
Frequency Missing = 20
WARNING: 65% of the data are missing.

Q3_2_1	Frequency	Percent
I don't know those frameworks. We use Pastel and do some measurments that way	1	12.50
I've heard about BSC, but we use basic calculations	1	12.50
Nothing formal - ad hoc	1	12.50
Our own custom reports	1	12.50
Statistical Tracking	1	12.50
We use our own product - crmBill for analysis	1	12.50

a few calculations in Excel	1	12.50
our own	1	12.50

Q3_2_1	Cumulative Frequency	Cumulative Percent
I don't know those frameworks. We use Pastel and do some measurments that way	1	12.50
I've heard about BSC, but we use basic calculations	2	25.00
Nothing formal - ad hoc	3	37.50
Our own custom reports	4	50.00
Statistical Tracking	5	62.50
We use our own product - crmBill for analysis	6	75.00
a few calculations in Excel	7	87.50
our own	8	100.00

Q3_3_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
A tool for strategy implementation	2	18.18	2	18.18
Identify and maintain a position of competitive advantage	1	9.09	3	27.27
Improved quality of products or services	2	18.18	5	45.45
Improved productivity	2	18.18	7	63.64
Increased financial returns	2	18.18	9	81.82
Other	2	18.18	11	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	0.4545
DF	5
Pr > ChiSq	0.9937

WARNING: The table cells have expected counts less than 5. Chi-Square may not be a valid test.

Effective Sample Size = 11
Frequency Missing = 20
WARNING: 65% of the data are missing.

Q3_3_1_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
tracking sales	1	50.00	1	50.00
It's easy to use and understand	1	50.00	2	100.00

Q3_3_2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Identify and maintain a position of competitive advantage	1	9.09	1	9.09
Improved quality of products or services	1	9.09	2	18.18
Improved productivity	2	18.18	4	36.36
Enhanced competitiveness	3	27.27	7	63.64
Increased financial returns	2	18.18	9	81.82
Closing of operational or strategic divide	1	9.09	10	90.91
Other	1	9.09	11	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	2.3636
DF	6
Pr > ChiSq	0.8834

WARNING: The table cells have expected counts less than 5. Chi-Square may not be a valid test.

Effective Sample Size = 11
Frequency Missing = 20
WARNING: 65% of the data are missing.

Q3_3_2_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent

Check if we're profitable	1	100.00	1	100.00

Q3_3_3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Useful mechanism for managing organisational change	1	9.09	1	9.09
Improved quality of products or services	1	9.09	2	18.18
Improved productivity	2	18.18	4	36.36
Enhanced competitiveness	2	18.18	6	54.55
Increased financial returns	3	27.27	9	81.82
Closing of operational or strategic divide	1	9.09	10	90.91
Other	1	9.09	11	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	2.3636
DF	6
Pr > ChiSq	0.8834

WARNING: The table cells have expected counts less
than 5. Chi-Square may not be a valid test.
Effective Sample Size = 11
Frequency Missing = 20
WARNING: 65% of the data are missing.

Q3_3_3_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Better overall view of company	1	100.00	1	100.00

Q3_4_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Too expensive	1	9.09	1	9.09
Time Consuming	9	81.82	10	90.91
Other	1	9.09	11	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	11.6364
DF	2
Pr > ChiSq	0.0030

WARNING: The table cells have expected counts less
than 5. Chi-Square may not be a valid test.
Effective Sample Size = 11
Frequency Missing = 20
WARNING: 65% of the data are missing.

Q3_4_1_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
It's does not do any forecasting	1	100.00	1	100.00

Q3_4_2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Complexity of implementation	2	18.18	2	18.18
Too expensive	4	36.36	6	54.55
Time Consuming	1	9.09	7	63.64
Not considered important	1	9.09	8	72.73
Other	3	27.27	11	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	3.0909
DF	4

Pr > ChiSq	0.5427

WARNING: The table cells have expected counts less than 5. Chi-Square may not be a valid test.

Effective Sample Size = 11

Frequency Missing = 20

WARNING: 65% of the data are missing.

Q3_4_2_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Does not provide all the information that we require	1	33.33	1	33.33
It's not an industry standard - difficult to becnhmark	1	33.33	2	66.67
not enough staff	1	33.33	3	100.00

Q3_4_3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Complexity of implementation	4	36.36	4	36.36
Too expensive	1	9.09	5	45.45
Insufficient knowledge	1	9.09	6	54.55
Not considered important	1	9.09	7	63.64
Not part of organisations strategy	1	9.09	8	72.73
Other	3	27.27	11	100.00

Chi-Square Test for Equal Proportions

Chi-Square	4.8182
DF	5
Pr > ChiSq	0.4385

WARNING: The table cells have expected counts less than 5. Chi-Square may not be a valid test.

Effective Sample Size = 11

Frequency Missing = 20

WARNING: 65% of the data are missing.

Q3_4_3_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Not always accurate	1	33.33	1	33.33
Not configurable enough	1	33.33	2	66.67
We're not always sure whether our measurements are accurate	1	33.33	3	100.00

Q3_5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	11	100.00	11	100.00

Frequency Missing = 20

Q3_5_a_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Cost of sales	1	9.09	1	9.09
Gross revenue	1	9.09	2	18.18
Return on Investment	1	9.09	3	27.27
Sales	2	18.18	5	45.45
Turnover for the month	1	9.09	6	54.55
amount recovered (turnover)	1	9.09	7	63.64
sales	1	9.09	8	72.73
sales for the month	2	18.18	10	90.91
sales/turnover	1	9.09	11	100.00

Q3_5_a_2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Actual funds received	1	9.09	1	9.09
Bank balance	1	9.09	2	18.18
Profit margins	1	9.09	3	27.27
Profitability	1	9.09	4	36.36

Profitability margins	1	9.09	5	45.45
Total Expense	1	9.09	6	54.55
cost per client	1	9.09	7	63.64
new members vs marketing spend	1	9.09	8	72.73
profit	2	18.18	10	90.91
profit %	1	9.09	11	100.00

Q3_6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	9	81.82	9	81.82
No	2	18.18	11	100.00

Chi-Square Test for Equal Proportions

Chi-Square	4.4545
DF	1
Pr > ChiSq	0.0348

Effective Sample Size = 11
Frequency Missing = 20
WARNING: 65% of the data are missing.

Q3_6_a_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Extensive monitoring of website traffic	1	11.11	1	11.11
Number of page hits	1	11.11	2	22.22
Number of website hits and number of unique site visitors	1	11.11	3	33.33
Orders by geographical region	1	11.11	4	44.44
Productivity vs. deliverables	1	11.11	5	55.56
Traffic	1	11.11	6	66.67
Units sold vs. previous periods	1	11.11	7	77.78
number of booking nights	1	11.11	8	88.89
website stats	1	11.11	9	100.00

Q3_6_a_2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Customer service rating	1	11.11	1	11.11
Number of new clients/cancellations	1	11.11	2	22.22
Pages Viewed	1	11.11	3	33.33
Performance	1	11.11	4	44.44
Source of site visitors (e.g google, gumtree or others)	1	11.11	5	55.56
Speed of delivery	1	11.11	6	66.67
hits	1	11.11	7	77.78
number of site searches and subsequent converted sales	1	11.11	8	88.89
service usage so that we can bill on usage	1	11.11	9	100.00

Q3_7	Frequency	Percent	Cumulative Frequency	Cumulative Percent
GP and NP	1	4.55	1	4.55
Performance vs. profit per project.	1	4.55	2	9.09
All performance	1	4.55	3	13.64
Currently we only do basic performance measurement. Need to focus more on non-financial measurement, but that would require better skills and more time and as a small business, we don't necessarily have the budget to do it	1	4.55	4	18.18
Customer satisfaction, 24/7 experience to users and also sales	1	4.55	5	22.73
Effectiveness in terms of goals i.e. expansion, customer service, increased sales and profits	1	4.55	6	27.27
Exact Data on improved revenue and repeat business	1	4.55	7	31.82
Firstly, we need a properly defined strategy with measurable goals and objectives that we can track on a monthly/quarterly basis. Even basic measures would help e.g. Acquisition cost of new client, lifespan of clients, average spend per client (basket totals) and of course tracking marketing expense	1	4.55	8	36.36
I would like to forcast certain aspects and then measure the company's actual performance against the forecasts	1	4.55	9	40.91

Our biggest problem is that we don’t always have the data available when we need it - we need to measure real time data	1	4.55	10	45.45
Page specific results	1	4.55	11	50.00
Productivity, Efficiency	1	4.55	12	54.55
Profitability of online offerings	1	4.55	13	59.09
Staff efficiency with clients on our online chat facility/ sales conversions	1	4.55	14	63.64
We will measure if/when we can afford to - at this stage all the manpower goes into running the day to day business	1	4.55	15	68.18
Yes as long as it is a simple process	1	4.55	16	72.73
more financial (what-if scenarios) and non-financial	1	4.55	17	77.27
non-financial measures	1	4.55	18	81.82
productivity, efficiency and effectiveness	1	4.55	19	86.36
the benefits o e-commerce	1	4.55	20	90.91
total order value, customer geograpghics/demograpics	1	4.55	21	95.45
website stats like abandoned baskets, tracking campaigns, repeat visits, repeat orders, customer lifetime	1	4.55	22	100.00

q2_41	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	16	51.61	16	51.61
No	15	48.39	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	0.0323
DF	1
Pr > ChiSq	0.8575

Sample Size = 31

q2_42	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	11	35.48	11	35.48
No	20	64.52	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	2.6129
DF	1
Pr > ChiSq	0.1060

Sample Size = 31

q2_43	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	8	25.81	8	25.81
No	23	74.19	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	7.2581
DF	1
Pr > ChiSq	0.0071

Sample Size = 31

q2_44	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	9	29.03	9	29.03
No	22	70.97	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	5.4516
DF	1
Pr > ChiSq	0.0196

Sample Size = 31

q2_45	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	7	22.58	7	22.58
No	24	77.42	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	9.3226
DF	1

Pr > ChiSq	0.0023
Sample Size = 31	

q2_46	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	15	48.39	15	48.39
No	16	51.61	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	0.0323
DF	1
Pr > ChiSq	0.8575
Sample Size = 31	

q2_47	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	12	38.71	12	38.71
No	19	61.29	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	1.5806
DF	1
Pr > ChiSq	0.2087
Sample Size = 31	

q2_48	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	1	3.23	1	3.23
No	30	96.77	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	27.1290
DF	1
Pr > ChiSq	<.0001
Sample Size = 31	

q2_49	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	8	25.81	8	25.81
No	23	74.19	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	7.2581
DF	1
Pr > ChiSq	0.0071
Sample Size = 31	

q2_410	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	3	9.68	3	9.68
No	28	90.32	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	20.1613

DF	1
Pr > ChiSq	<.0001

Sample Size = 31

q2_411	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	2	6.45	2	6.45
No	29	93.55	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	23.5161
DF	1
Pr > ChiSq	<.0001

Sample Size = 31

q2_51	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	14	45.16	14	45.16
No	17	54.84	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	0.2903
DF	1
Pr > ChiSq	0.5900

Sample Size = 31

q2_52	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	11	35.48	11	35.48
No	20	64.52	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	2.6129
DF	1
Pr > ChiSq	0.1060

Sample Size = 31

q2_53	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	7	22.58	7	22.58
No	24	77.42	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	9.3226
DF	1
Pr > ChiSq	0.0023

Sample Size = 31

q2_54	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	12	38.71	12	38.71
No	19	61.29	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	1.5806
DF	1
Pr > ChiSq	0.2087
Sample Size = 31	

q2_55	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	11	35.48	11	35.48
No	20	64.52	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	2.6129
DF	1
Pr > ChiSq	0.1060
Sample Size = 31	

q2_56	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	16	51.61	16	51.61
No	15	48.39	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	0.0323
DF	1
Pr > ChiSq	0.8575
Sample Size = 31	

q2_57	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	7	22.58	7	22.58
No	24	77.42	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	9.3226
DF	1
Pr > ChiSq	0.0023
Sample Size = 31	

q2_58	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	2	6.45	2	6.45
No	29	93.55	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	23.5161
DF	1
Pr > ChiSq	<.0001
Sample Size = 31	

q2_59	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	8	25.81	8	25.81
No	23	74.19	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	7.2581
DF	1
Pr > ChiSq	0.0071

Sample Size = 31

q2_510	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	3	9.68	3	9.68
No	28	90.32	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	20.1613
DF	1
Pr > ChiSq	<.0001

Sample Size = 31

q2_511	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	2	6.45	2	6.45
No	29	93.55	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	23.5161
DF	1
Pr > ChiSq	<.0001

Sample Size = 31

q3_31	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	1	3.23	1	3.23
No	30	96.77	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	27.1290
DF	1
Pr > ChiSq	<.0001

Sample Size = 31

q3_32	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	2	6.45	2	6.45
No	29	93.55	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	23.5161
DF	1
Pr > ChiSq	<.0001

Sample Size = 31

q3_33	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	2	6.45	2	6.45
No	29	93.55	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	23.5161
DF	1
Pr > ChiSq	<.0001

Sample Size = 31

q3_34	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	4	12.90	4	12.90
No	27	87.10	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	17.0645
DF	1
Pr > ChiSq	<.0001

Sample Size = 31

q3_35	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	6	19.35	6	19.35
No	25	80.65	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	11.6452
DF	1
Pr > ChiSq	0.0006

Sample Size = 31

q3_36	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	5	16.13	5	16.13
No	26	83.87	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	14.2258
DF	1
Pr > ChiSq	0.0002

Sample Size = 31

q3_37	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	7	22.58	7	22.58
No	24	77.42	31	100.00

Chi-Square Test for Equal Proportions

Chi-Square	9.3226
DF	1
Pr > ChiSq	0.0023

Sample Size = 31

q3_38	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	2	6.45	2	6.45
No	29	93.55	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	23.5161
DF	1
Pr > ChiSq	<.0001
Sample Size = 31	

q3_311	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	3	9.68	3	9.68
No	28	90.32	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	20.1613
DF	1
Pr > ChiSq	<.0001
Sample Size = 31	

q3_41	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	6	19.35	6	19.35
No	25	80.65	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	11.6452
DF	1
Pr > ChiSq	0.0006
Sample Size = 31	

q3_42	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	6	19.35	6	19.35
No	25	80.65	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	11.6452
DF	1
Pr > ChiSq	0.0006
Sample Size = 31	

q3_43	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	10	32.26	10	32.26
No	21	67.74	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	3.9032
DF	1
Pr > ChiSq	0.0482
Sample Size = 31	

q3_44	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	1	3.23	1	3.23
No	30	96.77	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	27.1290
DF	1
Pr > ChiSq	<.0001
Sample Size = 31	

q3_45	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	2	6.45	2	6.45
No	29	93.55	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	23.5161
DF	1
Pr > ChiSq	<.0001
Sample Size = 31	

q3_46	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	1	3.23	1	3.23
No	30	96.77	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	27.1290
DF	1
Pr > ChiSq	<.0001
Sample Size = 31	

q3_411	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	6	19.35	6	19.35
No	25	80.65	31	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	11.6452
DF	1
Pr > ChiSq	0.0006
Sample Size = 31	

APPENDIX G: DESCRIPTIVE STATISTICS FOR CATEGORICAL VARIABLES

Variables	Categories	Frequency	Percentage out of total
1.5 Industrial classification of organisation.	Agriculture	0	0.0%
	Catering, Accommodation and other trade	5	16.1%
	Community Social and Personal Service	4	12.9%
	Construction	0	0.0%
	Electricity, Gas & Water	0	0.0%
	Finance and Business Services	12	38.7%
	Manufacturing	1	3.2%
	Mining and Quarrying	0	0.0%
	Retail and Motor Trade and Repair Services	2	6.4%
	Transport, Storage and Communications	4	12.9%
	Wholesale Trade, Commercial Agents and Allied Services	3	9.7%
1.6 How many people, including the owner(s), does your business employ?	< 5	10	32.3%
	6-10	6	19.4%
	11-20	6	19.4%
	51-100	1	3.2%
	101-200	0	0.0%
	Unknown	8	25.8%
2.1 How important is performance measurement to your organisation?	1 = Not important	1	3.2%
	2	1	3.2%
	3	2	6.4%
	4	8	25.8%
	5	6	19.4%
	6	7	22.6%
	7= Critical	6	19.4%
2.2 How important is e-commerce as an area of strategic concern to your organisation?	1 = Not important	0	0.0%
	2	2	6.4%
	3	4	12.9%

Variables	Categories	Frequency	Percentage out of total
	4	5	16.1%
	5	4	12.9%
	6	7	22.6%
	7= Critical	9	29.0%
2.3 How many years ago did your organisation first start utilising e-commerce?	< 2 years ago	10	33.3%
	3-5 years ago	9	30.0%
	> 5 years ago	11	36.7%
2.4.1 Select the top 3 perceived benefits that you expected to obtain with your e-commerce initiative. No 1.	Increased sales	8	25.8%
	Increased profit	4	12.9%
	Increased productivity	1	3.2%
	Improved customer service	2	6.4%
	Gain competitive business advantage	1	3.2%
	Expand markets beyond geographical reach	8	25.8%
	24 hours / day, 7 days a week operation	3	9.7%
	Reduced inventory holding	1	3.2%
	Lower overhead costs	1	3.2%
	Increased purchasing opportunities	0	0.0%
	Other	2	6.4%
2.4.2 Select the top 3 perceived benefits that you expected to obtain with your e-commerce initiative. No 2.	Increased sales	6	19.4%
	Increased profit	4	12.9%
	Increased productivity	3	9.7%
	Improved customer service	1	3.2%
	Gain competitive business advantage	3	9.7%
	Expand markets beyond geographical reach	4	12.9%
	24 hours / day, 7 days a week operation	7	22.6%
	Reduced inventory holding	0	0.0%
	Lower overhead costs	2	6.4%
	Increased purchasing opportunities	1	3.2%
	Other	0	0.0%
2.4.3 Select the top 3 perceived benefits that	Increased sales	2	6.4%

Variables	Categories	Frequency	Percentage out of total
you expected to obtain with your e-commerce initiative. No 3.	Increased profit	4	12.9%
	Increased productivity	4	12.9%
	Improved customer service	6	19.4%
	Gain competitive business advantage	3	9.7%
	Expand markets beyond geographical reach	3	9.7%
	24 hours / day, 7 days a week operation	2	6.4%
	Reduced inventory holding	0	0.0%
	Lower overhead costs	5	16.1%
	Increased purchasing opportunities	2	6.4%
	Other	0	0.0%
2.5.1 Select the top 3 actual benefits that you gained with your e-commerce initiative. No 1.	Increased sales	11	35.5%
	Increased profit	2	6.4%
	Increased productivity	1	3.2%
	Improved customer service	4	12.9%
	Gain competitive business advantage	1	3.2%
	Expand markets beyond geographical reach	4	12.9%
	24 hours / day, 7 days a week operation	4	12.9%
	Reduced inventory holding	0	0.0%
	Lower overhead costs	2	6.4%
	Increased purchasing opportunities	1	3.2%
	Other	1	3.2%
2.5.2 Select the top 3 actual benefits that you gained with your e-commerce initiative. No 2.	Increased sales	0	0.0%
	Increased profit	7	22.6%
	Increased productivity	4	12.9%
	Improved customer service	4	12.9%
	Gain competitive business advantage	5	16.1%
	Expand markets beyond geographical reach	6	19.4%
	24 hours / day, 7 days a	2	6.4%

Variables	Categories	Frequency	Percentage out of total
	week operation		
	Reduced inventory holding	1	3.2%
	Lower overhead costs	1	3.2%
	Increased purchasing opportunities	1	3.2%
	Other	0	0.0%
2.5.3 Select the top 3 actual benefits that you gained with your e-commerce initiative. No 3.	Increased sales	3	9.7%
	Increased profit	2	6.4%
	Increased productivity	2	6.4%
	Improved customer service	4	12.9%
	Gain competitive business advantage	5	16.1%
	Expand markets beyond geographical reach	6	19.4%
	24 hours / day, 7 days a week operation	1	3.2%
	Reduced inventory holding	1	3.2%
	Lower overhead costs	5	16.1%
	Increased purchasing opportunities	1	3.2%
	Other	1	3.2%
3.1 Does your organisation measure its e-commerce performance?	Yes	11	35.5%
	No	20	64.5%
3.1a Why is your organisation's e-commerce performance not currently being measured?	Too expensive	0	0.0%
	Time consuming	4	20.0%
	Insufficient knowledge	4	20.0%
	Not considered priority	6	30.0%
	Does not form part of organisations strategy	1	5.0%
	Personal preferences & Leadership style	2	10.0%
	Other	3	15.0%
3.1b Are you planning to measure your organisation's e-commerce performance in the future?	Yes	13	65.0%
	No	5	25.0%
	Unknown	2	10.0%
3.1c When did you initially start measuring your e-commerce performance?	< 2 years ago	6	54.5%
	3-5 years ago	2	18.2%

Variables	Categories	Frequency	Percentage out of total
	> 5 years ago	1	9.1%
	Unknown	2	18.2%
3.2 Which of the following recognised performance measurement framework does your organisation utilises?	Activity based costing	1	9.1%
	Balanced scorecard	2	18.2%
	Business excellence model	0	0.0%
	Performance prism	0	0.0%
	Other	8	72.7%
3.3.1 List 3 positive aspects of the performance measurement framework that you currently use. No 1.	Useful mechanism for managing organisational change.	0	0.0%
	A tool for strategy implementation	2	18.2%
	Identify and maintain a position of competitive advantage.	1	9.1%
	Improved quality of Products / Services.	2	18.2%
	Improved productivity.	2	18.2%
	Enhanced competitiveness.	0	0.0%
	Increased financial returns.	2	18.2%
	Closing of operational / strategic divide.	0	0.0%
	Other	2	18.2%
3.3.2 List 3 positive aspects of the performance measurement framework that you currently use. No 2.	Useful mechanism for managing organisational change.	0	0.0%
	A tool for strategy implementation	0	0.0%
	Identify and maintain a position of competitive advantage.	1	9.1%
	Improved quality of Products / Services.	1	9.1%
	Improved productivity.	2	18.2%
	Enhanced competitiveness.	3	27.3%
	Increased financial returns.	2	18.2%
	Closing of operational / strategic divide.	1	9.1%

Variables	Categories	Frequency	Percentage out of total
	Other	1	9.1%
3.3.3 List 3 positive aspects of the performance measurement framework that you currently use. No 3.	Useful mechanism for managing organisational change.	1	9.1%
	A tool for strategy implementation	0	0.0%
	Identify and maintain a position of competitive advantage.	0	0.0%
	Improved quality of Products / Services.	1	9.1%
	Improved productivity.	2	18.2%
	Enhanced competitiveness.	2	18.2%
	Increased financial returns.	3	27.3%
	Closing of operational / strategic divide.	1	9.1%
	Other	1	9.1%
3.4.1 List 3 negative aspects of the performance measurement framework that you currently use. No 1.	Complexity of implementation	0	%
	Too expensive	1	9.1%
	Time consuming	9	81.8%
	Insufficient knowledge	0	0.0%
	Not considered important	0	0.0%
	Does not form part of organisations strategy	0	0.0%
	Other	1	9.1%
3.4.2 List 3 negative aspects of the performance measurement framework that you currently use. No 2.	Complexity of implementation	2	18.2%
	Too expensive	4	36.4%
	Time consuming	1	9.1%
	Insufficient knowledge	0	0.0%
	Not considered important	1	9.1%
	Does not form part of organisations strategy	0	0.0%
	Other	3	27.3%
3.4.3 List 3 negative aspects of the performance measurement framework that you currently use. No 3.	Complexity of implementation	4	4.4%
	Too expensive	1	9.1%

Variables	Categories	Frequency	Percentage out of total
	Time consuming	0	0.0%
	Insufficient knowledge	1	9.1%
	Not considered important	1	9.1%
	Does not form part of organisations strategy	1	9.1%
	Other	3	27.3%
3.5 Do you use financial performance as performance measure?	Yes	11	100.0%
	No	0	0.0%
3.6 Do you use non-financial measures as performance measure?	Yes	9	81.8%
	No	2	18.2%

APPENDIX H: DESCRIPTIVE STATISTICS FOR TRANSFORMED CATEGORICAL VARIABLES

Variables		Categories	Frequency	Percentage out of total
2.4.1a	"Increased sales" as top perceived benefit	Yes	16	51.6%
		No	15	48.4%
2.4.1b	"Increased profit" as top perceived benefit	Yes	11	35.5%
		No	20	64.5%
2.4.1c	"Increased productivity" as top perceived benefit	Yes	8	25.8%
		No	23	74.2%
2.4.1d	"Improved customer service" as top perceived benefit	Yes	9	29.0%
		No	22	71.0%
2.4.1e	"Gain competitive business advantage" as top perceived benefit	Yes	7	22.6%
		No	24	77.4%
2.4.1f	"Expand markets beyond geographical reach" as top perceived benefit	Yes	15	48.4%
		No	16	51.6%
2.4.1g	"24 hours / day, 7 days a week operation" as top perceived benefit	Yes	12	38.7%
		No	19	61.3%
2.4.1h	"Reduced inventory holding" as top perceived benefit	Yes	1	3.2%
		No	30	96.8%
2.4.1i	"Lower overhead costs" as top perceived benefit	Yes	8	25.8%
		No	23	74.2%
2.4.1j	"Increased sales" as top perceived benefit.	Yes	3	9.7%
		No	28	90.3%
2.4.1k	"Other" as top perceived benefit	Yes	2	6.4%
		No	29	93.6%
2.5.1a	"Increased sales" as actual benefit	Yes	14	45.2%
		No	17	54.8%
2.5.1b	"Increased profit" as actual benefit	Yes	11	35.5%
		No	20	64.5%
2.5.1c	"Increased productivity" as actual benefit	Yes	7	22.6%
		No	24	77.4%
2.5.1d	"Improved customer service" as actual benefit	Yes	12	38.7%

Variables		Categories	Frequency	Percentage out of total
		No	19	61.3%
2.5.1e	"Gain competitive business advantage" as actual benefit	Yes	11	35.5%
		No	20	64.5%
2.5.1f	"Expand markets beyond geographical reach" as actual benefit	Yes	16	51.6%
		No	15	48.4%
2.5.1g	"24 hours / day, 7 days a week operation" as actual benefit	Yes	7	22.6%
		No	24	77.4%
2.5.1h	"Reduced inventory holding" as actual benefit	Yes	2	6.4%
		No	29	93.6%
2.5.1i	"Lower overhead costs" as actual benefit	Yes	8	25.8%
		No	23	74.2%
2.5.1j	"Increased purchasing opportunities" as actual benefit	Yes	3	9.7%
		No	28	90.3%
2.5.1k	"Other" as actual benefit	Yes	2	6.4%
		No	29	93.6%
3.3.1a	"Useful mechanism for managing organisational change" as positive aspect.	Yes	1	3.2%
		No	30	96.7%
3.3.1b	"A tool for strategy implementation" as positive aspect.	Yes	2	6.4%
		No	29	93.6%
3.3.1c	"Identify and maintain a position of competitive advantage" as positive aspect.	Yes	2	6.4%
		No	29	93.6%
3.3.1d	"Improved quality of Products / Services" as positive aspect.	Yes	4	12.9%
		No	27	87.1%
3.3.1e	"Improved productivity" as positive aspect.	Yes	6	19.4%
		No	25	80.6%
3.3.1f	"Enhanced competitiveness" as positive aspect.	Yes	5	16.1%
		No	26	83.9%
3.3.1g	"Increased financial returns" as positive aspect.	Yes	7	22.6%
		No	24	77.4%
3.3.1h	"Closing of operational / strategic divide" as positive aspect.	Yes	2	6.4%
		No	29	93.6%
3.3.1i	"Other" as positive aspect.	Yes	3	9.7%
		No	28	90.3%

Variables		Categories	Frequency	Percentage out of total
3.4.1a	“Complexity of implementation” as negative aspect.	Yes	6	19.4%
		No	25	80.6%
3.4.1b	“Too expensive” as negative aspect.	Yes	6	19.4%
		No	25	80.6%
3.4.1c	“Time consuming” as negative aspect.	Yes	10	32.3%
		No	21	67.7%
3.4.1d	“Insufficient knowledge” as negative aspect.	Yes	1	3.2%
		No	30	96.8%
3.4.1e	“Not considered important” as negative aspect.	Yes	2	6.4%
		No	29	93.6%
3.4.1f	“Does not form part of organisations strategy” as negative aspect.	Yes	1	3.2%
		No	30	96.8%
3.4.1g	“Other” as negative aspect.	Yes	6	19.4%
		No	25	80.6%

APPENDIX I: BREAKDOWN OF TRANSFORMED VARIABLES

```
IF q2_4_1 EQ 1 OR q2_4_2 EQ 1 OR Q2_4_3 EQ 1 THEN q2_41=1;
IF q2_41 NE 1 THEN q2_41=2;
IF q2_4_1 EQ 2 OR q2_4_2 EQ 2 OR Q2_4_3 EQ 2 THEN q2_42=1;
IF q2_42 NE 1 THEN q2_42=2;
IF q2_4_1 EQ 3 OR q2_4_2 EQ 3 OR Q2_4_3 EQ 3 THEN q2_43=1;
IF q2_43 NE 1 THEN q2_43=2;
IF q2_4_1 EQ 4 OR q2_4_2 EQ 4 OR Q2_4_3 EQ 4 THEN q2_44=1;
IF q2_44 NE 1 THEN q2_44=2;
IF q2_4_1 EQ 5 OR q2_4_2 EQ 5 OR Q2_4_3 EQ 5 THEN q2_45=1;
IF q2_45 NE 1 THEN q2_45=2;
IF q2_4_1 EQ 6 OR q2_4_2 EQ 6 OR Q2_4_3 EQ 6 THEN q2_46=1;
IF q2_46 NE 1 THEN q2_46=2;
IF q2_4_1 EQ 7 OR q2_4_2 EQ 7 OR Q2_4_3 EQ 7 THEN q2_47=1;
IF q2_47 NE 1 THEN q2_47=2;
IF q2_4_1 EQ 8 OR q2_4_2 EQ 8 OR Q2_4_3 EQ 8 THEN q2_48=1;
IF q2_48 NE 1 THEN q2_48=2;
IF q2_4_1 EQ 9 OR q2_4_2 EQ 9 OR Q2_4_3 EQ 9 THEN q2_49=1;
IF q2_49 NE 1 THEN q2_49=2;
IF q2_4_1 EQ 10 OR q2_4_2 EQ 10 OR Q2_4_3 EQ 10 THEN q2_410=1;
IF q2_410 NE 1 THEN q2_410=2;
IF q2_4_1 EQ 11 OR q2_4_2 EQ 11 OR Q2_4_3 EQ 11 THEN q2_411=1;
IF q2_411 NE 1 THEN q2_411=2;

IF q2_5_1 EQ 1 OR q2_5_2 EQ 1 OR Q2_5_3 EQ 1 THEN q2_51=1;
IF q2_51 NE 1 THEN q2_51=2;
IF q2_5_1 EQ 2 OR q2_5_2 EQ 2 OR Q2_5_3 EQ 2 THEN q2_52=1;
IF q2_52 NE 1 THEN q2_52=2;
IF q2_5_1 EQ 3 OR q2_5_2 EQ 3 OR Q2_5_3 EQ 3 THEN q2_53=1;
IF q2_53 NE 1 THEN q2_53=2;
IF q2_5_1 EQ 4 OR q2_5_2 EQ 4 OR Q2_5_3 EQ 4 THEN q2_54=1;
IF q2_54 NE 1 THEN q2_54=2;
IF q2_5_1 EQ 5 OR q2_5_2 EQ 5 OR Q2_5_3 EQ 5 THEN q2_55=1;
IF q2_55 NE 1 THEN q2_55=2;
IF q2_5_1 EQ 6 OR q2_5_2 EQ 6 OR Q2_5_3 EQ 6 THEN q2_56=1;
IF q2_56 NE 1 THEN q2_56=2;
IF q2_5_1 EQ 7 OR q2_5_2 EQ 7 OR Q2_5_3 EQ 7 THEN q2_57=1;
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IF q2_57 NE 1 THEN q2_57=2;
IF q2_5_1 EQ 8 OR q2_5_2 EQ 8 OR Q2_5_3 EQ 8 THEN q2_58=1;
IF q2_58 NE 1 THEN q2_58=2;
IF q2_5_1 EQ 9 OR q2_5_2 EQ 9 OR Q2_5_3 EQ 9 THEN q2_59=1;
IF q2_59 NE 1 THEN q2_59=2;
IF q2_5_1 EQ 10 OR q2_5_2 EQ 10 OR Q2_5_3 EQ 10 THEN q2_510=1;
IF q2_510 NE 1 THEN q2_510=2;
IF q2_5_1 EQ 11 OR q2_5_2 EQ 11 OR Q2_5_3 EQ 11 THEN q2_511=1;
IF q2_511 NE 1 THEN q2_511=2;

IF q3_3_1 EQ 1 OR q3_3_2 EQ 1 OR Q3_3_3 EQ 1 THEN q3_31=1;
IF q3_31 NE 1 THEN q3_31=2;
IF q3_3_1 EQ 2 OR q3_3_2 EQ 2 OR Q3_3_3 EQ 2 THEN q3_32=1;
IF q3_32 NE 1 THEN q3_32=2;
IF q3_3_1 EQ 3 OR q3_3_2 EQ 3 OR Q3_3_3 EQ 3 THEN q3_33=1;
IF q3_33 NE 1 THEN q3_33=2;
IF q3_3_1 EQ 4 OR q3_3_2 EQ 4 OR Q3_3_3 EQ 4 THEN q3_34=1;
IF q3_34 NE 1 THEN q3_34=2;
IF q3_3_1 EQ 5 OR q3_3_2 EQ 5 OR Q3_3_3 EQ 5 THEN q3_35=1;
IF q3_35 NE 1 THEN q3_35=2;
IF q3_3_1 EQ 6 OR q3_3_2 EQ 6 OR Q3_3_3 EQ 6 THEN q3_36=1;
IF q3_36 NE 1 THEN q3_36=2;
IF q3_3_1 EQ 7 OR q3_3_2 EQ 7 OR Q3_3_3 EQ 7 THEN q3_37=1;
IF q3_37 NE 1 THEN q3_37=2;
IF q3_3_1 EQ 8 OR q3_3_2 EQ 8 OR Q3_3_3 EQ 8 THEN q3_38=1;
IF q3_38 NE 1 THEN q3_38=2;
IF q3_3_1 EQ 11 OR q3_3_2 EQ 11 OR Q3_3_3 EQ 11 THEN q3_311=1;
IF q3_311 NE 1 THEN q3_311=2;

IF q3_4_1 EQ 1 OR q3_4_2 EQ 1 OR Q3_4_3 EQ 1 THEN q3_41=1;
IF q3_41 NE 1 THEN q3_41=2;
IF q3_4_1 EQ 2 OR q3_4_2 EQ 2 OR Q3_4_3 EQ 2 THEN q3_42=1;
IF q3_42 NE 1 THEN q3_42=2;
IF q3_4_1 EQ 3 OR q3_4_2 EQ 3 OR Q3_4_3 EQ 3 THEN q3_43=1;
IF q3_43 NE 1 THEN q3_43=2;
IF q3_4_1 EQ 4 OR q3_4_2 EQ 4 OR Q3_4_3 EQ 4 THEN q3_44=1;
IF q3_44 NE 1 THEN q3_44=2;
IF q3_4_1 EQ 5 OR q3_4_2 EQ 5 OR Q3_4_3 EQ 5 THEN q3_45=1;
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IF q3_45 NE 1 THEN q3_45=2;

IF q3_4_1 EQ 6 OR q3_4_2 EQ 6 OR Q3_4_3 EQ 6 THEN q3_46=1;

IF q3_46 NE 1 THEN q3_46=2;

IF q3_4_1 EQ 11 OR q3_4_2 EQ 11 OR Q3_4_3 EQ 11 THEN q3_411=1;

IF q3_411 NE 1 THEN q3_411=2;

APPENDIX J: CRITICAL SUCCESS FACTORS

Human resource factors
The CEO's IT/e-business knowledge
Employees' IT/e-business knowledge
Hiring IS/IT staff
Hiring specific e-commerce staff
Staff with relevant IT skills
Training programme
Technology factors
Computer literacy
The availability for internet access and services
Compatibility
Trialability
Complexity
Process could be changed and improved
Integration
Rate of technology change
The previous experimental use of e-commerce
Physical infrastructure
Communication/telecom infrastructure
Website factors
Website business function/quality
Corporation credibility
Website/website service attractiveness
Website systematic structure
Navigation/ usability (convenience)
Links
Graphics and backgrounds
Content reliability
Content/information quality
Control
Multilanguage website
Outsourcing website
Response time of e-commerce site
Security factors

Trust in the web
Trust in the information/ e-channel
Security
Privacy
Management factors
Governmental support
Top management/the decision-maker support
Senior management support
Appreciate development time
Relationship factors
Competitive pressure from industry
Customer pressure/acceptance/interest/push by clients
Interaction with customers
Supplier pressure/interest
Collaboration/partnership
Push by other agencies or government
Communication channels
Finance factors
Cost of e-business and financial
resources priority
Cost benefit or realisation of Return
on Investment (ROI)
Internet affordable access
Finance help from outside of business
Cost associate with keeping up to-date or upgrade
Taxes
Marketing factors
Increase national/global market share
Setting strategic goals
Integrating the internet with marketing strategy
Electronic bank
Brand image (use of online and offline branding techniques)
Price sensitivity (sensitive to internet price competition)
Sales force role
Online payment
Effective marketing of the website (online and offline promotion)

Commitment (motivation to use the internet and to innovate)
Perceived increasing importance of e-business
Ethic and law factors
Regulatory environment
Legal issues
Standards
Intellectual property rights
Culture factors
Business size
Globalisation of the firm
Resources required working globally
Business infrastructure for e-commerce adoption
Organisational readiness for e-commerce adoption
Organisational/internal culture for e-commerce adoption
Culture considerations