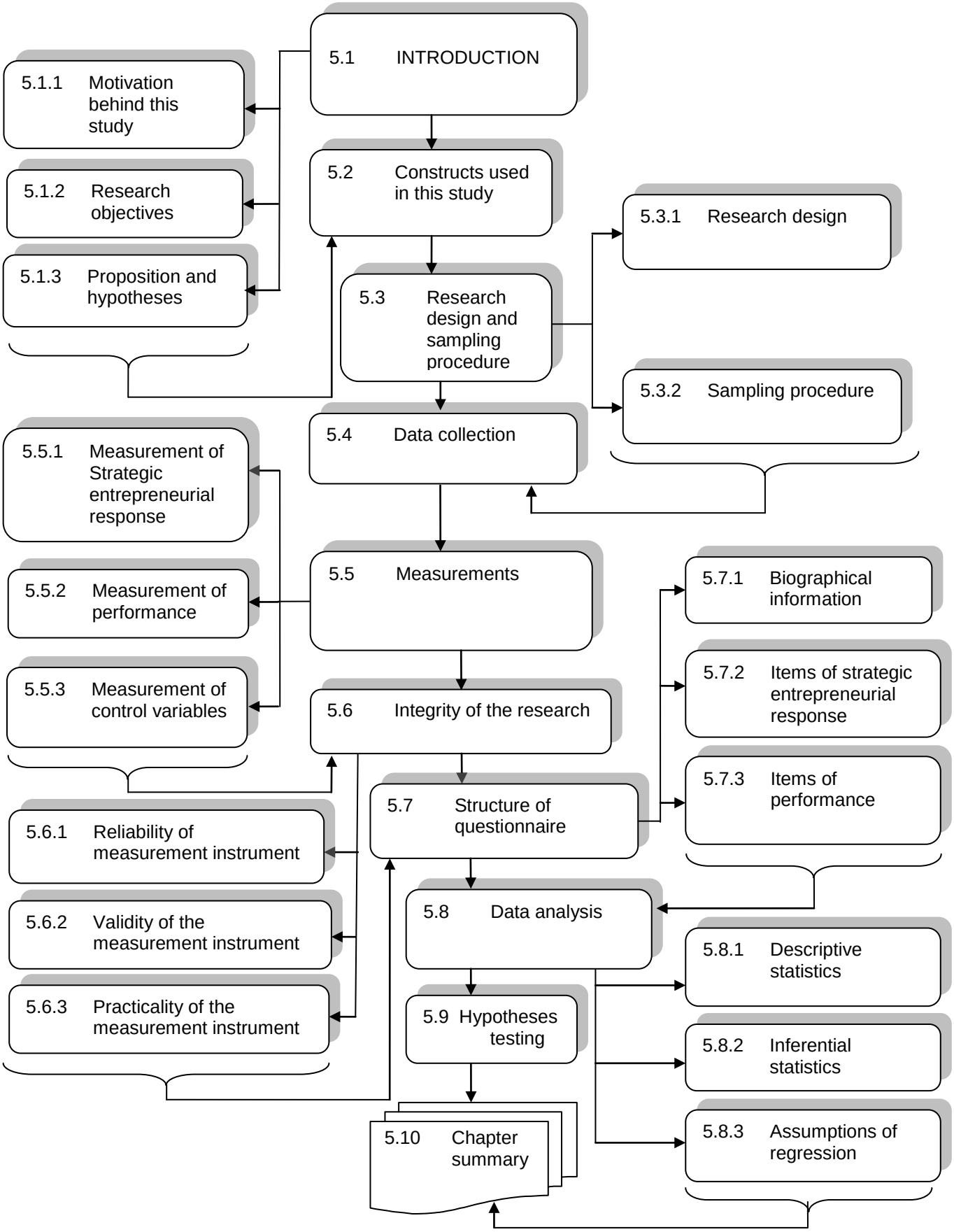
CHAPTER LAYOUT - CHAPTER FIVE



CHAPTER FIVE

5 RESEARCH METHODOLOGY

5.1 INTRODUCTION

This chapter briefly presents research methodology used in this study. It highlights the motivation behind the research at hand, and the objectives of the study that indicate what this study intend to achieve. It presents the research questions and hypotheses governing this study, as well as the research design and sampling procedure followed to obtain the sample unit. It also indicates how the measurement of constructs and the dimensions of strategic entrepreneurial response were accomplished to capture the data required to address research questions and the advanced hypotheses. Finally, it ends by showing the procedures that were followed for data collection, analysis and presentation of the results to the intended audience.

5.1.1 Motivation Behind This Study

In view of the background information in Chapter 1, and the literature review in Chapter 2 and 3, it is clear that there is a conceptual gap in terms of constructs, previously identified to enhance simultaneous opportunity seeking and advantage seeking behaviors and subsequently to attain firm's performance. However, this study identified market orientation, entrepreneurial orientation and networking capability to fill this gap. Since dimensions of market orientation, entrepreneurial orientation and networking capability used for the first time to measure SER, this raised the following questions:

- Does collectively, the individual dimensions of market orientation, entrepreneurial orientation and networking capability measure strategic entrepreneurial response (SER)?
- Is there any relationship between individual dimensions of SER and SME performance? If yes, does the composite dimensions of SER presents similar nature of relationship with SME performance?

- How much variance in SME performance is explained by scores of the composite dimensions of SER?
- Is there a relationship among the composite dimensions of SER? And whether the interactions of the composite dimensions of SER explain a significant amount of variance in SME performance?
- If the demographic variables such as firm size, type of industry, and level of education of the owners/managers are controlled, is the three composite dimensions of SER namely market orientation, entrepreneurial orientation, and networking capability still able to explain a significant amount of variance in SME performance?
- Which is the best predictor to explain SME performance among the three composite dimensions of SER namely market orientation, entrepreneurial orientation, or networking capability?

These questions warrant further investigation to isolate factors enhancing simultaneous combining of opportunity seeking and advantage seeking behaviors that foster competitive advantage and SME performance.

5.1.2 Research Objectives

In light of the problem statement and research questions presented under section 5.1.1, the general objective of this study is to examine the role of dimensions of strategic entrepreneurial response to foster simultaneous opportunity-seeking and advantage-seeking behaviours to enhance SME performance.

Specifically this study intends to:

- Study the relationship between individual and composite dimensions of strategic entrepreneurial response and SME performance.
- Examine the amount of variance explained in SME performance by the composite dimensions of the strategic entrepreneurial response.

- Study the interaction of composite dimensions of the strategic entrepreneurial response.
- Examine the amount of variance explained in SME performance by the interaction of composite dimensions of the strategic entrepreneurial response.
- Study the influence of the demographical variables such as firm size, type of industry, and level of education of owners/managers on the contribution of the composite dimensions of the SER in SME performance.
- Identify the best predictor that explains more variance in SME performance.

5.1.3 Proposition And Hypotheses

Zikmund (2003:99) define hypothesis as a proposition formulated for empirical testing. In other words, hypothesis is a statement that describes the relationship between two or more variables that can be subjected under empirical test. This implies that hypothesis is formulated to give boundaries and guide the direction of the study, identifies facts that are relevant and those that are not, it gives clues of which form of research design is likely to be most appropriate and it provides a framework for organizing the conclusions that result from the findings (Cooper& Schindler, 2011:64).

Basically, in statistical hypothesis testing, two hypotheses are compared, which are the null hypothesis and an alternative hypothesis (Tabachnick & Fidell, 2007:34). The null hypothesis is the hypothesis which states that there is no difference between groups or no relationship between the phenomena whose relation is under investigation. An alternative hypothesis on the other hand, is the opposite of the null hypothesis; it states that there is a difference between groups or some kind of relation between the phenomena whose relation is under investigation (Field, 2009:27; Wilson, 2010:48). The hypotheses may take several forms, depending on the nature of the hypothesized relation; in particular, it can be two-sided (for example there is some effect, in yet no direction) or one-sided (there is a direction of the hypothesized relation, positive or negative is fixed in advance) (Field, 2009:27). In view of what is elaborated in this section the subsequent section presents a set of

hypotheses guiding this study of which will provide a framework for organizing conclusion from the results of this study.

5.1.3.1 Proposition for measurement of strategic entrepreneurial response.

P1 *Collective dimensions of market orientation, entrepreneurial orientation, and networking capability measure strategic entrepreneurial response (SER).*

5.1.3.2 Hypothesis 1: Relationship between individual dimensions of SER and SME performance.

Ho1(a) *The customer orientation is not related to SME performance (Ha1(a): is related).*

Ho1(b) *The competitor orientation is not related to SME performance (Ha1(b): is related)*

Ho1(c) *The pro-activeness is not related to SME performance (Ha1(c): is related).*

Ho1(d) *The risk taking is not related to SME performance (Ha1(d): is related).*

Ho1(e) *The competitive aggressiveness is not related to SME performance (Ha1(e): is related).*

Ho1(f) *The relational skills is not related to SME performance (Ha1(f): is related).*

Ho1(g) *The internal communication is not related to SME performance (Ha1(g): is related),*

Ho1(h) *The coordination is not related to SME performance (Ha1(h): is related),*

Ho1(i) The partner's knowledge is not related to SME performance (Ha1(i): is related).

5.1.3.3 Hypothesis 2: relationship between composite dimensions of SER and SME performance

Ho2(a) *The market orientation is not related to SME performance (Ha2(a): is related).*

Ho2(b) *The entrepreneurial orientation is not related to SME performance (Ha2(b): is related).*

Ho2(c) The networking capability is not related to SME performance (Ha2(c): is related).

5.1.3.4 Hypothesis 3: Amount of variance explained in SME performance by the composite dimension of SER

Ho3(a) *The market orientation does not account for a significant amount of variance in SME performance (Ha3(a): account for a significant amount of variance)*.

Ho3(b) *The entrepreneurial orientation does not account for a significant amount of variance in SME performance (Ha3(b): account for a significant amount of variance).*

Ho3(c) The networking capability does not account for a significant amount of variance in SME performance (Ha3(c): account for a significant amount of variance).

5.1.3.5 Hypothesis 4: Amount of variance explained in SME performance by the interaction of composite dimension of SER.

Ho4(a) *The interaction of market orientation and entrepreneurial orientation does not account for a significant amount of variance in SME performance (Ha4(a): account for a significant amount of variance).*

Ho4(b) *The interactions of market orientation, entrepreneurial orientation and networking capability does not account for a significant amount of variance in SME performance (Ha4(b): account for a significant amount of variance).*

5.1.3.6 Hypothesis 5: Controls the effects/influence of the demographic variables.

Ho5a *The firm size has no influence on the amount of variance explained in SME performance by the collective dimensions of SER (Ha5(a): has an influence).*

Ho5b *The type of industry has no influence on the amount of variance explained in SME performance by the collective dimensions of SER (Ha5(b): has an influence).*

Ho5c *The level of education of owners / managers has no influence on the amount of variance explained in SME performance by the collective dimensions of SER (Ha5(c): has an influence).*

5.2 CONSTRUCTS USED IN THE STUDY

When a set of hypotheses are grouped together they become a type of conceptual framework that represent the relationships amongst variables under investigation. On the other hand, a group of related variables or concepts together form a construct. The social science research describes a construct as an image or idea specifically invented for a given research and/or theory building (Cooper & Schindler, 2011:55). The constructs are built by combining simple concepts, especially when the idea or image intended to be conveyed, is not subject to direct observation.

Figure 5.1 presents a conceptual framework that indicates a summary of constructs and variables examined in this study.

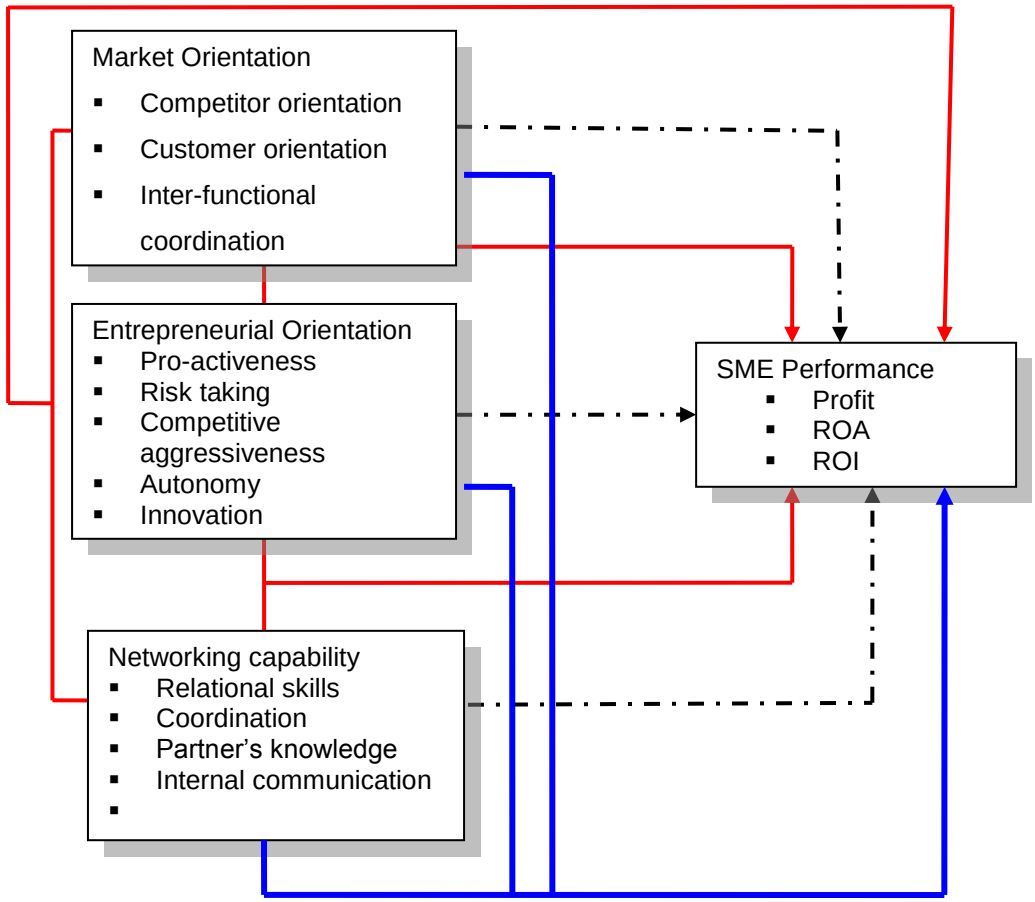


Figure 5.1: Independent and dependent variables investigated in this study *(Source: Own compilation)*

The specific construct investigated in this study is the strategic entrepreneurial response (SER) that is composite of three concepts namely; market orientation, entrepreneurial orientation, and networking capability, which are related to SME performance. The description of a construct and concepts are given below;

- Strategic entrepreneurial response

  The strategic entrepreneurial response built with three concepts namely; market orientation, entrepreneurial orientation, and networking capability.

- Market orientation

  The market orientation has three dimensions namely; customer orientation, competitor orientation and inter-functional coordination.

- Entrepreneurial orientation

  The entrepreneurial orientation has five dimensions namely; pro-activeness, risk taking, competitive aggressiveness, innovation and autonomy.

- Networking capability

  Networking capability has four dimension; relational skills, coordination, partner knowledge and internal communication.

5.3 RESEARCH DESIGN AND SAMPLING PROCEDURE

This section briefly presents the research design that provides the structure of investigation and forms the bases for data collection, measurement of constructs, and data analysis. The sampling procedure is highlighted to indicate how the representative sample of the study was obtained and used to generalize findings.

5.3.1 Research Design

There are many definitions of research design, but no one definition imparts the full range of important aspects (Cooper & Schindler, 2011:139). Despite of variations in definition there is a general consensus amongst the leading scholars that research design is concerned with producing a plan that guides the research process (Wilson, 2010:105). Blumberg *et al*. (2005) also highlighted the fact that an essential part of research desing is that of a time-based plan which constitute longitudinal and cross sectional research desing. Supporting this argument Wilson (2010:103) suggest six types of research designs, which include case study, experimental, archival, comperative, cross sectional, and longitudinal design. However, for convenience of time and resources this study adopted cross sectional research design that involved collection of data at one point in time.

5.3.1.1 Population

Defining a population is not always straightforward; it largely depends on the research questions and the context of the study. Wilson (2010:190) contends that definition of population should establish the types of cases that compose the

population of interest such as individuals, firms, households and the like. In this view, the population is a clearly defined group of research subjects that is being sampled, which implies the entire set of cases from which the sample is drawn. Consistently, Cooper and Schindler (2011:364) give a more comprehensive definition of the population and define population as “the total collection of elements, about which we wish to make some statistical inferences”.

In this study, the population under investigation is all SMEs entrepreneurs in Tanzania. Referring to the working definition of SME as defined in Chapter 4 (Section 4.5.1), the study covered all categories of the SMEs i.e. micro-enterprises, small enterprises, and medium enterprises. In view of this, the population boundary is all the SMEs entrepreneurs in Tanzania with at least one worker and the owner/manager engaged in manufacturing/processing, services and retail sectors. However, the entire population size could not easily be determined due to informality of the SME sector in Tanzania and the lack of reliable records/database that could be used to source the information.

5.3.1.2 Sample frame

The literature shows that sampling frame is a reflection of population. It is a complete list of the population of interest in the study area. This is not necessarily the complete population of the country or area being studied, but is restricted to the eligible population. Cooper and Schindler (2011:372) noted that the sample frame is the list of cases from which the sample is actually drawn. In this case the sampling frame must be representative of the population in terms of the characteristics under investigation.

The sample frame for this study includes; SMEs owners/managers operating in three sectors of the economy namely manufacturing/processing, services and retail in three regions of Tanzania namely Dar es Salaam, Morogoro, and Iringa (Figure 4.1). The three sectors of economy were selected because they are amongst the few sectors facing much competition in Tanzania.

5. 3. 2 Sampling Procedure

Sampling is the part of statistical practice concerned with taking up a subset of cases from a chosen sample frame or entire population of individuals intended to yield some knowledge about the population of interest. Samples can be used to make inference about a population or to make generalisations in relation to existing theory (Tabachnick & Fidell, 2007:33). Different studies rarely survey the entire population for at least three reasons: the cost is too high, it is a time consuming exercise, and the dynamic nature of the population of which the individuals make up, may change over time (Wilson, 2010:193). Some of the clearly feasible advantages of sampling are lower cost, faster data collection, and since the data set is smaller, it is possible to ensure homogeneity and improve the accuracy of the data (Cooper and Schindler 2011:364).

There are several alternative procedures of taking a sample from a population or sample frame. Basically, the two broad types of sampling are the probability (random) and non-probability (non-random) sampling (Wilson, 2010:193). The probability sampling allows the employment of tests of statistical significances that permit inferences to be made about the population from which the sample was selected (Bryman & Bell, 2007:185; Tabachnick & Fidell, 2007:33). Moreover, the probability sampling means that every case in the population or in the sampling frame has an equal chance of being included in the sample and it has the greatest freedom from bias although it may represent the most costly sample in terms of time and energy for a given level of sampling error (Zikmund, 2003:71). There are several different types of probability sampling techniques such as simple randomly sampling, systematic sampling, stratified random sampling, cluster sampling and multi-stage sampling (Wilson, 2010:194). However, for the sake of this study stratified random sampling was used. The details of the procedure and the reasons for choosing it are described in the next section.

5.3.2.1 Stratified random sampling

The stratified random sampling is the probability sampling procedure that was used to draw a representative sample from a population (Bryman & Bell, 2007:187; Zikmund, 2003:386) of SMEs (i.e., less than 100 employees) in Tanzania. The technique was used to divide the population into strata (or subgroups) and a random sample was taken from each stratum. The stratified random sampling technique was used in this study because of the great variation within the population of interest. Wilson (2010:195) suggests that stratified random sampling are often used where there is a great deal of variation within a population and it is done to ensure that every stratum is adequately represented. In other words, the selected sectors of economy and the firm sizes that formed the bases for strata formation vary in terms of characteristics of interest such as performance. For this reason, it was reasonable to use this sampling technique to ensure adequate representation of each stratum or category of interest.

According to Cooper and Schindler, (2011:379) stratified sampling increases samples statistical efficiency; provide adequate data for analysis of various strata and enables different research methods and procedures to be used in different strata. In another incidence, stratified sampling is acknowledged for having smaller sampling errors than simple random sampling which is an important consideration when making inferences in relation to a wider population (Wilson, 2010: 196). These reasons altogether contributed to the choice of the sampling technique.

The population was divided into three strata based on the type of industry namely manufacturing/processing, services and retail followed by three sub strata of business size namely micro, small, and medium enterprises. Figure 5.2 presents the sample stratification plan/schedule of which each stratum elements are assumed to be homogeneous in terms of characteristics such as profit generated over time, return on asset, return on investment, sales growth and other entrepreneurial behaviour such as entrepreneurial orientation, market orientation, and networking capability. The plan was to apply the proportional sampling to compute a sample size for each stratum. However, it was not easy to determine the total number of each

business category in the study area due to the lack of proper records/database that could be used to compute the proportional sample to be drawn from each business category and subsequently in each of the three economic sectors, targeted by this study to make a total sample size required. In this case, the plan scheduled to sample equal proportional of sample size for each stratum as indicated in Figure 5.2 to arrive at 360 cases which is the required sample size for this study.

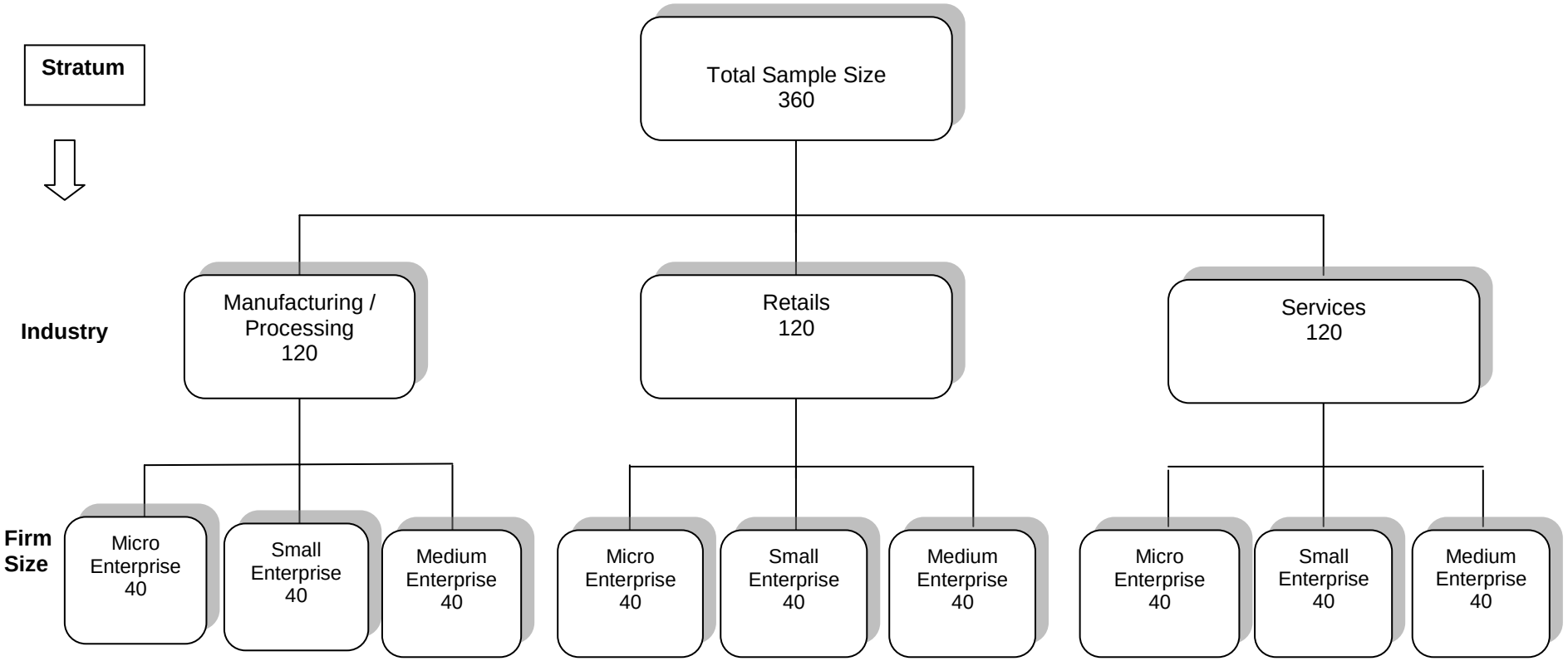


Figure 5.2: Sample stratification plan/schedule

In Tanzania, like in many other countries, businesses are distinguished into formal and informal sectors of the economy; in this case, both categories are represented in this study. The criterion for formality and informality is based on whether the business is registered (formal) for tax purpose or not (informal) (Research ICT Africa, 2006:6). This is one of the same criterions used in other countries to categorise businesses in terms of formality (Bradford, 2007:108). Including informal (unregistered) businesses in the sample, it is common, as Watkins (2007:134) points out, that most of the studies surveyed sample of small businesses that consist of unregistered firms, implying that this group cannot be ignored in business interventions. Consistently, Bradford (2007:108) reported similar findings when studied business and owner traits that predict revenue and job creation amongst township entrepreneurs in South Africa. In his findings the author reported that informal firms which kept records, had higher average revenue than formal (registered) firms, which did not keep records. In regard to this, informal firms are important if they are considered in terms of improved livelihood and poverty alleviation, which is among objectives of supporting SMEs in Tanzania (Ministry of Industry and Trade, 2003:2).

5.3.2.2 Sample size

Different scholars indicate different procedures to determine sample size. Blumberg, Cooper and Schindler (2008:228) indicate that the sample size can be dictated by considering the cost implied to collect data, greater accuracy and the speed required for data collection. However, Sekaran (1992:250) argues that the sample size is governed by the extent of precision and confidence desired, but concludes that the eventual choice is usually a trade-off between confidence and precision. This view-point is supported by Cooper and Schindler (2011:374) who recommend that since researchers can never be 100 percent certain that a sample reflects its population; they must decide how much precision they need and in making this decision, they must consider at least four factors, namely:

- The confidence needed in data
- The margin of error that can be tolerated
- The types of analysis to be performed
- The level of variability in the population on the characteristic of interest.

Considering the above-mentioned factors including the cost element, difficult to determine population size in the study area, and the envisaged number of questions, a total of 360 respondents were interviewed from three sectors of the economy namely; manufacturing/processing, services, and retailers. The selection of these sectors was based on the reality that these are amongst the sectors facing much competition compared to other sectors in the study area.

5.4 DATA COLLECTION

A survey method was used for data collection as indicated before, with structured questionnaires which involved personal interview with SME's owners or managers to ensure high response rate. The business owners/managers were targeted in this study due to the nature of businesses under study where most of the day to day decisions are centralized to the owners/managers of the firms. It was believed that the respondents gave reliable information to satisfy the requirement of the study.

The study selected a sample to represent a population of interest. The reason being to save cost, increase accuracy of the results and speed up the exercise of data collection (Wilson, 2010:193). This is in line with the argument posed by Blumberg *et al*. (2008:228) that the quality of a study is often better with sampling than with a census. The argument is based on the fact that sampling ensures possibility of better interviewing (testing), thorough investigation of missing, wrong, or suspicious information, better supervision, and better data processing than is possible with complete coverage of the entire population. Coupled with the reliability and validity of the measurement tools, it is likely to ensure quality data. However, the reliability and validity of the measurement tool is subject to several factors. The measurement scale used for each constructs and how the assessment for the validity and reliability of the measurement scale applied in this study, are briefly explained in the subsequent sections.

5.5 MEASUREMENTS

Measurement in research consists of assigning numbers to empirical objects or events in compliance with set rules (Blumberg *et al.,* 2008:438). Most constructs in this study measured by the existing measurements, which consist of a large number of items to ensure reliability and validity (Li *et al*., 2008:121; Verhees & Meulenberg, 2004:143).

However, to maintain quality of data and minimize heavy load on respondents, a pre-test was performed to refine the measurement instrument where some measurement questions were refined and some were removed, to improve reliability of the questionnaire in order that it collects only the information intended for this study. Bryman and Bell (2007:159) and Zikmund (2003:294), all agree that a concept must be made operational in order to be measured. An operational definition gives meaning to a concept or construct by specifying the activities or operations necessary to measure it. The operational definition specifies what must be done to measure the concept under investigation. In this view, the variables under investigation were operationally defined.

5.5.1 Measurement of Strategic Entrepreneurial Response

As described earlier in Chapter 3, the concept of strategic entrepreneurial response in this study is developed based on the interaction of SMEs and the environment in which they operate and the way they respond to adapt changes taking place in the environment. The conceptual definition of the SER is defined as a set of actions, measures or posture taken by the entrepreneur to respond through simultaneous opportunity sekkingand advantage seeking behaviours to cope with the changes in customer behavior, technology, competitor's actions, and changes in legal, regulatory, and ethical standards to attain performance. In a competitive business environment, entrepreneurs' survival depends mostly on how they respond to these forces. When confronted by the market competition explained by the environmental forces, entrepreneurs are likely to adopt entrepreneurial strategies such as market orientation and entrepreneurial orientation. The response in most cases, will involve a combination of strategies to ensure simultaneous opportunity seekingand advantage seeking behaviours to cope with environmental changes. The combination of strategies is determined by the circumstances such as availability and accessibility to resources, convenience of implementation and the capacity in terms of infrastructure and technical knowhow.

The implementation of the two strategies outlined earlier (i.e., market orientation and entrepreneurial orientation) requires resources. Unfortunately, SMEs are usually confronted by the shortage of resources (Kropp & Zolin, 2005:1; Verhees & Meulenberg, 2004:137). In this case, networking strategy is considered a viable strategy and it is added in this study. The networking for SMEs is considered appropriate because it enables them to access strategic information, resources, and other capabilities from other firms, which

subsequently give SMEs competitive advantage over the rivals (George *et al*., 2001:269; Walter *et al*., 2006:548; Watson, 2007:854). Collectively, the three strategies mentioned before in this study are conceptualized as the dimensions of the strategic entrepreneurial response over rivals that give enterprises the ability to attain or maintain superior performance over competitors. Figure 5.3 presents a summary of conceptual relationship of constructs under investigation.

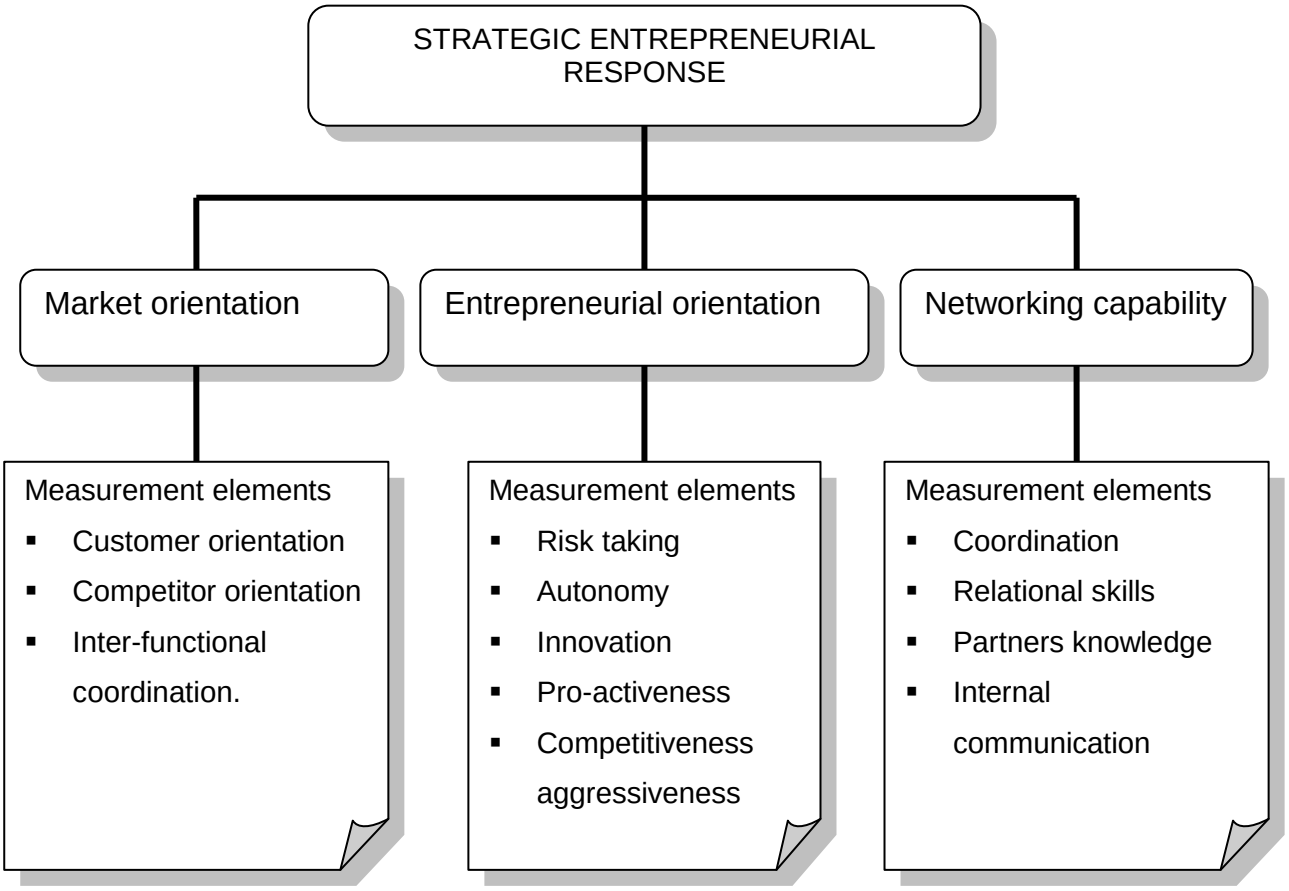


Figure 5.3: Conceptual relationship of concepts and dimensions of the SER under investigation.

(Source: own compilation).

The summary of constructs summarised in Figure 5.3 indicates that the strategic entrepreneurial response is conceptually made up of three dimensions namely market orientation, entrepreneurial orientation, and networking. Subsequently, each dimension has several measurement items or elements which are used to measure it. In view of this, market orientation has three measurement elements, namely: customer orientation, competitor orientation and inter-functional coordination (Narver & Slater, 1990:21). The entrepreneurial orientation has five measurement elements, namely: risk taking, autonomy, innovation, pro-activeness and competitive aggressiveness. (Lumpkin & Dess,

1996:137; Lumpkin & Dess, 2001:431; Walter *et al.,* 2006:557). Networking capability has four measurement elements, namely: coordination, relational skills, partner's knowledge and internal communication (Kale *et al.,* 2000:221). The details of each dimension and how it was measured, is given in the subsequent sections.

5.5.1.1 Measurement of market orientation

Several scholars who study market orientation either adopt framework of Kohli and Jaworski (1990:7) or of Narver and Slater (1990:29) studied in the early and late 1990s', respectively. The former framework is behavioural in nature and describes market orientation in terms of specific behaviours related to intelligence generation, dissemination of intelligence, and responsiveness to intelligence (Kohli & Jaworski, 1990:3). On the other hand, the latter is cultural oriented, focused on customers, competitors, and coordination (Narver & Slater, 1990:21). The two frameworks have much in common with regard to the focus on customers, functional integration and market opportunities. This argument is consistent with the observation made by other scholars who observed that measures of market orientation by the two frameworks are similar, because both are focused on information gathering in order to attain competitive advantage (Farrell, 2000:207). However, for the purpose of this research, Narver and Slater, (1990)'s framework is adopted because it is much more relevant to the nature and design of this study.

The measurement of market orientation used multi-items measures, adopted from Li *et al*., (2008:122), which were derived from Narver and Slater's (1990:26) framework. Specifically measurement items included are customer orientation, competitor orientation, and inter-functional coordination (See Figure 5.3). Bryman and Bell (2007:159) contend that in order to measure a concept, it is necessary to have indicator or indicators that will capture the image of the concept. The authors indicate that there are a number of ways in which indicators can be devised, among those include a series of questions connected to the respondents' report of an attitude.

In view of the above, all concepts in this study were measured using a series of measurement questions that formed part of questionnaire used during the structured interview. The measurement questions were connected to the respondents' report of an attitude toward a specific item in question. From this context, customer orientation was

measured using six questions, competitors' orientation was measured by four questions, and finally, the inter-functional coordination was measured by five questions. Although Li *et al.* (2008:122) used a seven point Likert scale; this study adopted a five point Likert scale, which has proved useful in other studies to measure different variables relating to market orientation. A scale ranging from 1 to 5 with a score of 1= strongly disagree to 5 = strongly agree was used.

5.7.1.2 Measurement of entrepreneurial orientation

Previous studies on entrepreneurial orientation adopted measures developed by Covin and Slevin (1989:79) focused on innovation, pro-activeness and risk taking, which is an adaptation of Khandwalla's (1976/1977) and Miller's and Friesen's (1982) works. Consistently, Lumpkin and Dess (1996:140) clarifying the entrepreneurial orientation construct identified five dimensions defining the construct namely; autonomy, innovativeness, risk-taking, pro-activeness, and competitive aggressiveness. In view of this, it is clear that Covin and Slevin (1989:79) treated pro-activeness and competitive aggressiveness as identical dimensions contrary to Lumpkin and Dess (2001:441) who reported to be two distinct dimensions.

Drawing from previous studies several scholars have developed measures of the entrepreneurial orientation construct (Krauss *et al.,* 2005:326; Le Roux, Pretorius & Millard, 2004:42; Lumpkin & Dess, 2001:434). However, Kraus *et al*. (2005:318) conceptualized entrepreneurial orientation construct by adding two more dimensions namely; learning orientation and achievement orientation from previous dimensions identified by Lumpkin and Dess (1996); Khandwalla (1976/1977); and Miller and Friesen (1982). The two dimensions were added to capture the full spectrum of the entrepreneurial tasks as described by Schumpeter.

The variation in numbers of dimensions of entrepreneurial orientation identified by different scholars has influenced the selection of dimensions of entrepreneurial orientation employed in various studies to examine the relationship with performance. For example some scholars have opted to use only three dimensions identified earlier by Khandwalla (1976/1977) and Miller and Friesen (1982) namely; innovation, risk taking and pro-activeness (Green, Covin & Slevin, 2008:364). Other scholars have used five dimensions

proposed by Lumpkin and Dess (1996:137) namely autonomy, risk taking, innovativeness, pro-activeness, and competitive aggressiveness with some studies failing to measure all five dimensions of entrepreneurial orientation, ending up measuring only two dimensions namely; innovativeness and risk taking (Le Roux *et al*., 2004:43). Also some studies have used seven dimensions that include leaning orientation, achievement orientation, autonomy, risk taking, innovation, pro-activeness, and competitive aggressiveness (Krauss *et al*., 2005:318).

All the same, use of measures of dimensions of entrepreneurial orientation in relation to performance in all the mentioned studies has not been consistent. For the sake of this study five dimensions of entrepreneurial orientation proposed by Lumpkin and Dess (1996:137) namely; autonomy, risk taking, innovation, pro-activeness, and competitive aggressiveness were adopted. These dimensions were considered more appropriate for the nature of the study and the environment in which the research was conducted. The dimension used multi-item measures derived from Covin and Slevin (1989:79), and Lumpkin and Dess (1996:140). Five point Likert scales were used to measure different variables relating to entrepreneurial orientation. Respondents were asked to rate extent of agreement about how well each of the presented statement is an accurate description of their firms in terms of entrepreneurial orientation. A scale ranging from 1 to 5 with a score of 1= strongly disagree to 5= strongly agree was used.

5.5.1.3 Measurement of networking capability

Networking is a general term that can easily be misconceived to mean different things. To avoid confusion that can result in misinterpretation of the term, this study adopt previous definition of networking meaning “the process of developing contacts (with professional and trade associations, community and local clubs, customers, competitors, civic and government bodies) that would help in the development of business” (George *et al.,* 2001:275). In view of the fact that benefits of networking are questionable, this study deceided to focus on networking capability rather than networking parse. The selection of networking capability is based on the fact that networking capability considers a firm’s abilities to initiate, maintain and utilise relationships with various external partners (Walter *et al*., 2006:546). Furthermore, networking capability is a higher order construct that increases in magnitude as each of the four measurement items namely; coordination activities, relations skills, partner knowledge, and internal communication increases. These

items are viewed as integral parts of the networking capability construct as suggested by various scholars (Keller & Holland, 1975:389; Mohr & Spekman, 1994:138).

This study adopted four measures of networking capability developed by Walter *et al*. (2006:552), which were derived from (Keller & Holland, 1975:389; Mohr & Spekman, 1994:138) namely; coordination of business activities and resources, relational skills, partner knowledge, and internal communication. The coordination activities used six items' measurement, which assessed synchronization, planning and controlling activities in both within and beyond a firm's boundaries. The relational skills used four items' measures to evaluate the degree in which networking partners are able to nurture and shape close relationships. Partner's specific knowledge used four item measures to capture the information which demonstrate the extent to which the networking partner understands the potentials and constraints of the second party. Internal communication applied five item measures that show how the acquired information is dissemination within the firm. The business owners/managers were asked to rate the extent of their firm's compliance to a given statement based on the measurement items. Although the original study used a seven point Likert scale, this study used 5 point Likert scale ranging from 1= strongly disagree to 5 = strongly agree.

5.5.2 Measurement Of Performance

The multi-dimensional nature of a firm's performance suggests integration of different dimensions of performance in empirical studies (Walter *et al.*, 2006:553; Wolff & Pett, 2006:275). To capture different aspects of SME performance, this study used objective measures of performance, capitalized on the financial performance and growth.

Growth was measured in terms of average number of full-time permanent employees and sales growth for the past three years. On financial performance this study used return on assets, return on investment, and profit. Due to reluctance of SMEs to give financial information, indirect questions were asked to respondents such as average total costs, average total sales or income, investment costs, and average total asset values. The answers provided were used as inputs for computation of the performance measures namely profits, return on asset (ROA), and return on investment (ROI) using the equations 5.1, 5.2, and 5.3, respectively.

$$Profit = (Average\ Total\ Sales) - (Average\ Total\ Costs) \quad \text{(Equation5.1)}$$

$$ROA = \frac{Net\ Income}{Average\ Total\ Assets} \quad \text{(Equation 5.2)}$$

$$ROI = \frac{Gain\ from\ Investment - Cost\ of\ Investment}{Cost\ of\ Investment} \quad \text{(Equation 5.3)}$$

5.5.3 Measurement Of Control Variables

Different types of industries, the business size, age of the firm, level of education of owner/manager, gender and age of owners/managers, may exhibit different organizational and environmental characteristics, which in turn may influence performance (Tang & Hull, 2012:142; Tang & Murphy, 2012:49). Therefore, these variables were included as controls. To determine the type of industry, respondents were asked if the firm's main line of business is manufacturing/processing, service, or retailing. Respondents were further asked the date or year in which the firm was established and subsequently the age of each firm was computed to establish the exact age of each firm during the survey. The respondents were finally asked the level of education of the owner/manager responsible for day to day decision making and the number of individuals employed on a permanent basis by the firm at the time of survey, including working owners. The scale for this measure employed four point Likert scale of 1= 1-4 employees, 2= 5-49 employees, 3= 50-99 employees, and 4= more than 100 employees. This variable was expected to be used to categorize business sizes in the study area. However, due to overlaps of the business categorization criteria, the investment cost, which is the dominant criteria, applied.

The use of investment cost as a dominant business categorization is in line with the Tanzania business categorization which clearly indicates that in case of overlaps of business categorization criteria the dominant criteria which are the total investment cost, applies (Ministry of Industry and Trade, 2003:3). In this regard, SMEs were categorized based on the total investment made by each firm and not the number of full-time employees. According to the Ministry of Industry and Trade in Tanzania, the categorization with the capital investment in brackets is as follows; micro enterprises (TAS 0 - 5,000,000), small enterprises (TAS 5,000,000 – 200,000,000), medium enterprises (TAS 200,000,000 – 800,000,000) and large enterprises (above TAS 800,000,000).

5.6 INTEGRITY OF RESEARCH

Supporting all research undertakings is a question of credibility. In this view, the researcher is responsible to ensure that conclusions drawn from the study can stand out and be trusted by the research community. Wilson (2010:116) pointed out that without addressing the issues of reliability and validity, the research is unlikely to carry much credibility. Consistent to this argument, researchers seem to agree that there are three criteria for evaluating a good measurement tool; reliability, validity and practicality (Wilson, 2010:116; Bryman and Bell, 2007:58; Zikmund, 2003:300; Cooper & Schindler, 2011:280). In this context the subsequent section sets out to discuss the three main issues that impinge on the quality of this study.

5.6.1 Reliability Of The Measurement Instrument

Reliability concerns the extent to which a measurement of a phenomenon provides stable and consistent results (Wilson, 2010:116). On the other hand, reliability is simply defined as the degree to which measures are free from errors and therefore yield consistent results (Zikmund, 2003:300). Moreover, reliability is a necessary contributor to validity, but is not a sufficient condition for validity. Researchers tend to agree that two dimensions underlie the concept of reliability: the repeatability and internal consistence (Cooper & Schindler, 2011:283; Zikmund, 2003:300). From this context the next section describes the procedure followed to address the issues of reliability in order to ensure quality research output.

5.6.1.1 Repeatability

In social science research, the repeatability, or sometimes referred to as the test-retest method in determining reliability, involves administering the measure to the same respondent at two different occasions to test for stability of the measurement tool (Zikmund, 2003). If the measure is stable over time the test administered under the same conditions each time, should obtain similar results. However, this procedure of reliability test is much more relevant to the longitudinal research design that requires researchers to collect data on the same respondent under the same conditions more that once Wilson, 2010:116). In this context, tests of the reliability through repeatability method was considered irrelevant in this study, since it adopted a cross sectional research design that collects data at one point in time. Instead the pre-test of the measurement

instrument/questionnaire was performed to refine ambiguous questions. This was done to ensure the stability of the measurement instrument to be able to provide consistent results.

5.6.1.2 Internal reliability

To measure internal consistence (Internal reliability) of a multiple–item measures, scores on subsets of the items within the scale are correlated. Cooper and Schindler (2011:285) identify several techniques used to test internal consistence such as split-half technique, Spearman-Brown correction formula, Kuder-Richardson Formula 20 (KR20) and Cronbach's coefficient alpha. However, Cronbach's alpha is a commonly used test for internal reliability (Bryman and Bell, 2007:164). It essentially calculates the average of all possible split–half reliability co-efficients. A computed alpha co-efficient varies between 1 (denoting perfect internal reliability) and 0 (denoting no internal reliability). The Cronbach's value of 0.80 is typically employed as a rule of thumb to denote an acceptable level of internal reliability, though several researchers accept a slightly lower figure as low as 0.6 that is considered to be sufficient, Kline (1999) cited in Field (2009:675). In this case, the same procedure applied in this study to test the internal reliability. The formula used to compute Cronbach's alpha (α) adapted from Field (2009:674) is given in equation 5.4.

$$\alpha = \frac{N^2 \overline{Cov}}{\sum S^2_{item} \pm \sum Cov_{item}} \quad \text{.....(Equation 5.4)}$$

Where: N^2 = square multiple of the number of items

$\overline{Cov}$ = average covariance between items

$\sum S^2_{item}$ = sum of all item variances

$\sum Cov_{item}$ = sum of all item covariances

5.6.2 Validity Of The Measurement Instrument

Validity, in simple terms, refers to the degree in which a measurement tool accurately reflects or assesses the specific concept that the researcher is attempting to measure, which is usually not simple in a practical sense. While reliability is concerned with the accuracy of the actual measurement instrument or procedure, validity is concerned with the study's success at measuring what researchers set out to measure (Cooper & Schindler, 2011:281; Zikmund, 2003:301) and this is the purpose of measurement. Widely

accepted classification of validity consists of three major forms: content validity, criterion-related validity, and construct validity. The next sections dwell on discussing the three forms of validity and how they were addressed in this study.

5.6.2.1 Content validity

The content validity, or sometimes referred to as face validity, is concerned with how well a measure or procedure appears to collect relevant information required to address the issues of the study. The focus is on how well the measurement instrument is designed in a reasonable way to capture the relevant information researchers are attempting to obtain. Cooper and Schindler (2011:281) put in a simple way that the content validity of the measurement instrument is the extent to which it provides adequate coverage of the investigative questions guiding the study.

In light of the above, the content validity for this study can be assured if the investigative questions in the measurement instrument (questionnaire) adequately cover the concept of strategic entrepreneurial response and its dimensions: market orientation, entrepreneurial orientation, and networking capability. This implies that the items describing the dimensions of the strategic entrepreneurial response really describe them.

According to Zikmund (2003:302), content validity is a subjective agreement among professionals that a measurement instrument logically appears to measure what it is supposed to measure. When it appears evident to experts that the measure provides adequate coverage of the concept, a measure has content validity. While Cooper and Schindler (2011:281) agree on the use of a panel of professionals to judge how well the instrument meets the standards, they provide another option for designer's judgment which can be accomplished through a careful definition of the topic of concern, the item to be scaled, and the scale to be used.

In this regard, this study combined both self-judgemental and professional's judgment. The professional judgment was based on the use of existing measurement tools as indicated earlier on the measurement of dimensions of the strategic entrepreneurial response namely: market orientation, entrepreneurial orientation and networking capability which have gone through a rigorous review and have been used successful in previous studies. On the other hand, the self-judgment was on considering market orientation,

entrepreneurial orientation and networking capability as collective measures of strategic entrepreneurial response. This argument implies that market orientation generate information that leads to identification of market opportunities through which entrepreneurial oriented firms respond to exploit these opportunities to fill market gaps through a series of innovation. In case of resource scarcity, entrepreneurial firms form networking to complement resources and capability needs.

5.6.2.2 Construct validity

According to Zikmund (2003:303) construct validity is established by the degree to which a measure confirms a network of related hypotheses generated from a theory based on a concept under investigation. Construct validity implies that the empirical evidence generated by a measure is consistent with the theoretical logic about the concept. Sekaran (1992:173) contend that construct validity testifies how well the results obtained from the use of the measures fit the theories around which the test is designed.

In view of the above, researchers took various efforts to ensure construct validity through: formulation of clear definition, research questions, and workable objectives of the study to ensure that measurement questions are reflecting research questions and objectives of the study so that the information collected answers the research questions and objectives of the study. As for measurement tools for the dimensions of the SER such as market orientation, entrepreneurial orientation and networking capability, the first and second order exploratory factor analysis were used to examine if the extracted factors converged to measure a single component .

5.6.3 Practicality Of The Measurement Instrument

The credibility of research requires quality data that call for the measurement process to be reliable and valid, at the same time the operational requirements call for it to be practical. According to Cooper and Schindler (2011;285) practicality is examined in term of economic considerations, convenience on use of the measurement instrument and the easy interpretation of the results. It is from this context this study addressed the three aspects of practicality to ensure quality and credible data.

5.6.3.1 Economic considerations

The length of the questionnaire is associated with the costs implied in the research, due to the time spent in the interview and or in an observation. However, there is always a trade-off between reliability and cost since more number of the measurement items gives high reliability. In this view, the economic consideration was addressed by limiting the number of items included in the questionnaire, while ensuring the reliability of the instrument. The measurement of the SER was measured by three dimensions namely market orientation, entrepreneurial orientation and networking capability. Each of these dimensions had a set of measurement elements as indicated earlier in Figure 5.3. The selection of the measurement questions was carefully done during the pretest to ensure that it includes a reasonable number of questions to keep the questionnaire short without jeopardizing the reliability of the measurement instrument.

5.6.3.2 Convenience of the measuring instrument

A measuring device passes the convenience test if it is easy to administer (Cooper & Schindler 2011:285). With this understanding, the questionnaire was simple in its design, used a Likert five point scale that made it simple for respondents to complete the measurement questions. However, the instructions and concepts used in the questionnaire were clarified beforehand and the enumerator was well-trained in advance to ensure correct translation to respondents throughout the data collection period.

5.6.3.3 Interpretability

Interpretability in practicality is applicable if a person other than the designer of the measurement instrument must interpret the result (Cooper & Schindler, 2011:286). In this study, the designer of the measurement instrument is responsible for the interpretation of the results.

5.7 STRUCTURE OF QUESTIONNAIRE

The questionnaire was designed with three main parts. The first part covered the biographical information, the second part the measurement questions on the SER and the last part focused on the measurement of the SME‘s performance, that were categorized into two major categories, namely: the objective and subjective measurement.

5.7.1 Biographical Information

The biographical information in this study is aimed at capturing information relating to gender, age and the level of education of the business owners/managers. Others were the year the company was established, meant to compute the age of the company in complete years, and the industrial sector that implied the main line of operation of the firm.

5.7.2 Items of Strategic Entrepreneurial Response (SER)

The SER measurement questions covered basically three dimensions; market orientation, entrepreneurial orientation, and networking capability. However, each of these dimensions had a set of measurement elements that subsequently formed the measurement questions. To avoid the problem of a respondent being caught in a groove of predicting the next question and create response bias, the measurement questions that appeared in the questionnaire, were mixed up.

5.7.3 Items of Performance Measures

The objective measures of performance involved questions which aided to compute employment growth for the past three years, wage bills for the past three years, sales growth for the past three years, profit growth, Return on Assets (ROA), and Return on Investment (ROI). During the subjective measures on SME performance, respondents were asked to respond on a set of questions, which were aimed at self rating on how they compared with their competitors on the three key areas namely: competitive advantage, market performance, and customer acceptance measures.

5.8 DATA ANALYSIS

The collected data were coded, cleaned and subjected to a series of statistical techniques to answer the advanced empirical research questions and the hypotheses governing this study. In this regard, the statistical analysis performed in this study were categorised into two major categories namely: descriptive statistics and inferential statistics. Details on how each of the procedures was accomplished are presented in the subsequent sections.

5.8.1 Descriptive Statistics

Descriptive statistics were the first statistical operation performed during the data analysis following the process of data cleaning. The objective was to describe the characteristics of a sample under investigation that subsequently be inferred to a larger population of interest. In light of this, the main statistical operations performed include frequency, mean and standard deviation of the following aspects, namely: gender, age and highest level of education amongst respondents. Others include industrial sector, age and the size of the firm distribution of business by region, total investment costs of firm, distribution of firms by size, reported employment growth, return on asset, return on investment and profit growth.

5.8.2 Inferential Statistics

In order to reach the conclusions that extend beyond the immediate sample, the inferential statistics were used in the data process. Inferential statistics are used to make an inference about a population from a sample (Tabachnick & Fidell, 2007:33; Meyers, Well, & Lorch, Jr, 2010:15; Zikmund, 2003:402). In this regard, the major statistical operations performed under inferential statistics, were the multivariate analysis such as the factor analysis, Analysis Of Variance (ANOVA), and the multiple regression analysis.

5.8.2.1 Factor analysis

The factor analysis was performed as a data reduction procedure to reduce the number of variable into a small number of factors which can easily be managed. There are mainly two major approaches which can be used for factor analysis. Such approaches are the exploratory and confirmatory factor analysis (Pallant, 2007:179). However, in this study, the exploratory factor analysis was considered appropriate to explore the relationship among a set of variables and reduced into few components/factors that can easily be managed for further analysis. This was followed by a second order factor analysis to confirm if the first order factors could converged to a single factor/component to measure strategic entrepreneurial response (Proposition 1).

1: Initial consideration for factor analysis

Before conducting factor analysis, two issues were considered in determining whether data were suitable for factor analysis; the sample size and the strength of correlation among variables were examined. Various authors point out that factor analysis varies with the sample size and the strength of inter-relationship among variables (Pallant, 2007:185; Field and Miles, 2010:559; Field, 2009:647) and that was the reason why these issues were examined before proceeding with the factor analysis.

2: Sample size suitable for factor analysis

The factor analysis relies on correlation co-efficients that fluctuate from sample to sample, much more so in small sample than in large. Therefore, the reliability of factor analysis is also depending on the sample size. Field (2009:645) reviews many suggestions about the sample size necessary for factor analysis and conclude that it depends on many things. In general over 300 cases is probably adequate but communalities after extraction should probably be above 0.5 (Field, 2009:647). Consistently, Tabachnick and Fidell, (2007:613) review this and suggests a similar number as a minimum number of cases for factor analysis. Pallant (2007:185) suggests a minimum number of 150+ cases and there should be a ratio of at least five cases for each of the variables. This study targeted 360 cases, however in the course of data entry 291 cases were found useful. With regard to the minimum number of cases, 150 plus suggested by Pallant (2007:185), by far the sample size involved in this study is adequate. The KMO measure of sampling adequacy was performed to confirm this argument (Kaiser, 1970:405; Kaiser, 1974:35).

3: Strength of correlation among variables

Factor analysis always finds a factor solution to a set of variables. However, the solution is unlikely to have any meaning if the variables analysed are not sensible. With this fact in mind, the analysis tested for inter-correlations between variables and picked variables with reasonable correlations with each other with an assumption that they measure the same underlying dimension and excluded variables with lots of correlations below 0.3 in the factor analysis. This is in line with the recommendations by other authors in previous studies that if a variable has lots of correlation with other variables below 0.3, it should be removed before running the factor analysis as part of the data cleaning process (Field,

2009:648; Field & Miles, 2010:566; Pallant, 2007:185). The correlations between variables were judged for this purpose through scanning the correlation matrix (R-Matrix).

5.8.2.2 Analysis of Variance (ANOVA)

Multi-way Analysis of Variance was performed to compare group means of the demographic variables, specifically the gender of respondents, age, level of education of owner/manager, age of business, and type of industry and determine if there is any significant difference in terms of the dimensions of market orientation, entrepreneurial orientation, and networking capability which subsequently have effects on SME performance. The intension was to isolate demographic variables with effects on the dimensions of market orientation, entrepreneurial orientation, and networking capability so as to control their effects in the relationship between the dimension of SER and SME performance and to be able to rule out the variance explained in SME performance by dimensions of SER, whether or not it is due to the influence of the demographic variables. However, with the understanding that ANOVA is the Omnibus test, which means it test for an overall effect, but it does not tell, which means amongst test groups it differs significantly, the results were subjected to the post hoc test specifically the Duncan's Multiple Range Test (DMRT) to isolates specific groups which are significant different at $p < 0.05$.

5.8.2.3 Multiple regression

The multiple regression analysis was performed for five purposes:

- To examine the relationship between individual and composite dimensions of SER and SME performance [hypotheses 1(a) – 1(i) and 2(a) – 2(c)].
- To determine the amount of variance explained in SME performance by scores of composite dimensions of SER [hypotheses 3(a) – 3(c)].
- To examine the amount of variance explained in SME performance by the interaction of composite dimensions of strategic entrepreneurial response (SER) [hypotheses 4(a) – 4(b)].
- To control the influence of demographic variables specifically firm size, type of industry, and level of education of owners/managers to be able to rule out the

influence of demographic variables in the amount of variance explained by composite dimensions of SER in SME performance [hypotheses 5(a) – 5(c)].

- To identify the best predictor to explain SME performance.

In this regard, a series of sequential/hierarchical multiple regressions were used to examine the relationship between predictors and outcome variable. One thing that needs mentioning is that the SME performance was measured by using three measurement items namely profit, return on asset (ROA), return on investment (ROI) and the overall SME performance in order to capture the multi-dimensional nature of the performance.

5.8.3 Assumptions of Regression

The regression analysis is one of the demanding statistical techniques that makes a number of assumptions about the data, and has severe impact on the end results if they are violated (Field, 2009:247; Gupta, 1999:7-16). From this understanding, prior to multiple regression analysis, a test of assumptions was performed to ensure credibility of results and the conclusions that will be drawn. In this case the following assumptions were tested: sample size requirement, multi-collinearity, outliers, normality, linearity, homoscedasticity, and independence of residuals (errors).

5.8.3.1 Sample size requirement for multiple regression

The multiple regression analysis is sensitive to the sample size. The issue at stake here is the generalization of findings. That is, with small samples you may obtain a result that does not generalise (cannot be repeated) with other samples. In social science research, if the sample does not generalise to a population of interest, they are of little scientific value (Zikmund, 2003). However, different authors tend to give different guidelines regarding the number of cases required for a multiple regression. Stevens (1996:72) recommends that for social science research, about 15 cases per predictor are required for reliable equation that translates into 135 cases for this study with 9 predictors. Tabachnick and Fidell (2007:123) give a formula for computing sample size requirements for a multiple regression, while considering the number of predictors required. The proposed formula to compute the sample size is given below:

$$N > 50 + 8M$$

Where:

M = number of predictors, and

N = number of cases.

For this case, with 9 predictors in this study, one would expect to have a minimum of 122 cases, a slightly lower number than the Steven's recommendation. Looking at both scenarios, 291 cases used in this study suffice the requirement of the minimum sample size and remove the fear to use a multiple regression as a technique of choice.

5.8.3.2 Multi-collinearity

Multi-collinearity exists when the predictor variables are highly correlated (r = 0.8 and above) (Field, 2009:224). Although Pallant (2007:155) suggests the lower cut off point of the bivariate correlation value of r = 0.7 and above are to be considered as multi-collinearity and are considered not to include any two variables with this value or above in the same analysis, taking into consideration that when dealing with large amount of data it may be tedious to sort out correlations greater than 0.7 or 0.9 whatever cut off point you choose from the correlation matrix. Field (2009:224) suggests the use of variance inflation factor (VIF), tolerance, and conditional index as a formal and the simplest way to examine multi-collinearity. The VIF indicates whether a predictor has a strong linear relationship. Previous studies provide cut-off points for VIF and tolerance values. For example, Bowerman and O'Connel (1990) and Meyers (1990) cited in Field (2009:242) suggest that if the largest VIF is greater than 10 there is cause for concern. If the average VIF is substantially greater than 1, the regression may be biased. According to Menard (1995) the tolerance value below 0.1 indicates a serious problem and a value below 0.2 indicates a potential problem.

According to Gupta (1999:7-17), collinearity cause a problem in the interpretation of the regression results. If the variables have a close linear relationship, the estimated regression co-efficients and t-statistics may not be able to properly isolate the unique effect or contribution of each variable and the confidence with which we can presume these effects to be true. In this view, the issue of multi-collinearity was given a due

consideration and since data were subjected under principle component factor analysis, this implies that all highly correlated variables were merged together to form a single/common factor.

5.8.3.3 Outliers

There are several ways to detect outliers, for example Tabachnick and Fidells (2007:75) and Pallant (2007:157) suggest use of scatter plots Mahalanobis distance values, case-wise diagnostics, and Cook's distance. However, Gupta (1999:7-12) argues that scatter plot is not a formal method of detecting outliers, although it is a good rapid visual test to give fast indication of presence of outliers, he supports Mahalanobis distance, case-wise diagnostics, and cook's distance as a formal test. Tabachnick and Fidell (2007:128) define outliers as those values with standardized residual values above 3.3 and or less than -3.3. A Multiple regression is very sensitive to outliers (very high or very low scores). Pallant (2007:158) suggests use of case-wise diagnostics which presents information about cases with standardized residual values above 3.0 or below - 3.0, in normally distributed sample it should not exceed 1 percent of cases falling outside this range. Checking for extreme scores was done at the initial stages of the data screening process. This was done for both categories of variables that is the independent and dependent variables, which were used in the multiple regression analysis. The search for outliers was performed by requesting case-wise diagnostics whereby the standardized residual values above 3.3 or less than -3.3 were used as a cut off point for the case of case-wise diagnostics.

5.8.3.4 Normality, linearity, and homoscedasticity

All these refer to various aspects of the distribution of scores and the nature of the underlying relationship between the variables. These assumptions were checked from the residuals scatter plots which were generated as part of the multiple regression procedure. According to Gupta (1999:7-10), residuals are the differences between the obtained and the predicted dependent variables (DV) scores. The residual scatter plots allow checking for normality, linearity, and homoscedasticity. However, residuals scatter plots are not formal test for normality. In this case a formal test one sample Kolmogorov-Smirnov test was performed to confirm the results observed through visual test. Fields (2009:221) contend that for data to give credible results for regression analysis;

- the residuals should be normally distributed about the predicted dependent variable scores,
- the residuals should have linear (straight line) relationship with predicted dependent variable scores, and
- the variance of the residuals about predicted dependent scores should be the same for all predicted scores.

Gupta (1999:8-1) indicates that the impact of violation of the regression assumptions is the low credibility of the results and limit the generalisation of findings beyond the sample. In this regard, compliance to the assumption before carrying out the multiple regression analysis was meant to ensure credibility of the results and be able to generalise the findings beyond the selected sample.

5.8.3.5 Independent residuals (errors)

The Durbin Watson test was requested to test serial correlations between adjacent residuals. According to Field and Miles (2010:195), for any two observations the residual term should be uncorrelated. The intention for requesting the Durbin Watson test was to examine whether the adjacent residual are correlated.

5.9 HYPOTHESES TESTING

Based on the conceptualisation of the construct of strategic entrepreneurial response, it was assumed that the individual dimensions of market orientation (customer orientation, competitor orientation, and inter-functional coordination), entrepreneurial orientation (pro-activeness, innovation, risk taking, autonomy, and competitive aggressiveness), and networking capability (relational skills, internal communication, coordination, and partner's knowledge) to converge to a single component. In this view, the first order factor analysis was performed to extract factors from the test variables (items), while the second order factor analysis was performed to ascertain if the extracted factors converged to measure a single component. This test was performed to address proposition 1.

The convergence of individual dimensions of market orientation, entrepreneurial orientation, and networking capability into a single component (SER) does not tell if there

is any relationship with the outcome variable (SME performance). Based on this observation, it was deemed logical to examine the relationship between the individual and composite dimensions of SER and SME performance. A series of sequential / hierarchical multiple regression analysis were performed to test for:

- The relationship between individual dimensions of SER and SME performance [hypotheses 1(a) – 1(i)].
- The relationship between composite dimensions of SER and SME performance [hypotheses 2(a) –2(c)].
- The amount of variance explained in SME performance by composite dimensions of SER [hypotheses 3(a) – 3(c)].
- The amount of variance accounted for in SME performance by the interaction of dimensions of SER {hypotheses 4(a) – (b)].
- Control the influence of firm size, type of industry and level of education of owner/managers to rule out their influence in the amount of variance explained in SME performance by composite dimension of SER [hypotheses 5(a) – 5(c)].
- Identify the best predictor to explain SME performance.

Field and Miles (2010) noted that beta value plays two roles in the regression analysis. It hints the relationship between predictor and outcome and provides bases for the judgement of contribution of predictor to the outcome. In view of this, beta value was used to examine the relationship [hypotheses 1(a) – 1(i) & 2(a) – 2(c)] and contribution of dimensions of SER on SME performance. Consistently, the co-efficient of regression (R^2) was used to identify the amounts of variance explained in SME performance by independent variables such as the composite dimensions of SER [hypotheses 3(a) – 3(c)] and the interactions of composite dimensions of SER [hypotheses 4(a) – 4(b)].

Furthermore, hierarchical or sequential regression was performed to control the effects of firm size, types of industry, and level of education of owners/managers to rule out the influence of the demographic variables and be able to draw a conclusion to whether the variance accounted in SME performance by the dimensions of SER is or not influenced by the background variables [hypotheses 5(a) – 5(c)]. Pallant (2007:160) argued that the sequential regression has a power to control the influence of the initial variables entered in

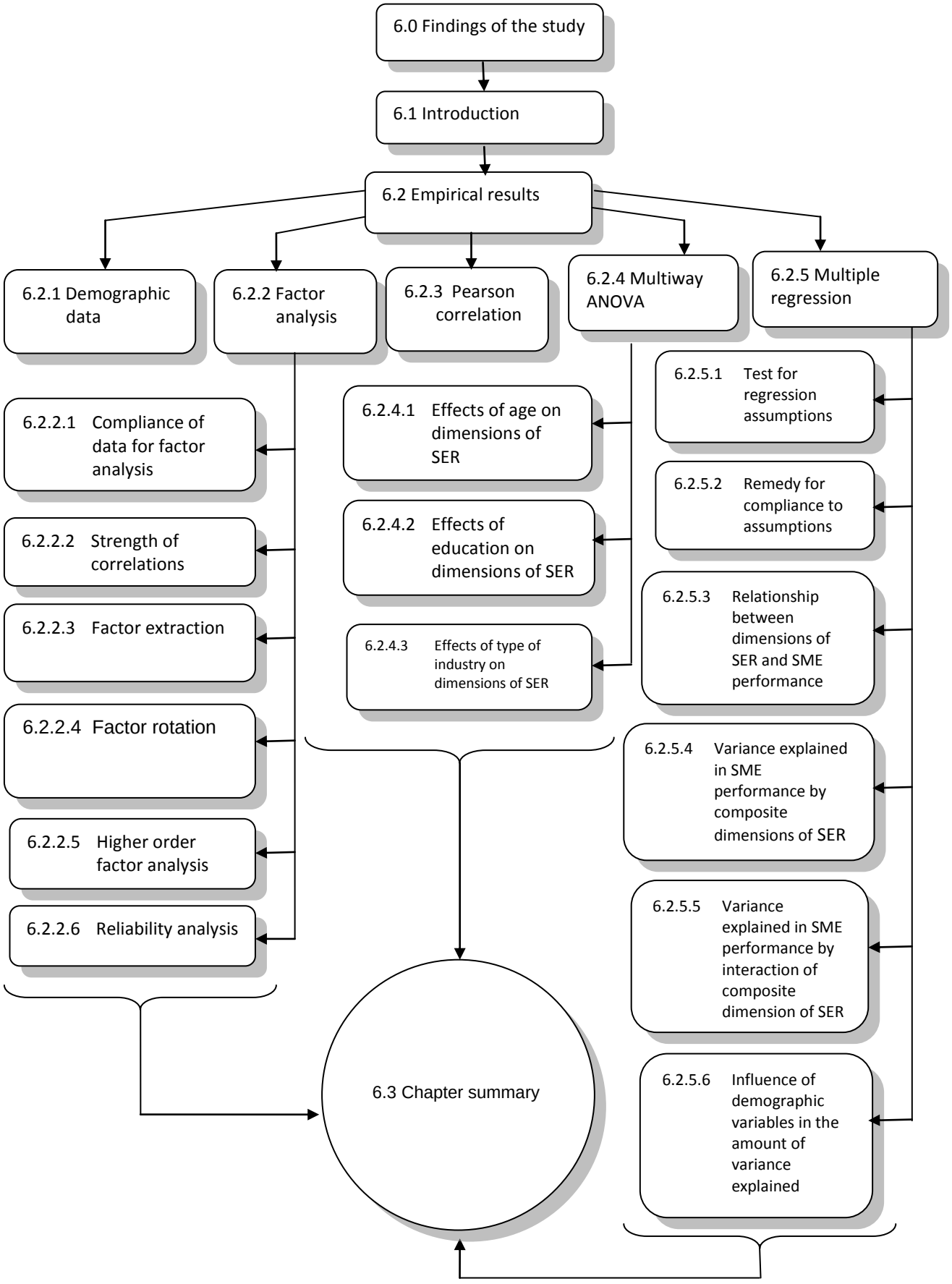
the model and makes it possible to isolate the amount of variance explained in the outcome variable as a result of adding new predictors in the model. The unique amount of variance explained by new predictors is represented by the R square change (ΔR^2).

After thorough examination of the relationship between predictors and outcome variables the amount of variance explained by the composite dimensions of SER in SME performance, the amount of variance explained by interaction of the composite dimensions of SER in SME performance, and examined the influence of the demographic variable on the relationship between the composite of dimensions of SER and SME performance, the study identified the best predictor to explain SME performance in competitive environment.

5.10 CHAPTER SUMMARY

This chapter provided a summary of the research methodology used in this study. It highlighted the research questions that prompted this study, followed by the hypotheses, which guided this study. The chapter described the research design and sampling procedure used in this study, also clearly clarified the measurements used to capture data and the criteria used to ensure credibility of the results. The last part of the chapter presented the section on data analysis that clearly highlighted the inferential statistics applied to judge the advanced hypotheses guided this study, and through which conclusions were arrived. Chapter six presents the findings of this study.

CHAPTER LAYOUT – CHAPTER SIX



CHAPTER SIX

6 FINDINGS OF THE STUDY

6.1 INTRODUCTION

This chapter presents results of empirical research. The findings covers the demographic information that briefly highlights the response rate indicating the proportion of questionnaire recovered from the respondents, the distribution of respondents by gender and age, the level of education of respondents and the number of employees in businesses covered by this study. Others are age of business in complete years, distribution of businesses by regions, the total investment capital of a firm, reported average employment growth for the past three years, reported wage bill growth, sales growth, average profit growth, return on asset, and return on investment. Furthermore, the results on factor analysis, Multiway Analysis of Variance (ANOVA), and the multiple regressions are also presented.

6.2 EMPIRICAL RESULTS

The empirical results are presented in four sections; firstly, the demographic data that presents the response rates and distribution of characteristics of the sampling unit. Secondly, the factor analysis was used for data reduction to easier handling of data during analysis. Thirdly, the Analysis of Variance (ANOVA) used to compare means of the demographic variables (i.e gender, age of respondent, level of education of owners/managers, age of business, and type of industry) and examines if there is any significant difference in terms of individual dimensions of the strategic entrepreneurial response (SER) such as customer orientation, competitors orientation, pro-activeness, risk taking, competitive aggressiveness, relational skills, internal communication, coordination, and partners knowledge. Fourthly, the multiple regression analysis was used to examine the relationship between SME performance and individual and composite dimensions of SER, examine the amount of variance explained in SME performance by the composite dimensions of SER and identify the best predictor to explain SME performance.

6.2.1 Demographic Data

Demographic results are presented in a series of tables and figures in the following sections. The major findings presented under this section are the response rate, distribution of business owners/managers by gender, age of the business

owners/managers, and the highest level of education of the business owners/managers. Others include age and distribution of business by region, distribution of industrial sectors covered in this study, total investment costs of firms, distribution of firms by size, reported employment growth, reported wage bill growth, sales and profit growth, reported average profit, for the past three years and the level of return on asset and return on investment.

The response rate (R_r) was computed as a proportion of the number of useful questionnaire ($N_{usefulQn}$) divided by the total number of respondents interviewed ($T_{respondents}$) multiplied by 100 to obtain percentage (See Equation 6.1).

$$R_r = \frac{N_{usefulQn}}{T_{respondents}} \text{ X } 100 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{ (}\textit{Equation 6.1}\text{)}$$

The target of the study was SME owners/managers to whom 360 questionnaires were administered. However, in the course of data entry, 291 questionnaires were found useful for data analysis. The redundant questionnaires were mainly due to incomplete filling of the key information required by this study or none response for questionnaires that were distributed to respondents for self-administering. The number of useful questionnaires translates into a response rate of 80.83 percent which is considered adequate for data analysis.

Table 6.1: Distribution of business owners/managers by gender

Gender	Frequency	Percentage (%)
Male	158	54.30
Female	133	45.70
Total	**291**	**100.00**

Missing = 0 Source: Survey

The findings summarised in Table 6.1 indicate that the gender ratio of respondents between male and female stands at 54:46. This implies that slightly more men are engaged in types of businesses selected for this study.

Table 6.2: Age of business owners/managers

Age	Frequency	Percentage (%)
20 -29 years	35	12.03
30 – 39 years	105	36.08
40 – 49 years	104	35.74
50 years and above	47	16.15
Total	**291**	**100.00**

Missing = 0 Source: Survey

Table 6.2 presents the distribution of age among business owners/managers in years. The business owner/managers with the age between 30–49 years form about 71.82 percent of all business owners/managers. The business owner/manager with the age between 20 and 29 years, form the smallest category with about 12.03 percent of all business owners/managers. The findings indicate that the age between 30 and 49 years is the most active age engaged in business activities in Tanzania.

Table 6.3: Highest level of education of business owners/managers

Level of education	Frequency	Percentage (%)
Primary education and below	65	22.34
Secondary education	86	29.55
Certificate	62	21.31
Diploma & Graduate	78	26.80
Total	**291**	**100.00**

Source: Survey

The education level is frequently associated with the entrepreneurial performance (Mass & Herrington, 2006:30). With this understanding it was deemed necessary to examine the level of education among business owners/managers. Table 6.3 indicated that about 77.66 percent of the business owners/managers at least had a secondary education. As such, the business community, with this level of education, should easily be supported in terms of training as a strategy for capacity building.

Table 6.4: Age of business

Age	Frequency	Percentage (%)
5 – years or less	98	33.68
6 – 10 year	107	36.77
11 – 20 years	67	23.02
21 years or more	19	6.53
Total	**291**	**100.00**

Missing = 0 Source: Survey

Several studies indicate that the failure rate of newly established business globally is high (Maas & Herrington, 2006:29). According to small business administration the failure rate of start-ups is around 70% to 80% in the first year and only about half of those who survive the first year, remain in business for the next five years (Mason, 2012). Although in Tanzania there is no actual figure in terms of a failure rate, it is not exceptional for the rest of the world. The result in Table 6.4 shows that 33.7 percent of businesses are 5 years or less and 66.3 percent of businesses are 6 years and more. Mass and Herrington (2007:11) suggest that businesses between 0 and 3 months are start-ups, businesses between the age of 3 and 42 months are new firms and businesses older than 42 months (three and half years) are established firms. In light of this, the majority of businesses covered in this study are established firms.

Table 6.5: Distribution of business by region

Region	Frequency	Percentage (%)
Dar es salaam	87	29.90
Morogoro	106	36.42
Iringa	98	33.68
Total	**291**	**100.00**

Missing = 0 Source: Survey

Table 6.5 presents the distribution of businesses in the three regions of Tanzania where data were collected. The findings indicate that there were slight variations in the sample size among regions with the highest recorded in the Morogoro region with 36.42 percent.

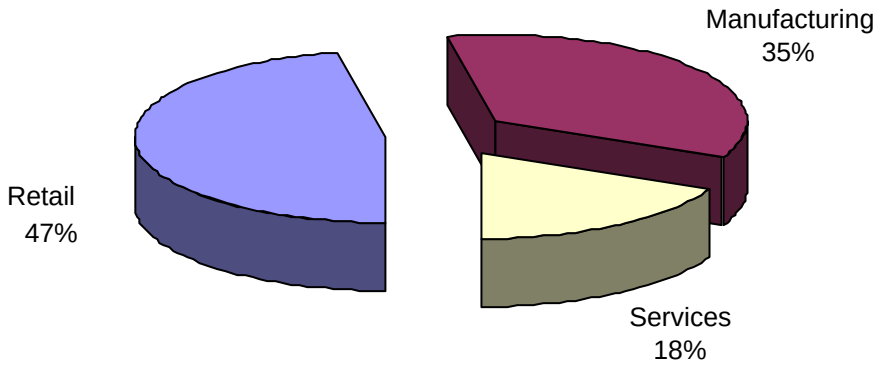


Figure 6.1: Distribution of businesses by industries

This study examined the distribution of business by economic sectors. In view of the results presented in Figure 6.1, the retail sector had a high composition of about 47 percent of the total sample followed by the manufacturing sector's 35 percent and the service sector's 18 percent. The dominance of the retail sector is not surprising, since it is easier and convenient to establish in the Tanzanian environment.

Table 6.6: Total investment capital of firm

Total investment capital (TAS)	Frequency	Percentage (%)
Up to 5,000,000	50	17.18
5,000,000 – 200,000,000	193	66.32
200,000,001 – 800,000,000	40	13.75
Above 800,000,000	8	2.75
Total	**291**	**100.00**

TAS = Tanzanian Shilling (1USD ≈ TAS 1,504.50)

In the course of research, it was deemed necessary to investigate the total investment capital of each business covered during the survey. The total investment capital is a dominant criterion for business categorisation in Tanzania (Ministry of Industry and Trade, 2003:3). Table 6.6 indicates that 66.3 percent of businesses had investment capital of between 5 and 200 million, and only 2.7 percent had an investment capital above 800

million. These findings imply that the majority (66.3%) of businesses sampled in this study were the small businesses.

The distribution of businesses by size was examined. While globally there are several criteria[1] used for business size categorisation, in Tanzania two dominant criteria apply; the first criteria is the number of employees and the second criteria is the total investment capital (Ministry of Industry and Trade, 2003:3). However, the total investment capital rules out in case of overlaps amongst the classification criteria. With this understanding, this study decided to use the total investment capital for business categorisation to avoid ambiguity that might arise due to criteria overlap.

According to the Ministry of Industry and Trade (2003:3) in Tanzania, micro enterprises are businesses with the investment capital of up to 5 million, small businesses are businesses with an investment capital of between 5 and 200 million, medium enterprises are businesses with an investment capital of between 200 and 800 million and business firms with an investment capital above 800 million are categorised as large businesses. In light of the criteria by the Ministry of Industry and Trade (MIT), drawing from results on total investment capital of firms presented in Table 6.6, it was possible to establish the distribution of firms by its size.

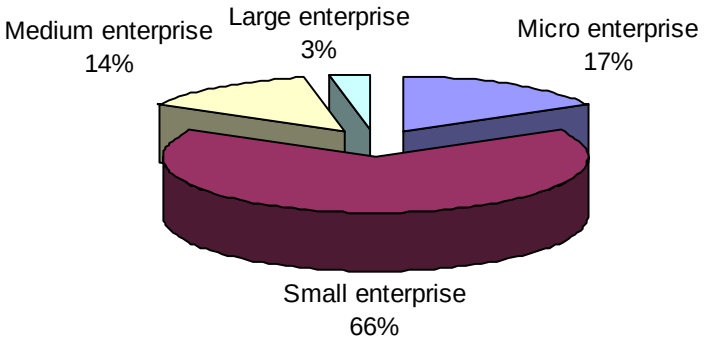


Figure 6.2: Distribution of firms by size

[1] Global business size categorisation criteria; numbers of employees, capital investment, shareholding, market share and turnover.

Figure 6.2 clearly indicates that the majority of business segments in the study area are small businesses that account for about 66 percent, and the least segment is large businesses with only 3 percent of the total businesses surveyed. The distribution of businesses presented in these findings, is the reflection of the real situation in terms of business distribution in Tanzania that is dominated by the small business with very few medium and large businesses.

Table 6.7: Reported average employment growth for the past three years

Average employment growth	Frequency	Percentage (%)
Decreasing (< 0%)	39	15.73
No change (0%)	121	48.79
Increasing (1 – 10%)	26	10.48
Increasing (11– 20%)	27	10.89
Increasing (≥ 21%)	35	14.11
Total	**248**	**100.00**

Missing = 43 (14.8%) Source: Survey

Table 6.7 presents findings on reported average employment growth in SMEs for the past three years. The analysis employed five criteria namely; decreasing employment growth (less than zero percent growth), no growth/change (zero percent/no change), increasing growth between 1 and 10 percent, increasing growth between 11 and 20 percent and increasing growth above 20 percent. In view of the identified criteria 64.52 percent of SMEs in Tanzania are not creating new employment for the past three years of which about 48.79 percent could not create new employment and 15.73 percent experienced employment shedding for the past three years. On the other hand, the proportion of SME's that recorded employment growth in the study area was only 35.48 percent. The findings hint that SMEs in Tanzania are not contributing much in employment growth as one would expect.

Table 6.8: Reported average wage bill for the past three years

Wage bill	Frequency	Percentage (%)
Decreasing (< 0 %)	18	8.00
No change (0 %)	27	12.00
Increasing (1 – 10%)	77	34.22
Increasing (11 – 20%)	42	18.67
Increasing (≥ 21%)	61	27.11
Total	**225**	**100.00**

Missing = 66 (22.7%) Source: Survey

This study examined the average wage bill growth for the past three years. Table 6.8 present findings that indicate 20 percent of SMEs experienced either a decrease in the wage bill or there were no change of which 8 percent of firms experienced negative growth of wage bill and 12 percent of firms recorded zero growth. At the same time about 80 percent of SMEs' experienced growth in the wage bill.

Table 6.9: Reported average sales growth for the past three years

Sales growth	Frequency	Percentage (%)
Decreasing (< 0 %)	10	14.49
No change (0 %)	0	0.00
Increasing (1 – 10%)	38	55.07
Increasing (11 – 20%)	12	17.39
Increasing (≥ 21%)	9	13.05
Total	**69**	**100.00**

Missing = 222 (76.3%) Source: Survey

Examining reported average sales growth for the past three years, respondents were asked to report sales growth during the past three years of their firms. However, about 76.3 percent could not provide complete information for the past three years due to poor record keeping and it was treated as missing data during the analysis. The findings summarised in Table 6.9 indicates that of all respondents that provided information on sales growth; 85.51 percent reported sales growth and only 14.49 percent recorded a decline in sales growth. The findings hint that the majority of firms in the study area for the period of three years, performed well in terms of sales growth.

The SME performance was examined by several measures such as average profit generated by the firm, return on assets and return on investment. The results for these measures are presented in a series of tables below.

Table 6.10: Reported average profit growth for the past three years

Profit growth	Frequency	Percentage (%)
Decreasing (< 0 %)	7	2.46
No change (0 %)	1	0.35
Increasing (1 – 10%)	16	5.61
Increasing (11– 20%)	54	18.95
Increasing (≥ 21%)	207	72.63
Total	**285**	**100.00**

Missing = 6 Source: Survey

Table 6.10 presents findings of reported average profit growth for the past three years. The results show that 97.19 percent of firms recorded profit growth and 2.81 percent of firms either recorded no change or a decrease in profit growth for the past three years. These findings indicate that firms performed well in terms of profit generation during the past three years.

Table 6.11: Reported return on assets (ROA) per annum

Return on assets (ROA)	Frequency	Percentage (%)
Decreasing (< 0 %)	7	2.46
No change (0 %)	1	0.35
Increasing (0 – 5 %)	150	52.63
Increasing (5 – 10 %)	77	27.02
Increasing (above 10%)	50	17.54
Total	**285**	**100.00**

Missing = 6 Source: Survey

Table 6.11 summarises results on the level of ROA among surveyed businesses. The findings indicate that 97.19 percent of firms registered an increase in return on assets (ROA) and only 2.81 percent of firms recorded a decrease or static growth in ROA. These results are consistent with the reported average profit growth reported in Table 6.10, probably because ROA relies on generated profit.

Table 6.12: Reported average return on investment (ROI) per annum

Return on investment (ROI)	Frequency	Percentage (%)
Decreasing (< 0 %)	7	2.41
No change (0 %)	1	0.34
Increasing (0 – 5 %)	212	73.10
Increasing (5 – 10 %)	41	14.14
Increasing (above 10%)	29	10.00
Total	**290**	**100.00**

Missing = 1 Source: Survey

The ROA was examined parallel to the return on investment (ROI). The results on the level of ROI are summarised in Table 6.12 and yield a similar trend as the ROA findings summarised earlier in Table 6.11 with the high proportion of firms (97.25 percent) recorded an increase in ROI and only 2.75 percent had no change or recorded ROI below zero percent.

6.2.2 Factor Analysis

Factor analysis is a group of analytical techniques used for different purposes such as data reduction, development and evaluation of tests and scales (Tabachnick & Fidell, 2007:607; Pallant, 2011:181). According to Pallant (2011:181) there are two main approaches to factor analysis that are commonly discussed in various literatures; exploratory and confirmatory. An exploratory factor analysis is used to explore the inter-relationship amongst a set of variables, while the confirmatory factor analysis is used to test specific hypotheses or theories regarding the structure of the underlying latent variables. This study adopted the exploratory factor analysis to explore the inter-relationship amongst variables and reduce them into fewer factors that are easily manageable.

6.2.2.1 Compliance of data for factor analysis

The compliance of data for factor analysis was performed through Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test and strength of correlation among variables. The intention of the test was to determine whether data are suitable for factor analysis.

Table 6.13: Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.947
Bartlett's Test of Sphericity	Approx. Chi-Square	9209.008
	Df	990
	Sig.	0.000

Source: Survey

Table 6.13 presents results of the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. The KMO measure of 0.947 indicates a high sampling adequacy for factor analysis that is quite far beyond the cut-off point of 0.5 (Kaiser, 1970:405; Kaiser, 1974:35). The Bartlett's test of sphericity on the other hand, tests the null hypothesis that the original correlation matrix (R-matrix) of the test variables is an identity matrix, which implies that there is no correlation between test variables (Field, 2009:660). The literature shows that for factor analysis to work, some relationships between tests variables are required (Pallant, 2011:183). The recorded significant value of Bartlett's test at $p < 0.01$, implies that the original R-matrix is significantly different from an identity matrix. These findings suggest that there are some correlations between test variables and that the data is suitable for factor analysis.

Table 6.14: Communalities after extraction

Items	Initial	Extraction
VAR08 Firm knows whether competitors are open to customers' complaints	1.000	.648
VAR09 Firm is engaged in development of new products / services	1.000	.394
VAR11 Firm regularly invests in new facilities (annually or less)	1.000	.712
VAR12 Firm knows how competitors maintain relationships with customers	1.000	.664
VAR14 Firm believes that higher financial risks are worth taking for higher rewards	1.000	.630
VAR15 Firm solves problems constructively with partners	1.000	.827
VAR16 Firm likes to take big financial risks	1.000	.727
VAR17 Firm gathers information regularly about customers' needs	1.000	.752
VAR18 Firm knows partners' products / services	1.000	.709
VAR19 Firm knows partners' potential and strategies	1.000	.742
VAR20 Firm knows in which ways competitors attract customers	1.000	.674
VAR21 Firm pursues new business ideas while knowing well that some will fail	1.000	.745
VAR23 Firm looks for ways to offer customers more values	1.000	.648
VAR24 Firm experiments with new ways of doing business	1.000	.411
VAR25 Firm knows whether customers buying from competitors are satisfied	1.000	.663
VAR27 Firm can put itself in partners position	1.000	.800
VAR28 Firm offers products / services to customers in a different way from competitor	1.000	.546
VAR31 Firm can deal flexibly with partners	1.000	.815
VAR34 Firm monitors customers buying from competitors	1.000	.617
VAR36 Firm matches the use of resources to the partners relationship	1.000	.717
VAR37 Firm deliberately studies partners' strength and weaknesses	1.000	.779
VAR38 Firm involves customers in decisions that affect the relationship	1.000	.363
VAR40 Firm holds regular meetings for every department / all workers to assess business progress	1.000	.762
VAR42 Customers see themselves as our partners	1.000	.530
VAR43 Firm analyses what it would like and desire to achieve with which partner	1.000	.750
VAR46 firm has a formal system for handling customer complaints	1.000	.631
VAR48 Firm has the ability to build good personal relationships with business partners	1.000	.790
VAR49 Firm has a tendency to be ahead of competitors in introducing novel business idea or products /service	1.000	.850
VAR50 Firm's managers and employees do give intensive feedback to each other	1.000	.596
VAR52 Firm discusses regularly with partners how to support each other for their success	1.000	.661
VAR53 Firms' business information is often communicated across departments / all workers	1.000	.684
VAR54 in response to competitors actions, firm is very aggressive	1.000	.751
VAR55 Firm knows why customers continue buying from competitors	1.000	.699
VAR56 Firm knows why customers switch to competitors	1.000	.679
VAR59 Firm typically adopts a very competitive "undo the competitors" posture	1.000	.661
VAR60 Firm always the first to introduce new products / services	1.000	.865
VAR62 Firm judges in advance possible partners to talk to about building up relationships	1.000	.701
VAR63 Firm is incorporating the latest technology for the industry	1.000	.648
VAR64 Firm hold regular meeting for every department or workers to develop business plan	1.000	.766
VAR65 Firm hold regular meeting for every department or workers to develop business plan	1.000	.763
RevSc51 In dealing with competitors, the firm is seldom the first business to introduce new products / services	1.000	.788
RevSc61 In dealing with competitors, the firm typically responds to action which competitors initiate	1.000	.805
RevSc13 Firm invests only in business that ensures success and profitability	1.000	.605
RevSc22 Firm makes no special effort to take business from the competitors	1.000	.788
RevSc45 Firm typically seeks to avoid competitive clashes, preferring a "live and let leave" posture	1.000	.725

Extraction Method: Principal Component Analysis. Source: Survey

Table 6.14 presents a summary of communalities after extraction. The results shows that of all 45 variables subjected to a factor analysis, the communalities after extraction ranged between 0.363 and 0.865, which are all above the cut-off point of 0.3. According to Pallant (2011:198) communalities give information on how much variance in each item is explained and a value less than 0.3 could indicate that the respective item does not fit well with other items in its component. In light of these findings, the values of communalities above 0.3, suggest that the test items fit well in their respective factors.

6.2.2.2 Strength of correlations among variables

The correlations between items were performed through scanning the correlation matrix (R-Matrix). The variables that recorded lots of correlations below 0.3 with other variables were excluded in the factor analysis; this is according to Field and Miles (2010:566) and Field (2009:657). Table 6.15 gives a summary of variables omitted in the factor analysis.

Table 6.15: Omitted variables/questions from factor analysis

Variable No.	Description of variable
VAR10	The firm owns patents/other proprietary information.
VAR26	The firm department/workers take collective decisions that affect relationship with customers
VAR29	Members of staff share business ideas freely within the firm.
VAR30	The firm's departments/workers jointly visit customers.
VAR32	The firm's departments/workers jointly satisfy customers' needs.
VAR33	You will be ready to accept good money from somebody to take over your firm and makes you one of their employees.
VAR35	The firm's departments/workers are collectively aware of the importance of the relationship with customers.
VAR39	The firm informs staff members of partners' goals, potential and strategies.
VAR41	Staff members are free to express their individual opinions.
VAR44	The firm appoints specific coordinator(s) responsible for the relationships with customers.
VAR47	Management does not interfere when staff members introduce new business ideas.
VAR57	The firm's employees develop informal contacts among themselves.
VAR58	The firm informs staff members of customer's needs.

6.2.2.3 Factor extraction

While there are several methods of factor extractions, such as principal component factor analysis, principal factors, image factoring, maximum likelihood, alpha factoring, unweighted least squares, and generalised least squares, several authors suggest that the most commonly used method, is the principal component analysis (Pallant, 2011:183; Field, 2009:638). This study adopted a principal component factor analysis as suggested by several scholars. Table 6.16 presents a list of eigenvalues associated with each factor before extraction, after extraction and after rotation. Before extraction, the analysis identified 46 linear components with the data set. The eigenvalues associated with each factor represent the amount of the total variance explained by that particular linear component (factor) (Pallant, 2011:184).

Table 6.16: Total variance explained by extracted factors

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	**17.798**	38.691	38.691	17.798	38.691	38.691	4.699	10.216	10.216
2	**2.613**	5.681	44.372	2.613	5.681	44.372	3.846	8.360	18.576
3	**2.480**	5.390	49.762	2.480	5.390	49.762	3.605	7.838	26.413
4	**1.910**	4.151	53.913	1.910	4.151	53.913	3.547	7.711	34.125
5	**1.683**	3.659	57.572	1.683	3.659	57.572	3.382	7.353	41.478
6	**1.457**	3.168	60.740	1.457	3.168	60.740	3.242	7.048	48.526
7	**1.231**	2.675	63.416	1.231	2.675	63.416	3.204	6.964	55.490
8	**1.140**	2.478	65.893	1.140	2.478	65.893	3.039	6.607	62.096
9	**1.044**	2.269	68.162	1.044	2.269	68.162	2.790	6.065	68.162
10	0.988	2.148	70.310						
11	0.880	1.913	72.223						
12	0.825	1.793	74.016						
13	0.760	1.653	75.669						
14	0.703	1.528	77.197						
15	0.670	1.457	78.653						
16	0.633	1.376	80.029						
17	0.618	1.343	81.373						
18	0.557	1.210	82.583						
19	0.539	1.172	83.755						
20	0.517	1.125	84.880						
21	0.472	1.027	85.907						
22	0.443	0.963	86.870						
23	0.407	0.885	87.755						
24	0.395	0.859	88.615						
25	0.372	0.808	89.422						
26	0.356	0.773	90.196						
27	0.349	0.759	90.954						
28	0.331	0.720	91.674						
29	0.307	0.666	92.341						
30	0.299	0.651	92.991						
31	0.294	0.640	93.631						
32	0.282	0.614	94.245						
33	0.264	0.574	94.818						
34	0.256	0.556	95.374						
35	0.235	0.511	95.885						
36	0.227	0.493	96.378						
37	0.220	0.478	96.856						
38	0.209	0.455	97.311						
39	0.202	0.439	97.750						
40	0.196	0.426	98.176						
41	0.175	0.380	98.555						
42	0.163	0.353	98.909						
43	0.158	0.343	99.252						
44	0.142	0.309	99.561						
45	0.136	0.295	99.856						
46	0.066	0.144	100.000						

Extraction Method: Principal Component Analysis. (Source: Survey)

The analysis then extracted all factors with eigenvalues of 1.0 and above based on the Kaiser's recommendation (Field, 2009:652; Pallant, 2011:184) of which un-rotated factor solution retained nine (9) factors which explained 68.16 percent of the total variance. The largest proportion of the variance before rotation explained by factor 1 (38.69%), which is relatively higher compared to other factors. The eigenvalues associated with individual factors are again displayed with their percentage of variance explained in the column labelled "extraction sums of squared loadings". The values are the same as the values before extraction, except that the values for the discarded factors with eigenvalues below 1.0 are ignored hence, Table 6.16 is blank after the ninth factor.

6.2.2.4 Factor rotation

In the final part of Table 6.16 labelled "rotation sums of squared loadings", eigen values of factors after oblique (direct oblimin) rotation are displayed. The oblique rotation was chosen with the assumption that the extracted factors are related. Rotation has the effect of optimizing the factor structure and one consequence for the data set is that the relative importance of the nine factors is equalized. Before rotation, factor 1 accounted for considerable more variance (38.691%) compared to the remaining eight factors (5.681%, 5.390%, 4.151%, 3.65%, 3.168%, 2.675%, 2.478% and 2.269%). However, after rotation, factor 1 accounted for only 10.216% of variance compared to 8.360%, 7.838%, 7.711%, 7.353%, 7.048%, 6.964%, 6.607% and 6.065% for the remaining eight factors.

Table 6.17: Pattern Matrix for exploratory factor analysis after oblique rotation

Item	Factors								
	1	2	3	4	5	6	7	8	9
Firm gathers information regularly about customer's needs	.737								
Firm has a formal system for handling customers complaints	.626								
Firm looks for ways to offer customer more value	.595								
Customers see themselves as our partners	.520								
Firm solves problems constructively with partners		.899							
Firm has the ability to build good personal relationships with business partners		.882							
Firm can deal flexibly with partners		.879							
Firm can put itself in partners' position		.873							
Firm holds regular meetings for all workers to assess business progress			.841						
Firm hold regular meeting for every department or workers to develop business plan			.823						
Firms' business information is often communicated to all workers			.746						
Firms' managers and employees do give intensive feedback to each other			.710						
Firm matches the use of resources (e.g. personnel, finances) to the partners' relationship				-.744					
Firm discusses regularly with partners how to support each other for their success				-.703					
Firm analyses what it would like and desire to achieve with which partner				-.677					
Firm judges in advance possible partner to talk to about building up relationship				-.658					
In dealing with the competitors, the firm is seldom the first business to introduce new products/services					-.895				
In dealing with competitors, the firm typically responds to action which competitors initiate					-.856				
The firm is always the first to introduce new product/services					-.838				
Firm has a tendency to be ahead of competitors in introducing novel business idea or products/services					-.828				
Firm likes to take big financial risks						-.794			
Firm believes that higher financial risks are worth taking for higher rewards						-.744			
Firm invest only in business that ensures success and profitability						-.702			
Firm pursue new business idea while knowing well that some will fail						-.681			
Firm knows partners' potential and strategies							.777		
Firm knows partners' markets							.746		
Firm deliberately studies partners' strengths and weaknesses							.706		
Firm knows partner's products/services							.703		
Firm knows in which ways competitors attract customers								.808	
Firm monitors customers buying from competitors								.720	
Firm knows whether customers buying from competitors are satisfied								.638	
Firm knows why customers continue buying from competitors								.620	
Firm knows whether competitors are open to customer's complaints								.587	
Firm knows why customers switch to competitors								.580	
Firm knows how competitors maintains relationship with customers								.558	
Firm offers products/services to customers in a different way from competitor									.583
Firm typically seeks to avoid competitive clashes, preferring a "live and let-leave" posture									.561
Firm makes no special effort to take business from competitors									.492
Firm typically adopts a very competitive "undo the competitors" posture.									.467
In response to competitor actions, the firm is very aggressive									.406

Source: Survey

Table 6.17 presents a summary of the pattern matrix for exploratory factor analysis after oblique rotation. Field and Miles (2010:575) point that in oblique rotation it is advisable to present results of both the pattern matrix and structure matrix to be able to compare the factor structure and confirm if there is any correlation among factors. Examining the pattern matrix and structure matrix for these findings, presented in Table 6.17 and 6.18 respectively, it showed a similar pattern of factor loadings. However, the double loadings on a structure matrix (Table 6.18) confirm existence of correlations among factors. The existence of correlations between factors supports the use of the oblique rotation.

Table 6.18: Structure matrix for exploratory factor analysis after oblique rotation

Item	Factors								
	1	2	3	4	5	6	7	8	9
Firm gathers information regularly about customer's needs	**.828**					-.421	-.415	.449	
Firm has a formal system of handling customers complaints	**.754**					-.451		.442	
Firm looks for ways to offer customers more value	**.753**					-.427		.530	
Customers see themselves as our partners	**.659**				-.426	-.450		.401	
Firm solve problems constructively with partners		**.906**							
Firm can deal flexibly with partners		**.896**							
Firm can put itself in partners position		**.890**							
Firm has ability to build good personal relationships with business partners		**.884**							
Firm hold regular meeting for every department or workers to develop business plan			**.848**						
Firm holds regular meetings for every department/all workers to assess business progress			**.842**						
Firms' business information is often communicated across department/all workers			**.792**						
Firms' managers and employees do give intensive feedback to each other			**.719**						
Firm matches use of resources to the partners relationship				**.821**			-.410		
Firm analyses what it would like and desire to achieve with which partner				**.814**	-.412		-.520		
Firm discusses regularly with partners how to support each other for their success				**.788**					
Firm judges in advance possible partners to talk to about building up relationship				**.787**			-.470		
Firm is always the first to introduce new product/services					**-.918**	-.451	-.432	.467	
Firm has a tendency to be ahead of competitors in introducing novel business ideas or products/services					**-.908**	-.444	-.452	.477	
In dealing with competitors the firm typically responds to action which competitors initiate					**.890**			-.457	
In dealing with competitors, the firm is seldom the first to introduce new products/services.					**.879**				
Firm regularly invests in new facilities (annually or less)	.463			.489	**-.637**	-.532	-.500	.587	-.572
Firm is incorporating the latest technology for the industry	.449				**-.611**	-.542	-.432	.538	-.580
Firm likes to take big financial risks	.420					**-.832**			
Firm pursue new business ideas while knowing well that sum will fail	.444				-.458	**-.822**		.480	
Firm believes that higher financial risks are worth taking for higher rewards						**-.783**			
Firm invests only in business that ensures success and profitability						**.764**			
Firm is engaged in development of new products/services					-.442	**-.513**		.443	
Firm involves customers in decisions that affect the relationship				.423	-.411	**-.461**			
Firm knows partners' potential and strategies							**-.851**		
Firm deliberately studies partners' strengths and weaknesses				.467	-.462		**-.848**	.413	
Firm knows partners' markets					-.426		**-.842**	.494	
Firm knows partner's products/services				.461	-.407		**-.808**		
Firm knows in which ways competitors attract customers								**.799**	
Firm knows why customers continue buying from competitors					-.488	-.493	-.479	**.779**	-.410
Firm monitors customers buying from competitors								**.777**	
Firm knows why customers switch to competitors				.440	-.507	-.485	-.460	**.766**	
Firm knows whether customers buying from competitors are satisfied	.508				-.459			**.753**	
Firm knows whether competitors are open to customers' complaints	.485				-.513			**.753**	
Firm knows how competitors maintain relationships with customers					-.479	-.426	-.530	**.747**	-.414
Firm typically seeks to avoid competitive clashes preferring a "live and let leave" posture	-.570			-.403				-.513	**.709**
Firm makes no special effort to take business from competitors	-.575			-.517	.433	.443	.486	-.553	**.693**
Firm offers products/services to customers in a different way from competitors									**-.649**
Firm typically adopts a very competitive undo the competitors posture.	.601					-.408	-.457	.448	**-.638**
Firm monitors customers buying from competitors	.610			.507	-.472	-.447	-.507	.557	**-.633**
Firm experiments with new ways of doing business		.410					-.451	.417	**-.461**

Deriving from Table 6.17 of the summary of the pattern matrix for exploratory factor analysis (N=291) complemented by the results summarised in a structure matrix in Table 6.18, it was possible to develop themes of factors based on the items loaded highly in each factor. In this regard, the extracted factors, after rotation, were named as customer orientation (factor 1), relational skills (factor 2), internal communication (factor 3), coordination (factor 4), pro-activeness (factor 5), risk taking (factor 6), partners' knowledge (factor 7), competitor's orientation (factor 8) and competitive aggressiveness (factor 9).

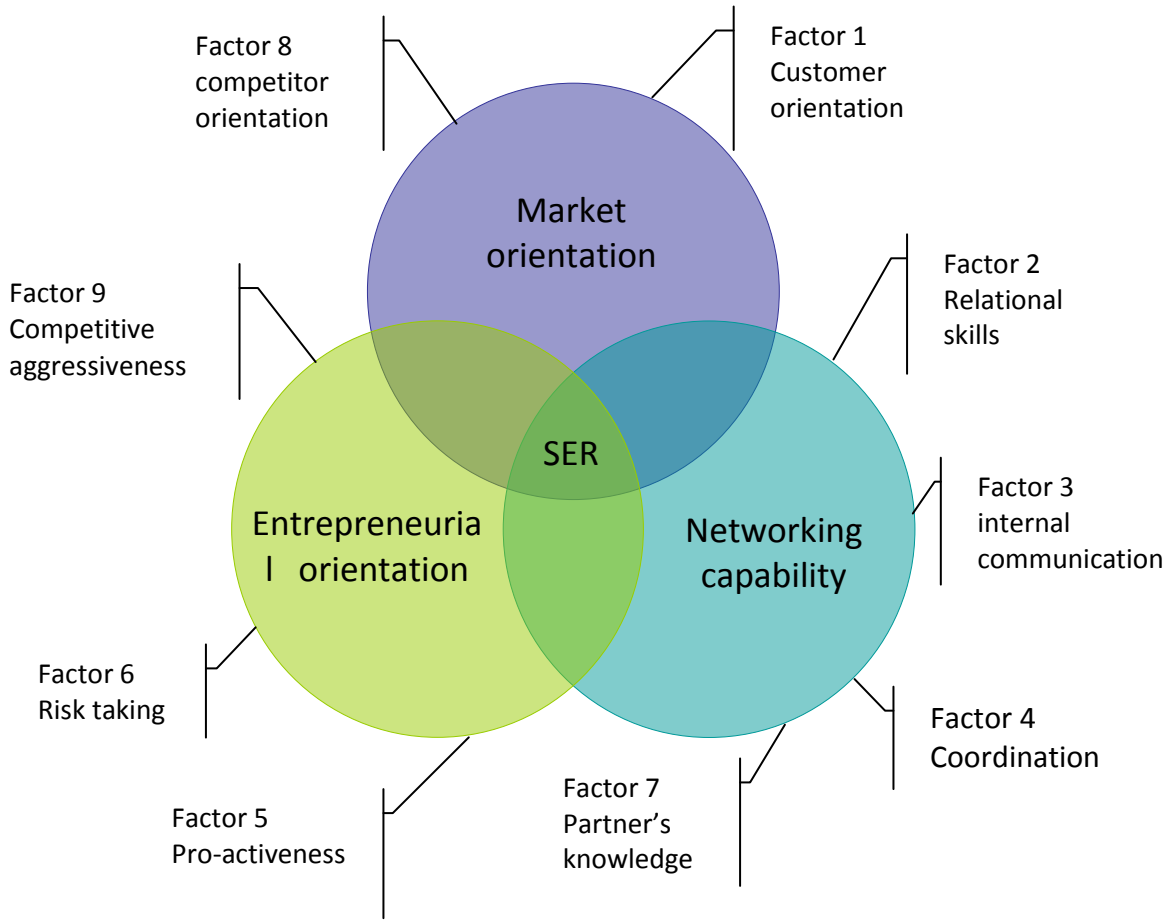


Figure 6.3: Names of extracted factors linked to the corresponding constructs

Based on the literature, the nine (9) factors were allocated in the corresponding constructs namely; market orientation (Narver & Slater, 1990:21), entrepreneurial orientation (Lumpkin & Dess, 1996:136), and networking capability (Kale *et al.,* 2000:221) (See Figure 6.3). In view of the fact that the nine factors are extracted, it does not ensure that they measure a common construct. It was from this context, the first research question was

advanced on whether the nine factors collectively measures strategic entrepreneurial response (SER). In response to this question a higher order factor analysis was performed and the findings are presented in the next section.

6.2.2.5 Higher order factor analysis

The nine (9) factors were further subjected to a higher order (second order) factor analysis. Table 6.19 indicates that all factors converged into one component, which implies that they measure a single (common) construct that is a strategic entrepreneurial response (SER).

Table 6.19: Component matrix for second order factor analysis

Factors	Loadings
Factor 8 Competitor orientation	0.715
Factor 5 Pro-activeness	-0.619
Factor 6 Risk taking	-0.684
Factor 7 Partner's knowledge	0.666
Factor 1 Customer orientation	0.606
Factor 4 Coordination	-0.570
Factor 2 Relational skills	0.569
Factor 9 Competitive aggressiveness	0.536
Factor 3 Internal communication	-

Source: Survey

Since the nine factors converged to a single component, for the purpose of this study as from this point onwards, they will be referred to as individual dimensions of the strategic entrepreneurial response (SER) and the three constructs, namely: market orientation, entrepreneurial orientation and networking capability in which the nine factors were allocated (See Figure 6.3) will be referred to as the composite dimensions of the SER. In this case the strategic entrepreneurial response (SER) has nine individual dimensions or three composite dimensions.

6.2.2.6 Reliability analysis

The reliability analysis was done to test the credibility of data. In this case the Cronbach's alpha was computed to examine the internal reliability (See Equation 6.2). Table 6.20 presents the Cronbach's alpha values and the number of items converged for each factor.

$$\textit{Cronbach's alpha } (\alpha) = \frac{N^2 \overline{Cov}}{\sum S^2_{item} \pm \sum Cov_{item}} \quad \text{.....(Equation 6.2)}$$

Where:

- N^2 = square multiple of the number of items
- $\overline{Cov}$ = average covariance between items
- $\sum S^2_{item}$ = sum of all item variances
- $\sum Cov_{item}$ = sum of all item covariances

Table 6.20: Item analysis for rotated factors

	Factors								
Factors	1	2	3	4	5	6	7	8	9
Number of items converged	4	4	4	4	4	4	4	7	5
% variance explained (VP)	10.22	8.36	7.84	7.71	7.35	7.05	6.96	6.61	6.07
Mean	4.100	3.890	3.705	3.768	3.601	3.284	3.732	3.745	3.684
Variance									
Standard deviation									
Cronbach's alpha	0.899	0.932	0.920	0.874	0.844	0.827	0.891	0.805	0.897
Eigenvalue	4.699	3.846	3.605	3.547	3.382	3.242	3.204	3.039	2.790
Squared multiple correlation	0.928	0.889	0.880	0.944	0.846	0.828	0.852	0.857	0.879
Canonical correlation	0.992	0.956	0.955	0.943	0.903	0.889	0.860	0.848	0.825

Source: Survey

The summary of the results indicate that factor one to seven contains four items, factor eight converged seven items and factor nine converged five items. The Cronbach's alpha values for the nine factors range between 0.805 and 0.932. According to Bryman and Bell (2007:164), Cronbach's alpha values above 0.8 represent an acceptable level of internal reliability. In this view, the higher Cronbach's alpha values recorded in this study denote that the measurement tool measured well the concept of strategic entrepreneurial response (SER).

6.2.3 Pearson Correlation

The relationship amongst test variables was examined using the Pearson correlation. Preliminary analyses were performed and SME measures namely profit, ROA, and ROI were natural logs transformed to ensure no violation of assumptions of normality, linearity, and homoscedasticity. Table 6.21 give summary of factor correlation matrix that contains correlation co-efficients among individual and composite dimensions of the strategic entrepreneurial response, SME performance measures, LnProfit, LnROA and LnROI.

Amongst the individual dimensions of the strategic entrepreneurial response, customer orientation recorded the strongest significant positive correlation with SME performance measures namely LnProfit (r = 0.669**), LnROA (r = 0.540**), and LnROI (r = 0.517**) followed by competitor orientation that recorded significant positive correlation with LnProfit (r = 0.632**), LnROA (r = 0.471**), and (r = 0.470**). Consistently, other individual dimensions of SER recorded significant correlation with LnProfit, LnROA, and LnROI except relational skills that recorded nosignificant correlation with LnROI. However three individual dimensions of the strategic entrepreneurial response, namely: coordination, risk taking and competitive aggressiveness recorded significant negative correlations with the three measures of SME performance. With regard to the composite dimensions of the strategic entrepreneurial response, all three dimensions recorded significant positive correlation, with the highest correlation recorded in the market orientation with SME performance measures: LnProfit (r = 0.779**), LnROA (r = 0.605**) and LnROI (r = 0.591**) (See Table 6.21).

Table 6.21: Correlation matrix for extracted factors and SME performance measures

Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Customer orientation	1													
Relational skills	0.215(**)	1												
Internal communication	0.168(**)	0.159(**)	1											
Coordination	-0.262(**)	-0.267(**)	-0.222(**)	1										
Pro-activeness	0.313(**)	-0.305(**)	-0.244(**)	0.313(**)	1									
Risk taking	-0.349(**)	-0.356(**)	-0.202(**)	0.257(**)	0.424(**)	1								
Partners knowledge	0.320(**)	0.328(**)	0.205(**)	-0.353(**)	-0.355(**)	-0.353(**)	1							
Competitor orientation	0.418(**)	0.316(**)	0.159(**)	-0.310(**)	0.443(**)	-0.398(**)	0.382(**)	1						
Competitive aggressive	0.238(**)	0.191(**)	0.101	-0.187(**)	-0.323(**)	-0.306(**)	0.283(**)	0.343(**)	1					
LnPROFIT	0.669(**)	0.322(**)	0.323(**)	-0.406(**)	-0.536(**)	-0.618(**)	0.485(**)	0.632(**)	0.489(**)	1				
LnROA	0.540(**)	0.121(*)	0.256(**)	-0.296(**)	-0.401(**)	-0.431(**)	0.329(**)	0.471(**)	0.358(**)	0.765(**)	1			
LnROI	0.517(**)	0.112	0.261(**)	-0.280(**)	-0.375(**)	-0.393(**)	0.298(**)	0.470(**)	0.348(**)	0.731(**)	0.917(**)	1		
Market orientation	0.842(**)	0.316(**)	0.194(**)	-0.339(**)	-0.449(**)	-0.443(**)	0.417(**)	0.842(**)	0.345(**)	0.779(**)	0.605(**)	0.591(**)	1	
Entrepreneurial orientation	0.263(**)	0.292(**)	0.214(**)	-0.237(**)	-0.684(**)	-0.695(**)	0.264(**)	0.309(**)	-0.231(**)	0.408(**)	0.291(**)	0.257(**)	0.340(**)	1
Networking capability	0.230(**)	0.634(**)	0.594(**)	0.082	-0.308(**)	-0.340(**)	0.613(**)	0.285(**)	0.201(**)	0.374(**)	0.213(**)	0.203(**)	0.305(**)	0.277(**)

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Source: Survey

The pro-activeness recorded positive correlation with customer (r = 0.313**), competitor orientation (r = 0.443**), risk taking (r = 0.424**) and coordination (r = 0.313**). It also recorded negative correlation with partners knowledge (r = - 0.355**), competitive aggressiveness (r = - 0.323**), internal communication (r = - 0.244**) and relational skills (r = - 0.305**). The fact that these correlations exist tells us that the constructs measured are inter-related. This observation is further confirmed by the squared multiple correlations amongst factors presented in Table 6.20 that indicate the R-Matrix is not an identity matrix since all squared multiple correlations ranged between 0.828 to 0.944, which are below one (1) (Field, 2009:660). In view of this, it is reasonable not to assume independence between factors. Therefore, the oblique rotated solution is more meaningful in this case.

The next section compares the means of individual dimensions of SER if they differ along the demographical variables namely gender, age and level of education of owners/managers, and the age of business and type of industry.

6.2.4 Multiway Analysis Of Variance

The multiway analysis of variance was performed to compare means of the demographic variables namely gender, age of respondents, level of education of owners/managers, age of business and type of industry and examines if the individual dimensions of strategic entrepreneurial response differs along the demographic variables. The results of the analysis are presented in a series of tables below.

Table 6.22: Multiway ANOVA for Customer orientation (Factor 1)

	Factor 1: Customer orientation				
Demographical variables/control variables	DF	Type III SS	Mean Square	F Value	Pr > F
Gender of respondent	1	0.19033509	0.19033509	0.46	0.4960
Age of respondent	3	9.48025402	3.16008467	7.71	<.0001
Level of education of owner/manager	3	13.81619004	4.60539668	11.24	<.0001
Age of the business/company	1	0.07601926	0.07601926	0.19	0.6670
Industrial sector/type of industry	2	5.45759687	2.72879843	6.66	0.0015

Source: Survey

Table 6.22 indicates that customer orientation (Factor 1) differ significantly in terms of age of owner/managers, level of education, and industrial sector at $p < 0.01$. The findings imply that the level of customer orientation among business owner/managers is influenced by

the type of industry they operate, age of owner/manager, and level of education of owners/managers.

Table 6.23: Multiway ANOVA for relational skills (Factor 2)

Demographical variables/control variables	Factor 2: Relational skills				
	DF	Type III SS	Mean Square	F Value	Pr > F
Gender of respondent	1	0.79530480	0.79530480	1.05	0.3073
Age of respondent	3	19.39761586	6.46587195	8.50	<.0001
Level of education of owner/manager	3	13.83033825	4.61011275	6.06	0.0005
Age of the business/company	1	0.00030266	0.00030266	0.00	0.9841
Industrial sector/type of industry	2	1.86625920	0.93312960	1.23	0.2947

Source: Survey

Table 6.23 indicates that relational skills differed significantly along age and level of education at $p < 0.01$. This is an indication that the relational skills among owner/managers of firms are influenced by their age and level of education of owner/manager.

Table 6.24: Multiway ANOVA for internal communication (Factor 3)

Demographical variables/control variables	Factor 3: Internal communication				
	DF	Type III SS	Mean Square	F Value	Pr > F
Gender of respondent	1	0.30761616	0.30761616	0.37	0.5462
Age of respondent	3	3.13729358	1.04576453	1.24	0.2950
Level of education of owner/manager	3	11.32770245	3.77590082	4.48	0.0043
Age of the business/company	1	0.17348685	0.17348685	0.21	0.6503
Industrial sector/type of industry	2	1.69400688	0.84700344	1.01	0.3672

Source: Survey

The role of gender, age of owners/managers, level of education, age of business and type of industrial sector on internal communication in the firm were examined. Table 6.24 presents summaries of the results that indicate that the internal communication within a firm differed significantly along the level of education at $p < 0.01$. This finding implies that the internal communication of a firm is likely to be influenced by the level of education of the owners/managers.

Table 6.25: Multiway ANOVA for coordination (Factor 4)

Demographical variables / control variables	Factor 4: Coordination				
	DF	Type III SS	Mean Square	F Value	Pr > F
Gender of respondent	1	0.43826224	0.43826224	0.63	0.4294
Age of respondent	3	19.34050256	6.44683419	9.21	<.0001
Level of education of owner/manager	3	8.35507102	2.78502367	3.98	0.0084
Age of the business/company	1	0.26400700	0.26400700	0.38	0.5396
Industrial sector/type of industry	2	0.78811859	0.39405929	0.56	0.5701

Source: Survey

The summary of results presented in Table 6.25 indicates that the coordination of business activities within and beyond a firm's boundaries differed significantly along the age and level of education of the owner/managers at $p < 0.01$. In other words, the age and level of education of the owners/managers has an influence on the ability to coordinate the business activities.

Table 6.26: Multiway ANOVA for pro-activeness (Factor 5)

Demographical variables / control variables	Factor 5: Pro-activeness				
	DF	Type III SS	Mean Square	F Value	Pr > F
Gender of respondent	1	0.74986298	0.74986298	0.85	0.3577
Age of respondent	3	32.86920644	10.95640215	12.40	<.0001
Level of education of owner/manager	3	22.23302412	7.41100804	8.39	<.0001
Age of the business/company	1	0.56626377	0.56626377	0.64	0.4240
Industrial sector/type of industry	2	0.57907141	0.28953571	0.33	0.7208

Source: Survey

Table 6.26 indicates that the pro-activeness of a firm towards products / service delivery as a strategy to attain competitive edge of the firm differed significantly along the age and level of education of the owners/managers at $p < 0.01$. The findings imply that the pro-activeness of the firm is influenced by the age and level of education of the owners/managers.

Table 6.27: Multiway ANOVA for risk taking (Factor 6)

Demographical variables / control variables	Factor 6: Risk taking				
	DF	Type III SS	Mean Square	F Value	Pr > F
Gender of respondent	1	2.39777056	2.39777056	3.00	0.0844
Age of respondent	3	15.30401451	5.10133817	6.38	0.0003
Level of education of owner/manager	3	40.93991310	13.64663770	17.07	<.0001
Age of the business/company	1	0.18726433	0.18726433	0.23	0.6288
Industrial sector/type of industry	2	1.28284140	0.64142070	0.80	0.4493

Source: Survey

The findings summarised in Table 6.27 shows that the risk taking of the firm differed significantly with the age and level of the education of the owners/managers at $p < 0.01$. This is an indication that the firm's decision to take risks is likely to be influenced by the age and level of education of the owners/managers.

Table 6.28: Multiway ANOVA for partners' knowledge (Factor 7)

Demographical variables/control variables	Factor 7: Partners knowledge				
	DF	Type III SS	Mean Square	F Value	Pr > F
Gender of respondent	1	1.09476409	1.09476409	1.46	0.2275
Age of respondent	3	16.45179023	5.48393008	7.33	<.0001
Level of education of owner/manager	3	15.43856718	5.14618906	6.88	0.0002
Age of the business/company	1	0.31331399	0.31331399	0.42	0.5182
Industrial sector/type of industry	2	2.22936254	1.11468127	1.49	0.2273

Source: Survey

Table 6.28 indicates that partner's knowledge is crucial for networking capability differed significantly along the age and level of education of the owner/manager of the firm at $p < 0.01$. The finding hints that the firm's ability to understand its partners' potential, strategy, products, market, strength and weaknesses is likely to be influenced by the age and level of education of the owners/managers.

Table 6.29: Multiway ANOVA for competitor orientation (Factor 8)

Demographical variables/control variables	Factor 8: Competitor orientation				
	DF	Type III SS	Mean Square	F Value	Pr > F
Gender of respondent	1	0.28486613	0.28486613	0.50	0.4820
Age of respondent	3	20.46176580	6.82058860	11.87	<.0001
Level of education of owner/manager	3	15.30548815	5.10182938	8.88	<.0001
Age of the business/company	1	0.16459507	0.16459507	0.29	0.5930
Industrial sector/type of industry	2	1.68469343	0.84234672	1.47	0.2327

Source: Survey

Table 6.29 presents findings in testing the relationship between the competitor orientation of the firm and a set of independent variables namely; gender of respondent, age of respondent, level of education, age of business, and industrial sector. The results show that the competitor orientation of the firm differed significantly along the age and level of education among business owner/managers at $p < 0.01$. In simple terms this can be interpreted as the ability of firm to be oriented to competitors is influenced by the age and level of education of the owner/manager.

Table 6.30: Multiway ANOVA for competitive aggressiveness (Factor 9)

Demographical variables/control variables	Factor 9: Comptitive aggressiveness				
	DF	Type III SS	Mean Square	F Value	Pr > F
Gender of respondent	1	0.14610727	0.14610727	0.20	0.6540
Age of respondent	3	23.41558838	7.80519613	10.75	<.0001
Level of education of owner/manager	3	38.40130882	12.80043627	17.64	<.0001
Age of the business/company	1	1.79499481	1.79499481	2.47	0.1169
Industrial sector/type of industry	2	4.69301310	2.34650655	3.23	0.0409

Source: Survey

Table 6.30 indicates that the competitive aggressiveness of the firm differed significantly along the age, level of education and industrial sector at $p < 0.01$. The results imply that the competitive aggressiveness of the firm can be influenced by the age, level of education of the owner/manager and the industrial sector in which the business is operating.

Since the ANOVA is an Omnibus analysis, it can only tell if there is a significant difference among means of test groups, but it can not tell which groups differs significantly (Pallant, 2007:242). In this view, it was considered necessary to examine the findings so that it is clear which groups differ significantly in the analysis of variance. To accomplish this, all

means, which differed significantly in the ANOVA, were subjected to the post hoc test specifically the Duncan's Multiple Range Test (DMRT) in order to tell exactly which category of group means are significantly different at $p<0.05$. The results are presented in the subsequent sections.

6.2.4.1 Effects of age on dimensions of strategic entrepreneurial response

Table 6.31 shows that the age group 20-29 years differed significantly from those of the age groups between 30-39 years, 40-49 years and 50 years and above. However, the age group 30-39 years and 40-49 years were not significantly different, but they differed significantly with those of the age groups 50 years and above in terms of customer orientation, relational skills, coordination, pro-activeness, risk taking, competitors orientation, and competitive aggressiveness. Scanning the results presented in Table 6.31, it is clear that age group 30-39 years and 40-49 years recorded the highest mean in customer orientation ($M=4.257$, $p<0.05$), relational skills ($M=4.106$, $p<0.05$), coordination ($M=3.952$, $p<0.05$), pro-activess ($M=3.875$, $p<0.05$), risk taking ($M=3.486$, $p<0.05$), competitor orientation ($M=3.924$, $p<0.05$) and competitive aggressiveness ($M=3.886$, $p<0.05$). These findings, suggest that owners/managers between 30 to 49 years of age are actively engaged in customer relationship, relational skills, coordination, pro-activeness, risk taking, competitor knowledge and competitive aggressiveness.

Looking at the age group 20-29 years, it differed significantly from the other groups 30-39 years, 40-49 years and 50 years and above which are not significantly different in terms of partner's knowledge. With the highest mean ($M=3.936$, $p<0.05$) recorded for the age group 30-39 years, it implies that owners/managers within the age group above 29 years are likely to be aware of partners' knowledge before engaging in networking activities than the younger owner/managers in the age between 20-29 years.

Table 6.31: Comparison of means for age of respondents to show strength of difference

Factors		Age groups			
		20-29 years	30-39 years	40-49 years	50 years <
Factor 1 Customer orientation	Mean	3.457 [c]	4.257 [a]	4.219 [a]	3.963 [b]
	SD	0.938	0.625	0.594	0.797
Factor 2 Relational skills	Mean	3.086 [c]	4.026 [a]	4.106 [a]	3.697 [b]
	SD	1.113	0.889	0.736	1.025
Factor 3 Internal communication	Mean	3.471 [b]	3.874 [a]	3.678 [ba]	3.564 [ba]
	SD	1.034	0.870	0.971	0.930
Factor 4 Coordination	Mean	3.086 [c]	3.950 [a]	3.952 [a]	3.463 [b]
	SD	0.996	0.787	0.782	0.985
Factor 5 Pro-activeness	Mean	2.529 [c]	3.793 [a]	3.875 [a]	3.367 [b]
	SD	1.076	0.931	0.914	1.128
Factor 6 Risk taking	Mean	2.450 [c]	3.464 [a]	3.486 [a]	3.059 [b]
	SD	0.880	0.970	0.993	1.055
Factor 7 Partners knowledge	Mean	2.914 [b]	3.936 [a]	3.846 [a]	3.638 [a]
	SD	1.041	0.853	0.880	0.907
Factor 8 Competitors orientation	Mean	2.882 [c]	3.921 [a]	3.924 [a]	3.599 [b]
	SD	0.943	0.758	0.747	0.853
Factor 9 Competitive aggressiveness	Mean	2.674 [c]	3.886 [a]	3.881 [a]	3.549 [b]
	SD	1.193	0.843	0.874	1.056

All means (horizontal) with different superscript letters are significantly different at $p < 0.05$

Examining internal communication, as an individual dimension of SER, yields interesting results. The age group of 20-29 years differed significant with the age group of 30-39 years and no significant differences were found in the 40 - 49 years and 50 years and above age groups. Similarly, the age group of 30 - 39 years does not differ significantly with the age group of 40-49 years and 50 years and above. The highest mean (M=3.874, $p<0.05$) recorded for the age group of 30-39 years, implies that owners/managers in this age category are much more engaged in internal communication which involves exchange of strategic information and capabilities within the firm. As the firm owners/managers grow older at the age of 40 years and above, the level of internal communication is not as much different from younger owners/managers of the age between 20 – 29 years old.

6.2.4.2 Effects of education on dimensions of strategic entrepreneurial response

Table 6.32 indicates that owners/managers with the level of primary education or lower, and secondary education are not significantly different in terms of customer orientation, relational skills, internal communication, coordination, pro-activeness, risk taking, partner's knowledge, competitor's knowledge and competitive aggressiveness. Similarly, certificate education, diploma and graduate education levels registered no significant difference in all aspects mentioned above. However, the lower level of education such as primary education or lower and secondary education differed significantly at $p< 0.05$ with the higher level of education such as certificate, diploma and graduate levels in all aspects except for secondary education level and certificate education level, which have no significant difference in terms of internal communication.

Table 6.32: Comparison of means for level of education of respondents to show strength of difference

		Level of education			
Factors		Primary or below	Secondary	Certificate	Diploma & Graduate
Factor 1 Customer orientation	Mean	3.777 [b]	3.869 [b]	4.375 [a]	4.404 [a]
	SD	0.700	0.783	0.590	0.599
Factor 2 Relational skills	Mean	3.700 [b]	3.567 [b]	4.246 [a]	4.115 [a]
	SD	1.079	1.098	0.628	0.679
Factor 3 Internal communication	Mean	3.454 [c]	3.526 [bc]	3.827 [ba]	4.016 [a]
	SD	1.013	1.059	0.883	0.665
Factor 4 Coordination	Mean	3.596 [b]	3.515 [b]	3.992 [a]	4.013 [a]
	SD	1.033	1.017	0.755	0.595
Factor 5 Pro-activeness	Mean	3.235 [b]	3.230 [b]	4.073 [a]	3.942 [a]
	SD	1.176	1.144	0.732	0.827
Factor 6 Risk taking	Mean	2.696 [b]	2.939 [b]	3.810 [a]	3.737 [a]
	SD	0.906	1.037	0.802	0.897
Factor 7 Partners knowledge	Mean	3.508 [b]	3.395 [b]	4.129 [a]	3.978 [a]
	SD	1.157	1.076	0.585	0.595
Factor 8 Competitor orientation	Mean	3.347 [b]	3.523 [b]	4.039 [a]	4.088 [a]
	SD	1.041	0.892	0.558	0.619
Factor 9 Competitive aggressiveness	Mean	3.252 [b]	3.237 [b]	4.090 [a]	4.213 [a]
	SD	1.086	1.148	0.522	0.643

All means (horizontal) with different superscript letters are significantly different at P< 0.05

Further examination of the findings reveal that higher levels of education, such as certificate, diploma and graduate levels, have higher mean in customer orientation ($M=4.404$, $p<0.05$), relational skills ($M=4.246$, $p<0.05$), internal communication ($M=4.016$, $p<0.05$), coordination ($M=4.013$, $p<0.05$), pro-activeness ($M=4.073$, $p<0.05$), risk taking ($M=3.810$, $p<0.05$), partners knowledge ($M=4.129$, $p<0.05$), competitor orientation ($M=4.088$, $p<0.05$) and competitive aggressiveness ($M=4.213$, $p<0.05$). These findings hint that owner/managers with at least a certificate level of education are more customer oriented, pro-active, and are risk takers, well equipped with relational skills, good on coordination, partners' knowledge, competitor's knowledge and are more competitive aggressive than those with a secondary level of education and lower.

6.2.4.3 Effects of type of industry on dimensions of strategic entrepreneurial response

Table 6.33 presents results on comparison of means for three industrial sectors namely manufacturing/processing, services and retail, to show strength of difference in terms of the individual dimensions of the strategic entrepreneurial response. The findings indicate that the service sector differed significantly at $p< 0.05$ with retail sectors, in terms of customer orientation, relational skills, internal communication, risk taking, partners' knowledge, competitors' knowledge and competitive aggressiveness and recorded no significant difference with the manufacturing/processing sector in terms of all aspects, except customer orientation that differed significantly at $p< 0.05$.

Table 6.33: Comparison of means for industrial sectors to show strength of difference

Factors		Industrial sector		
		Manufacturing	Services	Retail
Factor 1 Customer orientation	Mean	4.024[b]	4.315[a]	3.894[b]
	SD	0.837	0.607	0.709
Factor 2 Relational skills	Mean	3.835[ba]	4.026[a]	3.761[b]
	SD	0.958	0.802	1.085
Factor 3 Internal communication	Mean	3.715[ba]	3.832[a]	3.533[b]
	SD	0.886	0.896	1.034
Factor 4 Coordination	Mean	3.744[a]	3.879[a]	3.647[a]
	SD	0.879	0.832	0.984
Factor 5 Pro-activeness	Mean	3.582[a]	3.716[a]	3.472[a]
	SD	1.062	1.021	1.116
Factor 6 Risk taking	Mean	3.350[a]	3.431[a]	3.033[b]
	SD	1.032	1.019	1.027
Factor 7 Partners knowledge	Mean	3.662[ba]	3.877[a]	3.614[b]
	SD	0.861	0.943	1.012
Factor 8 Competitors orientation	Mean	3.731[ba]	3.903[a]	3.556[b]
	SD	0.833	0.822	0.902
Factor 9 Competitive aggressiveness	Mean	3.673[a]	3.902[a]	3.413[b]
	SD	1.093	0.915	0.996

All means (horizontal) with different superscript letters are significantly different at P< 0.05

From the results the service sector recorded highest and significant means on customer orientation (M = 4.315, p< 0.05) compare to the manufacturing (M = 4.024, p< 0.05) and retail industries (M = 3.894, p< 0.05). These findings indicate that the service sector is much more oriented to customers compared to other two sectors under investigation. Similarly, the service and manufacturing sectors with higher means (but not with a significant difference between them) on risk taking (M = 3.431, p< 0.05) and competitive aggressiveness (M = 3.902, p< 0.05) are much more risk takers and competitive aggressive compared to the retail sector, which recorded low means on these aspects (Table 6.33).

On the other hand, the study recorded a significant difference between manufacturing/processing and retail sectors at p< 0.05 in terms of risk taking and competitive aggressiveness, while no significant difference in customer orientation,

relational skills, internal communication, coordination, pro-activeness, partner's knowledge, and competitor's knowledge was recorded (Table 6.33).

6.2.5 Multiple Regression Analysis

The multiple regression analysis is amongst multi-variate techniques that are well acknowledged to have predictive power among variables to examine the relationship between independent variables and dependent variables (Pallant, 2011:148; Field, 2009:198; Tabachnick & Fidell, 2007:118). In this study the multiple regression technique was performed to test the advanced hypotheses, which guided this study.

- firstly, it examined the relationship between SME performance and individual dimensions of SER [hypotheses Ha1(a) to Ha1(i)],
- secondly, it examined the relationship between composite dimensions of strategic entrepreneurial response and SME performance [hypotheses Ha2(a) to Ha2(c)],
- thirdly, it examined the amount of variance accounted for in SME performance by the composite dimensions of SER [hypothesis Ha3(a) to Ha3(c)],
- fourthly, it examined the amount of variance explained in SME performance by the interaction of the composite dimensions of the SER [hypothesis Ha4(a) to Ha4(b)],
- to control the influence of demographic variables namely the firm size, type of industry, and level of education of owners/managers in the amount of variance explained in SME performance by the composite dimension of SER and be able to draw conclusions to whether the amount of variance explained is or is not influenced by the firm's size, type of industry and the level of education of the owner/manager [hypothesis Ha5(a) to Ha5(c)].

However, the credibility of the end results mainly depends on the compliance of the regression model on the set of assumptions. From this context, prior to the multiple regression analysis, data were tested for the compliance of assumptions and transformations were made whenever thought necessary to ensure compliance to the regression assumptions.

6.2.5.1 Testing for regression assumptions

The assumptions that were considered crucial and tested were: normality, linearity, independent residuals (errors), homoscedasticity, outliers, and multicollinearity (Field, 2009:220; Pallant, 2011:151; Tabachnick & Fidell, 2007:161).

1: Normality

As indicated before, the analysis checked for normality of the test variables (profit, return on asset and return on investment). According to Field (2009:221), the assumption for normality is crucial if findings are to be generalised to the entire population, which is the case in this study. The assumption of normality implies that the differences between the model and the observed data are most frequently zero or very close to zero and that the differences much greater than zero, happen only occasionally. Gupta (1999:7-13) and Pallant (2011:63) suggest several methods to determine the distribution type. Such methods include P-P and Q-Q, which are visual tests, but they are not sufficient because they do not provide a mathematical hypothesis test that the hypothesis' "variables distribution" can be accepted as normal. For this reason, a formal test for the distribution type such as the "Kolmogorov-Smirnov test for normality, became necessary.

In light of the above, a formal test for the distribution type was performed whereby a one sample Kolmogorov-Smirnov test for normality was employed. The Kolmogorov-Smirnov test whether the distribution type for the test variable, deviate significantly from normal (Pallant, 2011:63). Table 6.34 presents a summary of results for the formal test for the type of distribution.

Table 6.34: Distribution test for normality of test variables

Parameters		Non transformed test variables		
		PROFIT	ROA	ROI
N		290	290	290
Normal Parameters(a, b)	Mean	39.9007	7.3860	4.5886
	Std. Deviation	34.52881	9.25689	5.79967
Most Extreme Differences	Absolute	0.173	.247	0.230
	Positive	0.173	.247	0.230
	Negative	-0.130	-.205	-0.200
Kolmogorov-Smirnov Z		2.946	4.203	3.923
Asymp. Sig. (2-tailed)		0.000	0.000	0.000

a Test distribution is Normal.
b Calculated from data

Source: Survey

The results indicate that the test variables namely; profit, return on asset (ROA) and return on investment (ROI) are significantly different at p< 0.000 which implies that they are significantly different from normal distribution. In other words, the test variables are not normally distributed. In light of these findings, transformation considered crucial to attain normal distribution of data which will subsequently allow the generalisation of findings.

2: Testing for outliers

The case-wise diagnostic was performed in two phases, before transformation and after transformation of data to test for presence of outliers in data. This was performed with the understanding that regression is sensitive to outliers. Table 6.35 presents results on case-wise diagnostic with values of standard residual at both phases; before and after transformation of data.

Table 6.35: Case-wise diagnostic before and after transformation

Case No.	Standard residual before transformation			Standard residual after transformation		
	Profit	ROA	ROI	LnProfit	LnROA	LnROI
22	5.097	-	-	-	-	-
77	-	-	-	-	-	-4.100
124	-	-	-	3.531	-	-
128	-	-	4.397	-	-	-
148	4.655	9.179	7.262	-	-	-
152	-	4.285	4.157	-	-	-
153	-	4.207	6.657	-	-	-
193	4.323	4.339	4.134	-	-	-
197	5.072	-	-	-	-	-
238	-	3.444	4.100	-	4.835	4.989
239	-	3.353	3.359	-	3.405	-
264	3.557	-	-	-	-	-
Total cases	5(1.72%)	6(2.06%)	7(2.41%)	1(0.34%)	2(0.69%)	2(0.69%)

Source: Survey

The findings indicate that before transformation there were 5(1.72%), 6(2.06%), and 7(2.41%) cases in Profit, ROA and ROI, respectively with values above 3.3 or below -3.3, of which according to Fields (2009:216) and Tabachnick and Fidell (2007:128) were regarded as outliers. However, after transformations only 1(0.34%), 2(0.69%), and 2(0.69%) of cases in LnProfit, logROA and logROI, respectively recorded values above 3.3 or less than -3.3. Palant (2007:158) suggests that the value of less than 1 percent standard residual is acceptable. Since all values of standard residues after transformation were quite well below the cut-off point of 1 percent (Table 6.35), it implies that the transformation reduced the amount of outliers to an acceptable level and it was no longer a threat in this study.

3: Test for independent errors

The Durbin Watson test was requested to test whether the assumption of independent errors was met by the current data. Field (2009:120) suggests that for any two observations, the residual terms should be independent or uncorrelated. The Durbin Watson test for serial correlation between errors, especially tests whether the adjacent

residuals are correlated. According to Field (2009:220), the test statistics can vary between 0 and 4 with a value of 2 meaning that the residuals are uncorrelated, values less than 1 and greater than 3 should raise concern and values close to 2 are better. In view of this, Table 6.36 presents results on the Durbin Watson test before and after transformation.

Table 6.36: Independent errors test

	Durbin Watson values	
	Before transformation	After transformation
Natural log Profit (LnProfit)	1.842	1.685
Natural log return on asset (LnROA)	1.859	1.732
Natural log return on investment (LnROI)	1.682	1.847

Source: Survey

The results in Table 6.36 extracted from sequential multiple regression models presents the Durbin Watson values before transformation in profit (1.842), ROA (1.859), and ROI (1.682) and after transformation LnProfit (1.685), LnROA (1.732) and LnROI (1.847) regressed against the composite dimensions of SER, namely: market orientation, entrepreneurial orientation and networking capability. Findings indicate that there was a slight decrease in Durbin Watson values for LnProfit and LnROA and a slight increase in LnROI after transformation. These findings indicate that transformation did not add much value in terms of the Durbin Watson values because both values before and after transformation were within acceptable range. These values are by far not below 1 and not above 3, but were close to 2. In this view, the assumption for independent errors has certainly been met (Field, 2009:220).

6.2.5.2 Remedy for compliance to regression assumptions

Failure of the first attempt of the test variables (Profit, ROA and ROI), to comply with the normality, prompted a need to subject test variables into natural logarithm (Ln) transformation. Table 6.37 presents results for the formal test of one sample the Kolmogorov Smirnov test for normality of transformed data, to test whether the transformed data still deviate significantly from normal distribution. According to Pallant

(2011:63) the Kolmogorov Smirnov test used to test the hypothesis, that the test variables are not significantly different from normal.

Table 6.37: Transformed data for distribution test

Parameters		Transformed test variables (Ln)		
		LnProfit	LnROA	LnROI
N		282	282	282
Normal Parameters(a, b)	Mean	3.4553	1.6321	1.1565
	Std. Deviation	0.72312	0.84329	0.85168
Most Extreme Differences	Absolute	0.047	0.070	0.071
	Positive	0.038	0.070	0.071
	Negative	-0.047	-0.035	-0.061
Kolmogorov-Smirnov Z		0.791	1.169	1.192
Asymp. Sig. (2-tailed)		0.558	0.130	0.117

a Test distribution is Normal.
b Calculated from data.

Source: Survey

Table 6.37 shows that all three test variables (LnProfit, LnROA, and LnROI) are not significantly different from normal distribution a $p<0.05$, which suggest that all test variables after transformation are normally distributed. The normality of the variables allows generalisation of the findings beyond the collected sample, which is among the objectives of this study (Field, 2009:221).

4: Assessing for multi-collinearity

Referring to the impact of multi-collinearity in the credibility of the results of the multiple regressions, it was considered important to test whether there is collinearity in the data. In this case, the analysis requested a variance inflation factor (VIF) and Tolerance, which are formal tests for multi-collinearity (Pallant, 2011:158). Various scholars provide guidelines that can be applied to test collinearity. Pallant (2007:156) suggests that if the largest VIF is greater than 10, there is a cause for concern, indicating presence of multi-collinearity but Bowerman & O'Connell (1990) in Field (2009:224) pointed out further that if the average VIF is substantially greater than 1, the regression may be biased. On the other hand, Menard (1995) in Fields (2009:224) and Pallant (2007:156) indicate that the Tolerance below 0.1 pose a serious problem and below 0.2 indicates a potential problem.

Table 6.38: Collinearity statistics

Model	Collinearity statistics	
	Tolerance	Average VIF
Natural log return on profit (LnProfit)	0.751	1.332
Natural log return on asset (LnROA)	0.804	1.244
Natural log return on investment (LnROI)	0.806	1.240

Source: Survey

In view of the above, Table 6.38 presents collinearity statistics; average variance inflation factor (VIF) and Tolerance. According to Field (2009:242), to calculate the average VIF simply add the VIF values for each predictor and divide it by the number of predictors (k) (see Equation 6.2). The tolerance is simply a reciprocal of the variance inflation factor (1 / VIF) (See Equation 6.4)

$$\overline{VIF} = \frac{\sum_{i=1} VIF_i}{k} \quad \text{.....(Equation 6.3)}$$

Where:

- $\overline{VIF}$ is the VIF values for each predictor.
- k is the number of predictors

$$Tolerance = \frac{1}{VIF} \quad \text{.....(Equation 6.4)}$$

The findings presented in Table 6.38, indicate that the average VIF for test variables Lnprofit (1.332), LnROA (1.244) and LnROI (1.240) are quite well below 10 and are close to 1 as suggested by Field (2009:224). Consistently, the tolerance values for LnProfit (0.751), LnROA (0.804), and LnROI (0.806) are by far above 0.2 which again fall within acceptable range suggested by Menard (1995) cited by Fields (2009:224) and Pallant (2007:156). These findings suggest that neither multi-collinearity nor model biasness is a threat in these data.

Having tested compliance of data to regression assumptions, the next step was to use data to test the advanced hypotheses and acquire empirical evidence to be able to draw a conclusion.

6.2.5.3 Relationship between dimensions of SER and SME performance

This study examined the relationship between dimensions of SER and SME performance. Two categories of dimensions were established: the first category was the individual dimensions that involved the 9 factors extracted after oblique rotation, namely customer orientation, competitor orientation, pro-activeness, risk taking, competitive aggressiveness, relational skills, internal communication, coordination and partner's knowledge (Figure 6.3). The second category was the composite dimensions that involved three constructs, namely: market orientation, entrepreneurial orientation and networking capability formed by combining the individual dimensions of SER to the most related constructs (Figure 6.3). The results on the relationship between SME performance and both the Individual and composite dimensions of SER, are presented in the next sections.

Category 1: Individual dimensions of SER and SME performance

Hypothesis 1(a) to (i) as presented in section 5.1.3.2 were intended to examine the relationship between individual dimensions of SER and SME performance. According to Pallant (2011:148), multiple regressions are amongst techniques used to explore relationships between one continuous outcome variable and a number of predictors (independent variables). Based on this fact, amongst other analysis, multiple regressions were used to test hypothesis 1(a) to 1(i), to examine the relationship between individual dimensions of SER (predictor) and SME performance (outcome variable).

Table 6.39 provides details of the parameter estimates and model parameters for individual dimensions of SER such as the F-ratio, beta (β) values and the significance of these values. The F-ratio is the ratio of mean Sum of Square of the Model (SS_M) and the residual mean square (MS_R) (see general equation 6.5). The significant F-ratio tells that the model fitted data well. The β values on the other hand, tell about the relationship between SME performance (outcome variable) and each predictor and the contribution of each predictor to the outcome variables for the case of this study, namely: SME performance, and the individual measurements of performance, namely: LnProfit, LnROA

and LnROI. According to Field (2009:238), if the β-value is positive then the predictor has a positive relationship with the outcome variable and if the β-value is negative, it has a negative relationship.

$$F = \frac{MS_M}{MS_R} \quad \text{.....(Equation 6.5)}$$

In this case, Table 6.39 presents results on the relationship between individual dimensions of SER and overall SME performance, and individual performance measures namely LnProfit, LnROA and LnROI. The F-ratio for the first three models (model 1 – 3) were significant at p<0.01 for all outcome variables suggesting that the three models fitted data well. The overall results in model 3 show that the relationship between SME performance and individual dimension of SER namely; customer orientation (β = 0.361, p< 0.01), competitor orientation (β = 0.226, p< 0.01), pro-activeness (β = 0.105, p< 0.05), relational knowledge (β = 0.109**, p<0.01), and internal communication (β = 0.120, p< 0.01) recorded significant positive relationship while partners knowledge (β = 0.045, p< 0.695) recorded none significant positive relationship. However, SME performance recorded significant negative relationship with risk taking (β = - 0.184, p< 0.01), competitive aggressiveness (β = - 0.157, p< 0.01) and coordination (β = - 0.084, p< 0.007).

Table 6.39, model 3 presents results on the relationship between LnProfit and individual dimension of SER. These findings show that customer orientation (β = 0.361, p< 0.01), competitor orientation (β = 0.234, p< 0.01), pro-activeness (β = 0.083, p<0.05), internal communication (β = 0.106, p< 0.01), and partners knowledge (β = 0.083, p< 0.05) were significantly positive related to LnProfit. On the other hand, risk taking (β = - 0.243, p< 0.01), competitive aggressiveness (β = - 0.182, p< 0.01) and coordination (β = - 0.083, p< 0.05) recorded a significant negative relationship with LnProfit. However, relational skills are the only individual dimensions of SER that recorded non significant positive relationship with the LnProfit.

Table 6.39: Parameter estimates (β) and model parameters for individual dimensions of SER

	Model 1				Model 2				Model 3			
	SME Perf.	LnProfit	LnROA	LnROI	SME Perf.	LnProfit	LnROA	LnROI	SME Perf.	LnpProfit	LnROA	LnROI
Individual dimensions of SER												
Market Orientation			Beta (β)				Beta (β)				Beta (β)	
Customer orientation	0.463**	0.497**	0.419**	0.393**	0.381**	0.388**	0.350**	0.336**	0.361**	0.361**	0.334**	0.321**
Competitor orientation	0.372**	0.436**	0.306**	0.315**	0.229**	0.256**	0.183**	0.208**	0.226**	0.234**	0.188**	0.216**
Entrepreneurial Orientation												
Pro-activeness					0.124**	0.138**	0.114*	0.097ns	0.085^{n}	0.083*	0.085ns	0.069ns
Risk taking					-0.178**	-0.261**	-0.143**	-0.108*	-0.184**	-0.243**	-0.159**	-0.125*
Competitive aggressive					-0.167**	-0.195**	-0.139**	-0.141**	-0.157**	-0.182**	-0.130**	-0.134**
Networking Capability												
Relational skills									0.109**	0.012ns	0.143**	0.136**
Internal Communication									0.120**	0.106**	0.105*	0.123**
Coordination									-0.084*	-0.087**	-0.076ns	-0.072ns
Partners knowledge									0.045^{ns}	0.083*	0.038ns	0.012ns
Standard Error (SE)												
Customer orientation	0.114	0.032	0.047	0.048	0.108	0.026	0.047	0.049	0.106	0.025	0.046	0.048
Competitor orientation	0.110	0.031	0.046	0.047	0.111	0.027	0.048	0.050	0.110	0.026	0.048	0.050
Pro-activeness					0.107	0.026	0.046	0.048	0.109	0.026	0.047	0.049
Risk taking					0.105	0.026	0.045	0.047	0.104	0.025	0.045	0.047
Competitive aggressive					0.098	0.024	0.042	0.044	0.095	0.023	0.042	0.043
Relational skills									0.099	0.024	0.043	0.045
Internal Communication									0.091	0.022	0.040	0.041
Coordination									0.099	0.024	0.043	0.045
Partners knowledge									1.103	0.025	0.045	0.047
t-statistics												
Customer orientation	9.958	12.203	8.106	7.496	8.615	11.462	6.834	6.365	8.297	11.089	6.567	6.141
Competitor orientation	8.001	10.710	5.920	6.002	4.856	7.110	3.361	3.708	4.859	6.724	3.456	3.850
Pro-activeness					2.655	3.882	2.120	1.743	1.791	2.342	1.548	1.214
Risk taking					-3.848	-7.400	-2.676	-1.966	-4.005	-7.056	-2.968	-2.261
Competitive aggressive					-3.907	-5.948	-2.810	-2.758	-3.752	-5.790	-2.662	-2.663
Relational skills									-2.572	-0.393	-2.898	-2.676
Internal Communication									2.985	3.543	2.245	2.559
Coordination									-1960	-2.731	-1.530	-1.404
Partners knowledge									1.001	2.461	0.720	0.226

F-ratio	133.771	217.003	82.030	75.569	75.304	167.722	42.094	36.680	46.452	106.572	26.019	22.803
Sig. F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Model Parameters												
R^2	0.490	0.609	0.370	0.351	0.577	0.752	0.433	0.399	0.606	0.779	0.463	0.430
Adjusted R^2	0.486	0.606	0.366	0.347	0.569	0.748	0.422	0.388	0.593	0.772	0.445	0.411
R^2 Change	0.490	0.609	0.370	0.351	0.088	0.144	0.062	0.048	0.029	0.027	0.030	0.031
F – Change	133.771	217.003	82.030	75.569	19.034	53.382	10.112	7.327	4.970	8.215	3.794	3.678
Sig. F – Change	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.005	0.006

Model1: Predictors: (Constant), Factor 9: Competitive aggressiveness, F27256actor 6: Risk taking, Factor 5: Pro-activeness

Model 2: Predictors: (Constant), Factor 9: Competitive aggressiveness, Factor 6: Risk taking, Factor 5: Pro-activeness, Factor 1: Customer orientation, Factor 8: Competitor orientation

Model 3: Predictors: (Constant), Factor 9: Competitive aggressiveness, Factor 6: Risk taking, Factor 5: Pro-activeness, Factor 1: Customer orientation, Factor 8: Competitor orientation, Factor 3: Internal communication, Factor 2: Relational skills, Factor 4: Coordination, Factor 7: Partner's knowledge.

Dependent Variable: SME Performance (SME Perf.), LnProfit, LnROA & LnROI

**p< 0.01; *p<0.05

The relationship between LnROA and individual dimension of SER are: customer orientation (β = 0.334, p< 0.01), competitor orientation (β = 0.188, p< 0.01), pro-activeness (β = 0.085, p<0.123), internal communication (β = 0.105, p< 0.05), and partner's knowledge (β = 0.038, p< 0.472) (Table 6.39, model 3). These findings show that while customer orientation, competitor orientation, and internal communication recorded significant positive relationship with LnROA, pro-activeness and partner's knowledge recorded positive, but none significant relationship with LnROA. On the other hand, risk taking (β = - 0.159, p< 0.01) and competitive aggressiveness (β = - 0.130, p< 0.01) recorded significant negative relationships with LnROI, while coordination (β = - 0.076, p< 0.127) recorded negatively none significant relationship with LnROI.

With regard to the relationship between LnROI and individual dimensions of SER, model 3 in Tables 6.39 shows that customer orientation (β = 0.321, p< 0.01), competitor orientation (β = 0.216, p< 0.01), internal communication (β = 0.123, p<0.01), recorded positive significant relationship with LnROI and pro-activeness (β = 0.069, p< 0.226) and partners knowledge (β = 0.012, p< 0.822) recorded positive none significant relationship with LnROI. However, the risk taking (β = -0.125, p< 0.05) and competitive aggressiveness (β = - 0.134, p< 0.01) recorded significant negative relationships with LnROI while coordination (β = - 0.072, p< 0.161) recorded no significant relationship with LnROI. The positive relationship between individual dimensions and SME performance indicates that as a firm emphasizes on a respective individual dimension, the SME performance increases, while for a negative relationship, it implies the opposite.

The relationship between individual dimensions of SER and SME performance presents inconsistence in the nature of the relationship. It is evident that even in cases of factors drawn from the same constructs, revealed differences in the nature of the relationship. For example, while pro-activeness, risk taking and competitive aggressiveness are factors of entrepreneurial orientation, pro-activeness recorded a positive relationship while risk taking and competitive aggressiveness both recorded a negative relationship with SME performance. The same trend is observed in networking capability. This variation in the nature of the relationship with SME performance raised another question as to what the nature of the relationship between composite dimensions of SER and SME performance will be. The next section was set out to answer this question.

Category 2: Composite dimensions of SER and SME performance

Three composite dimensions of SER were created, namely entrepreneurial orientation, market orientation and networking capability. The composite dimensions of SER were created by combining respective factors such as entrepreneurial orientation combined by pro-activeness, risk taking and competitive aggressiveness. The market orientation combined customer orientation and competitor orientation. Finally the networking capability combined relational skills; internal communication, coordination and partners' knowledge (see Figure 6.3). Then the relationship between the composite dimensions of SER and SME performance was examined to test hypothesis 2(a) to 2(c) (see section 5.1.3.3).

Despite of variation in the nature of relationship between individual dimensions of SER and SME performance, the composite dimensions of SER observed to maintain a positive relationship with SME performance and the three measures of performance, namely: LnProfit, LnROA and LnROI. In Table 6.40 model 4, the results show that market orientation was significantly positive related to SME performance ($\beta = 0.697$, $p < 0.01$), LnProfit ($\beta = 0.779$, $p < 0.01$), LnROA ($\beta = 0.605$, $p < 0.01$) and LnROI ($\beta = 0.591$, $p < 0.01$). Model 5 shows that entrepreneurial orientation recorded a significant positive relationship with SME performance ($\beta = 0.336$, $p < 0.01$), LnProfit ($\beta = 0.408$, $p < 0.01$), LnROA ($\beta = 0.291$, $p < 0.01$) and LnROI ($\beta = 0.257$, $p < 0.01$). Consistently model 6 shows that networking capability recorded significant positive relationship with SME performance ($\beta = 0.276$, $p < 0.01$), LnProfit ($\beta = 0.374$, $p < 0.01$), LnROA ($\beta = 0.213$, $p < 0.01$) and LnROI ($\beta = 0.203$, $p < 0.01$).

Table 6.40: Parameter estimates (β) and model parameters for composite dimensions of SER

	Model 4				Model 5				Model 6			
	SME Perf.	LnProfit	LnROA	LnROI	SME Perf.	LnProfit	LnROA	LnROI	SME Perf.	LnpProfit	LnROA	LnROI
Composite dimensions			Beta (β)				Beta (β)				Beta (β)	
Market orientation	0.697**	0.779**	0.605**	0.591**								
Entrepreneurial orientation					0.336**	0.408**	0.291**	0.257**				
Networking capability									0.276**	0.374**	0.213**	0.203**
Standard Error												
Market orientation	0.062	0.017	0.026	0.026								
Entrepreneurial orientation					0.079	0.024	0.030	0.031				
Networking capability									0.068	0.021	0.026	0.026
t-statistics												
Market orientation	16.278	20.795	12.703									
Entrepreneurial orientation					5.969	7.479	5.082	4.457				
Networking capability									4.797	6.756	3.648	3.472
Model Parameters												
R^2	0.486	0.607	0.366	0.349	0.113	0.166	0.084	0.066	0.076	0.140	0.045	0.041
Adjusted R^2	0.484	0.606	0.363	0.347	0.110	0.164	0.081	0.063	0.073	0.137	0.042	0.038
F – ratio	264.988	432.418	161.365	150.070	35.630	55.929	25.824	19.868	23.015	45.638	13.311	12.057
Sig. F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001

Model 4: Predictors: Market orientation
Model 5: Predictors: Entrepreneurial orientation
Model 6: Predictors: Networking capability
Dependent Variable: SME Performance, LnProfit, LnROA and LnROI
**p< 0.01; p< 0.05

6.2.5.4 Variance explained in SME performance by composite dimensions of SER

To examine how much variance is explained in the SME performance by the composite dimensions of SER, the multiple regression analysis was used to test hypotheses 3(a) to 3(c) (see section 5.1.3.4). Table 6.40 present results of three models (models 4, 5 & 6) in which the composite dimension of SER namely market orientation, entrepreneurial orientation and networking capability were analysed. According to Field (2009:202), the useful statistics when examining the amount of variance explained in the outcome variable by the predictors are the R square (R^2), adjusted R2, and the F-ratio.

The R square (R^2) in the regression measures the amount of variance in the outcome variable (for this study SME performance), explained by the model (SS_M) relative to how much variation there was to explain in the first place (SS_T) (Pallant, 2011:160). Therefore, as a percentage, it presents the percentage of variation in the outcome variable that can be explained by the model (Field, 2009:202). It is easily computed by dividing the model sum of square (SS_M) by the total sum of square (SS_T) (See Equation 6.6).

$$R^2 = \frac{SS_M}{SS_T} \quad \text{.....(}\textit{Equation 6.6}\text{)}$$

In the case of model 4 in Table 6.40, when only the market orientation was included, the R^2 value was 0.486, 0.607, 0.366, and 0.349 for SME performance, LnProfit, LnROA and LnROI, respectively. These findings imply that market orientation alone accounted for the 48.6%, 60.7%, 36.6% and 34.9% of variance in the overall SME performance, LnProfit, LnROA and LnROI, respectively. In model 5, when only entrepreneurial orientation was considered the model explained R^2 = 0.113, R^2= 0.166, R^2= 0.084, and R^2= 0.066 of variance in SME performance, LnProfit, LnROA, and LnROI, respectively, suggesting that 11.3%, 16.6%, 8.4% and 6.6%. of variance in SME performance, LnProfit, LnROA and LnROI explained by entrepreneurial orientation. Consistently, in model 6 when networking capability was considered, the model recorded R^2= 0.076, R^2 =0.140, R^2 =0.045, and R^2= 0.041. In the overall SME performance, LnProfit, LnROA, and LnROI suggesting 7.6%, 14%, 4.5% and 4.1% of variance in SME performance, LnProfit, LnROA and LnROI is explained by networking capability.

In order to tell whether the amount of variance (R^2) explained in the outcome variables is significant, the F-ratio was calculated (See Equation 6.7) in which "*N*" is the number of cases, and "k" is the number of predictors in the model. According to Field (2009:235) the significance of R^2 is tested using an F–ratio to test hypothesis that the F-ratio is significantly different from zero. Examining the values of F-ratio in Table 6.40 in model 4, 5 and 6 all values were significant at p< 0.01 suggesting that market orientation, entrepreneurial orientation and networking capability explained significant amounts of variance in SME performance, LnProfit, LnROA and LnROI.

$$F = \frac{(N-k-1)\times R^2}{k\,(1-R^2)} \quad \text{.....(Equation6.7)}$$

6.2.5.5 Variance explained in SME performance by interaction of composite dimensions of SER

The amount of variance explained in SME performance by the interaction of composite dimensions of SER market orientation and entrepreneurial orientation, and market orientation, entrepreneurial orientation and networking capability was examined. The objective of this analysis was to test hypothesis 4(a) and 4(b) as presented in section 5.1.3.5 to determine if there is any synergic relationship among dimensions and if this interaction account for a significant amount of variance in SME performance. In events where more predictors are added in the model such as model 8 and 9 the R^2 change and F- change were used to make judgment on whether the added variable had significant contribution to the overall variance explained in the SME performance after controlling the effects of the other predictors in the model. The significance of R^2 change is tested by using the F- change ratio which is computed using similar equation presented in equation 6.7 except that since the interest is to find the change in models rather then the change in R^2 (R^2_{Change}) and the R^2 in the new model, should correspond to the parameters in the respective model. Equation 6.8 in this study gives an example of model 8, which includes the following parameters R^2_8, R^2_{Change} and k_{Change}

$$F_{Change} = \frac{(N-k_8-1)\times R^2_{Change}}{k_{Change}(1-R^2_8)} \quad \text{.....(Equation6.8)}$$

Table 6.41 model 7 shows that when only market orientation was included in the model, the amount of variance explained in SME performance, LnProfit, LnROA and LnROI were R^2 = 0.486, R^2 = 0.607, R^2 = 0.366 and R^2 = 0.349, respectively. Addition of entrepreneurial orientation in model 8, the amount of variance increased to R^2 = 0.498, R^2 = 0.631, R^2 = 0.374 and R^2 = 0.353 in SME performance, LnProfit, LnROA and LnROI, respectively. When the networking capability was added in model 9, the amount of variance increased slightly to R^2 = 0.501, R^2 = 0.648, R^2 = 0.375 and R^2 = 0.353 in SME performance, LnProfit, LnROA and LnROI, respectively. The F-ratio for the three models (7, 8 & 9) were significant at $p< 0.01$ suggesting that all models fitted data well and all the interactions explained significant amounts of variance in SME performance.

However, it was interesting to go further to understand which of the dimensions of the SER in the interaction accounted for a significant amount of variance in SME performance. The R^2 square change and F-change were used to isolate individual contribution of the dimension of the SER in the amount of variance explained in SME performance. The R^2 change in model 8 when entrepreneurial orientation was added for SME performance and LnRrofit were ΔR^2= 0.012 and ΔR^2= 0.024, respectively with F-change significant at $p< 0.01$. Conversely, entrepreneurial orientation recorded the R^2 square change (ΔR^2) = 0.012 with the F change none significant at $p< 0.191$ in LnROI. On the other hand, the R^2 change in model 9 was (ΔR^2) = 0.016 in LnProfit with the F change significant at $p< 0.01$ and accounted nosignificant amount of variance in SME performance, LnROA and LnROI,

Table 6.41: Parameter estimates (β) and model parameters for interaction of composite dimensions of SER

	Model 7				Model 8				Model 9			
	SME Perf.	LnProfit	LnROA	LnROI	SME Perf	LnProfit	LnROA	LnROI	SME Perf.	LnpProfit	LnROA	LnROI
Composite dimensions			Beta (β)				Beta (β)				Beta (β)	
Market orientation	0.697**	0.779**	0.605**	0.591**	0.659**	0.724**	0.571**	0.568**	0.645**	0.693**	0.566**	0.563**
Entrepreneurial orientation					0.115*	0.166**	0.099*	0.067ns	0.104*	0.139**	0.095ns	0.063ns
Networking capability									0.061ns	0.136**	0.023ns	0.023ns
Standard Error												
Market orientation	0.062	0.017	0.026	0.026	0.065	0.018	0.027	0.028	0.066	0.018	0.028	0.028
Entrepreneurial orientation					0.063	0.017	0.026	0.027	0.064	0.017	0.027	0.028
Networking capability									0.061	0.014	0.022	0.023
t-statistics												
Market orientation	16.277	20.795	12.703		14.631	18.755	11.370	11.118	13.995	17.889	10.972	10.730
Entrepreneurial orientation					2.562	4.292	1.972	1.311	2.262	3.620	1.845	1.200
Networking capability									1.349	3.587	0.464	0.449
F- ratio	264.943	432.418	161.365	150.070	138.384	238.876	83.461	76.088	93.134	170.315	55.555	50.647
Sig. F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Model Parameters												
R^2	0.486	0.607	0.366	0.349	0.498	0.631	0.374	0.353	0.501	0.648	0.375	0.353
Adjusted R^2	0.484	0.606	0.363	0.347	0.494	0.629	0.370	0.348	0.496	0.644	0.368	0.346
R^2 Change	0.486	0.607	0.366	0.349	0.012	0.024	0.009	0.004	0.003	0.016	0.000	0.000
F – Change	264.943	432.418	161.365	150.070	6.562	18.425	3.891	1.719	1.820	12.868	0.215	0.202
Sig. F – Change	0.000	0.000	0.000	0.000	0.011	0.000	0.050	0.191	0.178	0.000	0.643	0.654

Model 7: Predictors: Market orientation
Model 8: Predictors: Market orientation, Entrepreneurial orientation
Model 9: Predictors: Market orientation, Entrepreneurial orientation, Networking capability
Dependent Variable: Overall Performance (Perf.), LnProfit, LnROA and LnROI
**p< 0.01; p< 0.05

It was interesting to test whether these data can be generalized beyond the sample of interest. In this case the adjusted R^2 was compared to the R^2 to determine the magnitude of the difference. Field and Miles (2010:206) suggest that while R^2 hints the amount of the variance in the outcome variable that is accounted for by the regression model from the sample of interest, the adjusted R^2 gives some idea on how well the model generalizes the data across the population. In other words, the adjusted R^2 tells how much variance in outcome variable would be accounted for if the model had been derived from the population from which the sample was taken. In this case, for a good model the value of adjusted R^2 should be the same or very close to the value of R^2. The computation of the adjusted R^2 was performed using the Stein's equation which is presented in equation 6.9 (Field, 2009:222).

$$\text{Adjusted R}^2 = 1 - \left[\left(\frac{n-1}{n-k-1}\right) \times \left(\frac{n-2}{n-k-2}\right) \times \left(\frac{n+1}{n}\right)\right] \times \left(1 - R^2\right) \ldots\ldots\ldots \textit{(Equation 6.9)}$$

Where:

- "R^2"is the unadjusted value,
- "n" is the number of participants
- "k" is the number of predictors in the model.

Examining the difference between R^2 and adjusted R^2 for SME performance in model 7, 8 and 9 presented in Table 6.41, it was indicated that the difference between the two values for each mode is very small. For example, the difference between R^2 and adjusted R^2 in SME performance for model 7, 8 and 9 is 0.002, 0.004 and 0.005, respectively. This shrinkage suggests that if the models were derived from the entire population rather than a sample, it would account for approximately 0.2% (model 7), 0.4% (model 8) and 0.5% (model 9) less variance in the SME performance. With such a small difference, it is confidently concluded that the findings can be generalized across the population of interest.

6.2.5.6 Influence of demographic variables in the amount of variance explained

After the analysis have examined the amount of variance explained in SME performance by the individual and composite dimensions of SER and the contribution (effect) of

individual and composite dimensions of SER in the ability of the model to predict or explain variance in SME performance, it was imperative to control the influence of firm size, type of industry, and level of education of owner/manager in the amount of variance explained in SME performance by the dimensions of SER to test hypothesis 5(a) to 5(c) presented in section 5.1.3.6. The reason for controlling the effects of these variables is to rule out the confounding effect of these variables that were observed in the Multiway ANOVA to have influence on individual dimensions of SER that subsequently have influence in SME performance. In this view, controlling the influence of firm size, type of industry, and level of education of owner/manager, enables one to draw a conclusion on whether the amount of variance explained in SME performance by the dimensions of SER is due to the influence of firm size, type of industry, and level of education of owners / managers or if it is irrespective of these variables.

Table 6.42 presents results on parameter estimates for sequential multiple regression with four models (model 10, 11, 12 & 13). These findings presented in model 10, represent parameter estimates only when demographic variables namely firm size, type of industry, and level of education of owner/manager were considered. Model 11 includes the demographic variables and the market orientation, but only when the effects of the demographic variables are controlled. Model 12 involves demographic variables, market orientation and entrepreneurial orientation, but only when the effects of demographic variables and market orientation are controlled. Model 13 includes the demographic variables, market orientation, entrepreneurial and networking capability, but only when the effects of demographic variables, market orientation and entrepreneurial orientation are controlled.

Table 6.42: Parameter estimates (β) and model parameters for the interaction of Composite dimensions of SER

	Model 10				Model 11				Model 12				Model 13			
	SME Perf.	LnProfit	LnROA	LnROI	SME Perf.	LnProfit	LnROA	LnROI	SME Perf.	LnpProfit	LnROA	LnROI	SME Perf.	LnProfit	LnROA	LnROI
Demographic Variables		Beta (β)				Beta (β)				Beta (β)				Beta (β)		
Firm size	-0.377**	-0.077ns	-0.457**	-0.482**	-0.328**	-0.023ns	-0.414**	-0.439**	-0.337**	-0.034ns	-0.423**	-0.446**	-0.341**	-0.041ns	-0.426**	-0.449**
Type of industry	-0.030ns	-0.027ns	-0.011ns	-0.046ns	-0.035ns	-0.032ns	-0.015ns	-0.050ns	-0.042ns	-0.040ns	-0.021ns	-0.055ns	-0.045ns	-0.046ns	-0.023ns	-0.057ns
Level of education	0.482**	0.504**	0.442**	0.414**	0.234**	0.233**	0.225**	0.200**	0.219**	0.217**	0.211**	0.189**	0.211**	0.202**	0.206**	0.184**
Composite dimensions of SER																
Market orientation					0.637**	0.695**	0.556**	0.549**	0.600**	0.654**	0.521**	0.523**	0.588**	0.633**	0.514**	0.515**
Entrepreneurial orientation									0.123**	0.141**	0.118**	0.091**	0.112**	0.122**	0.112**	0.084ns
Networking capability													0.065ns	0.112**	0.038ns	0.042ns
Standard Error (SE)																
Firm size	0.228	0.073	0.085	0.085	0.169	0.049	0.068	0.069	0.167	0.048	0.068	0.069	0.167	0.047	0.068	0.069
Type of industry	0.175	0.056	0.065	0.066	0.129	0.037	0.052	0.053	0.128	0.037	0.052	0.053	0.128	0.036	0.052	0.053
Level of education	0.102	0.032	0.038	0.038	0.080	0.023	0.032	0.033	0.080	0.023	0.032	0.033	0.080	0.023	0.033	0.033
Market orientation					0.060	0.017	0.024	0.025	0.062	0.018	0.025	0.026	0.063	0.018	0.025	0.026
Entrepreneurial orientation									0.058	0.017	0.023	0.024	0.059	0.017	0.024	0.024
Networking capability													0.049	0.014	0.020	0.020
t-Statistics																
Firm size	-6.170	-1.271	-7.538	-7.936	-7.236	-0.572	-8.449	-8.892	-7.532	-0.854	-8.703	-9.059	-7.631	-1.038	-8.732	-9.094
Type of industry	-0.503	-0.456	-0.177	-0.773	-0.785	-0.804	-0.303	-1.034	-0.960	-1.033	-0.451	-1.149	-1.032	-1.182	-0.487	-1.188
Level of education	8.115	8.536	7.492	7.013	5.001	5.514	4.446	3.916	4.728	5.213	4.191	3.704	4.527	4.903	4.063	3.572
Market orientation					15.225	18.385	12.277	12.043	13.977	16.997	11.167	11.057	13.514	16.440	10.836	10.717

Entrepreneurial orientation									2.991	3.819	2.632	1.998	2.689	3.304	2.451	1.813
Networking capability													1.587	3.060	0.841	0.924
F-ration	108.870	28.746	28.998	28.832	95.387	132.199	71.141	69.085	80.289	113.861	59.515	56.663	67.695	99.319	49.661	47.336
Sig. F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Model Parameters																
R^2	0.227	0.237	0.238	0.237	0.579	0.656	0.507	0.499	0.593	0.673	0.519	0.507	0.596	0.684	0.520	0.508
Adjusted R^2	0.219	0.229	0.230	0.229	0.573	0.651	0.500	0.492	0.585	0.668	0.510	0.498	0.587	0.677	0.510	0.497
R^2 Change	0.227	0.237	0.238	0.237	0.352	0.419	0.268	0.262	0.013	0.017	0.012	0.007	0.004	0.011	0.001	0.002
F – Change	27.276	28.998	28.998	28.832	231.786	338.014	150.717	145.031	8.949	14.582	6.925	3.991	2.518	9.361	0.707	0.853
Sig. F – Change	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.047	0.114	0.002	0.401	0.357

Model 7: Predictors: (Constant), Level of education, Type of industry, Firm size
Model 8: Predictors: (Constant), Level of education, Type of industry, Firm size, Market orientation
Model 9: Predictors: (Constant), Level of education, Type of industry, Firm size, Market orientation, Entrepreneurial orientation
Model 10: Predictors: (Constant), Level of education, Type of industry, Firm size, Market orientation, Entrepreneurial orientation, Networking capability
Dependent Variable: Overall Performance, LnRofit, LnROA and LnROI
**p< 0.01; *p<0.05

The findings in model 10 shows that the demographic variables alone accounted for relatively similar amounts of variance in SME performance (R^2 = 0.227), LnProfit (R^2 = 0.237), LnROA (R^2 = 0.238), and LnROI (R^2 = 0.237) (Table 6.42). Examining the unique contribution (effect) amongst three control variables; education consistently contributed significantly more effect in SME performance (β = 0.482**), LnProfit (β = 0.504**), LnROA (β = 0.442**), and LnROI (β = 0.414**). The firm size recorded significant effects in SME performance (β = - 0.377**), LnROA (β = - 0.457**) and LnROI (β = - 0.482**) and no significant effect in LnProfit. Consistently, the type of industry did not record any significant effect in any of the SME performance measures (Table 6.42).

When market orientation was added in model 11, the variance explained in SME performance increased to R^2 = 0.579. After controlling the effects of the demographic variables, the R^2 change was 0.352 significant at p< 0.01 and the highest beta (β= 0.637**) value was recorded by the market orientation. Model 12 added entrepreneurial orientation and the variance explained in SME performance increased to R^2 = 0.593. After controlling the effects of the demographic variables and market orientation the R^2 change was 0.013 significant at p< 0.01, consistently market orientation still recorded the highest beta (β = 0.600**). Model 13 added networking capability and there was a slight increase in the total amount of variance explained in SME performance, R^2 = 0.596, with the R^2 change = 0.004 no significance at p< 0.114. The R^2 change = 0.011 for networking capability recorded significant F change at p< 0.01 in LnProfit. These findings suggest that networking capability accounted for a significant amount of variance in LnProfit and no significant amount of variance in the overall SME performance, LnROA and LnROI.

In view of these findings, it can be concluded that after controlling the influence of background variables, namely: firm size, type of industry, and level of education of the owner/manager, the market orientation and entrepreneurial orientation accounted for a significant amount of variance in SME performance. However, the networking capability accounted for significant amounts of variance only in LnProfit and no significant amount of variance in SME performance, LnROA and LnROI.

6.3 CHAPTER SUMMARY

This chapter presented findings of the empirical study and covered descriptive statistics, and multi-variate analysis, specifically the factor analysis, analysis of variance (ANOVA), and the multiple regression analysis. In view of the descriptive statistics, the demographic data indicated that the business environment is composed of micro, small, and medium enterprises with large proportions of small enterprises (66%) and relatively small proportions of medium enterprises (14%) taking part in the survey. The results shows that the ownership/management of SMEs in the study area is slightly male dominated by 54.3% and the age of the majority, 71.82 percent of the owners/managers' age ranged between 30-49 years, regardless of their gender. It also shows that over 51.89 percent of owners/managers attained at least a secondary education. While about 64.5% of SMEs reported either no change or a decrease in employment growth, but recorded a reasonable increase in the wage bill, profit growth, sales growth, return on asset and return on investment.

The compliance of data to factor analysis is supported by the KMO measure of 0.947 that indicates a high sampling adequacy for factor analysis, and the Bartlett's test of sphericity on the other hand is significant at $p<0.01$, which suggests that the factor model is appropriate for these data. The factor analysis extracted nine factors (individual dimensions) of strategic entrepreneurial response (SER), namely: customer orientation, relational skills, internal communication, coordination, pro-activeness, risk taking, partner's knowledge, competitor orientation, and competitive aggressiveness. According to literature, the nine factors relate to one of the three main constructs, namely: market orientation, entrepreneurial orientation and networking capability. Subjecting the nine factors in the second order, factor analysis converged to a single component providing evidence of measuring a single construct–strategic entrepreneurial response. The total variance explained by the nine factors after rotation is 68.16 percent. The recorded high Cronbach's alpha value that ranged between 0.805 and 0.932 in this data, suggests high construct reliability.

The multiway ANOVA for nine factors shows some significant difference amongst groups. For customer orientation (factor 1) and competitive aggressiveness (factor 9) were significantly different in terms of the type of industry, age, and the level of education of the owner/manager. For relational skills (factor 2), coordination (factor 4), pro-activeness (factor 5), risk taking (factor 6), partners knowledge (factor 7), and competitor orientation (factor 8) were significantly different along the age and the level of education of the owners/managers. For internal communication (factor 3), the only significant difference was on the level of education of the respondents. The Post hoc analysis specifically the Dumcan's Multiple Range Test (DMRT) indicates that age plays a great role for business owners/managers to engage on customer orientation, relational skills, coordination, pro-activeness, risk taking, competitor's knowledge and competitive aggressiveness with the highest mean recorded on the age group between 30–49 years.

The effects of the level of education on the dimensions of strategic entrepreneurial response indicated that the owners/managers with at least a certificate level of education recorded a higher mean in all nine individual dimensions of the SER. This suggests that owners or managers with at least a certificate level of education are more likely to be more customer orientation, more pro-active towards business opportunities, more risk-taking, well-equipped with relational skills, good on coordinating business activities and resources, have a greater partner's knowledge, have more competitors knowledge, and are more competitive aggressive than their counterparts with a secondary education level or lower.

With regard to the effects of the type of industry on the individual dimensions of strategic entrepreneurial response, the service industry recorded a higher mean in customer orientation than in the manufacturing and retail industries. These findings suggest that the service industry is much more oriented to customers compared to the manufacturing and retail sectors. Also, the service and manufacturing industries with higher means on risk taking and competitive aggressiveness implies that they are much more risk takers and competitive aggressive compared to those in the retail industry.

The sequential / hierarchical regression analysis was carried out for four purposes:

1 to examine the relationship between SME performance, and individual and composite dimensions of SER,

2 to examine the amount of variance explained in SME performance by the composite dimension of SER.

3 to control the influence of the demographic variables (firm size, type of industry and level of education of the owner/manager) to rule out the confounding effects of these variables in the amount of variance explained in SME performance by the individual and composite dimensions of the SER.

4 to identify the best predictor to explain SME performance.

Preliminary analyses were performed prior to hierarchical regression analysis to ensure no violation of the assumptions of normality, linearity, outlier, multicollinearity, and homoscedasticity.

Examining the relationship between both individual and composite dimensions of strategic entrepreneurial response and SME performance, LnPprofit, LnROA, and LnROI, the findings indicate that customer orientation, competitor orientation, pro-activeness, relational skills, internal communication, and partner's knowledge registered a positive relationship with SME performance, Lnprofit, LnROA, and LnROI while risk taking, competitive aggressiveness and coordination recorded a negative relationship with the LnProfit, LnROA, and LnROI (Table 6.40). These results support the Pearson correlation results presented in Table 6.21. Regarding the composite dimensions of the SER, all three dimensions of SER market orientation, entrepreneurial orientation and networking capability recorded a significant positive relationship with SME performance.

The results of the sequential multiple regression indicated that when only customer orientation is included in the model, it accounted for 49.0 percent of variance in SME performance, 60.9 percent of the variance in LnProfit, 37.0 percent of variance in LnROA, and 35.1 percent of variance in LnROI. Subsequent addition of factors in the

model improved the prediction power of the model. For example, when all predictors were included in model 3, the variance explained by the model increased significantly for SME performance 60.6 percent, for LnProfit 77.9 percent, for LnROA 46.3 percent and for LnROI 43.0 percent. This implies that each factor added in the model had a significant incremental effect on the outcome variable at $p< 0.05$.

Similarly, the composite dimensions registered similar trends though with relatively low amount of variance recorded in the outcome variables compared to the individual dimensions of SER. For example, in model 7, when only market orientation was considered the amount of variance in SME performance, was 0.486 and when entrepreneurial orientation and networking were added in model 8 and 9, the amount of variance in SME performance increased to 0.498 and 0.501, respectively. However, findings revealed that although the interaction of market orientation, entrepreneurial orientation and networking capability accounted significant amounts of variance in SME, it is only market orientation and entrepreneurial orientation that accounted for a significant amount of variance. The networking capability was able to explain significant amounts of variance only in LnProfit and no significance in SME performance, LnROA and LnROI.

After controlling the confounding effect of the firm size, type of industry and level of education of the owners/managers, the composite dimensions of SER were able to explain significant amounts of variance in SME performance (LnProfit, LnROA and LnROI). These results suggest that the amount of variance explained in SME performance is irrespective of the firm's size, type of industry and the level of education of the owner / manager. With regard to the best predictor of SME performance, LnProfit, LnROA, and LnROI, the market orientation consistently recorded the highest amount of variance in SME performance, LnProfit, LnROA, and LnROI compared to other dimensions of SER, which suggests the best predictor to explain SME performance.

Chapter seven discusses the findings and presents conclusions and recommendations.