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CHAPTER 1

INTRODUCTION TO THE RESEARCH

1.1 INTRODUCTION

This study sets out to determine the human capital investments and skills outcomes specific to different entrepreneurship phases. This chapter details the rationale for the study and provides a clear statement of the research question. The boundary conditions of the study, or the limits and exclusions, are also specified. The chapter concludes by defining key terms used in the study and the structure of the thesis as a whole.

1.2 BACKGROUND

The field of entrepreneurship, which is still in its infancy, has grown and gained more importance in recent years (Landström, Harirchi, & Åström, 2012). Entrepreneurship is seen as a driver of sustainable economic growth since entrepreneurs create new businesses and employment, drive and shape innovation, speed up structural changes in the economy, boost economic competitiveness and promote regional development (Dash & Kaur, 2012; Stenholm, Acs, & Wuebker, 2013; Turton & Herrington, 2012). The significance of entrepreneurship as an engine of economic growth has attracted the interest of many governments and non-governmental organisations (World Bank, 2012) and entrepreneurship scholarship (Wiklund, Davidsson, Audretsch, & Karlsson, 2011). This growing academic interest in entrepreneurship has also seen the application of human capital theory transcend economics literature to study the success of a business venture (Becker, 1964; Davidsson & Honig, 2003; Ucbasaran, Westhead, & Wright, 2008a; Unger, Rauch, Frese, & Rosenbusch, 2011).

Human capital theory (Becker, 1964) has been applied in entrepreneurship to study the relationship between human capital investments and success in identifying and exploiting opportunities (Davidsson & Honig, 2003; Ucbasaran et al., 2008a; Unger et al., 2011). Most of the studies that applied human capital focused on either opportunity recognition or exploitation with confined attention to singular phases of the entrepreneurship process, namely the nascent, new-business and established phases (Brixy, Sternberg, & Stüber, 2012; Singer, Amorós, & Moska, 2015). It has, however, been noted that a specific kind of human capital may be important

in completing activities in one phase, while the same human capital may be insignificant in subsequent phases in the entrepreneurial process (Brixy et al., 2012; Marvel, Davis, & Sproul, 2014). As a result, this study argued in line with Marvel et al. (2014) that there is a need to fully explore the differing dimensions of human capital (investments and skills) over distinct phases in the entrepreneurial process.

Human capital theory postulates that human capital investments, including the individual's education and work experience, produce human capital outcomes which are skills and knowledge (Becker, 1964). Unger et al. (2011) discovered that formal education and work experience, as generic human capital investments, have a lesser impact on the success of a business venture compared to skills (Unger et al., 2011). Even though formal education and work experience may not lead to better venture success, they may be a source of important generic skills required in different entrepreneurial phases. If human capital investments, such as industry and business-ownership experience, are specific to the entrepreneurial tasks then they will result in entrepreneurship-specific skills (Ucbasaran et al., 2008a). Although the literature has established that human capital investments are sources of skills, the role of varying dimensions of human capital investments was not examined across the entrepreneurship phases (Marvel et al., 2014). Therefore this study attended to the call made by Marvel et al. (2014) to determine the utility of human capital investments as significant sources of skills needed in the different entrepreneurship phases.

According to Chell (2013), skills required in the entrepreneurial phases are multi-dimensional meaning they can be cognitive, behavioural, technical and managerial. Chell further argued that research on entrepreneurial skills is mainly theoretical, lacking support by empirical evidence. Entrepreneurship researchers are yet to discover and support research on the nature of skills in entrepreneurship with empirical research. There is also no clarity on the specific skills required by entrepreneurs (Morales & Marquina, 2013). Complications in researching entrepreneurial skills include the lack of an agreed definition and the clarity of the construct as it is often interchanged with entrepreneurial competencies (Chell, 2013). Previous studies also tended to provide long lists of entrepreneurial skills (Pyysiäinen, Anderson, McElwee, & Vesala, 2006) without identifying priorities, or highlighting the skills needed at each entrepreneurship phase. It was found that skills have a greater impact if they are related to current tasks (Unger et al., 2011). Therefore this study proposed that since tasks in each entrepreneurial phase are different, the skills required in each entrepreneurship phase will differ.

1.3 STATEMENT OF RESEARCH PROBLEM

As much as studies on skills in entrepreneurship are increasing (Deakins, Bensemann, & Battisti, 2016; Shabir, Shariff, & Shahzad, 2016), there is a dearth of empirical evidence that focuses on more than one phase of the entrepreneurial process rather than on a single-phase approach where entrepreneurs are treated the same despite their entrepreneurship phase situation. This is due to the notion that entrepreneurship research exhibits disagreements and conflicting assumptions on the entrepreneurial process (Shane, 2012) and most entrepreneurship processes are theoretically derived and have never been tested empirically.

So, considering the complexities of the entrepreneurial process, this study adopted the definition of the Global Entrepreneurship Monitor (GEM) of viewing the entrepreneurial process as comprising different phases (Amorós & Bosma, 2014; Xavier, Kelley, Kew, Herrington, & Vorderwuelbecke, 2012), defined as the potential, nascent phase, new-business phase and the established-business phase (Amorós & Bosma, 2014). The motivation for selecting the GEM phases is that this model has been empirically tested as opposed to other theoretically derived entrepreneurial process frameworks (McMullen & Dimov, 2013; Moroz & Hindle, 2012).

In addition, there is contradictory evidence on the samples used to study human capital. Ucbasaran et al. (2008a) argued that research has focused minimally on established entrepreneurs, while Marvel et al. (2014) noted the dearth of research focusing on samples in the early entrepreneurship or nascent phases. Therefore this study adopted a multiphase approach that examines the different entrepreneurship phases simultaneously. This approach was advocated by Brixey et al. (2012).

Lastly, existing studies of human capital and the entrepreneurial process were mostly conducted in developed economies, raising the question of their generalisability in developing markets, which have distinctive contextual conditions identified by Herrington and Kelley (2013). Therefore, research is needed to identify human capital investments and skills required in the different entrepreneurial phases, and test developed-world assumptions and hypotheses to the advantage of entrepreneurship education and training, especially in a developing-market context. This study focused on the South African context which is characterised by poor entrepreneurial skills and education, low levels of entrepreneurial activity, high failure rates and an abundance of opportunities but a lack of resources available to exploit them (Herrington, Kew, & Kew, 2014; Lingelbach, De La Vina, & Asel, 2005).

In summation, this study proposed that human capital investments and skills are used differently across the different entrepreneurial phases. Each entrepreneurial phase is distinct in terms of the tasks performed and therefore requires distinctly different skills for its successful execution. As entrepreneurs engage in the tasks in each entrepreneurial phase, the importance of skills they possess changes.

1.4 RESEARCH QUESTIONS

This study was designed to determine the utility of human capital investments and skills outcomes in the different entrepreneurship phases. The following research questions were investigated:

- a) Research question 1: What skills required to perform entrepreneurial tasks are utilised by entrepreneurs in the different entrepreneurial phases?
- b) Research question 2: How does the utility of skills vary across the different entrepreneurship phases?
- c) Research question 3: How does the utility of human capital investments as sources of skills differ across the entrepreneurship phases?
- d) Research question 4: What is the relationship between the human capital investments, skills and entrepreneurship phases?

1.5 RESEARCH OBJECTIVES

- a) To identify the skills needed in the different entrepreneurship phases and determine how skills change in significance as the entrepreneurship phases unfold.
- b) To investigate the application of human capital investments across the entrepreneurship phases.
- c) To investigate the relationship between human capital investments, skills and the entrepreneurship phases.
- d) To develop an instrument for measuring skills in different entrepreneurship phases and test it statistically against a larger population of entrepreneurs.

1.6 CONTRIBUTIONS OF THE STUDY

The aim of the study was to determine the utility of human capital investments and skills across the different entrepreneurship phases. The study showed that the utility of *skills* across the entrepreneurship phases is an inverted U-shaped curvilinear, thus their utility increases from the nascent to new-business phase, then declines from the new-business to established phase. This means skills are used more by entrepreneurs in the nascent and new-business phases than entrepreneurs in the established phase. Above all, skills are maximally used in the new-business phase. Figure 1-1 indicates one of the significant theoretical contributions of the study.

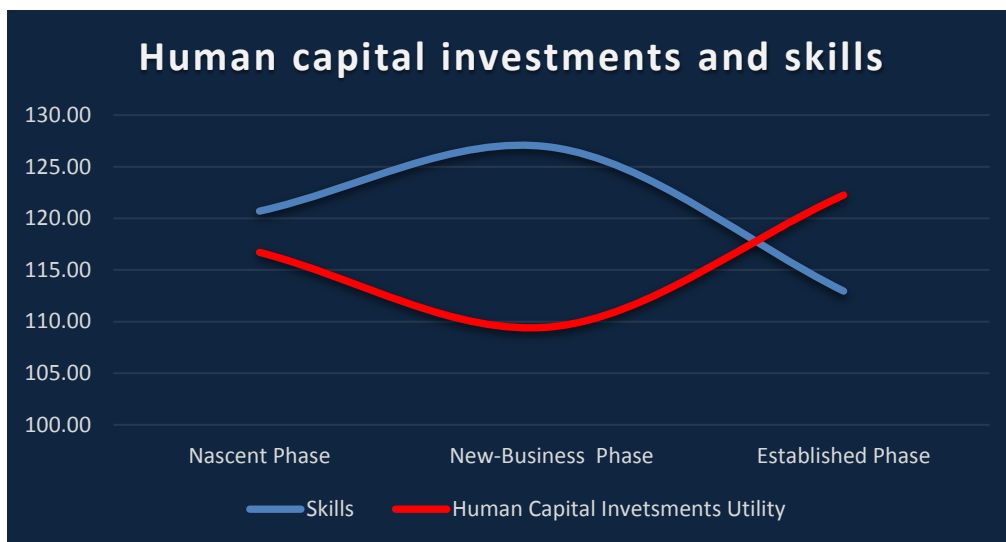


Figure 1-1: Human capital investments and skills utility

In contrast, the utility of *human capital investments* as sources of skills declines from the nascent phase to the new-business phase, then increases from the new-business phase to the established phase. This indicates that as nascent and new-business entrepreneurs apply skills to run their companies, the utility of human capital investments as sources of skills declines, requiring entrepreneurs – particularly those in the established phase – to search for additional sources of skills. Figure 1-1 also shows that when skills are needed or used most, sources of skills are least available.

Using the sequential exploratory mixed-methods study, this study made a methodological contribution by suggesting seven detailed and iterative steps to designing a quantitative questionnaire based on qualitative results analysed using a computer-assisted qualitative data analysis software (CAQDAS) programme. This led to developing an entrepreneurship skills

survey instrument that can be used in future entrepreneurship research studies on skills. Finally, the empirical contribution is that the study adopted a multiphase rather than single-phase approach to the entrepreneurship process and was conducted in an emerging-market context, which is relatively underexplored.

The entrepreneurship skills framework and typologies developed will benefit the practice of entrepreneurship. In addition, the study showed that policy-makers, business practitioners, and academic and training institutions should treat entrepreneurs according to their phases of development.

1.7 LIMITATIONS AND DELIMITATIONS

The study focused on researching skills in entrepreneurship and was not focused on competencies, but differentiated skills from competencies. Furthermore, this study did not research the relationship between venture outcomes (growth in sales, profitability, survival, innovation and employment growth) and human capital investments as is the case in entrepreneurship research. The study focused mainly on discovering the human capital investments and skills employed by entrepreneurs in different phases of the entrepreneurial process.

The study did not measure skills available at the organisational or individual level, but instead determined which skills are used by individual entrepreneurs in running their businesses. The skills that were applied most were regarded as significant skills in that entrepreneurship phase.

The literature presented complex theoretical entrepreneurship processes that are based on discovering how entrepreneurs start and establish their businesses. Therefore this study focused on the empirically tested GEM entrepreneurship phases: nascent, new business and established.

The GEM entrepreneurship phases start with the potential/intentional phase which includes people who believe they have what it takes to start businesses. However, this phase was excluded from the study as entrepreneurs in this phase are not yet running a business or engaged in any entrepreneurial tasks, but intending to start one in the next three years.

To determine the entrepreneurship phase, the study used two variables: duration of business existence and duration of paying salaries. Respondents who had different or misaligned scores

on the two variables were assumed to have been in transition or delayed in the entrepreneurship phase, and were excluded from the study. For example, businesses that have existed for over 3.5 years, but could only pay salaries for less than 1.5 years (denoting nascent phase) were regarded as being delayed in the nascent phase. As a result, the businesses were excluded in the final analysis.

The study used a mixed-method design that began with a qualitative study in phase I, followed by a quantitative survey in phase II. To manage the data-collection process, phase I was limited to entrepreneurs in Gauteng province and phase II comprised a nationwide survey of entrepreneurs in all South African provinces.

1.8 ASSUMPTIONS

Assumptions are fundamental in setting boundary conditions for a perspective, such that in their absence the research problem by itself cannot exist (Leedy & Ormrod, 2010). Consequently, parameters found to have a material bearing on the problem under investigation were identified and explicitly captured.

a) Theoretical assumptions

The available literature in entrepreneurship did not clearly describe utility of the human capital investments and skills across the different entrepreneurship phases. In addition, literature did not clearly explain how skills change in significance as the entrepreneurship phases unfold.

The study also assumed that sub-skills identified in the qualitative phase to formulate a survey instrument are exhaustive within and across the categories and phases.

In the quantitative phase, the sub-skills measurement items were assumed to be equally significant contributors to each of the aggregated skills constructs.

The 'use' of skills reflects the 'utility', which varies across the different entrepreneurship phases and entrepreneurs require skills to be able to perform entrepreneurial activities in each phases. The manifest skills used by entrepreneurs are aligned with the theoretical notion of skills as defined in this study.

Since the focus of this study was not to measure venture performance as an outcome, the assumption made here was that entrepreneurs with required skills were able to complete one phase and then proceed to the next phase of entrepreneurship.

b) Methodological assumptions

The chosen entrepreneurs were an ideal representation of the phenomenon studied on human capital investments and dimensions of skills in the entrepreneurial phases. Therefore the assumption is that the sample and measures correctly reflected the underlying behaviour. The study also assumed that cases examined represented the theoretical population of entrepreneurs and that cases within the phases correctly represented the population in those phases. Finally the entrepreneurs have honestly, and to the best of their ability, shared their experiences and responded to all questions on how they employ skills in the entrepreneurship phases and how the significance of skills changes as the business moves from one phase to another.

1.9 DEFINITION OF KEY TERMS

Entrepreneur: In line with the domain statement of the entrepreneurship division of the Academy of Management Research, an entrepreneur is an individual with entrepreneurial characteristics who takes actions to start and manage a business through the different phases (Mitchell, 2011).

Entrepreneurial phases: These are the potential, nascent, new-business and established phases of the entrepreneurship process (Bergmann & Stephan, 2012; Singer et al., 2015; Kelley, Singer, & Herrington, 2012; Reynolds, et al., 2005).

Potential phase: At this stage, entrepreneurs identify business opportunities and believe they have entrepreneurial skills to establish business ventures.

Nascent phase: At this point, the entrepreneur is actively involved in setting up a business they will own or co-own and the business has not paid salaries or wages to the owners for more than 1.5 years.

New-business phase: This is a stage where the business is running and has paid wages and any other payments to owners for more than 1.5 years but less than 3.5 years.

Established-business phase: This is where the business has paid salaries, wages and any other payments to the owners for more than 3.5 years.

Entrepreneurship process: The study adapts the domain statement of the entrepreneurship division of the Academy of Management to regard the entrepreneurship process as one in which an individual with entrepreneurial characteristics takes actions to start and manage a business through the different phases (Mitchell, 2011). Due to the scarcity of theory and research evidence underpinning the entrepreneurship process (Wright & Marlow, 2011), this study is focused on the empirically tested entrepreneurship phases (Kelley et al., 2012).

Human capital investments: The inputs in formal education, work experience, industry experience, previous entrepreneurship experience and entrepreneurship education that lead to developing skills and knowledge of economic value (Becker, 1964).

Skills: The proficiency in performing a task as a result of human capital investments (education, work, industry and entrepreneurship experiences) that can be improved by training, practice and development. **Entrepreneurial skills** denote proficiency in performing tasks in the entrepreneurial phases as a result of human capital investments (education, work, industry and entrepreneurship experiences) and can be improved by training, practice and development. For this study, an entrepreneur's skills are differentiated from abilities and competencies. Ability is an aptitude that influences a person's capacity to acquire skills to execute a specific activity, while competencies are a mixture of abilities, skills, attributes and knowledge applicable to carry out specific activity (Chell, 2013).

1.10 STRUCTURE OF THE THESIS

Chapter 1 introduced the research by presenting the problem statement, background of the research problem, research questions, assumptions, delimitations and definitions of terms. Chapter 2 captures the review of past and current literature and academic enquiry relevant to the research questions and is presented under themes: review of field entrepreneurship, entrepreneurship process and phases, human capital theory, human capital investments, entrepreneurial skills, and the study's context.

The research design and methodology stating how the study was conducted are presented in chapter 3. The findings from data gathered are presented in chapters 4, 5 and 6, followed by discussions in chapter 7. The study is concluded in chapters 8 and 9 which articulate the study's contribution and recommendations for future research.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The literature review begins by examining entrepreneurship research as a domain, followed by reviewing debates on the entrepreneurship process and phases. Human capital theory is presented as a dominant theoretical lens to provide a basic understanding of skills and support arguments in the study. The principal argument presented in the literature is that there is documented variation in the human capital investments and skills applied in executing the different phases of entrepreneurship. The discussion on skills focuses on distinguishing this construct from entrepreneurial competencies and further identifies the nature of skills relevant to the discourse. Finally, the South African context is examined as a boundary condition.

2.2 ENTREPRENEURSHIP AS A DOMAIN

Entrepreneurship as a domain is relevant in management and social sciences (Aldrich, 2012), attracting the attention of practitioners and scholars alike. More than two decades ago, Sexton (1988) speculated whether the field of entrepreneurship was growing in terms of theory and methodology or just number of publications. Since then the field has attracted increased attention to both concerns, resulting in greater public focus, scholarly research and publications (Aldrich, 2012). Despite this growth, there is still debate about the construct of entrepreneurship and the need to conclusively establish the domain's assumptions and theory base (Shane, 2012).

The arguments presented so far in literature to define entrepreneurship do not offer a consensus on the exact meaning of the term (Amit, Glosten, & Muller, 1993; Kobia & Sikalieh, 2010; Shane, 2012). Further, the dearth of robust theoretical grounding of the constructs behind the phenomenon that hypothetically should have led to the development of an empirically testable entrepreneurial process (Grebel, Pyka, & Hanusch, 2003) represents an urgent and significant call to develop theoretical tools that will enable the field to grow (Sarasvathy & Venkataraman, 2011). However, entrepreneurship, as defined in Shane and Venkataraman's seminal research paper (2000, p. 218), is generally agreed to be the "examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated and

exploited”. This definition illustrates that entrepreneurship is centred on opportunity recognition and exploitation. In this study, entrepreneurship is defined as a process by which an individual with entrepreneurial characteristics takes actions to start and manage a business through the different phases (Mitchell, 2011).

In a quest to clearly understand entrepreneurship, scholars studied characteristics to classify an individual as entrepreneurial. Research applied seminal theories including theory of planned behaviour (TPB), entrepreneurial event theory (EET) and theory of reasoned action (TRA) in an attempt to predict an individual’s entrepreneurial behaviour (Ajzen, 1991; Krueger, Reilly, & Carsrud, 2000; Shapero & Sokol, 1982). Psychology theories were also used to determine entrepreneurial and personality traits to distinguish entrepreneurs from the general population (McClelland, 1961, 1965). Among other theories used to describe individual characteristics and propensity to engage in entrepreneurial activities, human capital theory (HCT) was found to play a significant role (Becker, 1964).

Human capital theory became significant in entrepreneurship research to study the investments that lead to skills and knowledge needed for successful business venturing (Davidsson & Honig, 2003; Unger et al., 2011). Although this theory has been applied in entrepreneurship, a recent meta-analytical study showed that there is an opportunity to explore human capital at different phases in the entrepreneurship process (Marvel et al., 2014). Opportunely, this study addressed the call made by Marvel et al. (2014) to apply human capital theory to clearly understand the human capital investments and skills significant to tasks at each stage of the entrepreneurial process.

The challenge encountered by the entrepreneurship field is lack of agreement on the phases in different parts of the entrepreneurship process.

2.3 ENTREPRENEURSHIP PROCESS AND PHASES

Entrepreneurship is simply defined as a “process which involves all functions, activities and actions associated with perceiving opportunities and the creation of organisations to pursue them” (Bygrave, 1993, p. 257). The entrepreneurship process is centred on why, when and how certain individuals exploit the opportunity (Venkataraman, 1997). Shane and Venkataraman (2002) regarded the entrepreneurial process as the identification, evaluation and exploitation of opportunities. Conceptually, the term ‘process’ was not intended to imply that entrepreneurship

occurs in an organised sequence where identification always precedes evaluation, which precedes exploitation (Dimov, 2010; Shane, 2012). On the contrary, the field has recently adopted entrepreneurship as a “process perspective rather than the embodiment of a type of a person or the product of a particular set of environmental conditions” (Shane, 2012, p.14).

While there is agreement that the field of entrepreneurship lacks a unifying model or theory, there is some consensus that opportunity identification is one of the significant elements of the entrepreneurial process (Kirzner, 1973; Shane & Venkataraman, 2000). Shane and Venkataraman (2000, p.220) define an opportunity as “those situations in which new goods, services, raw materials, and organising methods can be introduced and sold at a greater price than their cost of production”. Moroz and Hindle (2012) noted that some of the conceptual frameworks by Gartner (1985), Bruyat and Julien (2001), Sarasvathy (2001) and Shane (2003) are now considered landmark studies of the entrepreneurial process. The challenge with some of these models, however, is that they are not empirically tested. Even though there is no agreement on conceptual frameworks and processes, there is empirical evidence of entrepreneurial processes that entrepreneurs actually engage. The Panel Study of Entrepreneurial Dynamics and the Global Entrepreneurship Monitor (GEM) provide some empirically tested models of entrepreneurial processes that are now widely used (Carter, Gartner, & Reynolds, 1996; Kelley et al., 2012).

This study adopted the entrepreneurship phases as nascent, new business and established business (Herrington et al., 2014). Very few empirical studies differentiate entrepreneurs according to the different entrepreneurship phases (Brixy et al., 2012). The motivation for selecting the GEM entrepreneurship phases is that they are empirically tested rather than theoretically derived frameworks (McMullen & Dimov, 2013; Moroz & Hindle, 2012) and are currently being adopted by other scholars in the field of entrepreneurship (Brixy et al., 2012; Wasdani & Matthew, 2014).

Brixy et al. (2012) focused on the demographic and cognitive characteristics of entrepreneurs while Wasdani and Matthew (2014) studied opportunity recognition across the different entrepreneurship phases. Brixy et al. (2012) empirically discovered that nascent entrepreneurs relied more on formal education to start businesses than entrepreneurs in the later phases. Their results support the study’s argument that entrepreneurs should be treated according to their specific entrepreneurship phases or levels of development.

2.3.1 GEM entrepreneurship phases

GEM regards entrepreneurship as a process comprising different phases, from potential entrepreneur, nascent phase, to owner-manager of a new business or owner-manager of established enterprises and even discontinuing or exiting a business (Kelley et al., 2012). The GEM model, depicted in Figure 2-2, is preferable to other conceptual models as it is empirically tested and also concerned with entrepreneurship as a process rather than an event or the embodiment of a type of person (Bergmann & Stephen, 2012; Dimov, 2010; Shane, 2012).

The model is derived from data collected on potential entrepreneurs, intentional entrepreneurs and entrepreneurs who own and manage new and established businesses or have exited the entrepreneurship process. The GEM data has about two million observations of respondents in more than 100 countries around the world over 16 years from 1999 to 2014 (Amorós & Bosma, 2014; Singer et al., 2015).

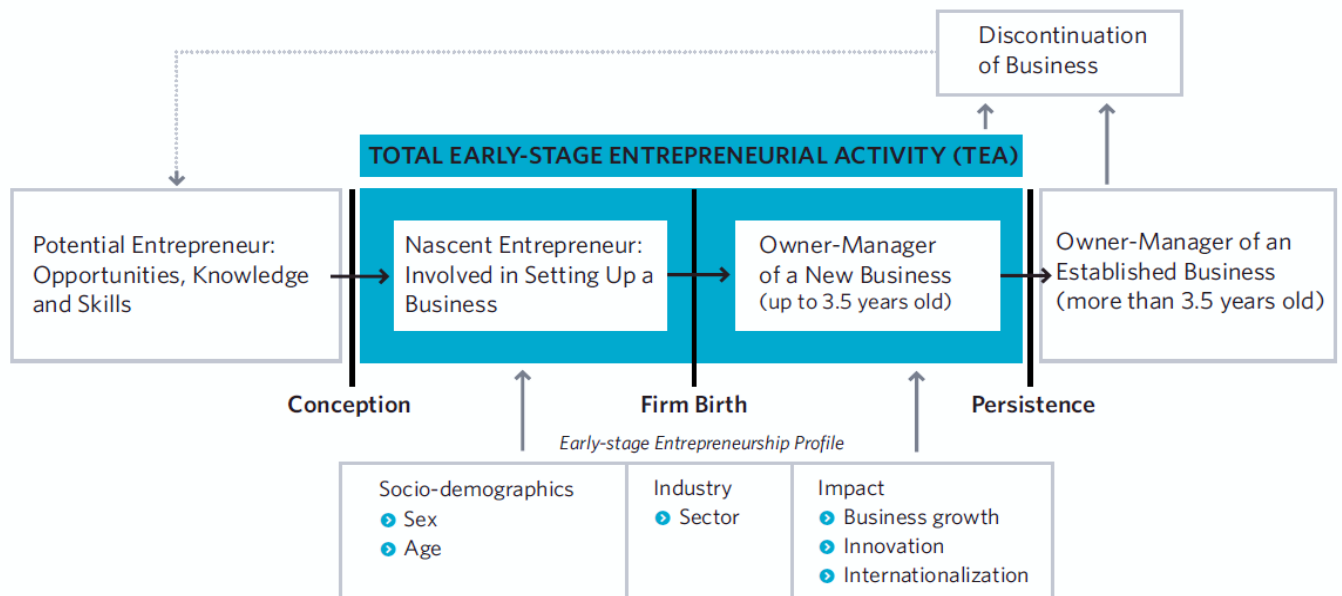


Figure 2-2: Entrepreneurship process and phases

Source: Amorós and Bosma (2014)

Figure 2-2 depicts the entrepreneurial phases. **Nascent-phase** entrepreneurs are individuals who take steps to create a venture, such as looking for equipment or a location, organising a start-up team, preparing a business plan or beginning to save money (Bergmann & Stephan, 2012; Carter et al., 1996). At this stage, the business has not paid salaries or wages to the owners for more than three months or 1.5 years using standardised times (Bergmann & Stephan, 2012; Herrington

et al., 2014; Kelley et al., 2012; Reynolds et al., 2005). In the **new-business phase**, the business has paid salaries or wages to the owner for more than three months or 1.5 years using standardised times but less than 3.5 years (Bergmann & Stephan, 2012; Herrington et al., 2014; Kelley et al., 2012; Reynolds et al., 2005). Finally, in the **established phase**, the business has paid salaries or wages to the owner for over 3.5 years (Kelley et al., 2012). While nascent and new-business entrepreneurs contribute to dynamism and innovation in an economy, established businesses and their owner-managers often provide stable employment and exploit the knowledge and social capital accumulated in past experiences (Herrington et al., 2014).

Conceptualising entrepreneurship as a process with multiple phases is significant for evaluating the state of entrepreneurship at different points (Amorós & Bosma, 2014). However, one of the limitations of adopting a multiphase approach is that there is no clarity on transition from one phase to the next as this may be different in each case (Brixy et al., 2012). For example, with a key transition from nascent entrepreneurship to new-business ownership, it is not known how long an individual already has already been involved in the process of starting a new business and how long they will remain nascent once identified as being in the start-up process (Bergmann & Stephan, 2012). Therefore, a challenge or limitation of using entrepreneurship phases includes the difficulty of discerning transitions from one phase to the next.

The diversity and complexity of contextual conditions that affect entrepreneurship in different economies make it impossible to “conclude that one phase inevitably leads to the next” (Kelley et al., 2012, p.5). For example, one economy may have a high number of individuals who intend to start businesses but, due to contextual limitations, this may not necessarily translate into a high rate of entrepreneurial activity (Herrington et al., 2014). The contextual conditions that affect entrepreneurship are identified by Amorós and Bosma (2014, p.13) as: financial support, general government support, specific regulations, market openness, R&D transfer, entrepreneurship education, and cultural norms and values related to entrepreneurship. Accordingly, it is vital to identify contextual factors that facilitate or inhibit the development of entrepreneurship. For this study, these factors are discussed in chapter 4 and chapter 7.

2.3.2 Rationale for GEM entrepreneurship phases

Challenges associated with the lack of empirically tested entrepreneurial process models motivated the application of GEM entrepreneurship phases in this study. GEM’s main objectives are to: 1) compare the level and characteristics of entrepreneurial activity among different countries, both emerging and developed; 2) determine the impact of entrepreneurial activity on

economic growth; 3) identify factors that promote or inhibit entrepreneurial activity; and 4) participate in developing policies aimed at promoting entrepreneurship (Amorós & Bosma, 2014). GEM is focused on how the level of entrepreneurship activity varies in different countries, as well as how it changes over time (Álvarez, Urbano, & Amorós, 2013; Sternberg & Wennekers, 2005). Since the first study in 1999 (Reynolds, Hay & Camp, 1999), GEM has increasingly been acknowledged as the most reliable and authentic entrepreneurship monitoring research on the global platform (Amorós & Bosma, 2014).

The establishment of GEM came at a time when entrepreneurship research was said to suffer from empirical gaps (Sternberg & Wennekers, 2005). These shortcomings were, in the main, the absence of globally comparable data on entrepreneurial activity and, secondly, reliance on outdated statistical data that lacked depth on the entrepreneurial characteristics of the population (Sternberg & Wennekers, 2005). As such, GEM is committed to closing some significant gaps in entrepreneurship research by developing consistent measurements of entrepreneurial activity that can be compared from one country to the next (Amorós, Bosma, & Levie, 2013; Bergmann, Mueller, & Schrette, 2013). In simple terms, GEM represents many distinct forms of entrepreneurial activity as performed by people across countries and over time (Amorós et al., 2013).

To provide a thorough, countrywide perspective of entrepreneurship, GEM measures the entrepreneurial attitudes of the population, activities and characteristics of individuals engaged in different types of entrepreneurial activities (Bosma, Couduras, & Seaman, 2012). As part of the data-collection process, adult surveys provide information on entrepreneurial activities being undertaken and qualitative interviews with national experts give deeper insight into contextual factors referred to as entrepreneurship framework conditions. The GEM population survey has increased to more than two million participants in over 100 countries, making its database significant in empirical entrepreneurship research and scholarship (Amorós & Bosma, 2014).

GEM is increasingly being integrated into high-quality scholarship through academic publications (Amorós et al., 2013; Álvarez et al., 2013). There is notable growth in peer-reviewed empirical research that uses the GEM database and models (Amorós & Bosma, 2014) and creates opportunities for future research (Álvarez et al., 2013; Bergmann et al., 2013). GEM's database is regarded as unique for a number of reasons, first of which is the absence of another source for comparable data on entrepreneurship from so many different countries. Secondly, unlike existing national statistics, GEM captures all types of entrepreneurial activities and, thirdly, it captures

start-up efforts from a very early stage, i.e. nascent entrepreneurship, as well as new and established businesses (Bergmann et al., 2013, p. 243; Bosma et al., 2012). This confirms that the GEM database and models have grown in acceptance and integration into entrepreneurship academic research.

Finally, GEM's recognition of entrepreneurship as a process is aligned with definitions adopted by prominent scholars in the field (Amorós & Bosma, 2014; Shane & Venkataraman, 2000). Since the focus of this study was to examine skills used by entrepreneurs at different points in entrepreneurship development, GEM's multiphase approach was considered directly relevant.

2.3.3 Entrepreneurship phases and organisational development stages

This study adopted entrepreneurship phases as more appropriate than models on the stages of business growth that frequently use a theoretical approach to understand business growth. An analysis of 104 business-growth models showed no agreement on fundamental constructs of approaches used, empirical confirmation of stages theory, agreement about model features, dominant stages model in the field and validity when tested with larger samples (Levie & Lichtenstein, 2010; Tushman, Newman, & Romanelli, 1986). The majority of models include three or four or five stages, while others have six to 11 stages. These business-growth models did not show a clear preference for the number of stages, nor is there a distinct theoretical reason why more or fewer stages appear in each model (Levie & Lichtenstein, 2010). Therefore, considering the lack of clarity on constructs and lack of empirical evidence supporting business-growth models, this author considered the empirical validity of GEM's entrepreneurship phases as a more suitable premise to inform this study.

It should be emphasised that while this study excludes the stages-of-growth models, it does include insights from organisational development literature. These insights are used to derive an understanding of activities performed by entrepreneurs who manage new-business versus established-business ventures. Consequently, some of the discussion on findings presented in chapter 7 was informed by perspective from organisational development literature, including Kroeger (1974), Lewis and Churchill (1983), and Scott and Bruce (1987).

2.3.4 Entrepreneurial tasks and entrepreneurship phases

The study argues that since tasks in the entrepreneurship phases are different, entrepreneurs should not be treated the same. In addition, to be able to perform the tasks in each phase, entrepreneurs need to have the requisite skills. Pyysiäinen et al. (2006) noted that if what entrepreneurs were supposed to do was specified, it would be easy to determine the skills they need to use. As much as entrepreneurial tasks provide an understanding of how entrepreneurs start and run businesses daily, there seem to be no agreed entrepreneurial tasks in the different entrepreneurship phases. However, through a longitudinal study, Panel Study of Entrepreneurial Dynamics was able to empirically validate entrepreneurial tasks in the nascent phase (Reynolds & Curtin, 2008). Table 2-1 shows the different tasks entrepreneurs in the different entrepreneurship phases perform.

Table 2-1: Entrepreneurial tasks and entrepreneurial phases

Entrepreneurial tasks	Entrepreneurship phase	Authors
Identifying opportunities, evaluating opportunities and deciding which one to pursue, environmental scanning, generating new ideas, searching alternative markets to enter and experimentation	Early nascent	Amorós & Bosma (2014); Trevelyan (2011)
Organising equipment/facilities, hiring employees, seeking financial support, forming legal entity, devoting full time to the business, negotiating, preparing a plan, organising a team, investing own money, buying facilities, defining market position, start marketing and purchasing raw materials	Nascent	Carter et al. (1996); Reynolds & Curtin (2008); Amorós & Bosma (2014)
Currently owning and managing a business, environmental scanning, implementing organisational systems, quality control, evaluating ideas with existing frameworks, refining existing production processes, creating organisational structures to speed up production and creating new products	Established	Man, Lau, & Chan (2002); Trevelyan (2011)
Marketing, business management, finance, operations/technical, human resource management and leadership	Unspecified	Pyysiäinen et al. (2006).

Source: Author's synthesis of literature

In the early nascent phase, entrepreneurial tasks are exploratory in nature and primarily concerned with identifying entrepreneurial opportunities and selecting, typically, the one that will be further explored (Trevelyan, 2011). Tasks in the nascent or start-up phase are regarded as exploitation tasks that involve exploiting the business opportunity by starting a new business (Amorós & Bosma, 2014; Reynolds & Curtin, 2008). Reynolds and Curtin (2008) argued that new businesses do not just emerge, they are the result of many activities and efforts by entrepreneurs.

Tasks then transition to the established phase where the focus is on the processes of maintaining established operating systems and ongoing quality improvements (Man, Lau, & Chan, 2002). Pyysiäinen et al. (2006) noted that the main categories of entrepreneurial tasks should not be combined with personal characteristics such as risk taking as this could blur the distinction of entrepreneurial tasks. Accordingly, this study focused on marketing, business management, finance and human resource management as specific tasks performed in running the business. Using these categories made it easier to indicate the skills required to perform relevant tasks.

2.4 HUMAN CAPITAL THEORY

Drawing from Becker's (1964) human capital theory, human capital is skills and knowledge manifested as ability to execute a function to create economic value (Beach, 2009; Ucbasaran et al., 2008a; Unger et al., 2011). Skills and knowledge can also be human capital outcomes acquired through investments in formal and non-formal schooling, practical learning and work experience that contribute to productivity and success (Becker, 1964; Silva, 2007). Human capital investments comprise formal education and work experience that lead to human capital outcomes, known as knowledge and skills (Becker, 1964; Unger et al., 2011). In addition to conceptualising human capital as investments and outcomes, Becker (1964) and Unger et al. (2011) noted that this can also be conceptualised as task-related and non-task-related human capital.

Task-relatedness addresses whether or not human capital investments and outcomes are related to specific tasks such as running a business (Unger et al., 2011). Task related human capital is specific human capital which is associated with the activities of starting and running a business such as startup experience, industry experience, previous business-owner experience; while "non-task related human capital, perceived as generic human capital is not related with activities of starting or running a business being general education, employment experience" (Dimov & Shepherd, 2005, p.6; Zarutskie, 2010). Figure 2-3 depicts the generic human capital investments which produce generic human capital outcomes, while specific human capital investments produce specific knowledge and skills.

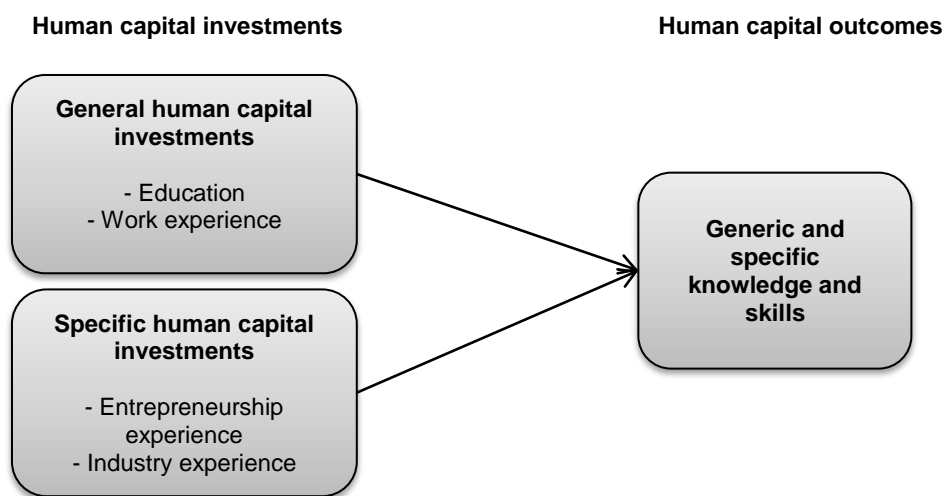


Figure 2-3: Human capital investments and outcomes

Source: Researcher's synthesis of literature

Applying human capital theory in entrepreneurship, investments in general human capital will be education and work experience while entrepreneurship-specific investments relate to start-up experience, business-ownership experience, managerial capabilities, entrepreneurial capabilities and technical capabilities (Ucbasaran et al., 2008a). Empirical evidence highlighted that entrepreneurship-specific human capital investments, which comprise industry and start-up experience, have greater impact than general education and work experience (Ucbasaran et al., 2008). This suggests that entrepreneurship-specific human capital investments and skills are paramount in starting, growing and sustaining a business venture.

Although the differentiation between general and specific human capital investments has been studied before (Zarutskie, 2010), this study sought to provide insights about general and entrepreneurship-specific human capital in the context of the potential, nascent, new-business and established entrepreneurial phases which are beyond the well-researched areas of opportunity identification and pursuit (Ucbasaran et al., 2008a).

Previous studies of skills treated all entrepreneurs equally, irrespective of which stage of development they were at (Lichtenstein & Lyons, 2001). However, given that entrepreneurs begin the start-up journey with distinct sets of skills, and these evolve at variable rates, they must be treated differently. In addition, given that tasks in the respective phases of entrepreneurship are different, skills will take on different priorities according to the levels of development and entrepreneurship phases. Therefore this calls for an empirical study to explore and determine different skills and how they take on different priorities in each entrepreneurship phase.

Theoretical justification for using human capital theory

As noted, human capital theory stipulates that education and work experience are investments that yield skills and knowledge that are economically valuable (Becker, 1964). Since the focus of this research was on skills that can be learned and manipulated rather than difficult-to-change innate or inborn personal characteristics, human capital theory was most suited to explaining how human capital investments produce skills that are applied in the different entrepreneurship phases. Human capital theory also assumes that on-the-job training improves existing skills (Becker, 1964). Accordingly, this study was also positioned to argue that as entrepreneurs engage in entrepreneurial activities, they learn and accumulate skills that lead to developing new skills needed in different phases. This process of learning and improving skills happens through training

and practice. As human capital theory argued that skills should be related to tasks being performed, this study applied skills in the different entrepreneurship phases that have different tasks.

The application of human capital theory in skills research has been criticised as it tended to focus on skills as individually rather than socially constructed, as in the social constructivist theory and psychological approach (Bowles & Gintis, 1975; Green, 1992). This study used mixed-methods research to adopt both social constructivist and positivist perspectives to research skills among entrepreneurs at different entrepreneurial phases. To ensure that context is not excluded in the social constructivist perspective, this study focused on an emerging market, South Africa, which is characterised by a low level of entrepreneurial activity, abundant opportunities with fewer resources and skills due to a lack of entrepreneurial education (Lingelbach et al., 2005; Turton & Herrington, 2012).

Finally, the current debate on the introduction of Lazear's jack-of-trades (JAT) theory in studying skills cannot be ignored. In contrast to human capital theory, JAT theory acknowledges that entrepreneurs engage in a variety of entrepreneurial tasks, therefore they need to be competent in diverse areas and skills that may originate from innate attributes while some may be acquired from different fields (Lazear, 2004, 2005). The issue with Lazear's theory is that it includes skills that are innate and, at times, difficult to measure (Silva, 2007). As much as JAT is more intuitively appealing, empirical evidence showed that JAT cannot "control the individual's unobservable characteristics like family which may at the same time affect the accumulation of skills" (Silva, 2007, p. 1). Since this research considered observable and changeable characteristics, such as formal education, which lead to the accumulation of learnt and changeable skills, human capital theory remained the theory of choice for the study.

2.5 SKILLS AND ENTREPRENEURSHIP PHASES

The reviewed literature on human capital theory showed that human capital investments are sources of skills and knowledge of economic value (Becker, 1964). In entrepreneurship, skills as a component of entrepreneurial competencies refer to practically being able and mentally knowing how to start and successfully run a business venture (Kilby, 1971; Pyysiäinen et al., 2006; Smilor, 1997). Chell (2013) lamented that there has been a loss of sight in the definition and function of skill in the field of entrepreneurship. Further, the construct of skill is at times confused or

interchanged with that of competencies. Therefore this study aimed to clearly define and separate skills from competencies.

2.5.1 Distinguishing skills from competencies

Competencies are perceived to be equivalent or the same as abilities, skills and knowledge (Chell, 2013; Hayton & McEvoy, 2006), which means that, in many instances, these constructs are applied interchangeably (Mitchelmore & Rowley, 2010; Smith & Morse, 2005). The lack of clear distinction in entrepreneurship literature has resulted in many scholars appearing to confuse entrepreneurial skills with entrepreneurial competencies (Chell, 2013). This has impeded expansion of the theoretical grounding of skills that can be derived from empirical studies. Not only do these obscure definitions affect the field of research, they also retard the possible practical application and implementation of relevant skills training programmes.

Competencies are the fundamental characteristics of an individual. They include motives, traits, skills, ability and knowledge that are essential in starting and running a business venture (Bird, 1995; Boyatzis; 1982). The alternative approach by Hayton and McEvoy (2006) is that competencies mirror the integration of particular knowledge, skills, abilities and other personality characteristics, resulting in productive performance. As such, competencies in the context of this study are defined as 'the ability to perform in a manner that satisfies or surpasses the set performance criteria as a result of the combination or integration of knowledge, skills and other personality characteristics'. It follows that entrepreneurial competencies are 'the entrepreneurial capability to perform entrepreneurial activities above the required standard as a result of the combination of entrepreneurial personal attributes, knowledge, skills and personality characteristics'.

Even though discussions of entrepreneurial competencies seem to be gaining momentum (Brinckmann, Salomo, & Gemuenden, 2011), there appear to be grey areas that need further clarification and support through empirical research. Entrepreneurial competencies have been theoretically perceived to contribute to success in the birth, growth and survival of a business venture (Mitchelmore & Rowley, 2010) but there is limited empirical evidence on the significance of entrepreneurial competencies at the different stages of venture growth.

Empirical evidence also confirmed that entrepreneurial competencies strongly predict the success of a business venture (Ahmad, Ramayah, Wilson, & Kummerow, 2010). However, Mitchelmore and Rowley (2010) argued that contextual conditions in which the business venture operates influence the association between entrepreneurial competencies and venture success. In hostile and dynamic environments, the relationship tends to be stronger than in more friendly and steady markets (Ahmad et al., 2010). This suggests contextual conditions have a moderating effect and should not be taken for granted in entrepreneurial competency research.

Woodruffe (1993) suggested it might be helpful to group competencies into categories. As part of categorising, Chandler and Jansen (1992) noted that the founder should be able to assume entrepreneurial, managerial and technological roles at different times. Entrepreneurial roles are associated with the skills to recognise opportunity and create a business. The managerial role includes the skills to develop programmes, budgets, delegate, manage performance, motivate staff and implement strategy. The technical role constitutes the skills to use devices or machinery, processes and techniques in a specialised field or industry in which the business is operating.

The review of categories of competencies presented in Table 2-2 indicates that competencies include behaviours (motives and traits), skills and knowledge. Differentiating entrepreneurial competencies and managerial competencies using table 2-2 illustrates that opportunity recognition is foundational in entrepreneurial competencies. In addition, what distinguishes the two is the phase in which each of the sets of competencies is applied most often. In the early nascent phase, entrepreneurial competencies ensure the successful completion of nascent activities while managerial competencies are essential in growing the business (Mitchelmore & Rowley, 2010; Man et al., 2002).

Table 2-2: Review of entrepreneurial competencies

Author	Composition of competencies	Entrepreneurial competencies	Managerial competencies
Boyatzis (1982)	Motives and traits, self-image and role taking, behavioural skills	Opportunity identification and exploitation, capacity to generate intense effort	Human resource management, goal and action management, directing subordinates and establishing networks
Bird (1995)	Motive and traits, social role and self-concept level, skills	Tolerance for ambiguity, assertiveness, opportunity recognition and experimental learning	Knowledge about leadership, accounting and human relations skills
Bartlett & Ghoshal (1997)	Attitude/traits, knowledge/experience and skills/abilities	Creativity and intuition	Knowledge of people, knowledge of internal and external resources, delegation
Chandler & Jansen (1992)	Entrepreneurial skills, managerial role and technical-function role	Opportunity and self-management	Human/conceptual, interpersonal and political competence
Man et al. (2002); Man & Lau (2005)	Behavioural focus – traits, intentions and motivations. Entrepreneurial competencies are traits, skills and knowledge	Opportunity, relationships, personal strength, operational and innovation competencies	Organising, strategic, commitment and human, learning
Mitchelmore & Rowley (2010)	Entrepreneurial, business/management, conceptual and relationship competencies	Idea generation, environmental scanning, identifying a viable market niche, recognising opportunities, formulating strategies	Business management competencies, marketing skills, technical skills, managerial experience, developing management system and preparing business plan

Source: Researcher's synthesis of literature

In concluding the review of what constitutes competencies, the first point to highlight is that using the term 'competency' as an umbrella term seems likely to perpetuate misunderstandings in

distinguishing knowledge, skills, abilities and personality characteristics. In addition, entrepreneurship scholars will be challenged to identify competencies, distinguish one from another, and to understand the differences between them in different environments. If some of the requisite entrepreneurial competencies are more essential in one context than the other, research should identify the unique contextual factors that will determine specific requirements for that context and the possibility of their replication in different contexts (Mitchelmore & Rowley, 2010).

Since entrepreneurial competencies contribute to business growth, a deeper comprehension of competencies can have important theoretical and practical implications. However, this understanding is considered well outside the boundary of this study. Instead, this study focused more narrowly on skills that are regarded as one dimension of competencies

2.5.2 Defining skills

The lack of clarity on competencies has also led to ambiguities and complexities in defining skills. A simple definition refers to skill as the ability to perform a task (McLarty & Dousios, 2006). In the entrepreneurship domain, defining and specifying skills is ambiguous and complex (Chell, 2013; Morales & Marquina, 2013). Contributions from practitioners' training programmes have "designed inconsistent entrepreneurial skills lists while trait psychology reduced skills to inherent traits" (Morales & Marquina, 2013, p. 129). In research, scholars do not clearly define or reinvent the definition of skills and entrepreneurial skills in the context of their studies. If skills are properly distinguished from and related to the elements in which they are embedded, this will be useful for empirical evaluation and practical implementation (Pyysiäinen et al., 2006) as well as theory development.

In the neoclassical approach, thus using human capital theory, skills are obtained through human capital investments in education and work experience (Becker, 1964). In addition, human capital theory maintains that skills can be learned and old ones perfected while training or performing tasks. For skills to be effective, they must be applied to different entrepreneurial tasks (Unger et al., 2011). Therefore skills, according to human capital theory, are results of investments in their acquisition; they can improve through training and development; and they need to be proficiently performed.

A review of some adopted definitions in literature (reflected in table 2-3) through the human capital theoretical base indicates that skills in the entrepreneurial context are broadly described as the ability to perform a task. The typically shallow definition frame has tended to narrow the scope of skills to whether a person can do some set of tasks or not. Further, defining skills in this manner does not acknowledge that for a person to be able to perform a task, some investments are needed to produce the skill to perform a task. Lastly, some of skills can be learned and refined through training.

Table 2-3: Definition of skills

Author	Skills	Investments	Training & development	Performance
Smilor (1997)	Entrepreneurial skills refer to those skills activities, or practical know-how, needed to establish and successfully run an enterprise	X		X
Wickham (1998)	A skill is knowledge demonstrated by action. Entrepreneurial skills are those that enable entrepreneurial performance	X		X
Van Vuuren & Niemen (1999)	Entrepreneurial skills cover the ability to turn a business idea into feasible business opportunities, to start and grow a business enterprise			X
Pyysiäinen et al. (2006); McLarty & Dousios (2006)	Skill refers to knowing how to do something, or how to carry out a task			X
Lashgarara, Roshani & Najafabadi (2011)	A skill is the ability of gained knowledge, correct application and using it in business administration	X		X
Chell (2013)	Skills refers to proficiency in performance and may be enhanced by practice and training		X	X
Author	Skill is the proficiency in performing a task, as a result of investment in education and experience, and can be improved by training, practice and development	X	X	X

Source: Researcher's synthesis of literature

Based on the characteristics of the skills aligned with human capital theory as portrayed in table 2-3, skills in this context are defined as ‘the proficiency in performance of a task, as a result of human capital investments (formal and education, entrepreneurial education, work, industry and entrepreneurship experiences) and can be improved by training, practice and development’.

The entrepreneurial skills in this context will be ‘the proficiency in performing tasks in the entrepreneurial phases as a result of human capital investments (formal and education, entrepreneurial education, work, industry and entrepreneurship experiences) and can be improved by training, practice and development’.

Entrepreneurial skills and venture performance

Research has attempted to relate entrepreneurial skills to venture performance. Theoretically and empirically, there is evidence that entrepreneurial skills can lead to venture success (Morales & Marquina, 2013; Unger et al., 2011). Human capital is significant in the success of a venture because it enhances the entrepreneur’s ability to identify and exploit business opportunities, in planning the venture, and in obtaining physical and financial resources (Unger et al., 2011). Several of these studies measured venture performance as profitability, venture growth, size and sales growth (Narkhede, Nehete, Rault & Mahajan, 2014). Among the indicators of venture success, venture size yielded a higher relationship with human capital than profit and growth (Unger et al., 2011). This is explained by the notion that human capital may not result in immediate profitability but offers benefits for opportunity recognition, planning and venture strategy.

The efforts of some scholars to measure the impact of entrepreneurial skills on firm performance (Narkhede et al., 2014) are marred by the need to empirically identify other factors that might explain this relationship (Pyysiäinen et al., 2006). The argument here is that skills alone may not clearly explain venture performance, especially financial performance, without considering the multitude of other factors that contribute to a venture’s success or profitability. This study therefore avoids using venture performance as an outcome variable.

Categories of skills in entrepreneurial tasks

The skills in entrepreneurial tasks are defined according to what an entrepreneur does and in terms of the subcategories of activities needed in running a business. In simple terms,

entrepreneurial skills must be aligned with activities in the different functional areas of the business (Pyysiäinen et al., 2006). Table 2-4 shows some of the skills identified from the literature. Some categories and their sub-skills were not empirically confirmed. In addition to lack of empirical evidence, the categories of skills noted were found to be inconsistent, therefore this study's objective was to identify the skills applied by entrepreneurs in running their business before understanding how the application of skills differs across the entrepreneurship phases.

Table 2-4: Skills categories and their subsets

Category of skills	Operation definition	Subset of skills	Authors
Technical skills	Performing key operations of the business	Managing operations, managing supplies and supply chains, production space skills, managing plant and equipment, technology and production processes, *management styles, written and oral communication, and *knowledge of manufacturing technology	Chang & Rieple (2013); Chell (2013); Narkhede, et al. (2014); Lichtenstein & Lyons (2001)
Business management skills	Organising and effectively managing the operations of the business (Lichtenstein & Lyons 2001)	Planning, organising, supervising, marketing skills, financial management skills, legal skills, administrative skills, high-order skills related to learning and problem solving, marketing, human resource management, marketing, networking, operational skills, business planning skills and negotiation skills	Hisrich, Peters & Shepherd (2005); Botha, Nieman & van Vuuren (2006); Loué & Baronet (2012)
Entrepreneurial skills	Birth, growth and performance of a business. These are skills needed to develop innovative products and services and to generate solutions to emerging needs in the marketplace	Ability to develop business concepts and a business plan, environmental scanning, *opportunity recognition, advisory board and networking, innovation, new resource skills, *calculated risk/risk propensity, change orientation, *visionary leadership, *inner control, *creativity and *persistence	Shane (2000); Timmons (1999)
Personal skills	Skills needed to attain self-awareness, emotional maturity, ability and willingness to accept responsibility	*Self-awareness, *accountability, *emotional coping, creativity, *change orientation, *motivation, negotiating skills, learning skills, communication skills and *self-efficacy	Chang & Ripple (2013); Narkhede, et al. (2014); Timmons & Spinelli (2004)
Behavioural and motivational skills	Skills associated with a behaviour and desire to achieve	*Self-discipline, *intuition and *vision, *creativity, *perseverance, *rigorousness, *meticulousness, *commitment, *stamina, *energy, effort, *motivation, *achievement motivation and *passion	Chell (2013); Loué & Baronet (2012)
Social and Interpersonal skills	Learnable behaviours used by individuals in their interactions with others	*Persuasiveness, social skill, *self-confidence, *trust, overconfidence, *leadership, networking skills, *self-efficacy, impression management, social adaptability, social perception, self-promotion, expressiveness, perception and social influence	Chell (2013); Baron & Tang (2009); Baron & Markman (2000); Morales & Marquina (2013)

Source: Researcher's synthesis of literature (* means element is more behaviour or trait rather than skill according to selected definition for this study)

Defining skills according to the tasks performed has resulted in various categories of skills in entrepreneurship. The well-researched categories of skills presented in table 2-4 are technical, management, entrepreneurial, personal, social and interpersonal, and behavioural or motivational skills.

An entrepreneur engaged in innovation and production will require skills categorised as production skills. Then the category of production skills will be divided into subcategories that may include new ideas, new products and services skills. If the activity of the entrepreneurial phase has to deal with opportunity recognition, then an entrepreneur is required to possess special skills in identifying and choosing opportunities from a variety of available choices, thus opportunity recognition skills (Fletcher, 2006).

The analysis of skills presented in table 2-4 highlights the need to distinguish entrepreneurial from management skills.

Entrepreneurial skills vs management skills

Apart from definitional issues in entrepreneurship skills research, another complexity is to differentiate entrepreneurial skills from management skills. Table 2-4 presented six categories of skills derived from the literature, with management skills differentiated from entrepreneurial skills. As noted from the two schools of entrepreneurship, the discipline is founded on innovation or novelty (Schumpeter, 1934) and opportunity recognition (Kirzner, 1973). Shane and Venkataraman (2000) and Timmons (1999) agreed that opportunity recognition and exploitation are fundamental constructs separating entrepreneurship from management. In the same vein, Markman (2007) believes the core of entrepreneurial skills is opportunity recognition and exploitation. Therefore, opportunity recognition differentiates entrepreneurial skills from management skills.

Can one entrepreneur possess all skills?

The identified skills in Table 2-4 question whether an individual entrepreneur can possess all skills, or whether they are equally important all the time. Timmons and Spinelli (2004) argued that it would be a rare situation for one entrepreneur to be excellent in all functional business areas. In most instances, an entrepreneur will have strengths in one area and weaknesses in another. For example, entrepreneurs with technical experience may be poor in marketing, finance, and

general management while, conversely, those without technical expertise might be weak in mechanical fields. If individuals lack some significant entrepreneurial skills, they can develop these skills or employ people with skill or outsource the skills from outside the venture.

Lazear's (2004, 2005) view is contradictory to Timmons and Spinelli (2004) as he argued that entrepreneurs are generalists or "jack-of-trades" who perform a variety of entrepreneurial activities by necessity. In other words, while they are not necessarily specialists in any single skill, they must be able to complete a variety of tasks to ensure the success of the business. Some of the requisite skills entrepreneurs may be lacking can be acquired through education and training. Empirical evidence indicated that, in the nascent phase, entrepreneurs with a wider set of skills perform more start-up activities personally while setting up a new business venture (Stuetzer, Goethner, & Cantner, 2012). So a wider set of entrepreneurial skills may be a predictor of success in starting a business.

Differentiating skills and behaviours

Table 2-4 indicates that some of the skills identified in literature are not actually skills, but more aligned with personality traits or qualities and behaviour. The lack of a proper definition of skills reviewed in this study resulted in many skills definitions in the literature appearing unclear. For example, recent research regards risk propensity, which is known as an entrepreneurial trait or personality characteristic, to be a skill (Chell, 2013). The other argument is that 'calculated' risk taking is more of a skill. This categorisation results in risk propensity being regarded as multidimensional (Chell, 2013) or having the properties of both a trait and skill.

Baum, Locke and Smith (2001) highlighted that entrepreneurial personality traits may influence skills sets that are developed. In addition, entrepreneurial personality traits like self-efficacy, passion, visionary and tenacity may influence the individual's ability to perform entrepreneurial activities, and ultimately impact on business venture growth. Noting this challenge, it is therefore significant to treat personality characteristics or traits and skills as separate entities.

Sambasivan, Abdul and Yusop (2009) suggested combining the constructs qualities and skills to form a two-dimensional construct presented as qualities-skills which ensures that qualities are not mixed up with skills. The mixing of the skills is due to the notion that personal qualities do not have a direct impact on venture performance but can influence the skills required to perform entrepreneurial tasks. For example, achievement motivation – which is a personality quality – may

influence opportunity identification and exploitation skills. However, the challenge with this mixing is how intrinsic traits could be measured relative to other skills. Due to this lack of clear distinction between personal qualities and skills, scholars like Chell (2013) recommended that research should be more explicit on the multidimensionality of skills.

Therefore it was paramount in this study to separate skills from traits or behaviour as the focal point of this study is on skills that can be developed rather than personality traits which are innate and more difficult to change.

2.5.3 Application of skills across the entrepreneurship phases

The reviewed literature confirmed that most prior studies are centred around the influence of human capital on opportunity identification and exploitation among nascent entrepreneurs. This has resulted in a paucity of research on practicing or established entrepreneurs who have heterogeneous experiences regarding the business venture (Ucbasaran et al., 2008a). Authors contend that there are distinct types of skills that will be significant in the completion and success of each entrepreneurial phase (Chell, 2013; Diochon, Menzies, & Gasse, 2008; Unger et al., 2011), but there is very little evidence to support this.

The challenge facing new business ventures is that the skills required for success change as the business transitions from one phase of development to the next (Mitchelmore & Rowley, 2010). Therefore understanding entrepreneurial skills at each entrepreneurial phase is significant, as skills sought as desirable for one phase may be unsuitable or even disadvantageous to the next (Lewis & Churchill, 1983; Mitchelmore & Rowley, 2010). The argument is that, in terms of role transitions, the business and the founder are fused in the early stages but, as the firm grows, there must be an essential separation and roles change.

Kroeger (1974) argued that in the early stages the entrepreneur is an originator-inventor and, in the later second stages, is a planner-organiser. At each phase, the entrepreneur requires a specific set of skills (Bird, 1995). Each phase has its own entrepreneurial and managerial role that describes the entrepreneurial or managerial functions needed. If the role is filled and performed successfully, the business will proceed to the next phase. However, if the entrepreneur does not have the requisite skills, the business venture may fail (Barlett & Ghoshal, 1997).

Table 2-5 presents the different categories of skills applied in running a business venture at different phases, based on existing theoretical literature. The skills portrayed in the table are mostly studied in relation to one phase of the entrepreneurship process, either opportunity recognition or in the established phase. For example, Chell (2013) focused on the opportunity-recognition phase which, according to Shane and Venkataraman (2000), is significant in the entrepreneurial process. However, businesses fail with some frequency well after this phase (Amorós & Bosma, 2014; Kelley et al., 2012). Still other skills portrayed in the table are confused with behaviour and some are treated as personal characteristics.

Table 2-5: Skills in different entrepreneurship phases

Author	Methodology	Results	Skills proposed	Entrepreneurial phase
Kroeger (1974)*	Theoretical review	12 skills and 4 categories	Technological, finance, production, management, marketing and technology	Initiation, development, growth and maturity
Lewis & Churchill (1983)*	Theoretical review	Unclassified set of skills	Technological, finance, production, management, marketing and technology	Existence, survival, success, take-off and resource maturity
Scott & Bruce (1987)*	Theoretical review	Unclassified set of skills	Technological, finance, production, management, marketing and technology	Inception, survival, growth, expansion and maturity
Chandler & Jansen (1992)	134 owners/directors by questionnaire – quantitative	21 skills divided into five categories	Human/conceptual competence, ability to recognise opportunity, technical, political and driving the venture to fruition	Opportunity recognition
Herron & Robinson (1993)	Quantitative study – 121 entrepreneurs by questionnaire	Seven abilities (personal skills)	Conception of products and services, business network management, evaluating functions of the firm, establish opportunities, managing the activity of the firm, human resource of the firm and understand its branch of industry and its tendencies	Established phase (venture performance)

Author	Methodology	Results	Skills proposed	Entrepreneurial phase
Greiner (1998)*	Theoretical review	Unclassified set of skills	Technological, finance, production, management, marketing and technology	Creativity, direction, delegation, coordination and collaboration
Lichtenstein & Lyons (2001)	Theoretical review	4 categories	Technical, entrepreneurial, business and personal maturity	Unspecified
Man & Lau (2000)	Qualitative study with 19 directors of small and medium enterprises (SMEs) in China	45 skills and behaviour divided into six categories	Identify opportunities, relationship, conceptual, organising, commitment and supporting	Established phase (venture performance)
Loué & Baronet (2012)	Mixed-method (29 qualitative interviews – 402 quantitative interviews)	44 skills and abilities and 8 categories	Opportunity recognition and exploitation, financial management, human resource management, marketing and commercial activities, leadership, self-discipline, marketing and monitoring, intuition and vision	Established phase
Chell (2013)	Theoretical review	47 skills and 6 categories	Personality skills, cognitive skills, business-specific skills, social and interpersonal skills, learning skills and motivational skills	Opportunity recognition
Narkhede et al. (2014)	Quantitative – 360 SMEs	23 skills and 4 categories	Personal, entrepreneurial, business and technical	Established phase

Source: Literature review and adaptation of Loué & Baronet (2012) (organisational development literature).*

Table 2-5 portrays some of the impressive lists of skills that are now commonplace in entrepreneurial teaching texts (Pyysiäinen et al., 2006). The current classification of these skills is based on general skills that are not associated with entrepreneurial phases (Botha et al., 2006). It is only the models adapted from organisational development literature that have tried to match

skills to the different phases of the business. Although these organisational development models are conceptual and some skills are uncategorised, the few identified skills will be instrumental in understanding skills at the different phases.

Pyysiäinen et al. (2006, p. 24) argued that lists such as those presented in table 2-5 raise many questions including: “Do these skills apply equally or are some more crucial than others? Are there differences between cases or contexts regarding the relevance of different skills sets?” In response to Pyysiäinen et al. (2006), this study suggested distinct skills are needed in different entrepreneurial phases and that skills are not applied equally in each entrepreneurial phase. As the business grows, entrepreneurs learn new skills and some skills become less significant while others become more significant. Finally, skills are also related to their different contexts.

From the perspective of task-specific human capital outcomes (Becker, 1964; Gibbons & Waldman, 2004; Unger et al., 2011), skills should be linked to entrepreneurial phases, because the tasks in each phase are different. Human capital leads to higher performance only if it is applied and successfully transferred to the specific tasks that need to be performed (Unger et al., 2011). Human capital outcomes should be related to the entrepreneurial tasks as identified by empirical studies such as the Panel Study of Entrepreneurial Dynamics: gestation, birth, growing and survival (Carter et al., 1996). As applied in the Global Entrepreneurship Monitor (GEM), entrepreneurial tasks relate to these entrepreneurial phases: potential, nascent/new business and established phase (Kelley et al., 2012). This study focused on skills across the empirically tested GEM entrepreneurial phases.

The GEM entrepreneurship phases – early nascent, nascent, new business and established – were reviewed to determine the skills used most in each phase.

i) Potential (early nascent) phase

The process starts with the involvement of potential entrepreneurs – those individuals who believe they have the required skills to start businesses, who perceive opportunities for entrepreneurship, and who would not be dissuaded from doing so by fear of failing (Amorós & Bosma, 2014; Kelley et al., 2012). Some of the skills in opportunity recognition include cognitive skills, business-specific skills, social and interpersonal skills, learning skills, motivational skills, and human/conceptual competence or ability to recognise opportunity and drive the venture to fruition (Chell, 2013; Man & Lau, 2000).

ii) **Nascent phase**

Nascent entrepreneurs are people who take actions to start a business venture such as looking for equipment or a location, organising a start-up team, preparing a business plan or beginning to save money (Bergmann & Stephan, 2012; Carter et al., 1996). In the nascent phase, the business has not paid salaries for more than three months. However, depending on the economic context of the study, especially where the entrepreneurship level is low and entrepreneurs stay longer in the nascent phase, an alternative for choosing the nascent phase is businesses that have not yet paid salaries for more than 1.5 years (Kelley et al., 2012; Reynolds et al., 2005).

The nascent phase is regarded as a learning phase in which the discovered opportunity is more closely evaluated through action. In this phase, entrepreneurs continuously evaluate the benefits associated with opportunities they are pursuing and, if those opportunities are inauspicious, they discard them and pursue those that are attractive (Dimov, 2010). Entrepreneurs starting businesses encounter many challenges that contribute to possible business failure in the first year (Kelley et al., 2012), and many entrepreneurs do not make the transition to the next entrepreneurial phases.

The human capital profiles required to identify business opportunities may not be the same as those required to exploit business opportunities (Davidsson & Honig, 2003; Ucbasaran et al., 2008a). At this stage, entrepreneurship-specific education and prior entrepreneurship experiences are important in pursuing opportunity (Davidsson & Honig, 2003). From the human capital assumptions (Becker, 1964), entrepreneurial experience should produce skills that are significant and specific at this phase. Among other entrepreneurship or start-up-specific skills significant at this stage, Diochon et al. (2008) provided empirical evidence that financial management skills are essential in the nascent phase and in sustaining the firm once it becomes operational.

Although human capital in the start-up phase is quite well documented in developed economies, in the South African context, where opportunities are abundant and resources relatively scarce, different kinds of skills may be required to carry out entrepreneurial activities with limited resources. This study therefore proposed that there are specific skills needed at each stage of start-up and beyond.

iii) New-business phase

New business owners are defined as those former nascent entrepreneurs who have been in business for more than three months, but less than three-and-a-half years (Turton & Herrington, 2012). In the context of low entrepreneurial activity as outlined above, the new-business phase can be standardised to businesses that have paid salaries for more than 1.5 years but less than 3.5 years (Kelley et al., 2012). This stage is affected by financial development and education. At this stage, new-business entrepreneurs need skills to acquire other “utilitarian resources such as financial and physical capital” (Unger et al., 2011, p. 341).

Baum and Locke (2004, p. 587) noted that entrepreneurs also need specific new resource skills which “enable them to acquire and systematise resources needed to start and grow a business”. Not much appears to have been documented about the skills needed at this phase. Therefore this study proposed that there are skills relevant to the new-business phase that need to be explored.

iv) Established phase

Established businesses are those that have paid salaries for more than three-and-a-half years (Kelley et al., 2012). The nascent and new-business entrepreneurs contribute to “dynamism and innovation in an economy while established businesses and their owner-managers often provide stable employment and exploit the knowledge and social capital accumulated in past experiences” (Amorós & Bosma, 2014, p. 34). At this stage, skills are required to transform products or services that can be sold to a broader customer base than in the prior phases, where selling products was aimed at a smaller and narrower customer base (Chang & Rieple, 2013).

Due to the preponderance of research focused on the nascent phase, entrepreneurship literature is not clear on which skills are needed at subsequent phases (Ucbasaran et al., 2008a). However, Loué and Baronet (2012, p. 455) conducted a study on established entrepreneurs and identified the following skills: opportunity recognition and exploitation, financial management, human resource management, marketing and commercial activities, leadership, self-discipline, marketing and monitoring, intuition and vision. The argument here is that some skills, for example opportunity recognition, are specific in start-up activities rather than the established phase.

Briefly, these discussions on applying skills across the entrepreneurship phases indicated that skills are used differently across the early nascent, nascent, new-business and established phases of the entrepreneurship process. Some skills and knowledge will be replaced by better skills (Unger et al., 2011), highlighting the need to understand the change in the significance of skills as the different entrepreneurship phases unfold.

2.5.4 Improving existing skills and learning new skills

Obschonka and Silbereisen (2012) indicated that the entrepreneurial process does not end with creating a venture. Similarly, figure 2-4 acknowledges that entrepreneurial development does not stop but rather an ongoing process of learning and adaptation unfolds. Individuals' actions are influenced by human capital on the entrepreneurial processes to create or maintain the venture, and in turn the process of entrepreneurial learning takes place thus enhancing entrepreneurial skills (Cope, 2005). Chell (2013, p. 23) encouraged a "refocus on learning and learning from experience" to discover the nature of skills that might emerge from these experiences and how they impact the successful implementation of entrepreneurial tasks.

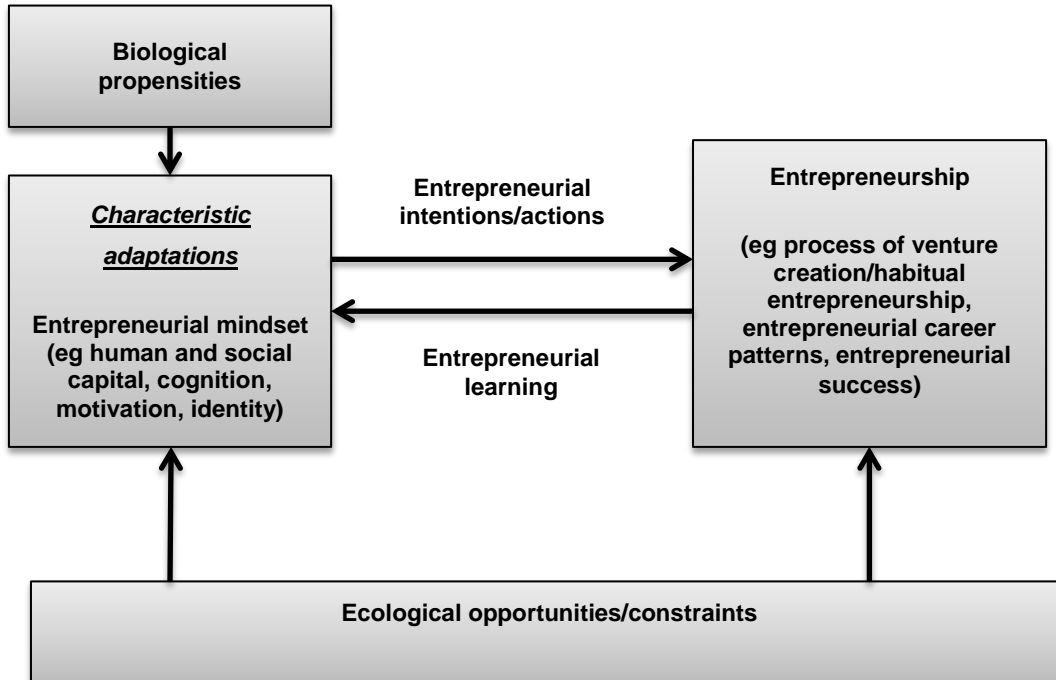


Figure 2-4: A section of the lifespan model of entrepreneurial development

This model shows how the process of venture creation impacts human capital through entrepreneurial learning. Source: Obschonka and Silbereisen (2012)

Entrepreneurial learning is “learning to recognise and act on opportunities through initiating, organising and managing ventures in social and behavioural ways” (Rae, 2006, p. 40). Entrepreneurial learning that takes place during venture creation impacts the entrepreneurial mindset, which includes human capital. Individuals do learn by doing to improve their skills and knowledge gained from creating and maintaining the business venture (Cope, 2005). Entrepreneurs repeatedly perform entrepreneurial activities and, the longer they run their businesses, the more likely they are to learn new skills and improve their performance (Frankish, Roberts, Coad, Spears, & Storey, 2013; Thompson, 2008).

However, new skills may be the accumulation of skills entrepreneurs had when they started the business venture (Arthur, Claman, & DeFillippi, 1995). It can be argued that, as the business grows from one phase to the next, prior skills accumulate and serve as a foundation for developing new skills. Empirical evidence shows that new skills relevant to running a business can be acquired through training programmes (Botha et al., 2006). Some authors also indicate that new skills can be the result of a build-up of prior skills, suggesting self-productivity and complementarity (Cunha & Heckman, 2007).

Self-productivity and dynamic complementarity of skills

New skills may result from cumulative, synergetic process which is affected by both formal and informal investments in education (Pfeiffer & Reuß, 2008). There are two ways in which new skills that entrepreneurs learn may develop. Firstly, they can be self-productive, where skills of prior phases remain productive for the acquisition of current or new skills (Cunha & Heckman, 2007, 2008). Self-productivity encompasses the notion that skills are self-reinforcing and cross-fertilising and that skills applied in one phase continue into subsequent entrepreneurial phases.

Secondly, there is dynamic complementarity where skills applied in one phase raise the productivity of investment in a subsequent phase (Cunha & Heckman, 2007, 2008). Skills complementarity suggests that skills at distinct phases fortify one another and new skills that manifest at different entrepreneurial phases are a result of old skills that have become salient in prior phases. The self-productivity and complementarity of skills were excluded in this study as this phenomenon requires extended longitudinal examination.

Summing up on skills in the different entrepreneurship (nascent, new-business and established) phases and how they change in significance, this study hypothesised that:

Hypothesis 1: The application of skills across each one of the entrepreneurship phases changes in significance as the entrepreneurship phases unfold

2.6 HUMAN CAPITAL INVESTMENTS IN DIFFERENT PHASES

Among many questions entrepreneurship research seeks to answer is where do entrepreneurial skills come from (Stuetzer et al., 2012)? According to human capital theory, skills come from investments in education, work experience and industry experience. What is not clear from the literature is the role of human capital investments as the source of skills in the different entrepreneurship phases. In agreement with Marvel et al. (2014), this study argued that not all human capital investments will be significant in all entrepreneurship phases. Some investments will help entrepreneurs start businesses while others may be significant in producing skills that are needed to run and sustain the businesses. For example, formal education may provide the skills to start a business but not to run and sustain it. Therefore, the ensuing discussion focuses

on the differing dimensions of human capital investments as sources of skills in the different entrepreneurship phases.

2.6.1 General human capital investments

Human capital theory is based on the assumption that formal education and work experience should be considered general human capital investments that yield outcomes, ie knowledge and skills (Becker, 1964). Unger et al. (2011) argued that outcomes of human capital investments (knowledge and skills) have a greater impact on performance than human capital investments themselves (education and work experience). The reason is that education and work experience are indirect indicators of human capital while knowledge and skills are direct indicators. In entrepreneurship, entrepreneurs with higher quality human capital investments are expected to have superior entrepreneurial outcomes (Becker, 1964; Davidsson & Honig, 2003). The discussion on education and work experience as generic investments in human capital is presented below.

a Formal education

Formal education emerged as a significant source of knowledge and skills and, among others, confidence to execute entrepreneurial activities (Ucbasaran et al., 2008a). Shane (2003) suggested that educated entrepreneurs may use the knowledge and skills acquired through the educational system to identify and pursue opportunities. An empirical analysis of 380 nascent entrepreneurs showed that those with formal education would attempt to start nascent activities but formal education did not appear to be a factor in determining success in the exploitation process (Davidsson & Honig, 2003). In a developing economy, studies have shown that entrepreneurs with higher levels of education are both more likely to start a business and ensure its sustainability (Herrington et al., 2014). These authors focused on the nascent phase, indicating that the significance of formal education in producing skills applied by entrepreneurs in the other entrepreneurship phases is yet to be explored.

b Work experience

Work experience represented by tacit knowledge is important in the process of entrepreneurship (Gabrielsson & Politis, 2012; Polanyi, 1966) and may produce managerial skills to start new

businesses (Shane, 2000). The indicator of work experience is the number of years' experience (Evans & Leighton, 1989), number of prior full-time jobs and achievement level which can simply be regarded as position occupied (Gimeno, Folta, Cooper, & Woo, 1997). Rather than having similar work experience as assumed in human capital theory, empirical evidence indicates that varied work experience is an added advantage for better opportunity identification, exploitation and running of a successful business venture (Ganotakis, 2012). This was confirmed through empirical study that founders with a variety of work experiences, specifically managerial experience, will have better managerial skills and a greater chance of success in the start-up phase (Baptista, Karaöz, & Mendonça, 2013). Although there is a paucity of evidence on the role of work experiences beyond start-up, this study proposes that work experience may be a source of skills needed by entrepreneurs in different phases to carry out entrepreneurial activities.

2.6.2 Entrepreneurship-specific human capital investments

There is growing acceptance that human capital theory (Becker, 1964) emphasises that the more specific an investment is to current tasks, the higher the expected returns. Among other specific investments in human capital are those that are industry-specific and entrepreneurship-specific. An industry-specific investment is of value inside the industry in which the business is started while an entrepreneurship-specific investment is of value inside the entrepreneurial process (Bosma, van Praag, Thurik & de Wit, 2004; Ucbasaran et al., 2008a). Empirical evidence indicated that entrepreneurship-specific human capital investments, such as earlier experience in starting a business, entrepreneurship education and membership of an association for small business founders, generate more promising start-ups and enhance performance (Bosma et al., 2004). Therefore, it is crucial for entrepreneurs to invest in both entrepreneurship-specific human capital and industry-specific human capital so that the outcomes will be specific to entrepreneurship.

a Prior entrepreneurship experience

The literature indicates that prior start-up experience is one of the most significant sources of skills required for successful business venturing as entrepreneurs learn skills from their involvement in starting a business or just by working in an entrepreneurial business (Morris, Kuratko, Schindehutte, & Spivack, 2012). Since it has been noted that human capital investments need to be related to the tasks of business venturing, prior entrepreneurship experience emerges as one of the investments that is more strongly related to the activities of starting a business than

formal education and work experience (Unger et al., 2011). Entrepreneurs with previous business exposure are therefore better able to identify feasible business opportunities (Politis, 2008).

Recent empirical studies suggested that individuals with previous business exposure have better entrepreneurial human capital, which includes opportunity identification and exploitation, managerial, technical and networking skills (Baptista et al., 2013; Ucbasaran et al., 2008a). Furthermore, empirical analysis of data gathered from 830 nascent entrepreneurs confirmed that prior entrepreneurial experience enhances the entrepreneur's ability to gather and use better networks, a vital source of knowledge in the early stages of setting up a business (Dimov, 2010). This highlights that prior entrepreneurial experience produces skills needed by entrepreneurs in starting businesses, but it remains uncertain whether this leads to success in later entrepreneurship phases.

b Industry-specific human capital

Industry experience is part of the human capital investment related to the tasks of starting a business and produces skills that are needed in the start-up process (Dimov, 2010). Empirical analysis of a sample of 1.8 million observations collected over eight years supported this theory by highlighting that work experience is essential, particularly if it is in the same industry as the new business venture (Baptista et al., 2014). The performance of business ventures can improve through same-sector experience and the integration of different but complementary skills such as commercial experience and managerial commercial experience (Ganotakis, 2012, p. 495). Entrepreneurs with industry experience have the necessary skills to start a business or perform nascent activities, but success in the later entrepreneurship phases of running the business is not guaranteed (Dimov, 2010). Therefore, having similar industry experience enhances an individual's ability to identify opportunities in the same sector but may not be as valuable later in the process.

Dimov (2010) observed the contradictory findings of the relationship between industry experience and opportunity identification. The condition under which these contradictions were noted is that if the industry experience is narrow and has a limited scope of application, identifying and exploiting opportunities outside the entrepreneur's industry can be onerous. Broader industry experience enhances opportunity recognition and exploitation within and outside the entrepreneur's industry. It can therefore be concluded that the wider the industry experience, the more likely idea generation will be enhanced. However, this contradicts human capital theory

which tends to focus more on the narrow, rather than broader, human capital investments. This suggests varied industry experience may lead to varied entrepreneurial skills across the different entrepreneurship phases.

c Entrepreneurship education

Entrepreneurship education is human capital investment that produces explicit knowledge and skills. A recent meta-analytical study showed a relationship between entrepreneurial education and training on the one hand, and the related human capital assets and entrepreneurial outcomes on the other. The relationship is stronger for academic-focused interventions than for training-related ones (Martin, McNally, & Kay, 2013). In their empirical study, Chang, Liu and Huang (2013) showed that well-established entrepreneurial courses have a significant impact on enhancing opportunity recognition or identification. However, this relationship may be mediated by other variables like entrepreneurial alertness.

In their meta-analysis of entrepreneurship education outcomes, Martin et al. (2013) noted that entrepreneurship-specific education has a positive impact on entrepreneurship-related skills as well as a positive relationship to entrepreneurship outcomes in the form of opportunity recognition and exploitation. In support, data collected from 170 entrepreneurs showed that not only does entrepreneurship training provide skills, it also appears to enhance the confidence of entrepreneurs (Elmuti, Khoury, & Omran, 2012). These findings suggest that entrepreneurship education is a significant source of skills and confidence to pursue related activities; however the utility of entrepreneurship education across the different entrepreneurship phases is not clear.

Therefore this study proposed that human capital investments are significant sources of skills in the different phases of entrepreneurship. The hypothesis related to human capital investments across the different phases is that:

Hypothesis 2: The utility of human capital investments, both generic and entrepreneurship-specific, as sources of skills is unequal in the different entrepreneurship phases.

2.7 HUMAN CAPITAL INVESTMENTS, SKILLS AND ENTREPRENEURSHIP PHASES

To bring together human capital investments, skills and entrepreneurship phases, the literature review revealed that studies on human capital theory have focused on human capital investments and venture outcomes (Unger et al., 2011) without looking at the mediating effect of skills as outcomes of human capital investments. The venture outcomes normally focus on profitability and sales growth, which does not indicate the business's phase of development. In addition, these studies centred on one sample without stratifying the sample according to the level of business development. This has led to a compromised understanding of how human capital plays out in different entrepreneurship phases.

In their human capital theory review, Marvel et al. (2014) noted that human capital investments and outcomes can help a business transition from one entrepreneurship phase to the next. Despite this, a clear relationship has yet to be determined through empirical evidence. The challenge with Marvel et al. (2014) is that it will be difficult to determine the role of human capital in transitioning from one phase to the next without considering other factors. Although the role of human capital cannot be totally ignored, it will be difficult to precisely isolate its impact.

This study did not seek to determine the impact of human capital investments on the transition from one entrepreneurship phase to the next, but to understand the difference in applying human capital investments and skills across the different entrepreneurship phases. Unger et al. (2011) showed that with the relationship between human capital and success, the effects of human capital were higher for younger or nascent businesses and lower for older established businesses. Thus the moderating effect of the business phase, marked by the age of the firm, was found to be significant. This supports the study's argument that there are differences across the entrepreneurship phases.

Although there is scarce evidence, the study relied more on Unger et al. (2011) by using entrepreneurship phase as a moderator variable between human capital investments and the skills applied by entrepreneurs in running their businesses. Thus, the effects of human capital investments, for example formal education, as source of skills applied in running a business may be higher for nascent entrepreneurs than established entrepreneurs. Therefore this study suggests that:

Hypothesis 3: The entrepreneurship phase moderates the relationship between human capital investments as independent variables and skills as dependent variable.

2.8 SOUTH AFRICAN CONTEXT

It has been established that contextual conditions influence human capital. Consequently, this study considered the potential impact of contextual conditions in the place where the study was conducted (Unger et al., 2011). With regard to skills, Spenner (1990) argued that skills should be referenced to a particular context, as it is incomprehensible to study skills without these. Contextual settings may enhance the expression of individual differences or be an inhibitor that obscures the expression of knowledge and skills acquired (Chell, 2013). Therefore, research should specify contextual conditions that may promote or inhibit the development of skills.

Zahra and Wright (2011) and Welter (2011) proposed four widely recognised dimensions of context (spatial, time, practice, change) that are important and can be applied in entrepreneurship research. For example, the institutional dimension determines cultural systems that may facilitate or inhibit entrepreneurial activities. A review of the dimensions and indicators of context in skills research presented in table 2-6 indicates how contextual settings can be applied in entrepreneurship skills research.

Table 2-6: Dimensions and indicators of context in skills research

Dimensions of context	Context in entrepreneurship skills research	Authors
Spatial (geographical environments, countries, industrial districts and clusters)	Competencies are well researched in emerging markets; there is lack of empirical evidence in emerging markets. Even among developed countries, entrepreneurial skills are different	Morales & Marquina (2013); Unger et al. (2011)
Time (sequencing of events)	There is a need to study entrepreneurial skills over time	Chell (2013); Ucbasaran et al. (2008a)
Social (networks, household and family)	The construct of skills is also associated with social embeddedness, but studies have been scant in this aspect. The influence of social networks and ties and family on the development and transference of skills is yet to be explored	Baum et al. (2004); Markman (2007); Sarasvathy (2001); Silva (2007)
Business (industry, market)	Industries require different entrepreneurial skills. Therefore it is significant to determine the sets of skills relevant in different industries	Pyysiainen et al. (2006); Unger et al. (2011)
Institutional (culture and society, political and economic system)	Further studies are needed in hostile environments where there are fewer resources and institutional support for entrepreneurship	Morales & Marquina (2013); Ahmad et al. (2010)

Source: Researcher's synthesis of literature

Table 2-6 shows that there are many contextual settings that can be applied to skills research in entrepreneurship. Some skills may apply in one country and not another; the variety of skills required to run a small business may be different to those required in a bigger business venture and, in addition, skills may be specific for certain types of businesses/industry and may be different from one entrepreneurial phase to the next. Therefore this study pays attention to the geographical dimension by focusing on emerging markets, with particular reference to the South African context.

Globally, there has been increasing fascination with understanding entrepreneurs in an emerging-market context (Bruton, Ahlstrom, & Obloj, 2008). Entrepreneurs operating in emerging markets must contend with formal and informal public and private institutions that can be hostile towards entrepreneurship (Ahmad et al., 2010). As a result, the skills entrepreneurs in these contexts apply to lead their businesses to survival and growth are distinct from those applied by entrepreneurs in developed markets (Solesvik, 2012). There is also an established research gap on the specific entrepreneurial skills suitable for entrepreneurs in emerging markets (Adendorff, Emuze, & Vilakazi, 2013). National disparities are not only a characteristic of emerging markets, but have been evidenced in comparisons among developed countries, revealing notable differences in skills (Morales & Marquina, 2013). In South Africa, little is known about entrepreneurial skills required by entrepreneurs.

South Africa's initiative to improve the economy and create employment is through entrepreneurship (Brière, Tremblay, & Dau, 2014). Despite efforts to invest in entrepreneurship, South Africa is challenged by low entrepreneurial activity and a high unemployment rate compared to the other sub-Saharan countries (Herrington & Kelley, 2013). This includes a low percentage of potential and established entrepreneurs. There are also comparatively fewer entrepreneurs who identify opportunities and believe they have the necessary skills to create business ventures. Some of the challenges encountered include the low levels of entrepreneurial skills which are seen as important elements in economic and entrepreneurship development (Adendorff et al., 2013).

Entrepreneurs in South Africa require three types of support: human, financial and social capital (Brière et al., 2014). With human capital, entrepreneurs would greatly benefit from entrepreneurial skills and training according to their developmental stages and sector of activity. The lack of entrepreneurial skills may be due to inadequate training (Brière et al., 2014) and a poor educational system given that South African public education is classified as the worst in the

world, far worse even than peer developing countries (Turton & Herrington, 2012). The “education system has been failing to effectively equip individuals with skills and confidence required to consider entrepreneurship as a valid choice” (Turton & Herrington, 2012; p. 28).

Studies in emerging markets have shown that the significance of entrepreneurship education lies in the positive relationship between the level of education and desire to be entrepreneurial (Herrington et al., 2014). Individuals with a higher level of education are more likely to have intentions to start new business ventures (Amorós & Bosma, 2014).

According to Turton and Herrington (2012), one of the requirements to increase the pool of potential entrepreneurs, individuals with entrepreneurial intentions and early-stage entrepreneurs is an effective education system. However, if the skills needed in each entrepreneurship phase are identified and training based on the identified skills is conducted, even in a weaker educational system the feasibility and desirability of entrepreneurs can still be increased.

2.9 SUMMARY OF LITERATURE REVIEW

The reviewed literature focused on three key constructs: human capital investments, skills and the entrepreneurship phases. With the entrepreneurship phases, this work is a response to Brixey et al. (2012) who argued that entrepreneurship should be studied at the level of the different phases: the nascent, new-business and established-business phase.

The literature review has shown that most studies have tended to be singular in their focus on the opportunity-recognition phase or start-up phase or established-business phase, rather than considering them simultaneously. Recognition of this gap created an opportunity to adopt a multiphase approach to explore the different skills that entrepreneurs at the different phases require for successful business venturing.

The application of human capital theory is supported by the work of Marvel et al. (2014) and Unger et al. (2011), who argued that the different dimensions of human capital may be suitable in the different entrepreneurship phases. Loué and Baronet (2012) similarly noted the need to study skills in relation to work experience, education and entrepreneurship education, which are elements of human capital investments. In addition, Chell (2013) and Morales and Marquina (2010) recommended that entrepreneurship research should consider identifying the various

dimensions of skills in the different phases of the entrepreneurship process. Figure 2-5 summarises the pertinent aspects in literature that underpin this study.

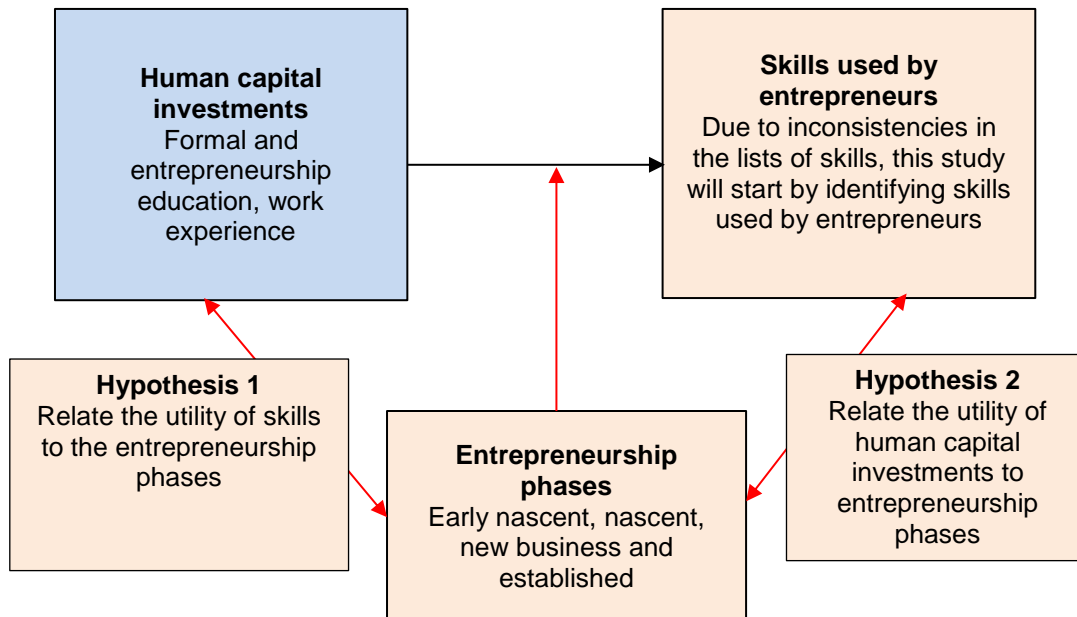


Figure 2-5: Summary of literature review

With the support of existing literature, this study applied the human capital theory to position human capital investments (formal education, entrepreneurial education, work experience and prior entrepreneurship experience) as significant sources of skills that entrepreneurs need in the different entrepreneurship phases. The argument on human capital investments is that while they are consistently required across all phases, the role they play varies in the different phases. Further, the dissected research also illustrated that entrepreneurship skills research treated entrepreneurs the same despite their specific entrepreneurial phases. Therefore this study argues that the application of skills is unequal across the nascent, new-business and established phases of the entrepreneurship process.

Finally, the study aimed to determine the relationship between human capital investments, skills and entrepreneurship phases. The argument is that some human capital investments, like formal education, may lead to skills that are used in the nascent and not in the established phase, suggesting some kind of moderating effect stemming from the entrepreneurship phases.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

This chapter presents the research design and methodology that was followed for the study. Research design is the overall strategy adopted to solve a research question and provides procedures for executing the research (Leedy & Ormrod, 2010). The research design part of the study includes philosophical assumptions, research paradigms, research approach, research choice and the research strategy. The methodology aspect of the study describes the sampling procedures, data collection and data analysis. The chapter concludes with ethical considerations in data collection and reporting.

3.2 RESEARCH PHILOSOPHIES

Research philosophy is defined by Saunders, Lewis and Thornhill (2009) as the development of knowledge and the nature of that knowledge relative to research. They further noted that research philosophy chosen in a study contains important assumptions about the way in which the world is viewed. Although there are many ways of thinking about research philosophy, the major ones are ontology and epistemology (Saunders et al., 2009). Ontology is one's perception of reality, while epistemology covers beliefs on the way to generate, understand and use the knowledge deemed to be acceptable and valid. This study was based on the ontological assumption that, objectively, skills in entrepreneurial phases can be determined independently of the inquiring observer and, subjectively, they can be explored dependently of the social actor or researcher. This study assumed an epistemological perspective, where the two extremes in which a feeling researcher concerned with feelings and attitudes of subjects can be combined with a resource researcher who is concerned with collecting and analysing facts (Creswell, 2012; Saunders et al., 2009).

3.3 RESEARCH PARADIGMS IN SKILLS RESEARCH

A research paradigm is a set of fundamental assumptions and beliefs on how the world is perceived, which then serves as an analytical framework that guides the choices and behaviour of the researcher (Teddlie, 2009; Wahyuni, 2012). Chell (2013) noted that positivism emerges as the dominant paradigm used to research skills. However Chell argued that the positivism paradigm raises a concern on how best to accurately define and measure skills. In addition, there are concerns with the notion that skills have an impact on performance, both at the individual and organisational level (Baum & Locke, 2004). Continued criticisms of positivism have shifted the focus of entrepreneurship research towards social constructivism (Chell, 2013) and mixed-method studies (Loué & Baronet, 2012). Table 3-7 shows the philosophical assumptions and paradigmatic approaches to conducting research on skills.

Table 3-7: The paradigmatic approaches to skills in the entrepreneurial process

Dimension	Positivism	Constructive realism/pragmatism	Social constructivism
Theoretical frame	Human/social capital, competency theory	Entrepreneurial cognition theory, cognitive decision-making theory	Phenomenology, structuration theory, radical humanism, Marxian theory
Ontology	Entrepreneurial skills have a tangible existence, objective reality	Observation of the skill is through perception	Skill is constructed and framed by the observer
Epistemology	Entrepreneurial skills may be observed, and measured by the researcher	The nature of skills may be determined and measured through empirical research	There is a large difference between observed skill and true underlying skill
Methodology	Scientific method; assumes that skills are measurable. Tests the impact of skills on performance of task	Primarily nomothetic, but may use mixed methods, accepting that skills are in some sense socially constructed.	Primarily ideographic, focuses on individual cases to glean insights; may use emic accounts and case-study method
Critical issues	Problem of measurement and agreement on definition and identification of which skills are crucial in the entrepreneurial process	Similar problems to those of the positivists; allowance for the construction of skills in certain specified contexts will reduce generalisability but produce explicable results in specific, well-defined contexts	Produces insights into the socio-political valuing of skills of, for example, minority groups; should produce explanations of why various social groups' entrepreneurial skills are undervalued and consequently have greater difficulty garnering resources such as finance in start-up mode

Source: Adapted from Chell (2013)

Table 3-7 shows key differences between the positivist, social constructivist and cognitive realism paradigms. The pragmatic position of this study combines the theoretical lens of human capital theory in positivism and the social constructivist position to study skills in a particular contextual setting. Further, it clearly depicts the methodological position of the study which draws from social constructivism by focusing on individuals to gain insights about skills and then later uses the scientific method to develop generalisations about the skills. Therefore, for this study, dimensions in the realms of positivism and social constructivism were fused for an optimal design outcome. This mirrors the theme of the mixed-method study where the incompatibility thesis of the two research paradigms is rejected (Teddlie, 2009).

3.4 RESEARCH APPROACH

A researcher has several options in framing the approach to a study. One can either opt to use an inductive approach generating theory from the analysed data, or a deductive approach primarily concerned with formulating and testing hypotheses (Leedy & Ormrod, 2010; Teddlie, 2009). Inductive approaches are mostly related to interpretivist or qualitative enquiry, while deductive approaches are more aligned to positivism or quantitative design (Saunders et al., 2009; Teddlie, 2009). There are instances where both approaches are employed to ensure the strengths of each are combined. In this study, the qualitative phase was used to identify skills in the different entrepreneurship phases, which led to refining the hypotheses and questionnaire design.

3.5 RESEARCH CHOICE

The design choice for this study was a mixed-method approach. The mixed-method originated as triangulation, combining qualitative and quantitative methodologies in studying the same phenomenon (Denzin, 1978; Jick, 1979). Combining the methodologies can be a way of discovering distinct differences which maybe missed when using one methodology (Jick, 1979). Despite the continued emphasis on mixed methods, this approach is still in the early stages of development, and many concerns still need to be resolved before it matures as a methodological concept.

3.5.1 Rationale for mixed-method

Tashakkori and Creswell (2007) recommend the use of mixed methods where the question of interest can be fragmented into sub-questions that can be answered qualitatively and quantitatively respectively. Therefore, for this study, the research question “what are the human capital investments and skills specific in the phases of the entrepreneurial phases” suggested that the research question can be investigated both qualitatively and quantitatively. Since skills in the different entrepreneurship phases were unknown, the study needed to begin by determining those skills.

The **qualitative study** was used to: 1) discover the skills used in each entrepreneurship phase; 2) determine the sources of skills required by entrepreneurs in the different entrepreneurship phases; and 3) use the results of the qualitative phase to develop a survey instrument to measure entrepreneurial skills in a larger population.

The **quantitative study** was used to: 1) statistically confirm the sets of skills derived in the qualitative phase; 2) determine the most-used skills in each entrepreneurial phase; 3) compare the utility of the sources of skills across the different entrepreneurship phases; and 4) determine the relationship between human capital investments, skills and entrepreneurship phases.

A mixed-method study provided strengths that offset the weaknesses of both quantitative and qualitative research. One might argue that a quantitative approach would be weak in supporting intrinsic understanding of the skills employed by entrepreneurs in the entrepreneurial phases. However, qualitative research makes up for these weaknesses as its strength is to help capture contextual perspective. On the other hand, qualitative research is often seen as analytically deficient because of the heavy reliance on personal interpretations made by the researcher, and its inability to produce broadly generalisable data. Therefore, the quantitative study complements these weaknesses as it is able to generalise and occurs with minimal researcher bias (Castro, Kellison, Boyd, & Kopak, 2010). In essence, the strengths of one approach make up for the weaknesses of the other.

3.6 RESEARCH STRATEGY

Mixed-method study strategies are both exploratory and explanatory, and they can be sequential, concurrent and transformative (Creswell, 2009). The strategy followed in this study is one of

sequential exploratory research where qualitative interviews were conducted in phase I, followed by a quantitative survey in phase II. The quantitative phase was given higher priority in scope and scale over the qualitative phase, thus making the design small qualitative and big quantitative, that is “qual-QUANT” (Cresswell, 2009). The qualitative findings were used to guide questionnaire development for the quantitative study. The results of these phases were then integrated in the presentation and discussions of the findings. In this study, the focus was on determining human capital investments and skills at a given point, thus adopting a **cross-sectional study** as the time horizon (Saunders et al., 2009).

3.7 PHASE I – QUALITATIVE RESEARCH METHODS

The qualitative research methods section provides specifics on sampling, data collection and data analysis (Teddlie, 2009). The main purpose of the qualitative study was to identify skills applied by entrepreneurs in the different entrepreneurship phases, refine the hypotheses suggested in the literature review and assist in developing a measurement instrument.

Unit of analysis

This study argued that skills are learned, mastered and used by individuals when performing entrepreneurial activities. Therefore the **individual entrepreneur** was the unit of analysis. An entrepreneur is defined as an individual with entrepreneurial characteristics, who takes actions to start and manage a business through the different phases.

Levels of analysis

Since it was established in the reviewed literature that it is significant to determine skills at different entrepreneurship phases, this study adopted a multiphase approach. Therefore, the levels of analysis focused on the four entrepreneurship phases which are the potential, nascent, new-business and established-business phases.

Entrepreneurship phase	Description
Potential	Those who believe they have ability to start a business (0 months)
Nascent	Those who have a business that paid wages for <1.5 years
New business	Those who have a business that paid wages for >1.5 but less than 3.5 years
Established	Those who have a business that paid wages for >3.5 years

The study used standardised criteria for classifying the entrepreneurship phases. In a context of low entrepreneurial activity, it takes much longer for nascent entrepreneurs to start a business and generate income of any kind (Bergmann & Stephan, 2012; Kelley et al., 2012; Reynolds et al., 2005). Thus businesses in the nascent phase do not generate income in the first three months; they take 1.5 years to generate income. Accordingly, the nascent phase was classified as businesses that had paid any salaries, wages, or payments in kind for less than 1.5 years. 'Payments in kind' refers to goods or services provided as payments for work rather than cash (Herrington et al., 2014). These categories are explained under definitions of terms in chapter 1.

3.7.1 Qualitative pilot interviews

Before collecting qualitative data for the main study, a pilot was conducted. This is a small-scale study to test the research instrument to minimise the likelihood of data-gathering processes failing to capture required information. An added benefit is that a pilot test enables prior evaluation of the reliability and validity of the research instrument (Saunders et al., 2009). The first three qualitative interviews were treated as the pilot study.

The results of this pilot phase showed that respondents who were already in business understood all the questions with ease. From these findings, some of the skills themes were derived and explored further in subsequent interviews. The main themes of skills that emerged from the pilot study included financial management, human resource management, technical, marketing and personal skills. It was also noted that the researcher's voice was not audible after the recording. So the microphone of the recording instrument was adjusted and the researcher ensured that all aspects of the interviews were effectively recorded.

3.7.2 Sampling

The qualitative phase used purposive sampling which is a non-probability sampling method where judgement is used to select cases (individuals, groups of individuals, institutions) that will best answer the research question (Saunders et al., 2009; Teddlie, 2009). However, it is uncertain if each unit or case will be selected from the overall population. Since the study is focused at the multiple level of analysis, a stratified purposive sampling method according to the entrepreneurship phase was deemed appropriate. The strata enabled discovery and detailed description of elements that were identical as well as those that were unique across the

entrepreneurship phases. The strata consisted of entrepreneurs in the potential phase (0 months), nascent phase (paid salaries of any kind in less than 1.5 years), new-business phase (paid salaries of any kind for 1.5 to 3.5 years), and established phase (paid salaries of any kind for more than 3.5 years). The existing businesses were at a point where they were generating revenue and able to pay wages. Criteria used to select the entrepreneurs are listed in table 3.8.

As an alternative measure, the number of years in business was also selected to validate the entrepreneurship phase. For example, a business that had been in existence for more than 3.5 years (denoting established phase) but was able to pay salaries for less than 1.5 years (denoting new-business phase) was considered to be delayed in the new-business phase or possibly in the process of transitioning to the established phase. So businesses whose years of existence did not align with the duration of paying salaries were considered to be delayed in the process, and considered in the study.

Table 3-8: Qualitative sampling criteria

Measure	Nascent entrepreneurs	New-business owners/ Entrepreneurs	Established-business entrepreneurs
Role/position	- Exploiting an opportunity - Currently <i>setting</i> up a business individually	- Currently <i>owning</i> or managing a business - Manager	- Currently <i>owning</i> and managing a business - Planner and strategist
Time to pay wages (GEM)	- Business has not paid wages for more than 3 months	- Business has paid wages for less than 3.5 years	- Business has paid wages for over 3.5 years (42 months)
Used standardised times	- Less than 1.5 years	- Can be 1.5 to 3.5 years	- Can be over 3.5 years
Activities	- Organising equipment/facilities, hired employees, sought financial support, formed legal entity, devoted full time to the business, make and distribute products, negotiation	- Make profits, formally controlling the business, planning and budget, information systems, salary rewards, division of labour, scheduling	- Dominating a niche, five-year profit plans, salary and bonus rewards, multidimensional plans (strategic plans), intergroup relations
Industry	Agriculture Mining and quarrying Manufacturing, engineering and technology Electricity, gas and water supply Construction Wholesale and retail trade Transport and communication Financial services Community, social and personal services	Agriculture Mining and quarrying Manufacturing, engineering and technology Electricity, gas and water supply Construction Wholesale and retail trade Transport and communication Financial services Community, social and personal services	Agriculture Mining and quarrying Manufacturing, engineering and technology Electricity, gas and water supply Construction Wholesale and retail trade Transport and communication Financial services Community, social and personal services

Purposive sampling was also used in selecting national experts in the field of entrepreneurship. National experts with entrepreneurial businesses and professional experience in entrepreneurship education and training were selected as participants in the study, based on the following criteria:

- Academics: Lecturers in entrepreneurship with entrepreneurial experience.
- Research practitioners: Director of research institutions focusing on entrepreneurship and editor of a South African peer-reviewed journal focusing on entrepreneurship.
- Entrepreneurial hubs and centres: Senior managers at governmental business incubation centres that have created a unique space for high-tech entrepreneurs, world-class businesses, academics, researchers and venture capitalists to meet, network and prosper.

- Entrepreneurs: Recognised and successful entrepreneurs actively engaged in business venturing.

The national experts in entrepreneurship played an important role in the qualitative phase as they provided data on skills across the different entrepreneurship phases that were triangulated with data gathered from entrepreneurs. They also provided insights on contextual factors that impact the skills required by entrepreneurs in the different phases. Their data was included as part of the qualitative findings.

3.7.3 Sample size

The initial qualitative data was gathered from a sample of 26 respondents, comprising 20 entrepreneurs and six national experts in entrepreneurship. From the sample of 20 entrepreneurs, there were five in the early-nascent phase, five in the nascent phase, five in the new-business phase and five in the established phase. The early-nascent entrepreneurs intended to start businesses within the next three months or so, nascent entrepreneurs had up to 1.5 years operating their business, new-business entrepreneurs had 1.5-3.5 years running their business. Established entrepreneurs had more than 3.5 years in business. It was observed from the data that those in the manufacturing industry tended to take longer in the nascent phase due to demanding and expensive processes in setting up a manufacturing plant.

Entrepreneurs interviewed were the founders of their business ventures. The related industries included agriculture and nature conservation; manufacturing, engineering and technology; electricity; wholesale and retail trade; transport and communication; financial services; community, social and personal services. Their academic qualifications included matric, diplomas, BTech, honours and masters. One candidate was still pursuing a doctoral degree. To ensure confidentiality, participants were assigned pseudonyms for data-reporting purposes. Table 3-9 shows the sample of entrepreneurs who participated in the study.

Table 3-9: Sample of entrepreneurs

Name*	Gender	Education	Industry	Business focus	Entrepreneurial phase
Maliah	Female	Masters	Finance business	Financing solutions	Early nascent
Barry	Male	Diploma	Service business	Corporate leadership and events management	Early nascent
Rorisang	Male	Honours	Service business	Personal and career development	Early nascent
Latoya	Female	Doctorate	Food and restaurant retail	Running sandwich franchises	Early nascent
Owen	Male	Masters	Software and retail business	Mobile app based on couponing system	Early nascent
Moses	Male	Honours	Service business	Design and fitting floorings	Nascent
Karl	Male	Degree	Service business	Business development and governance	Nascent
Luca	Male	Studying a degree	Manufacturing business	Manufacturing and supply soft drinks	Nascent
Maxwell	Male	Diploma	Manufacturing business	Processing macadamia nuts	Nascent
Charles	Male	Grade 12	Service	Transportation	Nascent
Randall	Male	MBA	Educational business	Delivering accessible, high-quality education	New business
Xavi	Male	Grade 12	Manufacturing business	Process and supply maize meal	New business
Pheladi	Female	BTech	Manufacturing business	Manufacturing and supply skincare products	New business
Patience	Female	BTech	Retail fashion	Design, manufacture and supply clothes	New business
Theo	Male	Honours	Media business	Media relations and corporate communications	New business
Mandla	Male	Honours marketing	Manufacturing business	Manufacturing and supply insecticide	Established business
Leica	Female	BCom	Fashion and retail	Selling locally made high-end carpets and natural fibre	Established business
Hope	Female	Masters physiotherapy	Hospitality business	Tourism, hospitality and spa treatments	Established business
Lee	Male	MBA	Software business	Provides high-tech solutions to companies	Established business
Levi	Male	MBA	Vegetation business	Environmental management and engineering consulting	Established business

**Respondents were given false names*

When the five early-nascent entrepreneurs were interviewed, results showed that most were still in the conceptual phase and were not running any business. So when they were asked about the skills they need to start a business, they spoke more about what they intended doing when their businesses started operating. These entrepreneurs portrayed a belief that they had the required skills to start the business, although they were not practically performing them. As a result, this early-nascent phase was excluded from the study (both in the qualitative and quantitative

phases). The study then remained with 15 entrepreneurs, being five each in the nascent, new-business and established phases.

Table 3-10 presents the national experts who participated in the study, all actively involved in entrepreneurship through teaching the subject, conducting entrepreneurship research, running entrepreneurial incubators and owning entrepreneurial businesses.

Table 3-10: Sample of national experts in entrepreneurship

Name*	Gender	Profile	Organisation type
Jeffrey	Male	Entrepreneurship lecturer, previously owned a business	Business school
Malik	Male	Entrepreneur heading a global research organisation	Private global research organisation
Floyd	Male	Editor of an accredited journal focusing on entrepreneurial and business management fields	University
Fabio	Male	Enterprise and skills development manager at an incubation centre, owned a business before	Governmental organisation
Christine	Female	Director of an entrepreneurship centre at a business school, with entrepreneurial experience	Business school
Felicia	Female	Entrepreneur and CEO of a successful testing station. She is one of the most influential women in business and government in the services sector. She also serves on different committees in the transportation and service sector	Active entrepreneur

**Respondents were given false names*

Table 3-10 also shows that the national experts captured included those in academia, as well as practising and serial entrepreneurs who were once involved in starting and running their own entrepreneurial businesses.

3.7.4 Fieldwork procedure

The fieldwork began by purposively identifying entrepreneurs and national experts according to criteria outlined in tables 3.8 and 3.10. The selected entrepreneurs were sent emails requesting them to participate in the study. An example of the email is presented in appendix A. Three days after the emails were despatched, those who had not yet responded were contacted telephonically. The telephonic appointments were effective as entrepreneurs indicated that, in

most cases, they take longer to respond to emails. An hour-long interview appointment was secured with each entrepreneur. The fieldwork began in September and ended in October 2014.

Location: Interviews were conducted at the place preferred by the respondents. There were no major material differences on data collected from different locations except for the fact that interviewing entrepreneurs at their business premises provided the researcher with observations of how the businesses were conducted. Also, the researcher conducted the interviews in a quiet environment to minimise external noise that could have affected the quality of interview recordings. The study area for the qualitative phase was Gauteng Province in South Africa.

Duration: Interviews lasted for a minimum of 30 minutes and maximum of 96 minutes. The average time for all entrepreneurs was 53 minutes and, for the national experts, the average time was 59 minutes. Overall, the average duration of interviews was 56 minutes. Total time for all interviews was 24 hours and 25 minutes. See the breakdown below:

	Early entrepreneurs	Nascent entrepreneurs	New-business phase	Established entrepreneurs	National experts	Total
Average minutes	48.34	58.08	57.40	56.31	59.11	55.94
Total minutes	241.72	290.40	287.02	281.57	354.66	1 455.37 (24hrs 25 min)

3.7.5 Data method and collection tools

The qualitative phase data collection adopted semi-structured, in-depth face-to-face interviews with both entrepreneurs and national experts in entrepreneurship. This method of interviewing provided the researcher with an opportunity to ‘probe’ answers, encouraging interviewees to explain, and build on, their responses. The interviews were recorded on a voice recorder, and later transcribed on the Microsoft Word software programme. Additional notes were taken during the interview.

The discussion guide, which was semi-structured and had open-ended questions, was used to interview individuals at the following levels: potential entrepreneurs, nascent entrepreneurs, new business (entrepreneurs) and established business owners (entrepreneurs). To harmonise data

capture and reduce bias, entrepreneurs in all phases were asked the same questions (see appendix B).

The discussion guide was developed with thematic guidance from reviewed literature. For example, the literature theme of human capital investments as sources of skills led to developing discussion questions about the significance of entrepreneurship education, formal education, work experience and prior entrepreneurship experience as sources of skills in the respective entrepreneurship phases. The entrepreneurs were also asked about other sources of skills, which led to developing new themes. The sources of skills and skills applied in each entrepreneurship phase were maintained as the core discussion points in each interview.

Observations stemming from other scholarly works indicated that the context in which the study was conducted had factors such as poor formal education which could impede the development of skills required by entrepreneurs. Therefore, this literature theme resulted in discussion questions about incongruences between skills learned in the classroom and those needed in the real business world. A separate discussion guide with open-ended questions was the same for all national expects in entrepreneurship (see appendix C).

During the process of data collection, the researcher started preparing the data for analysis. This stage involved transcribing the recorded audio interviews, optically scanning the interviews and transferring other files into a Microsoft Word document (Creswell, 2003; Saunders et al., 2009). The recorded interview was transcribed a day after the interview was conducted. This helped to identify emerging threads from the data that could then be positioned for further validating discussions in subsequent interviews.

3.7.6 Qualitative data analysis

The qualitative data was analysed using a deductive approach which relied on an organising framework to direct data analysis (Saunders et al., 2009). The five steps that constituted the deductive data-analysis approach are presented in figure 3-6.

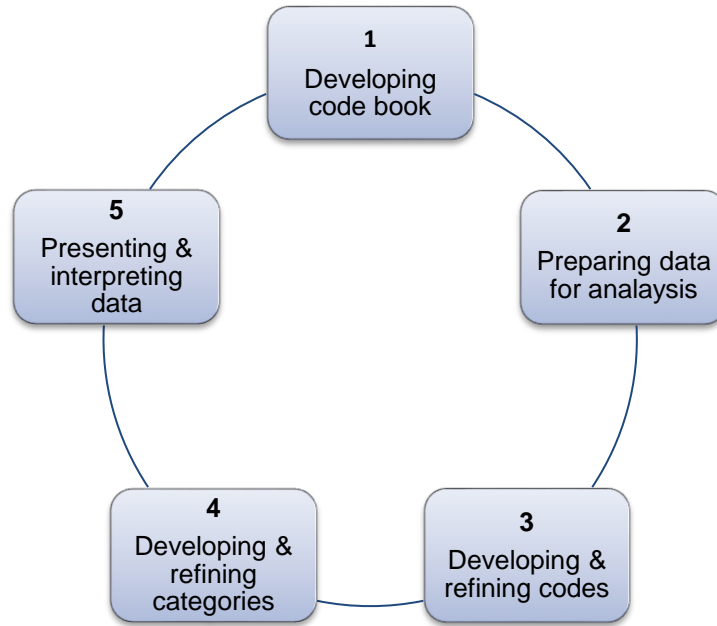


Figure 3-6: Qualitative data analysis
 Source: Author's own work

The following steps were used in analysing the data:

STEP 1: Developing the code book

The researcher started by making a code book of skills that included categories of skills, their sub-skills and operational terms. This comprehensive log of codes and categories of skills was derived from the reviewed literature on skills. After identifying the skills, appropriately descriptive codes were formulated and captured in a Microsoft Excel spreadsheet which was later loaded onto a computer-aided qualitative data analysis software program (CAQDAS), ATLAS.ti. After loading the code book, initial code families and their corresponding codes were created. Using the code book helped with precision in identifying data on skills for coding.

The only disadvantage to this approach is that it took longer to conduct a detailed literature review to inform compilation of the code book but, once this process was completed and initial codes were loaded onto ATLAS.ti, the coding process was fairly expedient. The code book for the study is in appendix D.

STEP 2: Preparing data for analysis

After all interviews were transcribed, the next step was to closely appraise the data. This involved reading through all the data for a general sense of the information and to reflect on its overall meaning (Creswell, 2003). The raw data was read in detail until the researcher was familiar with its content and had gained an understanding of the themes and events covered in the text (Thomas, 2006). After all the data was read and edited, transcripts were then loaded onto ATLAS.ti.

Using this analysis software, all transcripts were grouped into the primary documents manager and into the following primary document families: nascent, new-business and established business phases.

STEP 3: Developing and refining codes

Coding is the process of organising the data into chunks or segments of text before bringing meaning to information (Creswell, 2003). ATLAS.ti was used to code, organise, compare different codes and sort the significant data that was best in describing the qualitative findings. Using a software program was an efficient means of facilitating the coding process, storing and locating the qualitative data. The data was coded according to the code book while some codes emerged from the data.

At the end of coding, there were 375 codes, but not all were used in presenting the results. Some codes were new themes and not directly related to the research questions, hence their inclusion could compromise the golden thread of the study. The researcher meticulously incorporated data that contributed to answering the main research questions.

STEP 4: Developing and refining categories

The last step of data analysis involved revising and refining the developed skills categories. The contents of the categories were closely appraised for contradictions and emerging themes. These are presented in the findings chapter. Appropriate quotations that convey the core skills themes or essence of skills per category were selected. Some skills categories with related meanings were merged under a superior category and, to some extent, given a name for the new category

(Thomas, 2006). The finalisation of categories resulted in the formation of clusters of skills (refer to appendix E for the final code list).

STEP 5: Presenting and interpreting the data

The final step was presentation and interpretation of the data. The analysed qualitative data is presented in chapter 4, followed by discussion of the findings in chapter 7. The interpretations were derived from comparing the findings on entrepreneurial skills with the reviewed literature and the main theory used in the study. The findings on human capital and skills in the different entrepreneurship phases presented in the discussion chapter either confirmed or argued against the literature (Creswell, 2003). The theory, policy and action implications were generated in later chapters, finalising the report (Leedy & Ormrod, 2010).

3.7.7 Reliability and validity

Validity is the accuracy, meaningfulness, and credibility of a research exercise while reliability determines the consistency of approach applied in carrying out the investigations and that measuring instruments measured what they were intended to (Gibb, 1997; Leedy & Ormrod, 2010). To ensure results were valid and robust, the data was analysed over a period of two-and-a-half months – beginning in October 2014 to mid-January 2015.

In addressing reliability, transcripts were checked to eliminate any prominent errors made in the transcription process and ensure accuracy of representation of the interview data. As additional assurance, the researcher opted to personally conduct all interviews and transcribe the audio files. This helped in ensuring that the data transcribed is well aligned with what respondents represented during the interviews. In cases where recorded data was found to be unclear, participants were contacted again for further clarifications and confirmations. During the coding process, the consistency of definitions and meanings of the codes as guided by the code book was maintained.

As for validity, the researcher used quotations from the respondents. The use of experts in the field of entrepreneurship and research methodology who gave guidance on the research also helped to lend depth of legitimacy to the process. Post data analysis, the researcher re-engaged

some entrepreneurs who participated in the qualitative interviews to present the results for further verification and alignment. The supporting evidence of validity is briefly presented in the table below:

Table 3-11: Validity of the qualitative findings

Respondent	Validity on	Response	Validity of results confirmed
Maxwell	Technical skills in the nascent phase	6 months after the interview Maxwell was still trying to acquaint himself with the technical skills of manufacturing the product	Yes. The technical skills are important in the early phases of the entrepreneurship process
Pheladi	Business management skills in new-business phase	This respondent improved business management skills by introducing formalised systems which improve the day-to-day running of the business	Yes. The business management skills start to build up in the new-business until the established phase
Levy	Business development skills in established phase	Respondent indicated that they are trying to focus more on business development and diversification of the business	Yes. The business development skills are used most in the established business
Rorisang	Exclusion of early nascent phase in the study	Rorisang said that much has not happened post the interview and was not actively engaged in starting a business	Yes. For this study, early nascent entrepreneurs were not going to provide the true and valid data that would answer the study's research questions

The findings from phase I were also presented at an academic conference and were then submitted as a manuscript for publication to a reputable journal in entrepreneurship. Feedback from the academic conference panel reviewers and peers in the field of entrepreneurship was used to enhance the quality and robustness of the conclusions.

3.8 PHASE II – QUANTITATIVE RESEARCH METHODS

The sampling, data-collection and data-analysis methods that were followed in the quantitative phase are explained in this section (Teddlie, 2009). The main purpose of the quantitative phase was to confirm the skills sets identified in the qualitative phase, compare the utility of skills across

the different entrepreneurship phases and establish the relationship between human capital investment, skills and entrepreneurship phases.

Unit of analysis

The unit of analysis for the quantitative phase was maintained as per the qualitative phase. Thus the individual entrepreneur was the unit of analysis.

Levels of analysis

The study focused on skills in the different entrepreneurship phases using a multiphase approach. Consequently, the levels of analysis included the three entrepreneurship phases: nascent, new-business and established business.

Business phase	Description
Nascent	Those who have a business that paid wages for <1.5 years
New-business	Those who have a business that paid wages for >1.5 but <3.5 years
Established	Those who have a business that paid wages for >3.5 years

These levels of analysis were the same as the ones in the qualitative phase (see section 3.7). As explained earlier, the early nascent phase was excluded on the basis that respondents were not able to report factually on the skills they were using.

3.8.1 Pilot test

The intention was to conduct the pilot test on a sample of 30 entrepreneurs, but this was not achieved due to slow response from the invited participants. By the end of data collection for the pilot study, only 15 responses from targeted participants had been received. These included five nascent, five new-business and five established entrepreneurs. One of the intentions of the pilot test had been to assess the reliability of the research instrument before using it in the main survey, however captured responses for the pilot survey did not meet the required sample size to enable the computation of trial statistical tests. Fortunately, the researcher had elected to design the pilot instrument in a way that enabled respondents completing the questionnaire to simultaneously

provide reflective opinion on the survey questions asked; thus a content analysis of this commentary from the respondents was used to modify the final survey questionnaire. As part of this a priori feedback, respondents indicated that age may influence the utility of skills. This came from a young entrepreneur who mentioned that, because of her age, it was difficult to interact with older entrepreneurs and, at times, she was not able to manage older employees. As a result, age was included in the questionnaire and used as a control variable in statistical analysis.

The questionnaire was derived from the variables and measurement items with high-frequency loadings on ATLAS.ti, therefore the modification of the survey questionnaire based on the qualitative codes frequency tables and entrepreneurs' pilot feedback was deemed sufficient. The respondents also pointed out questions that were not clear and some that did not fit in the survey. For example, in the pilot test, the technical skills addressed by the tool were found to be biased towards manufacturing, which made it difficult for service-orientated entrepreneurs to respond accurately. After the pilot feedback, questions on technical skills were asked in such a way that even service entrepreneurs could answer them with ease. However, results from the pilot were not incorporated in the main study. Similarly, respondents who participated in the pilot test were excluded in the sample for final data collection.

3.8.2 Sampling

Phase II, the main survey, adopted a probability sampling strategy in which the possibility of each unit to be selected from the population is known and usually equal for all cases (Teddlie & Yu, 2007). This strategy is implemented when selecting a relatively large number of units from a population, or from specific subgroups (strata) of a population (Tashakkori & Teddlie, 2003; Teddlie & Yu, 2007). While purposive sampling has limited generalisability, implementing probability sampling ensures that the whole population is represented. The sample was stratified to ensure required composition of the nascent phase, new-business and established-phase entrepreneurs.

3.8.3 Sample frame and size

For the quantitative phase, the sample frame for the study was a list of 11 001 South African entrepreneurs at different entrepreneurship phases who owned and operated formally registered businesses. The list sourced from an organisation that works with entrepreneurs had details of

the businesses and email addresses. The large sample size in the survey study was significant for selecting the statistical method of analysis. The sample size for the study based on the population of 11 001 entrepreneurs is computed as follows:

The confidence level was 0.95% (z-score = 1.96), margin of error (ME) = 5%, distribution was 50% (p = 0.5, therefore q = 1 – 0.5 = 0.5) and population size (N) = 11 001

$$\begin{aligned}
 \text{Sample size} &= \frac{[(z^2 \times p \times q) + \text{ME}^2]}{[\text{ME}^2 + z^2 \times p \times (q/N)]} \\
 &= \frac{[(1.96^2 \times 0.5 \times 0.5) + 0.05^2]}{[0.05^2 + 1.96^2 \times 0.5 \times (0.5/11001)]} \\
 &= 0.9629 / 0.002587301 \\
 &= 372
 \end{aligned}$$

The first sample size computed was found to be very high, and the probability of getting 372 questionnaires completed was low. Therefore, these parameters were changed to derive an achievable sample size: confidence level to 90% (z-score = 1.645) and the margin of error (ME) to 6%. Distribution was kept at 50% and the population at 11 001. The refined sample size was calculated as follows:

$$\begin{aligned}
 \text{Sample size} &= \frac{[(z^2 \times p \times q) + \text{ME}^2]}{[\text{ME}^2 + z^2 \times p \times (q/N)]} \\
 &= \frac{[(1.645^2 \times 0.5 \times 0.5) + 0.06^2]}{[0.06^2 + 1.645^2 \times 0.5 \times (0.5/11001)]} \\
 &= 0.6801 / 0.00366 \\
 &= 186
 \end{aligned}$$

Therefore the expected sample size was 186 completed survey questionnaires at a confidence level of 90% and margin of error of 6%. This sample size was achieved, as the final completed sample of online questionnaires was 235 respondents.

3.8.4 Data-collection method

The quantitative survey data was collected using a standardised structured closed-ended self-administered questionnaire completed by entrepreneurs at the respective entrepreneurial phases.

The survey questionnaire was developed from the qualitative phase findings. The qualitative-to-quantitative conversion process is discussed in chapter 5 (hypotheses and questionnaire development). The questionnaire was administered electronically using SurveyMonkey, an online service that allows users to create web browser surveys.

An invitation to participate in the study, together with the survey link on SurveyMonkey, was emailed to 11 001 entrepreneurs (see appendix A for invitation email). The first email solicited 116 responses. One week after the first survey email, a reminder email was sent to respondents who had partially completed the questionnaire and those who had not yet responded. Sending out reminders was very effective as it yielded more than 100% of the initial 116 responses. At the closure of the survey, which took two months (last week of June to mid-August 2015) of data collection, 267 responses had been received. The first data-cleaning step was to remove cases with over 50% of missing data. As a result, final completed cases that were incorporated in the study analysis pool totalled 235. The breakdown of the attained sample sizes across the entrepreneurship phases is outlined in chapter 6 in the presentation of quantitative findings.

3.8.5 Data-collection tools

As indicated, compilation of the quantitative data-collection tool was a key outcome of the qualitative data-analysis process. The questionnaire had closed-ended questions with 5-point Likert scales from which respondents were required to select one of five options (see appendix E). The Likert scale measures responses along a dimension from positive to negative, where the following possible answers are selected: strongly approve, approve, undecided, disapprove, and strongly disapprove (Likert, 1932). In employing the scales, the researcher was able to interrogate the extent to which respondents thought they used the different skills in their businesses. The responses expected in this study ranged from 1 = never, 2 = almost never, 3 = sometimes, 4 = almost every day, and 5 = every day. The respondents (nascent, new-business and established entrepreneurs) submitted their responses via the online SurveyMonkey questionnaire. Survey responses were consolidated and then exported to statistical software for analysis. Details of the questionnaire design and operationalisation of terms are presented in chapter 5 on questionnaire design.

Study area: The quantitative phase was a nationwide survey capturing all South African provinces (Gauteng, Limpopo, Mpumalanga, North West, Northern Cape, Western Cape, Kwa-Zulu Natal, Free State and Eastern Cape).

3.8.6 Quantitative data analysis

After quantitative data collection, the SurveyMonkey responses were exported to the Statistical Package for Social Science Software (SPSS) and AMOS (Analysis of Moment Structures) for statistical analysis. Before conducting any statistical analysis, the data was prepared for analysis. This procedure included dealing with missing values, outliers, normality tests and reliability tests to determine the internal consistency of the research instrument. Descriptive statistics (mean, mode, median, frequencies) were used to give the general description and structure of the data, especially for demographic information. The statistical tests used to analyse each research question and the related hypothesis are outlined below. The detailed analysis of the research questions and hypotheses is presented in chapter 6.

a) Research question 1: Skills applied by entrepreneurs

The skills derived in the qualitative phase were confirmed through confirmatory factor analysis (CFA), which tests how well the measured items represent a smaller number of constructs. For example, how well the business management measurement items represent the construct of business management skill. This method was appropriate to test the extent to which the proposed sub-skills pattern of the factor loadings on the pre-specified skills constructs represent the actual data (Hair, Black, Babin, Anderson, & Tatham, 2010). On a Likert scale of 1 to 5 (1 = never, 2 = almost never, 3= sometimes, 4 = almost every day, and 5 = every day), the participants were asked to indicate the extent to which they used the skills in their businesses.

The variables measured directly are called measured, observed or manifest variables; while those that are not measured directly are called latent variables or hypothetical constructs and are inferred from the measured variables (Kline, 2011). The construct skills are referred to as latent variables or constructs as they are concluded from the measured variables. The measured variables were: start-up, business management, marketing, financial management, technical, social and interpersonal, leadership and personality skills. The use of a measurement model

allowed the researcher to determine how the observed or measured variables combine to identify the underlying hypothesised constructor latent variable (Lomax & Schumacker, 2012).

The steps followed in conducting confirmatory factor analysis

i Model specification

The representation of hypothesis in the form of a measurement model is called the model specification (Kline, 2011). The specification involved using all the skills sets derived from the qualitative phase to form the theoretical model of skills and hypotheses presented in chapter 4, which were later tested quantitatively. Skills that formed clusters were also specified from the theory.

ii Model identification

Model identification is a complex concept to understand (Weston & Gore, 2006). A model is identified if it is theoretically possible for the computer to derive a unique estimate of every model parameter (Kline, 2011). Model identification was determined by the degrees of freedom (Hair et al., 2010; Kline, 2011). Models with more estimated parameters than observations ($df_M \leq 0$) are not suited to empirical analysis, and were classified as 'model is not identified'. If $df_M = 0$, the model was regarded as just-identified, a perfectly fit model. Lastly a model with $df_M \geq 0$ meant that the model is over-identified and will withstand a greater potential for rejection. The greater the degree of freedom, the more parsimonious the models.

iii Model estimation

Estimating the model involved determining the value of unknown parameters and the error associated with the estimated value. Estimates of free parameters were generated using SPSS and AMOS. This step evaluated the model fit, which determines how well the model explains the data (Weston & Gore, 2006).

iv Model fit and interpretation

The objective of the model fit test was to determine whether the associations among measured and latent variables in the researcher's estimated model adequately reflect observed associations in the data. The models were evaluated for fit in terms of significance and the strength of the parameters, and how well the overall model fits the observed data, as indicated by a variety of fit indices. The chi-square and the GFI (goodness-of-fit index), CFI (comparative fit index), TLI (Tucker-Lewis index), NFI (normed fit index) and RMSEA (root-mean square residual) indices were used to determine the model fit. A significant chi-square value relative to the degrees of freedom indicated that the observed and implied variance-covariance matrices differ and do not fit the data. A non-significant chi-square value indicated that the two matrices are similar, in turn indicating that the implied theoretical model fits the data well (Kline, 2011; Weston & Gore, 2006).

v Model modification

Rarely is a proposed model the best-fitting model (Kline, 2011). In cases where the model did not fit the data, modifications were performed (Kline, 2011). This involved adjusting the model by freeing (estimating) or setting (not estimating) parameters.

b) Research question 2: The utility of skills across the different entrepreneurship phases

The Kruskal-Wallis test was used to provide clear comparisons of skills across the three entrepreneurship phases and to test the hypotheses. The Kruskal-Wallis is a non-parametric test applied to rank the data and compare the median ranks of three or more groups when the level of measurement is ordinal (Cunningham & Aldrich, 2011). Findings which showed that entrepreneurship phases had unequal application of skills were further analysed using the Mann-Whitney test, to detect the two-by-two group differences (1 = nascent and new business, 2 = nascent and established, and 3 = established and new business). The Mann-Whitney U test is a non-parametric test used to provide statistical evidence that two-sampled populations are statistically different (Cunningham & Aldrich, 2011). This helped to support or reject the hypotheses formulated and answer the second research question.

c) Research question 3: The utility of human capital investments as sources of skills across the different entrepreneurship phases

Using the defined Likert scale of 1 to 5, entrepreneurs in the three entrepreneurship phases were asked to rate the extent to which they use the skills obtained from formal education, entrepreneurship education, work experience, and previous entrepreneurship experience. Since the Likert scale was used as a scale of measurement, the data could not assume normality therefore non-parametric tests were used to analyse the data. Kruskal-Wallis was performed to determine the difference across the three groups. Where there were differences across the three groups, a Mann-Whitney test was performed to determine two-by-two group differences. These statistical analyses indicated whether to support or not support the hypothesis related to research question 3.

d) Research question 4: The relationship between human capital investments, skills and entrepreneurship phases

After determining the skills constructs of the skills through CFA, their summated scores were used in testing the hypotheses. The summated score of skills was found to satisfy the assumptions of linearity, therefore hierarchical multiple regression was performed to determine the relationship between the human capital investments, skills and entrepreneurship phases. A hierarchical multiple linear regression is used when the analysis of two or more independent variables and one dependent variable is run in a series of steps (Cunningham & Aldrich, 2011).

The human capital investments (work experience, formal education, previous entrepreneurship experience and entrepreneurship education) were measured as independent variables while the summated score of skills was treated as dependent or outcome variables of the human capital investments. The entrepreneurship phase as a variable was introduced as a moderator variable of the human capital investments and skills while age and gender were positioned as control variables. Before computing the regression analysis, the researcher ensured that all the assumptions of regression were met.

3.8.7 Reliability and validity

To determine the internal consistency that measures the extent to which the instrument addressed what it was intended to, Cronbach's Alpha test was run. This measures the "consistency of responses across either all the questions or a subgroup of the questions from the questionnaire" (Saunders et al., 2009, p. 374). The research instrument was validated by the pilot testing and by comparing pilot test results with the code frequency tables derived from the analysed qualitative data. Construct validity was evidenced through the presence of convergent and discriminant validity. Data-cleaning methods, checking for missing data and outliers, improved the reliability and validity of the results (details are explained in chapter 6: quantitative findings). The quantitative data was recurrently analysed over a period of one-and-a-half months to ensure the robustness of results. Data analysis ran from August until mid-September 2015. In addition, the use of mixed methods also served as triangulation, validating the qualitative findings.

After analysis of the quantitative data, the findings were presented at a doctoral conference and feedback was used to improve the quality of the study. In addition to the doctoral conference, results were also presented to a group of peers and their valuable feedback was incorporated in the findings chapter.

3.9 ETHICAL CONSIDERATIONS

Ethics concerns the morality of human conduct and, in social sciences, it refers to the moral deliberation, choice and accountability on the part of the researcher throughout the process of research (Miller, Mauthner, Birch, & Jessop, 2012). Saunders et al. (2009) noted that ethics is a critical aspect for the success of any research project, and argued that ethics is not only a matter of concern in data collection, but that ethical concerns should be carefully thought about at the different phases of research. Leedy and Ormrod (2010) then proposed categories of ethics: protection from harm, informed consent, right to privacy and honesty with professional staff. These categories were applied when data was collected and analysed.

3.9.1 Data collection

A critical first step in ethics assurance was effected by undergoing the Gordon Institute of Business Science research ethics compliance process which culminates with a committee-driven

evaluation towards clearance certification ahead of any data collection. Secondly, when recruiting participants in the study, they were well advised of the academic purposes of the study and then invited to volunteer as participants (see appendix G for informed consent on both the interview in qualitative phase and survey in quantitative phase). Each participant signed an 'informed consent' statement explicitly confirming their agreement. Although participants were still fully entitled to withdraw during the process of research, none chose to exercise this option during their engagement with the study.

During fieldwork, the most common issue of ethical concern is protection from harm. For this study, participants were not exposed to any form of physical risk. However, the researcher ensured participants were not hurt emotionally in any way. Participants were further protected from harm by ensuring anonymity and confidentiality of their individual contributions.

3.9.2 Reporting

Every human should be respected and granted their right to privacy (Saunders et al., 2009). The researcher ensured the research report is presented in such a way that no individual could be aware of how particular participants responded in the interview. The researcher kept the nature and performance of participants during the interview strictly confidential. However, since verbatim quotations from respondents were essential to enhance the trustworthiness and thickened description in reporting the qualitative findings, respondents were assigned pseudonyms.

The researcher maintained honesty by reporting results completely and without misrepresentation or deception of the conclusions of the study. Great care was also taken to ensure data was not manipulated or fabricated to support particular and/or more compelling conclusions.

3.10 SUMMARY OF RESEARCH DESIGN AND METHODOLOGY

The research design and methodology followed in carrying out the research was clearly articulated in this chapter. In summary, the study consisted of two phases: the qualitative process which was conducted first under phase I, followed by the quantitative process in phase II. The qualitative study was conducted to identify the skills used by entrepreneurs and then developed into a survey questionnaire based on the qualitative findings. In the second phase, a skills survey was conducted among entrepreneurs in the different entrepreneurship phases. The qualitative data was gathered through face-to-face interviews with 15 entrepreneurs and six national experts. The qualitative data was then analysed using ATLAS.ti. From the analysed results, a quantitative questionnaire was compiled. Phase II data was connected through a survey questionnaire distributed online via SurveyMonkey. The population of entrepreneurs was 11 001 and, at the end of the survey, there were 235 responses. The quantitative data was analysed using SPSS and AMOS. The qualitative findings are presented in chapter 4 while the quantitative findings are presented in chapter 6. Chapter 5 details the conversion from qualitative to quantitative phase.

CHAPTER 4

QUALITATIVE FINDINGS AND REFINED HYPOTHESES

4.1 INTRODUCTION

This chapter presents the gathered and analysed data on human capital investments and skills. The findings were gathered from 15 entrepreneurs in the different entrepreneurial phases and six national experts in entrepreneurship. The data was analysed using ATLAS.ti, computer-assisted qualitative data-analysis software. The two main themes of discussion were skills specific to the different entrepreneurship phases and human capital investments as sources of skills in different entrepreneurship phases. The main aim for the qualitative phase was to identify skills across the entrepreneurship phases, revise the suggested hypotheses and use the findings to develop a survey instrument. The respondents were reported using pseudonyms.

4.2 SKILLS IN THE DIFFERENT ENTREPRENEURSHIP PHASES

The argument raised in the literature review is that skills required by entrepreneurs differ across the entrepreneurship phases. The skills categories derived from the data are start-up, business management, marketing, financial management, personal, social, technical, leadership and human resource management skills. Due to the inconsistencies of skills lists in entrepreneurship literature, the skills were first empirically identified and, at the same time, compared across the different entrepreneurship phases.

To make a clear distinction of skills across the phases, narrative analysis was supported by the results of codes-primary document table (C-PDT), an internal numerical report extracted from the analysed qualitative data on ATLAS.ti. The codes-primary document tables contain the frequency of codes within the skills code families per document family, in this case the entrepreneurship phases.

a) Start-up skills

Start-up skills identified from the data include: opportunity recognition, prototyping, starting up a venture, developing a business plan, innovating, environmental scanning, calculated risk-taking and new resource skills. The skills significant in each entrepreneurship phase are shown in table 4-12.

Table 4-12: C-PDT start-up skills

Start-up skills	Nascent phase	New-business phase	Established phase	National experts	TOTAL
Business plan/modelling	5	0	0	5	10
Prototyping	4	0	0	3	7
Starting up a venture	4	0	0	1	5
Assess own capabilities	2	2	2	4	10
Environmental scanning	4	4	4	1	11
Innovation	2	3	5	1	11
Calculated risk-taking	2	4	3	2	9
Opportunity recognition	4	4	5	6	19
TOTAL	27	17	19	23	86

An entrepreneur in the **nascent phase** needs skills to identify the opportunity, innovate, scan whether the environment is suitable for the opportunity and innovation, take risks in the process, formalise a business plan and prototype the idea with an intention to start a business. Formalising a business plan and the skill of actually starting up the business are significant in the nascent phase. Respondents emphasised that, in most cases, business plans are developed to access funding. They added that funding institutions have their own business-plan formats which entrepreneurs need to adopt when applying for funding. These institution-specific business plans are lengthy and detailed, requiring much time to complete. In this phase, entrepreneurs continue to prototype the idea to determine the possibilities of success or failure. As part of prototyping the idea, some businesses are started with minimal capital investment to ensure minimal financial loss in case the business fails. One respondent noted that:

“It is not a popular product, but there is actually a demand for it. Not in South Africa only, also internationally in places such as Europe, Asia and United States of America. That is why we decided to introduce it to the South African market to see if they love the product” (Maxwell).

Entrepreneurial skills like opportunity recognition, assessing own abilities, innovation, environmental scanning and formalising business plans are extended to the **new-business**

phase. In this phase, entrepreneurs can actually observe if they are a high- or slow-growing business. A high-growth business has associated risks, which require an entrepreneur to take more calculated risks.

“We are a high growing company, the more you grow, there are elements of risks involved. We have rules, generate staff, we are still high risk, which is worrying” (Randall).

As other entrepreneurial skills become unnoticeable in the **established phase**, some become more prominent. Environmental scanning, innovation and opportunity recognition continue to be significant in the established business. Respondents noted that an established business needs to constantly monitor what competitors are doing and still be relevant in the market. Established entrepreneurs explained that staying relevant can be achieved through environment scanning, continuous innovation and identifying other new opportunities:

“We are constantly changing our own offerings and our own business model to try and lead this transformation. So we like to be in the leading edge from that perspective” (Lee).

“I changed the company to X product holdings the division of Y Brands, so today in the business, we have got the detergents and cosmetics. We are busy listing with the Medical Control Council. And then we soon we will be manufacturing tablets” (Mandla).

The findings indicated that entrepreneurial skills are applied largely in the nascent phase, more so than in the new-business and established-business phases. Formalising a business plan and prototyping are significant in both nascent and new-business phases. Start-up skills that are significant across all phases are planning growth, environment scanning, opportunity recognition and innovation. The established phase is more about continuous innovation, and identifying and exploiting new opportunities to expand the existing business.

b) Business management skills

The following sub-skills of business management skills were derived from the qualitative data: planning, delegation, organising work, decision-making, legal skills, networking, problem-solving, strategic competence, negotiation, business development, designing distribution models, managing systems and processes, managing change and creating partnerships. The table below gives an overall view of business management skills specific to each entrepreneurship phase.

Table 4-13: C-PDT business management skills

Business management skills	Nascent phase	New-business phase	Established phase	National experts	TOTAL
Problem-solving	1	1	4	1	7
Strategic competence	3	6	2	4	15
Legal skills	6	3	2	4	15
Planning	1	3	0	1	5
Negotiation	1	1	0	1	3
Organising work	0	2	0	0	2
Decision-making	0	3	3	2	8
Delegation	0	4	4	4	12
Distribution model	0	2	1	0	3
Managing change	0	0	3	2	5
Partnerships	0	0	4	3	7
Business development	0	0	5	3	8
TOTAL	12	25	28	25	90

Significant business management skills in the **nascent phase** are administrative skills, problem-solving skills, strategic competence and understanding legal issues concerning the business. The legal skills include understanding business compliance, legislative requirements or policies and the finer details of what a business contract entails. This is what a nascent entrepreneur had to say:

“They [legal skills] are important because there are a lot of agreements we enter into and lots of contracts that you may find yourself signing not knowing what you are entering into. You also need an understanding in terms of procurement policies, corporate governance and understanding the legislative requirements that you need to comply with within the different sides of the business as well” (Karl).

Business creation in this phase is fragile, as a result respondents emphasised that they do minimal long-range strategic planning in case the outcomes of business creation are undesirable. However, since business ventures in this phase are already operational, respondents noted that they focus on more operational activities such as negotiating for price discounts. Thus negotiation skills also start to feature in this phase: *“We negotiate the price, so that it goes down, we can even top up our margins and we gonna benefit for the installation and that comes straight to us” (Moses).*

As the nascent phase unfolds into the **new-business phase**, business management skills like legal, strategic competence and negotiation skills are carried over into this phase. Respondents highlighted that in this phase they are expected to be employing people and starting to delegate daily activities to employees, hence delegation skills are more salient. One respondent narrated a predicament she is facing:

“I find myself caught up and making it my responsibility saying, oh this must be done and it must be done by me. People had to remind me no you don’t have to do that, do this, so I am still in that phase. I am still adjusting to others what I must do and what is it that I have to just let other people do. I have two permanent staff that work for me, but it is still very hard to let them be, let them do stuff without me, so, I am still struggling with being the CEO in my own business” (Pheladi).

There was consensus among the respondents that planning the strategic direction of the business is a skill that features predominantly in the new-business phase. The strategic competence skill in this phase involves much planning, implementation and execution of the strategic plan. As part of business development skills, respondents in the manufacturing sector highlighted that moving from an informal distribution chain to a formalised market is one of the strategic development actions in the new-business phase:

“I took the sample to Y stores, they liked it and they said to me, fine you can supply us” (Xavi).

As the new-business phase unfolds into the **established-business phase**, planning and negotiation skills become unnoticeable while other skills like delegation, problem-solving, decision-making, dealing with legal issues and strategic competence are continued. However, it should be noted that strategic skills are applied minimally compared to the previous phase. The assumption is that strategic competence skill and other unnoticeable skills like planning may translate to business development skills.

Business development skills may constitute an ability to strategically plan for growth and to then execute the plan. To develop the business, respondents noted a need to take themselves out of the business and delegate the responsibilities to employees. Respondents emphasised a need to have management systems that can run independently of the entrepreneur’s involvement. Therefore a combination of strategic competence, planning and delegation skills is a fundamental foundation for business development skills. The national experts explained that:

“If you diversify and you are tapping into the new avenues it is important that you have created a management system that can stand independently without your involvement in place. People that you think will run the place..... the moment you shift your focus you will find that things will run differently” (Fabio).

Furthermore, negotiation skills may be unnoticeable in this stage but may also be part of a newly identified skill of partnering with other businesses. The assumption is that, in this phase, the business would have grown to attract investors who may want to buy into the business. So a skill to formulate partnerships plays a significant role. The data indicated that negotiation is highly useful in creating partnerships as the concerned parties have to negotiate the shared value.

“You find yourself; you are attracting people who want to invest in the business. Now, how do we determine the value of business? So that comes with the skills that you must acquire, so you can’t just relax” (Mandla).

Another newly identified skill is managing change. As the environment changes, respondents noted that an ability to manage change is fundamental.

“I learnt that because of the challenges and the environment changes, that is the other thing that I have learnt that nothing stays the same; if you cannot embrace change and learn to manage it and also assist your staff in coping with change you will not succeed” (Felicia).

In essence, the data showed that business management skills are minimally applied in the nascent phase. As the business grows, business management skills become more prominent in the new and established-business phases. In the nascent phase, specific skills are problem-solving, strategic competence skills, legal, and negotiation skills. As the nascent phase unfolds to new-business phase, strategic competence skills become more prominent than in previous phases. In the new-business phase, skills like delegation, networking, decision-making, developing distribution models, networking, organising work and planning, which were previously not applied in the nascent phase, start to become more applicable. Skills from the new-business phase were continued to the established phase and some of them cumulated or formed a foundation for new skills.

c) Marketing skills

The category of marketing skills comprises building the sales persuasion, exhibiting and advertising products, creating customer experiences, selling, adapting products, building relationships, branding, conducting market research and monitoring competitors. It was noted from the data that today's entrepreneurs use social media marketing skills to enhance the visibility of their businesses. Marketing skills are dissected in table 4-16.

Table 4-14: C-PDT marketing skills

Marketing skills	Nascent phase	New-business phase	Established phase	National experts	TOTAL
Market research	3	2	1	2	8
Monitoring competitors	1	1	1	2	5
Positioning	1	3	4	0	8
Selling	2	5	4	4	15
Advertising the business	1	2	4	1	8
Branding	1	1	1	1	4
Customer experience	0	2	5	4	11
Social media marketing	0	1	2	2	5
Adapting products	0	0	3	2	5
TOTAL	9	17	25	18	69

Skills applied in the **nascent phase** are market research, branding, positioning the business and selling skills. Market research provides a good understanding of what the market needs. Selling skills were emphasised most, as entrepreneurs need to start generating income. With marketing, respondents stated that they continue to analyse the markets and find suitable positions for their business. To survive in this phase, respondents also noted that they continuously look for current trends and monitor what competitors are doing. In this phase, entrepreneurs start to capitalise more on the skills needed to brand the businesses. One respondent emphasised that branding the business should come before actual production of the product:

“You know us going out there, taking our business plan is marketing ourselves. So marketing is important from the initial phase of the business because we need to build an image or brand before we could have the product. The product is part of the brand” (Maxwell).

In terms of having aggressive marketing strategies, respondents indicated that they tend to be more self-contained and market on a smaller scale. This is to ensure they are able to function within their capacity and provide excellent services to the small number of clients they have.

“So in terms of marketing the business we have limited it to the current pool of customers. We do not want to dilute the value of the brand by actually taking more than we can chew. We still need to ensure that from an internal point of view we have got sufficient infrastructure, we have got the capability to cater to the market, we kind of held back from aggressively marketing the business and putting it out there” (Karl).

The skills acquired in the nascent phase are continued to the **new-business phase**. Entrepreneurs in this phase continue to conduct market research, sell products, brand the business and advertise the products. The new-business entrepreneur emphasised that the selling skill is critical as the business needs capital to survive:

“I would say sales are probably the most significant skill because that is the heart of the business. You need to be good at it. There is nothing to manage if there is no money coming in” (Theo).

One national expert also added:

“I think that selling skills are critical and I will tell you why not only do you have to have selling skills to sell your business, but you have to sell your idea of your business to staff, to potential investors” (Malik).

In contrast to the nascent phase where respondents may choose to minimally advertise their products, in the new-business phase they actually have promoters who are responsible for exhibiting the products.

“I have promoters and they are well trained to promote my products. And I have a marketing assistant who is able to drive those people to every event” (Pheladi).

In this phase, skills that start to feature are creating customer experience and leveraging social media marketing. Social media marketing and media interviews present entrepreneurs with an unlimited platform to publicise their businesses. Therefore, in this phase, skills of operating social media platforms for enhancing the business’s footprint are critical.

Skills like selling, market research, monitoring competitors, advertising products, branding, social media marketing and positioning are continued to the **established-business phase**. Most established businesses have clearly defined positions in the market. However, to continue enjoying their position in the market, respondents emphasised that in this phase there is a need to adapt the products, thus to continuously review their product offerings and start improving the products to suit the needs of dynamic markets.

“I see the product works and studying the market now, I realised that I need to have a whole lot of products. I need to have a product range” (Mandla).

One of the most significant skills in the established phase is creating the customer experience. Although nascent entrepreneurs did not mention this skill, established entrepreneurs indicated that the skill of creating customer experience should be emphasised from the nascent phase. One of the established entrepreneurs explained that early emphasis of this skill will help grow long-term relationships with clients:

“There is a client that I met six years ago, I think he was the second client that I met, but because of how we engaged from the start....my responsiveness when they needed the service has actually prolonged that relationship to date. You cannot grow the business if you don’t grow the relationship with your clients” (Levi).

The results showed that most of the marketing skills in the nascent phase are continued until the established phase. Skills that are the same across all phases are market research, monitoring competitors, advertising the business, branding, positioning and selling skills. Customer experience, social media marketing, positioning and adapting products are more important in the new-business phase and established phase. The results have shown that selling skills and creating customer experiences are critical marketing skills. *“Without customers there is nothing to sell (Theo)”*.

d) Financial management skills

Sub-skills in the financial management category are: analysing income statements, managing cash, managing billing, understanding financial results, using financial ratios, calculating costs, pricing skills, filing tax reports, identifying financial needs. Some additional skills that emerged from the data are financial reporting, selling and buying shares, financial forecasting, and raising capital. The financial management skill codes across the different phases are presented below.

Table 4-15: C-PDT financial management skills

Financial management skills	Nascent phase	New-business phase	Established phase	National experts	TOTAL
Pricing	2	2	0	0	4
Raising capital	2	1	0	0	3
Managing cash	1	1	2	5	9
Calculating costs	2	1	2	0	5
Understanding financial results	1	1	4	2	8
Filing tax reports	1	1	2	1	5
Using financial software	0	2	2	0	4
Managing billing	0	2	4	1	7
Bookkeeping\financial reporting	0	1	4	0	5
Selling\buying shares	0	0	2	1	3
TOTAL	9	12	22	10	53

Financial management skills in the **nascent phase** are ability to calculate costs for starting the business, managing cash at hand, pricing the services and learning basic financial acumen. Managing cash is in terms of the available money an entrepreneur has to start a business. In this phase, some entrepreneurs are interested in offering services at their own expense rather than at the cost of clients. Attempting to grow the business in this manner can, however, also lead to failure. The nascent who is currently adopting this strategy had this to say:

“I offer services at my expense rather than at the expense of those that I will be training. So with that I think it will be able to bring [customers] in place” (Rorisang).

With raising capital, entrepreneurs with service businesses opt to use their own capital to start businesses. Although entrepreneurs use funds from own savings, there is the need for a skill to separate business funds from their personal accounts.

The transition from nascent phase to **new-business phase** takes place with a continuation of some skills from the nascent phase. Skills carried through include calculating costs, pricing, managing cash flow, understanding financial results and raising capital. In this phase, financial reporting is no longer performed informally, it starts to be more formal using financial software packages.

“I didn’t know that there was Pastel, it used be oh God! [Now] I produce reports! You can use Pastel for that, you can just produce reports, and it does accounting reports for you. I invested in software and I could not be happier, it is making my life easier” (Pheladi).

Respondents also emphasised the significance of billing their clients. It is fascinating to note that, in the nascent phase, some services were offered for free. However, at this stage, clients are expected to be paying for services rendered or products bought. It is no longer at the entrepreneur's cost but at the client's cost. As one entrepreneur elaborated:

“So we request upfront payment because at least you know that you are not taking the risk of waiting for payment. They know that if they do not pay you, you will not deliver the service so that is crucial. Some clients make it impossible to keep a cordial relationship, but the priority is to get paid, the second priority is to get paid on time, the third priority is to get paid on time with least follow ups as possible and hopefully after all those follow ups you still able to keep your clients” (Theo).

In terms of raising finances, respondents made a bold move from using their own financial resources to seeking funding. Financial investments can run to millions of rand.

Skills obtained in the new-business phase are carried through to the **established phase**. Some of the skills carried forward include calculating costs, managing billing, financial reporting, understanding financial results, managing cash flow, and using financial software. In this phase, some skills like pricing and raising funds that were prominent in the new-business phase become unnoticeable, while new skills like selling shares emerged.

It can be argued that, for an established business, the manner of raising capital is more sophisticated and complex compared to previous phases. In this phase, entrepreneurs enter into partnerships and sell shares to raise capital. Assuming that the skill of pricing in the established phase moves beyond products to valuing the business, the skills of pricing and raising capital are presented as building blocks of the ability to sell the shares of the business.

“He wants to buy shares in the business; he has been asking me how much. So we sat yesterday and evaluated the business, there are some potential and risks but he is still keen” (Mandla).

These transactions also involve entrepreneurs being invited to partner or buy shares in other companies. At times, buying shares does not take place through monetary exchange but through the contribution one brings to the company. This contribution will be equated to the share percentage an entrepreneur obtains.

In essence, the results revealed that skills related to calculating costs, managing cash, pricing and raising capital apply in all phases. In the new-business phase, entrepreneurs apply financial reporting skills using financial software packages and manage billing. These are sustained

through to the established phase. A distinct skill that manifested in the established phase is the ability to sell or buy shares. Selling or buying shares is another way of raising business capital and requires an ability to price or value the shares. Therefore, the assumption is that raising capital and pricing skills are fundamental in selling and buying shares. The overall results showed that financial skills are more significant in the established phase than in the nascent and new-business phases. A national expert supported this notion informed by findings from a survey stating:

“Financial skills are absolutely significant, absolutely significant! I mean we did some research where we found that if the entrepreneurs just do these four things, for example if they keep the record of their cash, keep the record of their debtors as they chase the debtor they make sure that they get the money, keep a close hand on their inventories, then the likelihood of them coming to financial stress or even going through liquidation decrease by 60%. Financial skills are absolutely essential!” (Malik).

e) Human resource management skills

The skills in the human resource management skills category presented in table 4-16 include recruitment, defining job descriptions, drawing employment contracts, implementing policies, establishing compensation, evaluating skills, evaluating performance, developing employees, evaluating potential, laying off employees and managing conflict.

Table 4-16: C-PDT human resource management skills

Human resource management skills	Nascent phase	New-business phase	Established phase	National experts	TOTAL
Recruitment: hire managers/operational people	4	5	5	6	20
Developing employees	0	5	5	2	12
Evaluating employee skills	0	2	2	0	4
Evaluating performance	0	3	2	0	5
Dismissing employees	0	1	3	0	4
Setting roles	0	1	3	1	5
Paying salaries	0	0	2	2	4
Recruitment: people aligned with vision/values	0	0	4	1	5
TOTAL	4	17	26	12	59

In the **nascent phase**, human resource management skills are applied minimally. The entrepreneurs in this phase have limited resources to employ more staff. A lack of financial

resources to hire motivates nascent entrepreneurs to perform all the functions in the business. At this stage, nascent entrepreneurs learn to be competent in all these different functions. Towards the end of the nascent phase, entrepreneurs start to think about additional people they will recruit to fill in the skills gaps. Employment in this phase is not formalised.

“In the nascent you need to know how to do everything. You absolutely have to because you don’t have resources to bring people to do that. An entrepreneur says that I am all those people all at the same time. I am wearing ten or nine hats all at any one time” (Jeffrey).

“In start-up you do things by yourself because you don’t have the capital to pay people. It does help as a young entrepreneur or start-up to learn those things” (Moses).

As the **new-business phase** unfolds, most of the human resource management skills start to manifest. Skills in the new-business phase are recruitment, evaluating performance, firing employees, setting roles and training staff. There was unanimous agreement among respondents that recruitment should be in terms of filling the skills gaps in the business. Most entrepreneurs had experienced the dilemma of hiring the wrong people. In this phase, an entrepreneur needs to hire skills that are lacking in the business. Entrepreneurs narrated incidences where they hired wrong people:

“.....I saw her promoting very well, and I thought that she will be good with the other skill, only to find that she couldn’t do anything on Microsoft Word. There was actually nothing that she produced. And it was actually difficult to fire her because you cannot just fire” (Pheladi).

“Hiring the right employees. It comes with hiring the right people, there was a point in time where I hired the wrong people so I couldn’t let go” (Theo).

Respondents agreed that one cannot perform all the activities in the different business functions. If an entrepreneur performs all the business functions and acts as a jack-of-trades in this phase, the business will not grow. A national expert gave this caution:

“The jack-of-all trades syndrome can be dangerous and futile at the same time. It is important when you are in start-up but it can be very dangerous when the business grows.

The jack-of-all trades mentality will take away the confidence of yourself and people working with you” (Fabio).

Human resource management skills in the new-business phase are carried through to the **established phase**. Respondents indicated a shift from recruiting according to the skills gaps to recruiting people with values aligned to those of the business. It is expected that, in this phase, the business has its own articulated vision and values. So recruitment in this phase is about employing people with values aligned to those of the business.

“Obviously it is good to have all of that but you have to hire based on a mix of things. You have to hire based on culture. You know what I mean by culture, is an attitude, finding people who have similar attitude that you have” (Lee).

“When you hire people, hire people who share the same value systems with yourself and then the next layer will come in terms of hire people with competencies, the skills and the competencies where you have a gap” (Fabio).

Remuneration in this phase is no longer informal but formalised, often using software packages. Entrepreneurs who experienced the shift from informal to formalised systems said:

“...you definitely need skills because as the business grows you realise that it outgrows you, you used to pay people with say envelopes, and as the business grows, and you get registered maybe ISO 9001 accredited, so now you are forced to have pay slips, so now. That is the skill, is either you have to hire that skill or go to learn more” (Mandla).

In the nascent phase, entrepreneurs are jacks-of-all trades, performing all functional activities. The ability to function independently in the nascent phase prepares entrepreneurs to be able to recruit capable people and evaluate their performance. In the new-business phase, human resource management skills increase because entrepreneurs are no longer jacks-of-all trades but they are managing employees. The same applies in the established-business phase. The critical human resource skills are hiring operational people and training employees to have the skill sets that will take the business forward.

f) Technical skills

The category of technical skills comprised managing operations, managing supplies and supply chains, managing operations, quality audit, technology and production processes, product development, industry-specific skills and applying manufacturing technology. The table below breaks down these technical skills.

Table 4-17: C-PDT technical skills

Technical skills	Nascent phase	New-business phase	Established phase	National experts	TOTAL
Industry-specific	1	2	1	4	8
Product (tangible/intangible) development	1	1	3	1	6
Managing operations	1	4	2	3	10
Managing supplies/forecasting	2	3	2	0	7
Quality audit	2	3	2	0	7
Technology and production process	2	3	2	0	7
TOTAL	9	15	12	8	44

The **nascent phase** is about developing the product, either tangible or intangible. Therefore, this phase requires skills to develop products and industry-specific skills for the sector in which the entrepreneur intends to operate. Once the business starts to operate, one of the skills needed is the ability to ensure operations run smoothly. Therefore a skill of managing operations is critical:

“You need somebody that understands the business and operate the plant to make sure that the operations are solid. Luckily we had a friend who knew how to do this thing. It is very important to understand the operations of the business” (Maxwell).

Technical skills are more prominent in the **new-business phase** than in the nascent phase. Other required skills include managing operations, managing supplies and forecasting, managing technology and production processes, producing service and quality monitoring. In the new-business phase, entrepreneurs who are in manufacturing have their own manufacturing plants and technological processes for producing products. In this phase, respondents noted that they had already acquainted themselves with the industry and they were supplying the product (tangible or intangible), hence the skill of managing and forecasting supplies is important.

“In a month I was supplying 15 stores, I didn’t forecast my stock so I found myself with shortages because my shrink could accommodate 24 products. I thought 24 products will last a month and they were lasting weeks and days and I needed to refill this. So that, I

would warn anyone who would want to go to retail or who is any entrepreneur who wants to sell a product please forecast your stock” (Pheladi).

“You look at your track record, you look at the experience you had, but you also need to realistically forecast what it is that you can do and achieve. If your revenue does grow, you know that your capacity needs to grow. So don’t look to make quick money because that can tarnish your reputation if you don’t deliver. It can kill your momentum” (Theo).

Skills acquired in the new-business phase are brought along to the **established phase**. All technical skills are applied in the established phase. The respondents highlighted that product development skill in this stage is about improving current products and developing new product ranges. The critical factor is to continue complying with business regulations.

“You have new regulations because now the business is bigger. We operated from the balcony. You need to know the regulations, now we are at the factory you need to know the fire hazard regulations” (Mandla).

In summary, results indicated that product development and learning industry-specific skills are critical in the new-business phase. The skill of developing the product, either tangible or intangible, is significant across all entrepreneurship phases. The new-business and established-business phases have technical skills which are industry-specific skills, managing operations, managing supplies/forecasting, product (tangible or intangible) development, quality audit, and technology and production process. Overall, the data showed that technical skills are applied most in the new-business phase compared to the nascent and established phases.

g) Personal skills

The exhaustive list in the category of personal skills includes stress management, intuition, creativity, perseverance, rigorousness, meticulousness, tenacity, self-awareness, accountability, emotional coping, motivation, self-efficacy, self-confidence, expressiveness, commitment, stamina, motivation, achievement and passion. Single-mindedness emerged from the data as one of the significant personal skills need for successful business venturing. Table 4-18 presents personal skills across the nascent, new-business and established entrepreneurship phases.

Table 4-18: C-PDT personal skills

Personal skills	Nascent phase	New business phase	Established phase	National experts	TOTAL
Accountability	0	4	0	0	4
Hard work	2	4	3	1	10
Intuition	0	0	2	0	2
Passion	0	1	1	0	2
Self-motivation	2	2	0	0	4
Single-mindedness	0	1	3	1	5
Tenacity	0	3	5	5	13
Time management	1	0	1	0	2
Assertiveness	2	4	1	0	7
Emotional coping	1	1	1	0	3
Patience	2	1	0	3	6
Self-confidence	0	1	1	0	2
TOTAL	10	22	18	10	60

Vital skills in the **nascent phase** are accountability, communication, hard work, intuition, passion, self-motivation, single-mindedness, tenacity and time management, emotional coping, assertiveness and patience. All these skills are important in starting a business. In the process of starting a business, nascent entrepreneurs emphasised that they rely on their intuitive knowledge to make decisions. Respondents indicated that, as they started engaging with clients, they needed to be assertive and know which business to take and which to decline. If things are not working as planned, they had to manage their emotions and deal with situations without being too emotional. In this phase, there are few clients so there is a need to be patient and not hurry the process. Entrepreneurs were of the notion that:

“You need to know when to walk away, because that is where you hurt yourself. You remember that as an entrepreneur you need to be passionate and don’t give up, but you must know when to walk away. You must have a threshold to walk away. Sometimes you must know to get back into the car and drive to another place “(Luca).

“I think they need a lot of patience to start because patience is...you think you will open the door and the customers gonna run like flood to you....and that is not gonna happen. When you see that the bank balance is totally the wrong way it is red instead of blue, so you have to be very careful and be patient” (Floyd).

Skills applied in the nascent phase extend to the **new-business phase** and **established phase**. However, some skills, like intuition, were not seen in the established phase. Respondents in the established phase noted that intuition is used if there are no resources to gather enough information on which to make decisions.

“And it is easy to say let us sit down, let us get this research going and strategise, simply let us do what corporates do. Unfortunately you cannot do that in a small entrepreneurial business. As an entrepreneur you can’t do that. You really don’t have luxury time to do that; you got to go with your gut” (Lee).

In sum, the analysed findings revealed that personal skills are applicable in most phases. Other skills apply when the business is operational, like dealing with emotions of rejection, assertiveness and being patient in running the business. Some skills that were significant in the beginning also show up in the established phase. Overall, the analysis showed that personal skills are significant across all entrepreneurship phases.

h) Leadership skills

Skills in the leadership category are having a vision and sharing it with employees, leading others, instilling team spirit and inspiring employees. Additional skills derived from the data are instilling a culture of performance and thought leadership. Table 4-19 shows leadership skills across the different entrepreneurship phases.

Table 4-19: C-PDT leadership skills

Leadership skills	Nascent phase	New business phase	Established phase	National experts	TOTAL
Visionary	1	5	4	2	12
Inspiring employees	1	2	2	3	8
Sharing vision	1	2	4	3	10
Culture of performance	0	1	1	0	2
Thought leadership	0	0	1	0	1
TOTAL	3	10	12	8	33

The data showed that, among **nascent-phase** entrepreneurs, leadership skills begin with crafting the vision, inspiring the few employees in the business and sharing the vision with them. As the phases unfold, some leadership skills are continued to the **new-business phase**. Skills in the new-business phase include instilling a culture of performance, inspiring employees and sharing

the vision with employees. In the new-business phase, respondents noted that they start to clearly articulate their vision – basically what the business aims to achieve. Since there are new people brought on board in the new-business phase, sharing the vision remains important. A new-business entrepreneur highlighted that this will make employees part of the business:

“Share the vision with them; make them feel as part of the business so that they don’t feel discouraged. Somehow make them see the big picture, it is not easy for people to work for a small business, people want things that are established but when you sort of share the vision with them they see the possibilities of where this company [is] going and they start somehow marrying in the vision” (Pheladi).

Another important element in running a business is to ensure set performance objectives are met, said respondents. So instilling a culture of performance can be one of many ways of achieving the goals of the business. One respondent highlighted:

“I am instilling a culture of consistent good behaviour or performance right from the beginning” (Xavi).

Leadership skills in the new-business phase are continued to the **established phase**. The skills of drafting a vision, sharing the vision, cultivating a culture of performance and inspiring employees still apply in the established phase. Sharing the vision is all about connecting employees with the business and keeping the goals of the business alive.

“I think it will be important to keep the goal alive, to keep the mission alive, from the top man, to a person cleaning the floor. People must understand what I am doing, I am not chopping rocks here, I am building a cathedral. They must see how they connect and must see what the goal is, then they understand” (Floyd).

What distinguishes leadership skills in the established phase from those in the new-business phase is thought leadership. Established businesses are in the position to take the lead in their field of expertise. This is a skill that an entrepreneur may transfer to the business and to the employees. Entrepreneurs aiming to be industry leaders emphasised:

“And our success is attributed to strong partnerships with market on thought leadership in the company in terms of being able to take new products into the markets, thought leadership in terms of knowing and understanding our market and the industry and also willingness to take risks” (Lee).

So it can be argued that, in the nascent phase, entrepreneurs start to develop the vision of the business and share it with employees. There was unanimous agreement that having a vision and sharing it with employees is an essential leadership skill required by entrepreneurs. As they hire people, they inspire employees and try to cultivate a culture of performance. So leadership skills are applied more in the new-business and established phases than the nascent phase.

i) Social and interpersonal skills

Skill codes in the category of social and interpersonal skills include people skills, communication skills, building relationships and political astuteness. Considering the contextual setting of the study, understanding and interacting with different cultures emerged as one of the crucial social skills needed by entrepreneurs. The social skills are dissected and presented in table 4-20.

Table 4-20: C-PDT social and interpersonal skills

Social & interpersonal skills	Nascent phase	New business phase	Established phase	National experts	TOTAL
People skills	1	2	2	2	7
Communication skills	1	1	3	2	7
Building relationships	3	1	2	0	6
Understanding cultures	0	3	2	0	5
Political astuteness	0	2	3	0	5
TOTAL	5	9	12	4	30

People and communication skills are important in the **nascent phase**. These skills continue throughout the nascent and new-business phases to the established phase. In the process of intending to start a business, respondents noted a need to bounce their ideas off other people. This requires an ability to communicate and relate with people well. Since the business is running, entrepreneurs start to build relationships with relevant stakeholders.

“The skills that are needed for this thing to work are building proper relationships with people because a business needs money and money comes from the people. We need municipality buy in; we need to build the relationships with the actual farmers. You know even with people who will come there to be employed. I think that when we have proper relationships with different stakeholders that is when the business will thrive but without that I don’t think that” (Maxwell).

As the entrepreneurial phases unfold into the **new-business phase**, skills of building relationships, communicating well and dealing with people continue to apply. However, in this phase, respondents also deal with different cultures and the political environment. They emphasised that skills of understanding cultures and political astuteness emerge as essential skills in this phase.

“I think like in any other formal or informal situation, you need to understand the political landscape in which the business operates. You need to respond into those requirements. Also we are not a political organisation; however we are guided by the laws of the country. It doesn’t matter how the political landscape looks like, but we are, from our side we are prepared to grow and further the growth of black businesses that have been marginalised before” (Xavi).

“Even now the cultures, all these types of people, they like or appreciate if they are approached in this manner, these ones they like it when they are approached in this manner and when I was in it I didn’t appreciate it, but now that I am in business, it has made creating relationships easier” (Pheladi).

The social and interpersonal skills from the previous phase are extended to the **established phase**. Skills in the established phase are communication, people skills, political astuteness and building relationships. Respondents recognised communication and understanding the political environment as the most significant skills in this phase.

“I managed to build a good relationship with the people who report to me, who see me as their boss even if they are older than me in terms of their age, and also you know how difficult it is you as a black person trying to manage another black person, the lower and the same level” (Mandla).

In summation, communication and people skills are applied in all phases. Additional skills of interacting with people of different cultures, building relationships and understanding the political environment are essential in the new-business and established-business phases. So, application of social and interpersonal skills seems to be equal across the entrepreneurship phases.

4.2.1 Summary of findings on skills in different entrepreneurship phases

The purpose of the qualitative study was to identify the skills applied by entrepreneurs, and compare the application of skills across the different entrepreneurship phases. Table 4-21 shows the nine categories of skills and four main clusters of skills that were applied differently across the entrepreneurship phases. Skills are grouped into four main clusters: start-up, technical, core business (financial management, marketing, business management and human resource management), and personal and leadership (social and interpersonal, leadership and personal) skills.

An overall view of the data showed that start-up skills are the most significant. They are also more prominent in the early phases of starting a business than in the new-business and established-business phases. However, business management skills are also significant and they are applied mostly in the new-business and established-business phases. On the same note, marketing and financial management skills become salient as the business grows, mostly in the new-business and established-business phases.

Table 4-21: C-PDT skills code families across entrepreneurial phases

Skill clusters	Skills code families	Nascent phase	New-business phase	Established phase	National Experts	TOTAL
Start-up	Start-up	27	17	19	23	86
Core business	Business management	12	25	28	25	90
	Marketing	9	17	25	18	69
	Financial management	9	12	22	10	53
	Human resource management	4	17	26	12	59
Technical	Technical	9	15	12	8	44
Personal and leadership	Leadership	3	10	12	8	33
	Personal	10	22	18	10	60
	Social and interpersonal	5	9	12	4	30
TOTAL		88	144	174	118	524

Human resource management and leadership skills are applied minimally in the nascent phase, but gain importance as the phases unfold to the later entrepreneurial phases. Technical skills are applied more in the new-business than in the nascent and established phases. Skills such as social and personal skills appear to be equally important across the phases. At this stage, conclusions and generalisations will not be drawn without a thorough analysis of each skill family across the different phases in the quantitative stage of the research.

4.3 HUMAN CAPITAL INVESTMENTS IN DIFFERENT ENTREPRENEURSHIP PHASES

The literature review argued that human capital investments, both generic and specific, lead to skills needed in the different entrepreneurship phases. Generic investments include general education and work experience while entrepreneurship-specific investments are entrepreneurship education and prior entrepreneurial experience. The findings revealed that entrepreneurs also learned skills from social actors in their networks (family, friends, mentors and coaches), failures and mistakes, and reading entrepreneurial books. Entrepreneurs in the different entrepreneurship phases were asked about the role of human capital investments in providing them with skills, and the findings are presented in this section.

4.3.1 Human capital investment across the entrepreneurship phases

a) Formal education

Respondents in all entrepreneurship phases used their formal education to start and run the businesses. They argued that knowledge without practical application is largely acquired from formal education. They also emphasised that skills acquired in the classroom are at times disconnected with what is happening in the real business world. The data gathered indicated that the field of study or type of degree pursued impacts on human capital formation or skills that one acquires. For example, entrepreneurs with an engineering and mathematical background had acquired useful problem-solving and decision-making skills. One respondent mentioned that:

“So my engineering degree is a different domain from what I am doing and it doesn’t help from an academic perspective. As an engineer you learn to solve problems and in the business you solve problems in the space of technology. It gives you an approach to solve problems” (Lee).

The findings revealed that entrepreneurial, financial management, business management, personal, marketing and technical skills were some of the skills acquired from formal education. While these skills were applicable across all phases, nascent entrepreneurs were noted to use skills from formal education most compared to new-business and established entrepreneurs.

b) Work experience

When starting businesses, entrepreneurs in the nascent phase rely mostly on skills acquired from work experience compared to those in the new-business and established phases. It was observed from the data that some respondents had different types of work experience which contributed to developing skills in the different industries. The data showed that work experience is not only limited to the number of years, it also extends to exposure in different functional areas of the business that provide functional skills. One entrepreneur explained:

“When I was working as an employee for other companies, there was a vast amount of skills that I learnt...you do learn how to invoice, small things and the general work that the companies do” (Theo).

The skills entrepreneurs acquired by being exposed to a work environment fall under the categories of entrepreneurial, financial management, business management, marketing, technical, personal and social skills. Therefore it can be argued that work experience is more important in the nascent phase, compared to the new-business and established phases.

c) Entrepreneurship education

Entrepreneurs already running their business pursued entrepreneurial education to acquire skills for growing the business and obtaining industry-specific training. Some respondents mentioned that entrepreneurship education gave them confidence to run their businesses.

“My reason for going to do an MBA was particularly having practiced in my business for five years, and during that I got to a point where I felt I reached the limit in terms of my growth and the business and also the potential of the business to grow beyond where we were and I realised that there has be skill sets that I didn't have which perhaps will be important and for me to perceive beyond my current level of pursuing opportunities and as a result I thought let me go and see if I can get something from the MBA” (Levi).

National experts interviewed argued that entrepreneurship education in South Africa is still underdeveloped and offered in a generic manner rather than being practical and industry- or sector-specific. This was supported by the finding that entrepreneurs who attended general

training programmes extracted less value compared to those who attended tailor-made entrepreneurship programmes and academic entrepreneurship education. Since entrepreneurship education in South Africa is underdeveloped, new-business and established entrepreneurs tend to benefit more from entrepreneurship education than those in the nascent phases.

The categories of skills acquired from entrepreneurial education include business management, entrepreneurial, financial management, marketing and personal skills. The data showed that skills acquired from entrepreneurial education are more dominant in the established phase. The reason may be that some established entrepreneurs get access through enterprise development programmes that serve as a platform to improve their skills in running their businesses. In the nascent phase, entrepreneurs rely mostly on the formal education received.

d) Prior entrepreneurship experience

Skills learned from prior entrepreneurship experience were predominant in the new-business and established phases, compared to the nascent phase. This suggested that entrepreneurs who have established the businesses were once exposed to working in entrepreneurial businesses while others may have owned one before. One entrepreneur explained:

“I think you cannot compare the experience that you get in a start-up because you kind of do everything, you don't have to be constrained to doing one thing; you end up doing a lot of things that provides you with lot of experience” (Lee).

An observation from the data is that prior entrepreneurship experience goes beyond the business an entrepreneur previously owned to working in an entrepreneurial firm or a start-up business. Skills obtained from prior engagement in entrepreneurial activities are business management, entrepreneurial, financial management, marketing and personal skills. In essence, established entrepreneurs learned skills to start and run entrepreneurial businesses from their previous entrepreneurial experience.

4.3.2 Other sources of skills

In addition to human capital investments, other sources of skills identified from the data were self-taught skills from failure and mistakes, and social actors represented by family, friends, mentors and coaches.

a) Self-taught from failure and mistakes

Entrepreneurs noted that some of the skills they are currently applying in their businesses are self-taught, acquired from performing entrepreneurial activities. Nascent entrepreneurs emphasised that self-taught skills are learned by doing or performing entrepreneurial activities:

“Just from doing it. So when we started property, procurements and marketing were given to me, so the only way to learn was just to do it” (Owen).

From the established entrepreneurs’ perspective, they emphasised that they apply skills learned from failures and mistakes. They have been in the process long enough to have experienced moments of failures from which they can model corrective insight. Established entrepreneurs also narrated the significance of previous business exposure that can minimise learning pains.

“I think basically that [failure] has to be a common experience among entrepreneurs especially those who never had prior exposure into a business environment and actually if you do not have a mentor that you can draw from to spare you the pain from learning the hard way” (Levi).

b) Self-taught from reading about successful entrepreneurs

The nascent and new-business phase entrepreneurs reported that, due to lack of financial resources, they learned skills by observing what successful entrepreneurs are doing. They learned through reading their books and implementing some of the advice that worked best for them.

“I am reading about Jack Welch, former CEO of General Electric. I don’t think people should follow Warren Buffet, he is one of those people who come once in 50 years. It is like the Nelson Mandela thing, don’t do it. I read Steve Jobs, he is also a weird character.

I like Malcolm Gladwell books as well, he teaches you how to look at things differently. There are a lot of books that claim to do it correctly or become more profitable. I think it is about finding the person that you relate with the most and getting it done” (Luke).

c) Social actors

Family and friends

Prior family business experience may produce skills that are related to starting a business, while a family with no business experience provides general skills not directly related to the task of starting a business. One of the respondents added that she learned technical skills from an entrepreneurial parent:

“My mom is also an entrepreneur, she never worked for anybody, and she makes duvets and curtains. What I would do, I would take the material that she is not using, the cut out material and make three pieces of cushions for bedrooms and go sell them” (Pheladi).

Entrepreneurs also learned skills to start or run businesses from friends already engaged in entrepreneurship and general skills from friends who are not entrepreneurs. Entrepreneurs who had just entered the entrepreneurial process rely mostly on the skills they have learned from their family and friends, while those in the established phases apply minimally what they learned from their families and friends.

Mentors and coaches

The national experts who participated in the study concurred that successful entrepreneurship requires mentorship and this was reinforced by respondents in the nascent phase through to the established phase who reported having people who mentored them. They acquired some of the skills associated with starting the business from formal and informal entrepreneurial mentorship and coaching sessions they attended. However, some nascent entrepreneurs were not under any mentorship or coaching programme, formal or informal. The respondents added that:

“I can say from my mentor, the lady I say I bought equity from, the company, she is the one who does most of the work, and she is the one who teaches me most things” (Patience).

Entrepreneurs without mentors or coaches learned skills by observing what successful entrepreneurs are doing. They learned through reading their books and implementing some of the business practices that worked best for these role models.

4.3.3 Disconnect between theory and practice

Since the data showed disconnect between skills learned in the classroom and those needed to run a business, national experts were asked about the finding. An empirical study using data from America, Argentina, Canada, Greece, the Netherlands, Norway and Sweden revealed that there is a substantial difference between what is taught in traditional entrepreneurship textbooks and classrooms and what entrepreneurs practice in their businesses (Edelman, Manolova, & Brush, 2008; Reynolds & Curtin, 2008). Therefore, as much as the disconnect is an issue in developing countries, it is also an issue in developed countries. The data showed that contributing contextual factors include poor levels of formal education, poor entrepreneurship education and poor methods of teaching entrepreneurship.

a) Poor formal education

The first discussion point of disconnect between skills taught in the classroom and those that are applied practically in business was to evaluate the level of education in South Africa. The national experts explained that the current standard of education is very low, as are the requirements to pass high school or matric.

“Because in this country the level of education is low, you can get a matric with 30% pass in three subjects and another 40% pass in four subjects, so that is not education. That means that 70% of the time you answer the questions incorrectly” (Malik).

The national experts further argued that poor education raises a concern about the ability of both universities and schools to teach entrepreneurship. The current observation is that academic institutions teach “about entrepreneurship” rather than being specifically tailored “for entrepreneurship” education. The national experts highlighted that this compromises the process of teaching the skills to become an entrepreneur:

“I think that universities are not really equipped to teach skills. Even programmes that teach entrepreneurship for the most part don’t teach the skills you need to become an

entrepreneur. We often teach about entrepreneurship rather than for entrepreneurship. So I am not sure that the education through school and even through university is particularly well put together to teach people the skill to become an entrepreneur” (Jeffrey).

b) Poor entrepreneurship education

The national experts agreed that, in the South African education system, entrepreneurship is taught at the university level, which is already late. They suggested entrepreneurship should be taught at an early age. The big question remains how early should entrepreneurship be introduced in the education system. The national experts suggested that an introduction to entrepreneurship should be started at primary-school level, and continued all the way to tertiary level. A precondition to successfully teach an entrepreneurial skill is a good education system; however given the state of the South African education, the idea of teaching of entrepreneurial skills from primary school to tertiary level is scarcely credible. One national expert explained:

“Well obviously we’ve got to start at primary school level, the skills there should be introduction to entrepreneurship and all that is about and that should be carried through into secondary and into tertiary education. Unless you have got a decent education, you not gonna have them” (Malik).

In addition to the challenge presented by delayed teaching of entrepreneurship, the entrepreneurship curriculum is not suited for the emerging-market context. National experts stressed that, in the African context, it is critical to have an understanding of unique experiences and tailor the entrepreneurial curriculum or education around those experiences. Experiences generated elsewhere may be irrelevant when applied in a different contextual setting. One respondent emphasised:

“Instead of us understanding our experiences and developing our own educational models, or frameworks encompassing those experiences of what we have done and then develop African curriculum of education based on that, as usual we have gone to the north, to the west and looked at how they are doing it and then developed the curriculum based on that. Immediately there is disjuncture because the context in which the entrepreneur operates is different” (Christine).

c) Method of teaching entrepreneurship course or training

The first issue on methods of teaching entrepreneurship is that entrepreneurs are not teaching entrepreneurship. Respondents highlighted that entrepreneurs with practical and related experience are not in front of a classroom teaching entrepreneurship. So those who teach entrepreneurship had actually never had any practical experience; they mostly rely on textbook knowledge, thus creating a gap between theory and practice.

“So when you find a good entrepreneur, let me put it negatively, you are not going to find a good entrepreneur standing in front of the classroom. If they are good entrepreneurs they will be doing something else and they are entrepreneuring. So that is the problem. They sit with this book knowledge and I am not suggesting that they are bad or doing stupid things or anything, all I am saying is that they don't have the hands-on experience that the entrepreneur should have to learn from. So they may be really good teachers but they cannot teach from experience and they teach from the book, that is the difference” (Floyd).

Another point of note is the mode of teaching the entrepreneurial curriculum. The respondents argued that the South African mode of teaching entrepreneurship is a “generic” or “batched system” with minimal interaction. A batched system can be seen as teaching in a generic way without attending to the specifics of what each group of students requires or the sectors in which entrepreneurs operate.

“I think that education system through schooling and university is largely a batched industrial process. You gather groups of people in a room, you have somebody talk at best to them, but probably at them and you imagine that by being passive as a learner you will absorb some knowledge and skills. But learning in any form, whether you are learning at university or learning skill is an action, is an activity; you have to be actively involved” (Jeffery).

A suggestion from national experts is that there should be more creative methods of teaching entrepreneurship. The current methods used to teach entrepreneurship are similar to the way generic courses are being taught. Entrepreneurship is assumed to be an art form, thus requires more of a creative, practical approach.

4.3.4 Summary of findings on human capital investments as sources of skills

The first proposed model in the literature (figure 2-5) only showed human capital investments as the source of skills, but the skills were unknown. This reflected many inconsistent lists of skills, therefore the qualitative phase was included to identify the skills in different phases. Skills applied by entrepreneurs in running their businesses were identified as start-up, core business, personal and leadership, and technical skills. In the previous section, these skills were found to be applied unequally across the different entrepreneurship phases. These skills were acquired from different human capital investments in the form of formal education, work experience, entrepreneurship experience and prior entrepreneurship experience. The utility of human capital investments was found to be unequal across the phases. Figure 4-7 shows how the qualitative findings contributed to the model proposed in chapter 2.

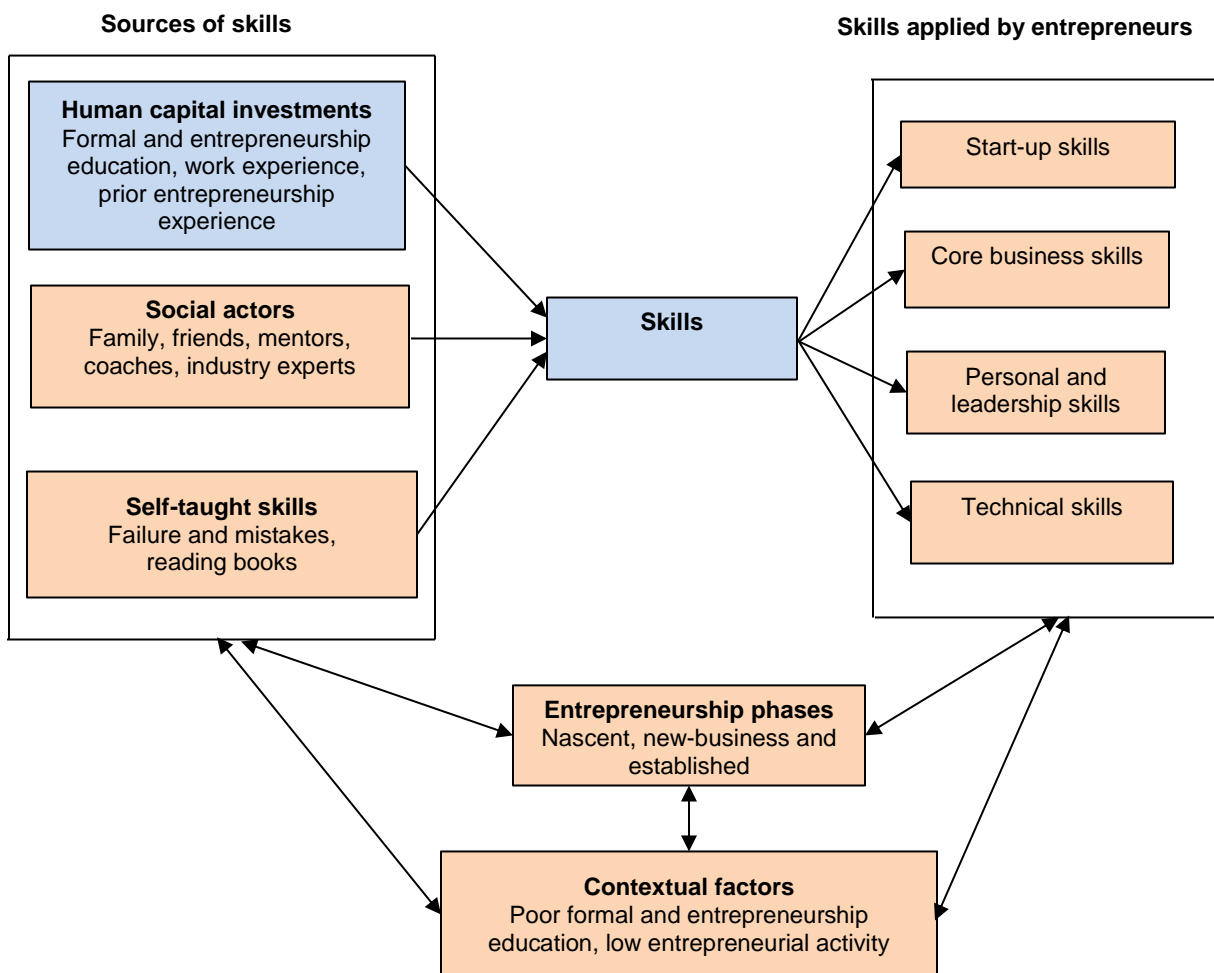


Figure 4-7: Summary of qualitative findings

The initial model in chapter 2 had human capital investments as the only source of skills, but the analysed qualitative data provided evidence that entrepreneurs also learn skills from social actors like mentors and coaches, family and friends, and successful entrepreneurs who may provide entrepreneurship-related and generic skills. In addition to the role of human capital investments and social actors, entrepreneurs regarded some of the skills they learned as 'self-taught skills' acquired by reading entrepreneurial books and practically performing entrepreneurial activities. The findings also demonstrated that the forms of human capital and the role of social actors as sources of skills are unequal across the entrepreneurship phases. Another addition to the model is contextual factors. The findings showed that the context in which entrepreneurial activities occurs impacts the source of skills and skills needed by entrepreneurs. A context with a poor national education system may not equip entrepreneurs with necessary skills needed to perform entrepreneurial tasks.

4.4 CONCLUDING SUMMARY AND HYPOTHESIS

The literature review revealed that there are many inconsistent lists of skills, and **research question 1** of this study aimed at discovering the skills applied by entrepreneurs in running their businesses. The framework presented below shows the clusters, categories, sub-skills and operational definitions of skills from the qualitative phase.

Table 4-22: Entrepreneurship skills framework

Cluster	Category	Sub-skill	Operational definition
Start-up skills	Start-up skills	Prototyping	Testing the feasibility of the business idea
		Starting a venture	Gathering material and financial resources to start a new venture
		Formalising business plan	Developing a business model or plan to run the business
		Growth planning	Planning the growth of the business in short and long term
		Assess own capabilities	Showing compelling drive to achieve the set objectives
		Environmental scanning	Scanning trends outside the business's environment
		Innovation	Developing new ideas, products and envision possibilities
		Calculated risk	Taking calculated risks to run the business
Core business skills	Business management skills	Opportunity recognition	Identifying business opportunities
		Problem-solving	Identifying and solving problems encountered in the business
		Strategic competence	Identifying where the business is and where it needs to go
		Legal skills	Complying with the law and regulations set by government
		Planning	Planning activities in the business
		Negotiation	Negotiating to get better business deals
		Organising work	Organising activities in the business
		Decision-making	Making decisions in running the business
		Delegation	Delegating tasks to employees
		Distribution model	Making the product available in the market
Core business skills	Marketing skills	Managing change	Managing changes in the business
		Partnerships	Attracting investors and potential partners
		Business development	Developing or growing the business by diversification
		Market research	Conducting market research
		Monitoring competitors	Monitoring and benchmarking the competition
		Positioning	Finding the market position in which the business operates
		Selling	Selling the product, either tangible or intangible
		Advertising the business	Seeking out new clients, eg. at trade shows or exhibitions
		Branding	Creating a positive brand or image of the business
		Customer experience	Creating good customer experience and loyalty
Core business skills	Financial management skills	Social media marketing	Using social media to advertise the business
		Adapting products	Modifying products to client demands
		Pricing	Setting prices for products or services
		Raising capital	Gathering financial resources to start or grow the business
		Managing cash	Managing money transferred into and out of the business
		Calculating costs	Calculating costs, cost prices and margins
		Interpreting financial results	Reading and analysing balance sheet and income statement
		Filing tax reports	Filing tax returns with revenue services
		Using financial software	Using financial software to produce financial reports
		Managing billing	Managing invoicing and collecting payments from clients
Core business skills	Human resource management skills	Bookkeeping	Understanding and interpreting financial records
		Selling/buying shares	Selling a portion of company shares in exchange for money to grow the business
		Recruitment	Recruiting and employing the right people for the job
		Developing employees	Evaluating if employees have the right skills to perform tasks
		Evaluating employee skills	Assessing the overall performance of employees
Core business skills	Human resource management skills	Evaluating performance	Evaluating and overseeing employee potential and career
		Setting roles	Defining jobs in terms of activities and skills and drawing up job descriptions
		Paying salaries	Implementing pay policy by defining salaries and bonuses
		Dismissing employees	Terminating employee contracts while respecting employment law

Cluster	Category	Sub-skill	Operational definition
		Using HR technologies	Using software to manage human resource matters
Technical skills	Technical skills	Industry-specific Product development Managing operations Managing supplies Quality audit Technology and production process Continuous innovation	Applying skills that are relevant in the industry Developing the product, either tangible or intangible Managing the production of products or services Distributing products to the market Assessing if product adheres to industry norms or standards Making use of specialised technology in production processes Continuously innovating existing products or services
Personal and leadership skills	Personal skills	Accountability Hard work Intuition Passion Self-motivation Single-mindedness Tenacity Time management Assertiveness Emotional coping Learning ability Creativity	Focusing on the intended goals or purpose Going the extra mile and working long hours Following your gut feeling when making decisions Enthusiastic about starting and running a business Encouraging yourself and relying on inner strength in executing entrepreneurial activities Sticking with something even when the going gets tough Enduring hard situations Scheduling and executing activities according to allocated time Saying no to business deals without being too desperate Dealing with stressful situations Learning in difficult challenges Initiating new ideas in the business
Personal and leadership skills	Leadership skills	Visionary Inspiring employees Sharing vision Culture of performance Thought leadership Leading responsibly	Having a vision about the future of the business Encouraging and bringing the best out of employees Sharing the vision of the company with employees Encouraging employees to have excellent performance Establishing oneself as the leader in the industry Leading in responsible and ethical manner
Personal and leadership skills	Social and interpersonal skills	People skills Communication skills Building relationships Understanding cultures Political astuteness Networking Listening	Showing sensitivity to people's feelings and emotions Communicating with employees, customers and stakeholders Building relationships of trust with clients Working well with people of different cultures Identifying and overcoming political challenges Networking to build resources and opportunities Listening to and hearing what other people are saying

HYPOTHESIS 1

This hypothesis was formulated in line with research question 2, which investigated the utility of skills across the different entrepreneurship phases. The table below, which was derived from the qualitative findings, assisted in reshaping the hypothesis that each one of the entrepreneurship phases (the nascent, new-business and established business phases) requires specific skills sets which change in significance as the entrepreneurship phases unfold. The application of skills ranged from low to medium and high utility. The entrepreneurship phase, which had the best application of skills compared to the other two phases, was ranked as high utility.

Table 4-23: Hypothesis 1

Clusters	Categories of skills	Nascent	New business	Established
Start-up	Start-up	High	Medium	Low
Core business	Business management	Low	Medium	High
	Marketing	Low	Medium	High
	Financial management	Low	Medium	High
	Human resource management	Low	Medium	High
Technical	Technical	Low	High	Medium
Personal and leadership	Leadership	Low	Medium	High
	Personal	Equal	Equal	Equal
	Social and interpersonal	Equal	Equal	Equal

H1: The skills applied by entrepreneurs in running their businesses are unequal in the different entrepreneurship phases.

H1a: Start-up skills are applied unequally in the different entrepreneurship phases. Entrepreneurs in the nascent phase apply more start-up skills than entrepreneurs in the new-business and established phase [nascent phase (P1) > new-business phase (P2) > established phase (P3)].

H1b: Business management skills are applied unequally in the different entrepreneurship phases. Entrepreneurs in the established phase apply more business management skills than entrepreneurs in the nascent and new business phases [established phase (P3) > new-business phase (P2) > nascent phase (P1)].

H1c: Financial management skills are applied unequally in the different entrepreneurship phases. Entrepreneurs in the established phase apply more financial management skills than those in the

new-business and nascent phases [established phase (P3) > new business phase (P2) > nascent phase (P1)].

H1d: Marketing management skills are applied unequally in the different entrepreneurial phases. Entrepreneurs in the established phase apply more marketing skills than entrepreneurs in the nascent and new-business phases [nascent phase (P1) < new-business phase (P2) < established phase (P3)].

H1e: Human resource management skills are applied unequally in the different entrepreneurship phases. Entrepreneurs in the nascent phase apply fewer human resource skills compared to entrepreneurs in the new-business and established-business phases [nascent phase (P1) < new business (P2) < established phase (P3)].

H1f: Technical skills are applied unequally in the different entrepreneurship phases. Entrepreneurs in the nascent and new-business phases apply more technical skills compared to entrepreneurs in the established-business phase [nascent phase (P1) < new business (P2) > established phase (P3)].

H1h: Leadership skills are applied unequally in the different entrepreneurship phases. Entrepreneurs in the nascent phase apply fewer leadership skills compared to entrepreneurs in the new-business and established phases [nascent phase (P1) < new-business phase (P2) < established phase (P3)].

The qualitative findings also indicated that some skills, ie social and interpersonal and personal skills, were applied equally, therefore:

H1g: Social and interpersonal skills are applied equally in the different entrepreneurship phases. Entrepreneurs in the nascent business phase, new-business and established phases have similar social and interpersonal skills [nascent phase (P1) = new-business phase (P2) = established phase (P3)].

H1i: Personal skills are applied equally in the different entrepreneurship phases. Entrepreneurs in the nascent business phase, new-business and established phases have similar personality skills [nascent phase (P1) = new-business phase (P2) = established phase (P3)].

HYPOTHESIS 2

The sources of skills were identified in the qualitative phase as formal education, work experience, entrepreneurship education, previous work experience, self-taught and social actors. The qualitative findings answering research question 3 showed that the utility of human capital investments and social actors as sources of skills is unequal across the entrepreneurship phases. Therefore this study hypothesised that:

Table 4-24: Hypothesis 2

Human capital investments and other sources of skills		Nascent	New business	Established
Generic human capital investments	Formal education	High	Medium	Low
	Work experience	High	Medium	Low
Entrepreneurship-specific human capital investments	Entrepreneurship education	Low	Medium	High
	Prior entrepreneurship education	Low	Medium	High
Self-taught	Failures and mistakes	Low	Medium	High
	Reading books	Medium	High	Low
Social actors	Family and friends	High	Medium	Low
	Mentors and coaches	Low	Medium	High

H2: The skills acquired from human capital investments and social actors are applied unequally in the different entrepreneurship phases.

H2a: Entrepreneurs in the nascent phases apply skills acquired from formal education most compared to entrepreneurs in the new-business and established-business phases.

H2b: Entrepreneurs in the nascent phases apply skills acquired from work experience most compared to entrepreneurs in the new-business and established phases.

H2c: Entrepreneurs in the established business phases apply skills acquired from entrepreneurship education most compared to entrepreneurs in the new-business and nascent phases.

H2d: Entrepreneurs in the new-business and established phases apply skills acquired from previous business experience more than entrepreneurs in the nascent phase.

H2e: Entrepreneurs in established businesses apply skills they learned from failure most compared to entrepreneurs in the nascent and new-business phases.

H2f: Entrepreneurs in nascent and new-business phases apply skills learned from reading entrepreneurial books more than entrepreneurs in the established phase.

H2g: Entrepreneurs in established businesses apply skills acquired from coaches and mentors most compared to entrepreneurs in the nascent and new-business phases.

H2h: Entrepreneurs in the nascent and new-business phases apply skills acquired from family and friends to a greater extent than entrepreneurs in the established-business phases.

HYPOTHESIS 3

The last research question was about investigating the relationship between human capital investments (measured as formal education, work experience, entrepreneurship education and

prior entrepreneurship education), skills and entrepreneurship phases. Since social actors were found to be a significant source of skills, they were included to determine if there was a relationship between social actors, skills, and entrepreneurship phases. As such, this study hypothesised that:

H3: The entrepreneurship phase moderates the relationship between human capital investments and social capital as independent variables and skills as dependent variable.

H3a: The relationship between formal education and skills applied by entrepreneurs is moderated by the entrepreneurship phase.

H3b: The relationship between work experience and skills applied by entrepreneurs is moderated by the entrepreneurship phase.

H3c: The relationship between entrepreneurship education and skills applied by entrepreneurs is moderated by the entrepreneurship phase.

H3d: The relationship between prior entrepreneurship experience and skills applied by entrepreneurs is moderated by the entrepreneurship phase.

H3e: The relationship between family and friends as source of skills applied by entrepreneurs is moderated by the entrepreneurship phase.

H3f: The relationship between mentors and coaches as source of skills applied by entrepreneurs is moderated by the entrepreneurship phase.

CHAPTER 5

QUESTIONNAIRE DEVELOPMENT

5.1 INTRODUCTION

This study applied a sequential exploratory mixed-method design, in which a qualitative phase was conducted first, followed by a quantitative phase. The main purpose of this design was to use initial results from the qualitative phase to develop a survey research instrument (Creswell, 2009).

Mixed-method studies, especially in entrepreneurship research, tend to focus more on sequential explanatory mixed-method designs where a quantitative phase is conducted first, followed by a qualitative phase (Molina-Azorín, López-Gamero, Pereira-Moliner, & Pertusa-Ortega, 2012). Other studies have focused on converting qualitative data into quantitative data through content analysis without conducting surveys (Srka & Koeszegi, 2007). Scholars argued that mixed-method research may help to improve entrepreneurship research (Loué & Baronet, 2012; Molina-Azorín et al., 2012), therefore this study will contribute to entrepreneurship research methodology by proposing a process of converting qualitative findings into a quantitative survey instrument.

In contrast to the incomplete evidence of the conversion process, a notable contribution is that of Crede and Borrego (2013) who showed how data extracted from qualitative ethnography was configured into constructs and survey items. However, what is missing is a clear step-by-step process showing the conversion of rich qualitative data into a survey questionnaire. Therefore this chapter expands on the work of Crede and Borrego (2013) by suggesting seven detailed and iterative steps to designing a quantitative questionnaire based on qualitative results, analysed with computer-assisted qualitative data analysis software (CAQDAS).

5.2 SURVEY QUESTIONNAIRE DESIGN PROCESS

The seven steps followed in converting qualitative data into a survey instrument are depicted in Figure 5-8. The process started with the conclusion of qualitative findings by refining the hypotheses. The next step was to transform code families or parent codes into quantitative variables, which may include independent, mediator, moderator and dependent variables. The next step was to convert codes into measurement items. After all variables were assigned

measurement items, a survey questionnaire was constructed. The penultimate step was to do a pilot study to ensure the survey questionnaire was reliable and valid. Finally, results of the pilot study were used to revise and improve the quality of the survey questionnaire.

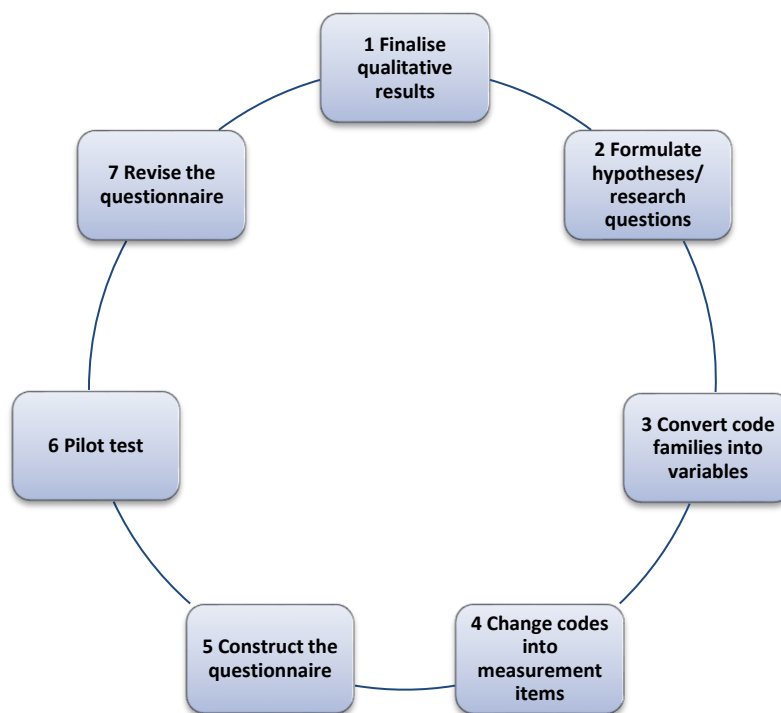


Figure 5-8: Survey questionnaire design process

Each of these steps is described in detail below:

STEP 1: Finalise qualitative results

It is critical to ensure that the designed survey instrument will gather the exact data that will answer the research questions and objectives of the study. To ensure that precise data was collected, the first step was to ensure that qualitative findings were presented in such a way that it would be easy to refine the hypotheses.

STEP 2: Formulate hypotheses or research questions

After finalising the qualitative findings, the researcher refined the existing hypotheses. When the hypotheses were refined, it was crucial to note the relationship between variables prior to designing the questionnaire.

STEP 3: Convert code families into variables

The hypotheses suggested that a relationship exists between the variables. The next task was to start selecting code families that would be used as variables for testing the hypotheses. With the qualitative phase, the focus was mostly on constructs and how they related to the research questions and theoretical underpinnings. However, the quantitative phase is about quantitative variables and how they relate to the hypotheses.

A quantitative variable is simply defined as an individual element or attribute on which data has been collected (Saunders et al., 2009). These can be independent, mediator, moderator and dependent variables. As the name implies, dependent variables depend on or are predicted by other latent variables or indicators while independent variables are not dependent on or predicted by other latent variables or indicators (Weston & Gore, 2006). The moderator variables moderate the strength of the relationship between two variables (Preacher, Rucker & Hayes, 2007). Mediation or an indirect effect is said to occur when the causal effect of an independent variable on a dependent variable is transmitted by a mediator variable (Preacher et al., 2007).

The qualitative code families or parent codes were converted into the main quantitative variables. Since there were many code families, quantitative variables were selected on the basis of their alignment with the hypotheses or research questions. Variables that were not related to the hypotheses were excluded. This study used code and primary document families shown in Figure 5-9 to develop the independent, moderator and dependent variables.

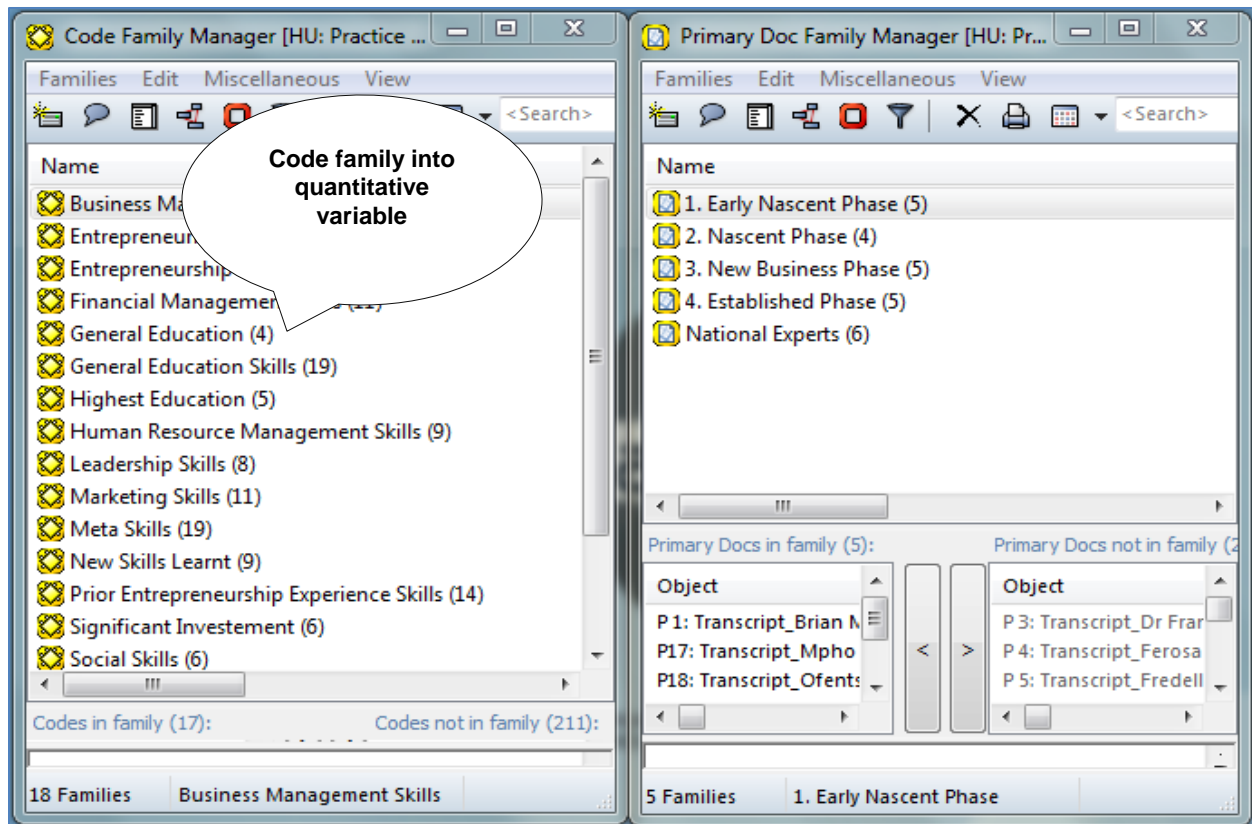


Figure 5-9: ATLAS.ti codes and primary document families

The human capital investments, which included generic education, work experience, entrepreneurship experience and prior education, were said to lead to developing entrepreneurial skills at the different phases of the business. Therefore, human capital investments were treated as independent variables. Then the categories of skills were regarded as the outcome or dependent variable. As suggested by the literature, the entrepreneurship phase was regarded as moderator variable. The table below shows a detailed layout of the variables used in the quantitative phase.

Table 5-25: Quantitative variables

Independent variables	Moderator variables	Dependent variables
Generic education Work experience Entrepreneurship experience Prior entrepreneurship education	Entrepreneurship phase (nascent phase, new-business phase and established phase) Contextual factors* (low entrepreneurial activity and poor education system)	Summated factor score of skills - Start-up skills - Business management skills - Marketing skills - Financial management skills - Human resource management skills - Technical skills - Personal skills - Leadership skills - Social and personal management skills

*Contextual factors were derived from the qualitative phase and were not tested quantitatively.

STEP 4: Change codes into measurement items

The measurement items for the variables were derived from the qualitative codes. Not all codes were used as measurement items. The criteria for selecting codes as measurement items were based on the frequency, consensus and uniqueness of each code. Frequencies were derived from the code-primary document table which showed the number of occurrences of each code. Some codes were selected based on consensus or agreement of the respondents. Codes that were unique and showed variance from the norm or expected were also included as measurement items. Table 5-26 shows the criteria for selecting measurement items.

Table 5-26: Criteria for selecting codes as measurement items

Measuring items for business management skills	Frequency		Consensus	Uniqueness
	High	Low		
Delegation	X		X	
Strategic competence	X			X
Partnerships		X		X
Business development		X	X	

The quotations of the codes were then converted into survey questions. Figure 5-10 shows the iterative process of how code families or parent codes were transformed into variables, codes into measurement items and quotations into survey questions using the analysed qualitative data from ATLAS.ti.

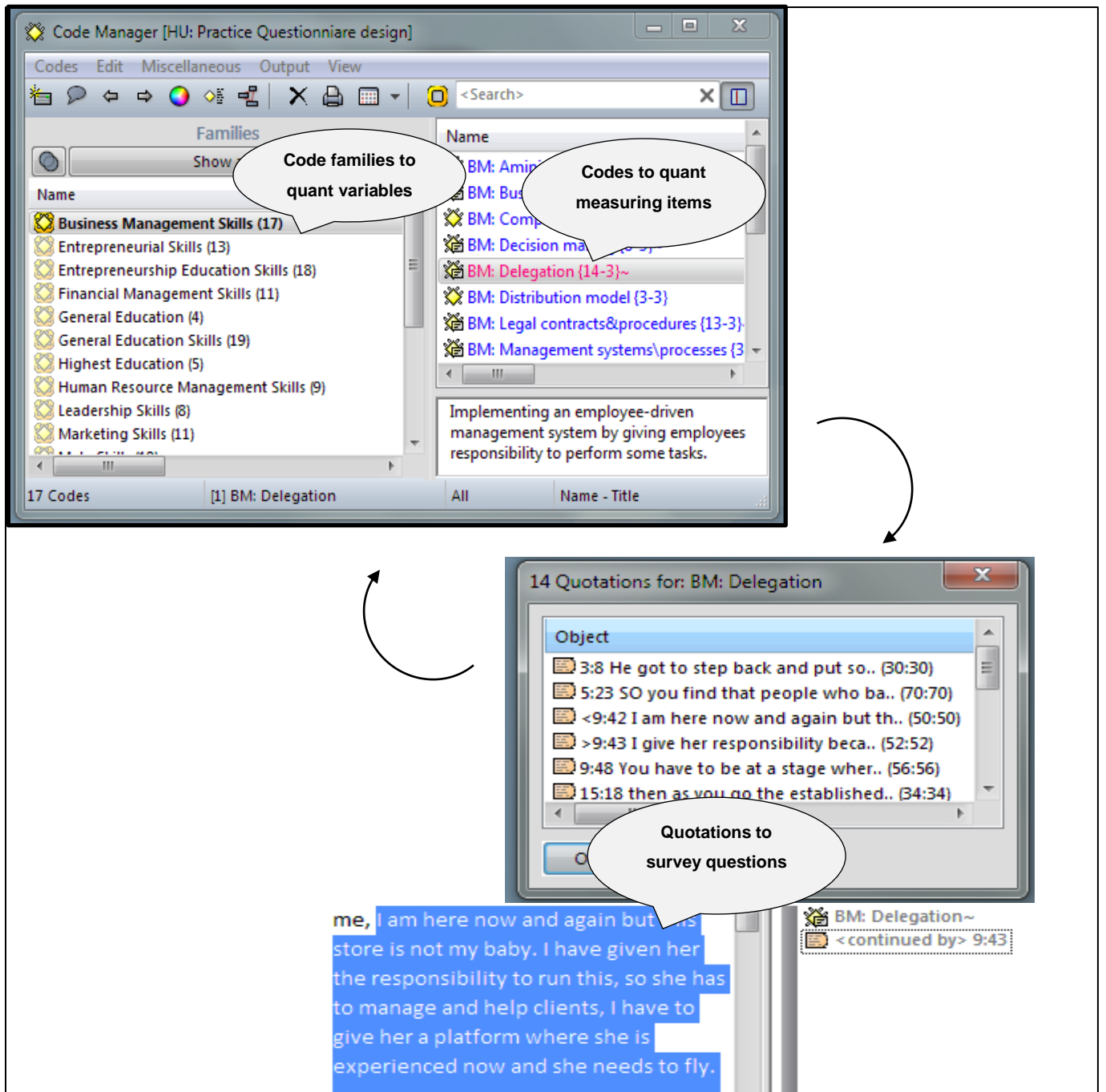


Figure 5-10: Conversion of qualitative-quantitative process on ATLAS.ti

To maintain consistency throughout the process, table 5-27 shows a consistency matrix that guided the conversion of qualitative data to survey questions. The elements in the consistency matrix are research questions, hypotheses, qualitative data, codes or measurement item, code families or variables and survey questions.

Table 5-27: Consistency matrix for questionnaire design

Research questions	Hypotheses	Code families/ variables	Codes/ measuring items	Qualitative data	Survey question
How does the utility of skills vary across the different entrepreneurship phases	Marketing skills are applied unequally in the different entrepreneurship phases	Marketing skills _____ Entrepreneurship phases	Branding	“So marketing is important from the initial phase of the business because we need to build an image or brand before we could have the product”	Are you creating a positive brand or image of the business? _____ How long has the new business paid any salaries, wages, or payments in kind, including your own?

Measurement scales of the measurement items

It is also important to be clear about the scales that will be used to measure variables. The scales of measurement include nominal scales where each number represents a category, ordinal scales that use greater-than (>) and less-than (<) relationships, interval scales that include how much more or less one object possesses than the other and, lastly, the ratio scale which is similar to the interval scale but has an absolute zero and multiples (Weiers, 2008).

This study applied a hybrid design combining nominal and ordinal scales. The nominal scale used multiple-choice questions where only one answer is sought. The ordinal scales used closed-ended questions with a 5-point Likert scale from which respondents were required to select an option. The Likert scale measures responses along a dimension from positive to negative from which possible answers are selected (Likert, 1932). Entrepreneurs were asked about the extent to which they applied, for example, business management skills in their businesses. So the ordinal-scale responses expected in this study ranged from never, almost never and sometimes, to almost every day, and every day. These responses showed how entrepreneurs in the different entrepreneurship phases applied skills in running their businesses.

STEP 5: Constructing the survey questionnaire

After the quantitative variables and measurement items were finalised, the next step was to construct the questionnaire. A questionnaire is one of the data-collection instruments in which each person is asked to respond to the same set of questions in a predetermined order (Saunders et al., 2009). Firstly, the significant aspect of a questionnaire is to determine operational terms to

be used for measurement items in the instrument. Some variables were given operational terms as detailed in table 5-28 while operational terms for skills sets were as per those already detailed in the entrepreneurship skills framework in chapter 4's concluding summary.

Table 5-28: Quantitative variables

Variables	Measurement items	Scale of measurement	Source
Entrepreneurship phase: <i>The duration that a new business paid any salaries, wages, or payments in kind, including the owner's salary. (Hypotheses 1, 2 and 3)</i>	Nascent (<1.5yrs)	<u>Ordinal</u> Multiple choice	Amorós and Bosma (2014)
	New business (>1.5 but <3.5yrs)		
	Established (>3.5yrs)		
Skills: <i>The proficiency in performance of a task as a result of human capital investments (education, work, industry and entrepreneurship experiences) and can be improved by training, practice and development. (Hypothesis 1)</i> Research questions 1 & 2	Start-up (5 items)	<u>Ordinal</u> (The extent to which entrepreneurs applied skills on Likert scale of 1-5) 1=never, 2=almost never, 3=sometimes, 4=almost every day, and 5=every day	Qualitative data analysis
	Business management (10 items)		
	Financial management (9 items)		
	Marketing (9 items)		
	Human resource management (7 items)		
	Technical (6 items)		
	Leadership (6 items)		
	Social and interpersonal (7 items)		
Utility of human capital investments and other sources like social actors and self-taught skills. (Hypothesis 2) Research question 3	Formal education (1 item)	<u>Ordinal</u> (The extent to which entrepreneurs applied skills from sources on Likert scale of 1-5) 1=never, 2=almost never, 3=sometimes, 4=almost every day, and 5=every day	Qualitative data analysis
	Work experience (1 item)		
	Prior entrepreneurship experience (1 item)		
	Entrepreneurship education (1 item)		
	Family and friend (1 item)		
	Mentors and coaches (1 item)		
	Self-taught (1 item)		
Human capital investments: <i>Are the inputs in formal education, work experience, industry experience, previous entrepreneurship experience and entrepreneurship education which lead to the development of skills and knowledge of economic value (Hypothesis 3)</i> Research question 4	Formal education (6 items)	<u>Nominal and ordinal</u> Multiple choice	Becker (1964)
	Work experience (6 items)		
	Prior entrepreneurship experience (2 items)		
	Entrepreneurship education (2 items)		
Control variables	Age (4 items), gender (2 items)	<u>Nominal and ordinal</u> Multiple choice	Pilot test, Unger et al. (2011)

Secondly, the layout of the questionnaire should be clear and pleasing to the eye of the respondent. In addition, there should be a clear explanation of the purpose of carrying out the

research. These parameters were considered in the process of designing the survey questionnaire illustrated in table 5-29. The detailed survey questionnaire appears in appendix F.

Table 5-29: Survey questionnaire

Variables	Measurement Items
Entrepreneurship phase	<ul style="list-style-type: none"> • Do you currently own and run a business? • How long have you been running the current business? • How long has the new business paid any salaries, wages, or payments in kind, including your own? "Payments in kind" refers to goods or services provided as payments for work rather than cash.
Generic education	<ul style="list-style-type: none"> • What is the highest level of your education? • If you have a tertiary qualification, please indicate the field of study.
Work experience	<ul style="list-style-type: none"> • How long did you work before starting the business?
Prior entrepreneurship experience	<ul style="list-style-type: none"> • Have you ever owned and run a business before?
Entrepreneurship education	<ul style="list-style-type: none"> • Have you received entrepreneurship education or attended an entrepreneurship course? • Which one? How long?
Entrepreneurial skills	<p>Thinking about the last 30 days of running your business, to what extent have you used the following start-up skills?</p> <ul style="list-style-type: none"> • Testing if my idea will be feasible • Gathering material and financial resources to start a new venture • Developing a business model or plan to run the business • Planning the growth of the business in both short and long term • Scanning business trends outside the business's environment • Developing new ideas, new products and envision possibilities • Taking calculated risks to run the business • Identifying business opportunities • Showing compelling drive to achieve the set objectives

The layout for the web survey questionnaire

Since the sample used for the quantitative phase was geographically dispersed, this study used a web survey, which is becoming a popular method of collecting quantitative data (Couper, 2000; Fan & Yan, 2010). A number of factors need to be considered when designing a questionnaire for web surveys. It has been noted that putting more items on a screen increased item non-response and reduced the duration of the survey, making the subjective assessments of the questionnaire less positive (Peytchev, Couper, McCabe & Crawford, 2006; Toepoel, Das, & Van Soest, 2009). The above mentioned authors also indicated that negativity towards more items or the whole questionnaire on one screen arises when scrolling is required. What has been

recommended to address this is to put no more than ten items on a single screen to avoid the need to scroll. Therefore, for this study, five to ten items appeared on several screens or pages with a button to submit each response. The respondents were not able to proceed to the next screen without submitting a response (Vicente & Reis, 2010).

The respondents were sent an email with a link to the survey questionnaire. The web survey questionnaire was consistent with the self-administered questionnaire. This was to maintain the consistency of what the survey questionnaire is intended to measure in both methods of administration.

STEP 6: Pilot test

After the design of the instrument was complete, a pilot test was conducted. A pilot test is a small-scale study to test a questionnaire to minimise the likelihood of respondents having problems in answering questions and to assess the questions' validity and reliability in capturing the required data (Saunders et al., 2009). The pilot test that was conducted is reported in chapter 3. The questionnaire was also taken through a peer-review process to ensure it was effectively aligned with what the study intended to achieve. The results from the pilot study were used to modify the research instrument and were not incorporated in the main study. Furthermore, respondents who participated in the pilot test were excluded in the sample for main data collection.

STEP 7: Revise the questionnaire

The final step was to revise the questionnaire based on results from the pilot study. The combination of pilot results and qualitative frequency tables informed any need for amendments to the questionnaire. Questions which the respondents struggled to answer were thoroughly evaluated and some excluded from the measuring instrument. Once all issues encountered in the pilot test were resolved, the main survey data collection commenced.

5.3 SUMMARY ON QUESTIONNAIRE DESIGN

This section showed the process of designing a survey questionnaire from qualitative results. The steps included finalising qualitative results, refining the hypotheses or research questions,

changing code families into variables, changing codes into measurement items, constructing the questionnaire, pilot testing, and revising the questionnaire. The designed survey questionnaire was used to collect data in the quantitative phase, with results presented in chapter 6.

CHAPTER 6

QUANTITATIVE FINDINGS

6.1 INTRODUCTION

This chapter presents the quantitative results of data gathered from the survey. The raw data was exported from SurveyMonkey to an Excel spreadsheet which was then loaded onto SPSS. Before the main data analysis, the data was first prepared for analysis by checking and replacing missing values, identifying and dealing with outliers, and running tests for normality. After the data was prepared for analysis, descriptive statistics tests were run for an overall view of the data. Following on from the descriptive statistics, confirmatory factor analysis (CFA) was used to confirm the skills sets. The hypotheses and corresponding research questions were tested using inferential statistics which, among other techniques, included hierarchical multiple regression analysis. The chapter concludes with the summary of results from quantitative findings.

6.2 PREPARING DATA FOR ANALYSIS

The first step in preparing for data analysis was to evaluate the impact of missing data, identify outliers and then test for assumptions underlying the statistical tests. Violations of statistical assumptions may cause biases or non-significance in the results that cannot be distinguished from true results (Hair et al., 2010). So it was vital to identify and test for any irregularities in the data before beginning the main data analysis.

6.2.1 Missing values

Missing data primarily results from errors in data collection or data entry, or from omission of answers by respondents (Hair et al., 2010). To avoid missing data, the survey questionnaire on SurveyMonkey had a compulsory condition that required respondents to complete each question before moving to the next. Before proceeding with the formalised methods of diagnosing randomness of the missing data, a simple remedy of deleting offending cases with more than 50% of missing data was followed. After these deletions, Little's missing completely at random (MCAR) test was run to detect if any data was missing at random or systematically and to provide the remedies of dealing with the missing data. The table below shows the expectation maximisation (EM) means of Little's MCAR.

Table 6-30: EM means^a

Little's MCAR test: chi-square = 334.018, *df* = 368, sig = 0.898

The Little's MCAR results show a $p = 0.898$ which is greater than 0.05, therefore we failed to reject the null hypothesis and concluded that data was missing at random. Accordingly, missing values were replaced using mean substitution which replaces the missing value for a variable with the mean value of the variable calculated from all valid responses (Hair et al., 2010). The disadvantage of this approach is that it diminishes variance estimates and distorts the actual distribution of values.

6.2.2 Outliers

Outliers are scores that are different from the rest (Kline, 2011). To detect univariate outliers, all variables were saved as standardised (*Z*-) scores. The univariate outliers were detected using the frequency of *Z*-score distributions where $|Z| > 3.00$ were considered as outliers. The outliers noted were with skills variables: start-up, business management, financial, marketing, human resources, technical, social and interpersonal, personality, and leadership skills. They were removed and replaced using the mean. After outliers were removed, variables were saved as standardised scores to recheck the *Z*-score and all were less than $|Z| = 3.00$. Multivariate outliers were treated before running hierarchical multiple regression analysis tests, as explained later in the document.

6.2.3 Normality

The test for normality was performed to determine the distribution of the data and statistical tests relevant for the diagnosed distribution. The one-sample Kolmogorov-Smirnov test for all questionnaire items showed a significant p -value of 0.00, so the null hypothesis that the data is normally distributed was not supported. Since the survey questionnaire had Likert scale items which were measured on a categorical or ordinal scale, it was expected that the data would not be normally distributed. Therefore, non-parametric tests for non-normally distributed data were used in testing some hypotheses. The results of Kolmogorov-Smirnov normality tests are presented in appendix H.

6.2.4 Scale reliability

Internal consistency is the degree to which responses are consistent with items within a measure (Kline, 2010). A Cronbach alpha test was used to determine internal consistency where reliability coefficients around 0.90 are considered “excellent”, values around 0.80 are “very good”, and values around 0.70 are “adequate” (Kline, 2011). Reliability statistics for the constructs on Likert scale are presented in table 6-31.

Table 6-31: Reliability statistics

Construct	Number of items	Cronbach alpha	Outcome
Start-up skills	5	0.800	Very good
Business management skills	10	0.834	Very good
Financial management skills	9	0.729	Adequate
Marketing skills	9	0.714	Adequate
Human resource management skills	7	0.810	Very good
Technical skills	6	0.817	Very good
Social and interpersonal skills	7	0.812	Very good
Leadership skills	6	0.818	Very good
Personal skills	8	0.765	Adequate

Table 6-31 indicates that the scale is reliable and measured what the study intended to measure. Internal consistency results for individual scale items are presented in appendix H.

6.2.5 Construct validity

Construct validity is the extent to which a set of measured items actually reflects the theoretical latent construct (Hair et al., 2010). High construct validity indicates that internal consistency exists, meaning that all measures consistently represent the same latent construct. Convergent and content validity were used to assess construct validity. For content validity, the designed questionnaire was circulated among respondents who participated in the qualitative study for review, and this feedback used to improve the quality of the questionnaire.

Convergent validity

Convergent validity was ensured by following a guideline suggested by Hair et al. (2010) that standardised loadings (standardised regression weights using AMOS) should be at least 0.5 to 0.7 and the reliability of the factor loadings should be above 0.7. Reliability tests were run on the factor loadings of each construct and a value of 0.7 was regarded as acceptable, provided other indicators of the model’s construct validity were found to be good. Discriminant validity was ensured by eliminating cross-loading factors, especially in skills cluster formations.

6.3 DESCRIPTIVE STATISTICS

Descriptive statistics for demographic information are presented below. As part of the screening process or inclusion test for the survey, respondents were asked if they had an operational business or not. Respondents without an operational business at the time the survey was conducted were automatically disqualified from participating.

Table 6-32: Demographic information

Demographic information		Frequency	Percent
Gender	Male	151	64.3
	Female	82	34.9
	Total	235	100.0
Age	18-29	27	11.5
	30-49	108	46.0
	50-64	74	31.5
	65 & over	26	11.0
	Total	235	100.0

The table shows that the sampling process captured a higher percentage of males engaged in entrepreneurship than females, who constituted only 35% of the sample population. This was incidentally aligned with national and global studies that show males are more entrepreneurial than females (Herrington et al., 2014). The age demographics showed that a higher percentage of entrepreneurs was in the category of 30-49 years, while the lowest percentage was in the youth category of 18-29 years, suggesting low entrepreneurial activity among youth in South Africa. This finding was consistent with previous studies conducted among youth in the country which showed that South African youth are not actively engaged in entrepreneurial activities (Herrington & Kelley, 2013).

Entrepreneurs were asked to locate themselves within one of the entrepreneurship phases. The measures used to determine entrepreneurship phases were in line with the GEM classification and include the period the business has existed and duration of paying salaries of any kind (Herrington et al., 2014). Respondents whose duration of business's existence and payment of salaries were not the same, for example a business that had existed for over four years but only paid salaries for one year, were excluded from the study as they were assumed to have been delayed in the nascent phase. The entrepreneurship phases and industries of entrepreneurs who participated in the research study are presented in table 6-33:

Table 6-33: Entrepreneurship phases

Entrepreneurship phase and industry		Frequency	Percent
Nascent	<1.5 years	56	23.8
New business	1.5-3.5 years	54	23.0
Established	>3.5 years	125	53.2
Three entrepreneurial phases	Total	235	100.0
Start-up (nascent and new business)	<1.5-3.5 years	110	46.8
Established	>3.5 years	125	53.2
Two entrepreneurial phases	Total	235	100.0
Industry	Agriculture and environmental management	11	4.7
	Mining and quarrying	1	0.4
	Manufacturing, engineering and technology	73	31.0
	Electricity, gas and water supply	1	0.4
	Construction	6	2.6
	Wholesale and retail trade	24	10.2
	Transport and communication	14	6.0
	Financial services	36	15.3
	Community, social and personal services	69	29.4
	Total	235	100.0

The results tabulated above indicate that the nascent and new-businesses phases had smaller sample sizes compared to the established-business phase. An explanation for this is that most nascent businesses are not formally registered and lists of potential respondents are therefore rarely available. Marvel et al. (2014) noted that the dearth of research in the nascent phase is due to difficulty in accessing nascent samples. As such, to have balanced sample sizes, the nascent and new-business phases were combined in the later analysis to form the **start-up phase** which was compared with the established phase.

Another part of the descriptive statistics represents the human capital investment variables. These are work experience, formal education, previous entrepreneurship experience, and entrepreneurship education. The majority of entrepreneurs (49%) had post-graduate qualifications followed by those with technical certificates and undergraduate degrees. Only a handful of respondents had never completed high school. All in all, the sample pool met the precondition of this study that entrepreneurs who participate should have had some form of training. Table 6-35 shows the descriptive statistics of human capital investments.

Table 6-34: Human capital investments

Human capital investments		Frequency	Percent
Formal education	Some high school	3	1.3
	Completed high school	23	9.8
	Technical or college training	50	21.3
	Undergraduate university	44	18.7
	Postgraduate university	115	48.9
	Total	235	100
Field of study	Agriculture and environmental management	5	2.1
	Arts and culture	20	8.5
	Business and management studies	98	41.7
	Communication studies and language	5	2.1
	Education, training and development	12	5.1
	Manufacturing, engineering and technology	24	10.2
	Human and social studies	15	6.4
	Law, military science and technology	4	1.7
	Health sciences and social services	4	1.7
	Physical, mathematical, computer and life sciences	13	5.5
	Services	8	3.4
	Planning and construction	3	1.3
	Other	24	10.3
Total	237	100	
Work experience	Never worked	9	3.8
	Less than 5 years	62	26.4
	5-10 years	49	20.9
	10-15 years	39	16.6
	15-20 years	34	14.5
	More than 20 years	42	17.8
	Total	235	100
Position occupied	Employee	58	25.7
	Low management	20	8.8
	Middle management	71	31.4
	Top management	77	34.1
	Total	226	100
Business experience	Yes	83	35.3
	No	152	64.7
	Total	235	100
Entrepreneurship education	Yes	133	56.6
	No	102	43.4
	Total	235	100

The data indicates that most respondents had some work experience, with a high percentage having less than five years' experience. Only a very small percentage (3.8%) had never worked prior to starting their businesses. More than half the entrepreneurs who participated in the study had occupied middle and top management positions in their previous workplaces.

The entrepreneurship education measure showed that 43.4% had attended an entrepreneurial programme of some kind. The type of entrepreneurship education was an open-ended question and results showed that entrepreneurship education was either an academic or training programme. Academic entrepreneurial education included postgraduate diplomas and degrees

with a focus on entrepreneurship while training programmes consisted of supplier-development and business-development training programmes. The duration of courses or programmes attended spanned less than a month, 2-6 months, 6-12 months, 12-18 months and 18-24 months.

On previous business ownership, which is also a measure of human capital investment, findings showed that 65% of respondents had no prior entrepreneurial experience before the current business.

6.4 RESEARCH QUESTION 1

The first research question the study intended to answer was ‘What skills required to perform entrepreneurial tasks are employed by entrepreneurs in the different entrepreneurial phases?’ To answer this question, a confirmatory factor analysis (CFA) was performed to confirm the skills sets derived from the qualitative data analysis. CFA seeks to statistically test the significance of the hypothesised factor model, thus whether the sample data confirms that model (Schumacker & Lomax, 2010). In CFA, the researcher has a pre-specified theoretical model which, in exploratory factor analysis (EFA), is not specified beforehand. CFA was run on the questionnaire items which were grouped into start-up, business management, financial management, marketing, human resource management, technical, social and interpersonal, leadership and personality skills. The model fit indices and expectations for good fit that were used in this analysis are presented below.

Table 6-35: Model-fit criteria/global-fit indices

Model-fit criteria	Measures	Values for good fit
Chi-square (χ^2)	Difference between observed and estimated covariance matrices	Insignificant value
Goodness-of-fit (GFI)	Similarity of observed and estimated covariance matrices	0.90 or 0.95
Root-mean-square error approximation (RMSEA)	How a model fits the population, not just the sample used for estimation	0.05 to 0.08
Tucker-Lewis Index (TLI)	Compares a proposed model against a null model	0.90 or 0.95
Normed fit index (NFI)	Rescales chi-square and compares a restricted model with a full model	0.90 or 0.95
Comparative fit index (CFI)	Improved version of the normal fit index (NFI)	0.90 or 0.95
Parsimony normed fit index (PNFI)	Used in comparing one model with another	0.90 or 0.95

Adapted Schumacher and Lomax (2010), Hair et al. (2010) and Kline (2011)

There are many model-fit indices used to determine if the data fits the model. Given the plethora of fit indices that can be used, Hair et al. (2010) argue that the most commonly used are chi-

square (χ^2), GFI, RMSEA, TLI, NFI, CFI and PNFI. It is suggested that using three to four fit indices provides adequate evidence of the model fit, however one should report at least one incremental index and one absolute index in addition to χ^2 value and degree of freedom (*df*). Therefore χ^2 value, *df*, GFI, CFI or TFI and RMSEA are the model-fit indices used in this study to provide sufficient and unique information in evaluating the CFA skills models.

6.4.1 CFA per skills category

a) Start-up skills

CFA was conducted to assess whether the items in the start-up skills construct load onto that factor. Results indicated that all variables (planning growth, environmental scanning, taking calculated risks, new idea generation and opportunity recognition) had a high loading on the start-up skills construct. The results are shown below:

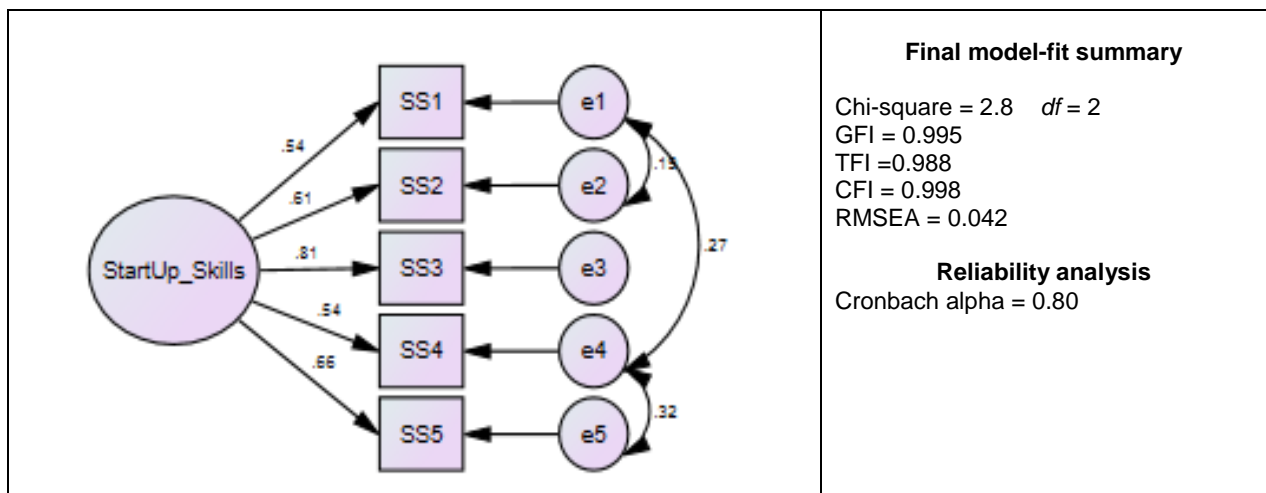


Figure 6-11: CFA start-up skills

The initial computation of the model had a chi-square = 34.1, *df* = 5, GFI = 0.946, CFI = 0.917 and RMSEA = 0.158. Since the RMSEA results were higher than the expected value, modification indices were examined to check if the model could be improved. The covariates of SS1 (planning growth), SS2 (environmental scanning), SS4 (calculated risks) and SS5 (opportunity recognition) were found to be highly related. After correlating the covariates, the model improved with a chi-square = 2.8, *df* = 2, RMSEA = 0.042, CFI = 0.998 and GFI = 0.995. The reliability test of the factors had a Cronbach alpha of 0.80, indicating that the items measured what the instrument intended to measure.

b) Business management skills

CFA was run to determine which measurement items on the scale would load on the business management skills construct. Results are shown below:

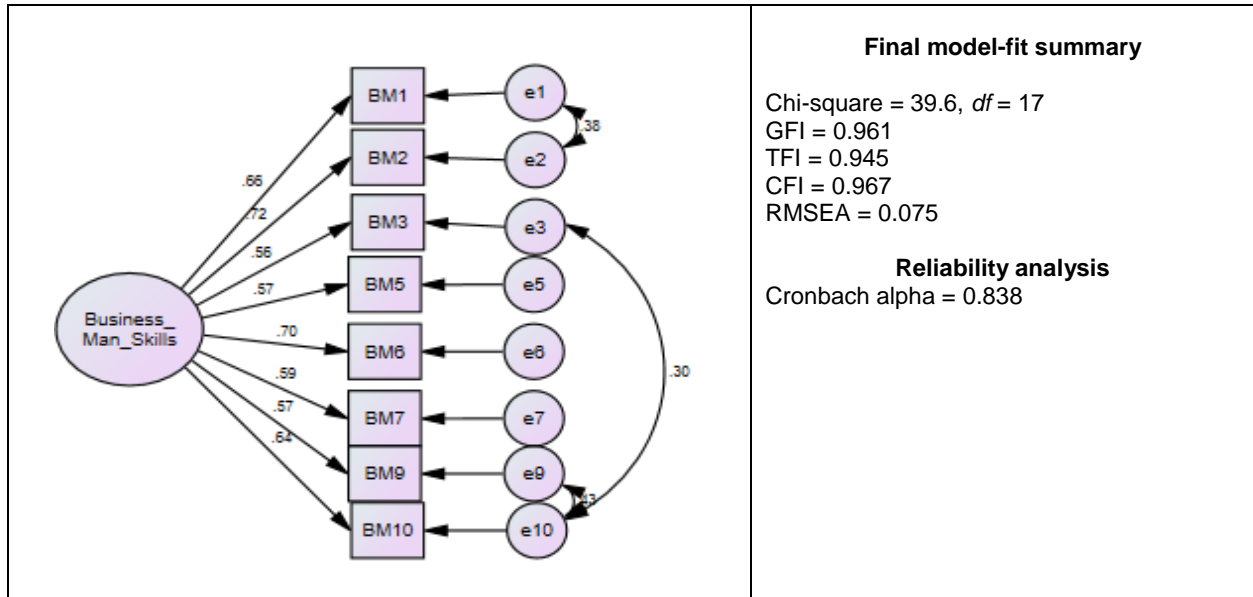


Figure 6-12: CFA business management skills

The initial global fit indicators showed a poor model fit with chi-square = 179.9, *df* = 35, GFI = 0.857, CFI = 0.816 and RMSEA = 0.133. The factor loadings showed that BM4 (legal skill), BM7 (delegation) and BM8 (attracting investors and potential partners) had poor factor loadings of about 0.40. To improve the fit, the model was trimmed by removing observed variables with poor loadings. During the trimming, it was noted that some covariates were highly related and, when they were correlated, the model improved to chi-square = 39.6, *df* = 17, GFI = 0.961, CFI = 0.967 and RMSEA = 0.075, indicating a good fit. The reliability test was run on the constructs and found to be 0.838, meeting the internal consistency standard. So, the final factors that loaded on business management skills were: planning, problem-solving, implementing business plan, negotiation, decision-making and strategy implementation and execution.

c) Marketing skills

CFA was computed to determine which measurement items on the scale would load on the marketing skills construct. Results are shown below:

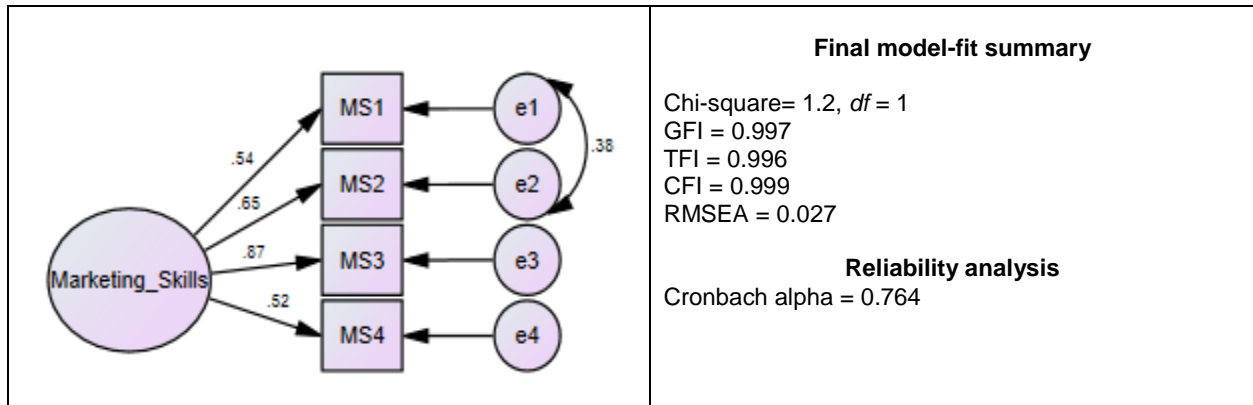


Figure 6-13: CFA marketing skills

The result of the first model analysis indicated a poor model fit with a chi-square = 188.9, *df* = 27, GFI = 0.840, CFI = 0.722 and RMSEA = 0.155. It was discovered from the modification indices that the poor fit was due to MS5 (seeking clients), MS6 (brand image), MS7 (creating customer experience), M8 (social media marketing) and MS9 (adapting products) which had poor factor loadings. When these observed variables were removed and some related covariates correlated, the results showed an improved model fit. The final model was deemed to be a good fit with chi-square = 1.2, *df* = 1, GFI = 0.997, CFI = 0.999 and RMSEA = 0.027. The reliability analysis of the remaining factors had a Cronbach alpha of 0.764, indicating that observed variables measured what the instrument was intended to measure. The detailed Cronbach alpha of the CFA results appears in appendix G. So, the final factors that measured marketing skills are market research, monitoring competition, positioning and selling the products.

d) Financial management skills

CFA was run to determine which measurement items on the scale would load on the financial management skills construct. Results are shown below:

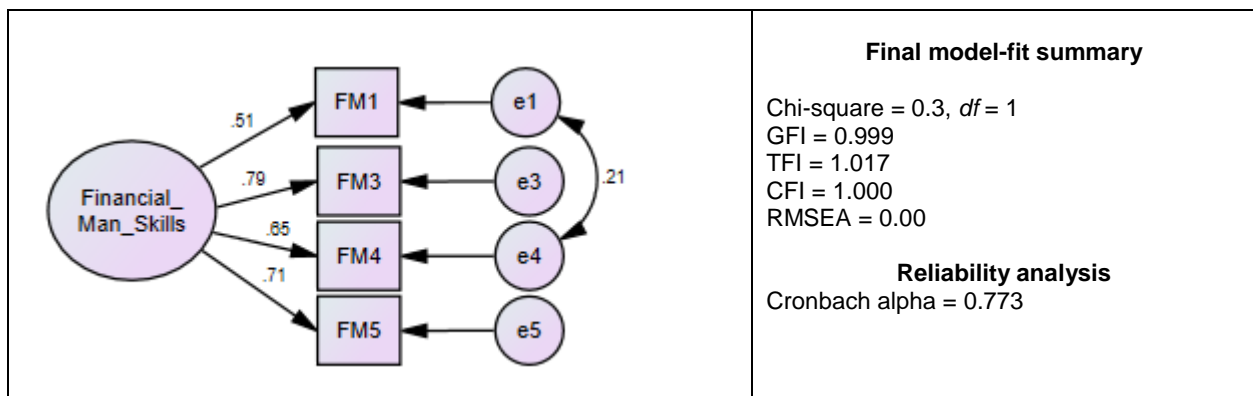


Figure 6-14: CFA financial management skills

The initial loadings of all factors resulted in a poor model fit of chi-square = 219.3, $df = 27$, GFI = 0.830, CFI = 0.647 and RMSEA = 0.174. The factors FM2 (gathering financial resources), FM6 (filing tax returns), FM7 (billing clients), FM8 (selling company shares) and FM9 (using financial software) had poor loadings below 0.40, contributing to a poorly fit model. Model trimming improved the fit to chi-square = 0.3, $df = 1$, GFI = 0.999, CFI = 1.000 and RMSEA = 0.00, which is a perfectly identified model. Reliability tests run on the factors had a Cronbach alpha of 0.773, which is above the expected. So, the factors that loaded on the financial management skills construct are: setting prices, managing cash flow, calculating costs and basic financial literacy.

e) Human resource management skills

CFA was run on the set of human resource management skills to determine which measurement items on the scale would load on the human resource management skills construct. Results are shown below:

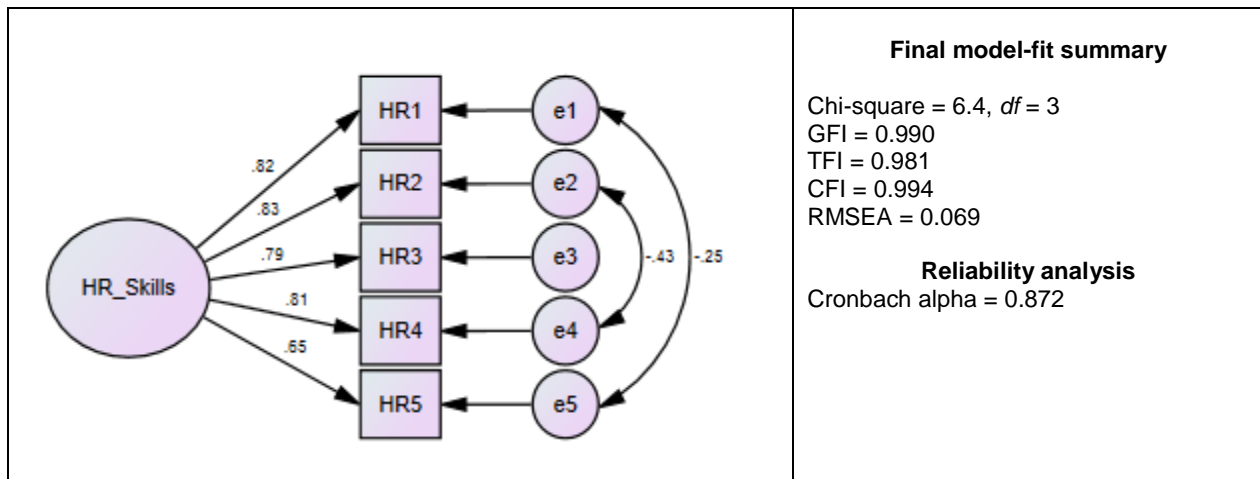


Figure 6-15: CFA human resource management skills

The initial computation had a chi-square = 217.9, $df = 14$, GFI = 0.808, CFI = 0.742 and RMSEA = 0.249, indicating a poor model fit. The modification indices showed that H6 (firing) and HR7 (using HR technologies) had poor factor loadings, less than 0.40, and that the model could be improved further by correlating covariates that were highly related. The correlation of HR1 (recruitment), FM2 (evaluating skills), FM4 (performance management) and FM6 (paying salaries) improved the model to chi-square = 6.4, $df = 3$, GFI = 0.990, CFI = 0.994 and RMSEA = 0.069.

Therefore, the factors that clearly represent human resource management skills are: recruitment, evaluating skills, performance management, job description and paying salaries. The reliability tests of these factors had a Cronbach alpha of 0.872, indicating that the measurement items are consistent with what the questionnaire intended to answer.

f) Technical skills

CFA was run on a set of technical skills to determine which measurement items on the scale would load on the technical skills construct. Results are shown below:

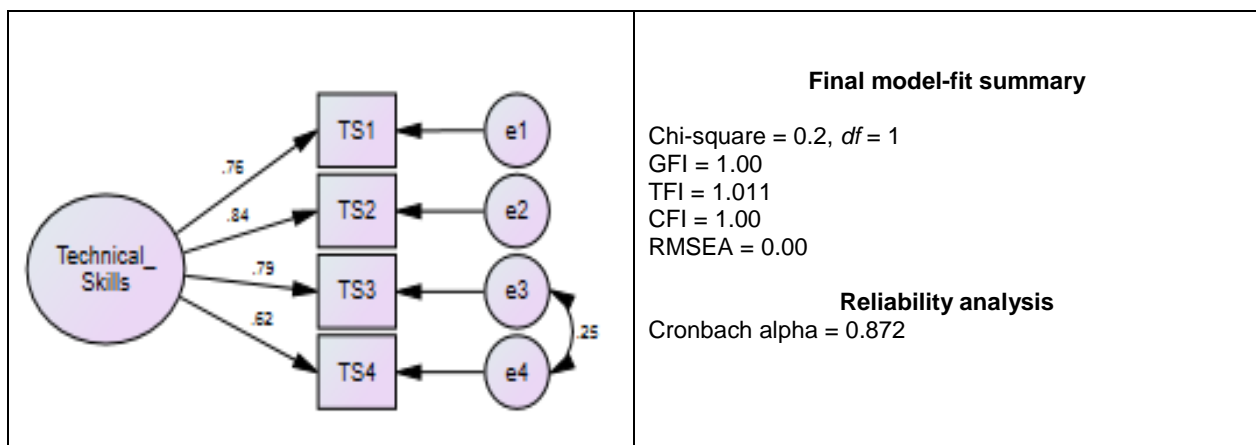


Figure 6-16: CFA technical skills

The first model computed was a poor fit, with chi-square = 124.9, $df = 9$, GFI = 0.858, CFI = 0.798 and RMSEA = 0.234. Modification indices showed that TS5 (using specialised technology) and TS6 (continuous innovation) had low factor loadings, and they were removed. After correlating the covariates of TS3 (product development) and TS4 (quality evaluation), the global-fit indices improved to chi-square = 0.2, $df = 1$, GFI = 1.00, CFI = 1.00 and RMSEA = 0.000. The reliability analysis of the final factors had a Cronbach alpha of 0.872, which is above the expected. Therefore, the measurement items or factors for technical skills are: industry-specific skills, product development, managing production and product quality evaluation.

g) Leadership skills

The results of a CFA run to determine which measurement items on the scale loaded on the leadership skills construct are shown below:

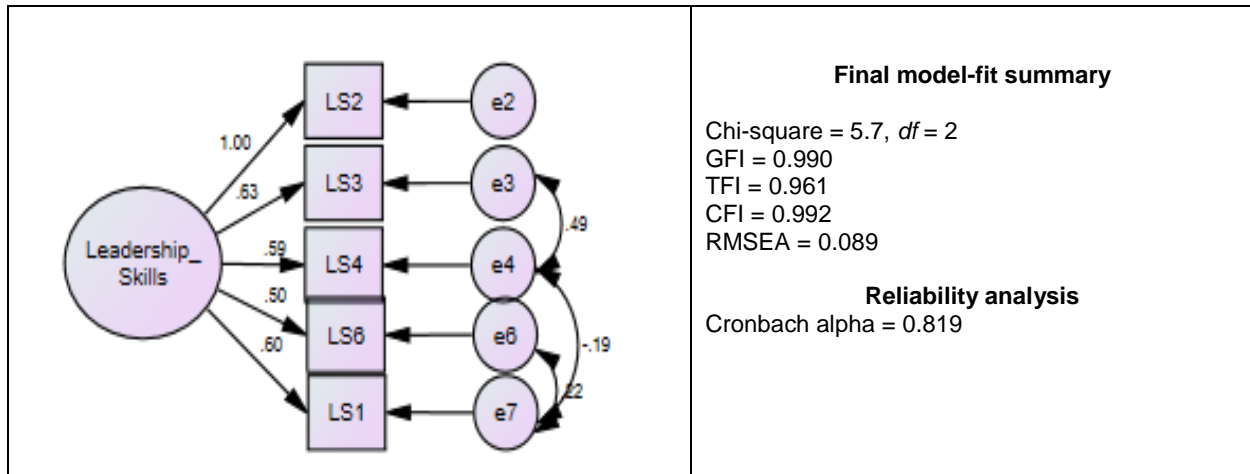


Figure 6-17: CFA leadership skills

The first factor loadings on the construct leadership skills did not fit the model as global fit indices were found to be outside the expected values, thus chi-square = 123.6, *df* = 9, GFI = 0.846, CFI = 0.793 and RMSEA = 0.233. The modification indices showed that LS5 (thought leadership) had a poor factor loading of 0.38, and it was removed from the model. After trimming the model by correlating the covariates of LS1 (developing a vision), LS3 (sharing the vision), LS4 (cultivating excellent performance) and LS6 (leading responsibly), the model improved to chi-square = 5.7, *df* = 1, GFI = 0.990, CFI = 0.992 and RMSEA = 0.089. The RMSEA was slightly above 0.08, but Schumacker and Lomax (2010) argued that RMSEA of less than 0.10 is still acceptable. The reliability test was run on the measurement items and results showed a Cronbach alpha of 0.819. Therefore the leadership skills construct consists of crafting a vision, inspiring employees, sharing the vision, cultivating excellent performance and leading responsibly.

h) Social and interpersonal skills

The CFA test that was run on social and interpersonal skills measurement items, resulting in the model depicted below:

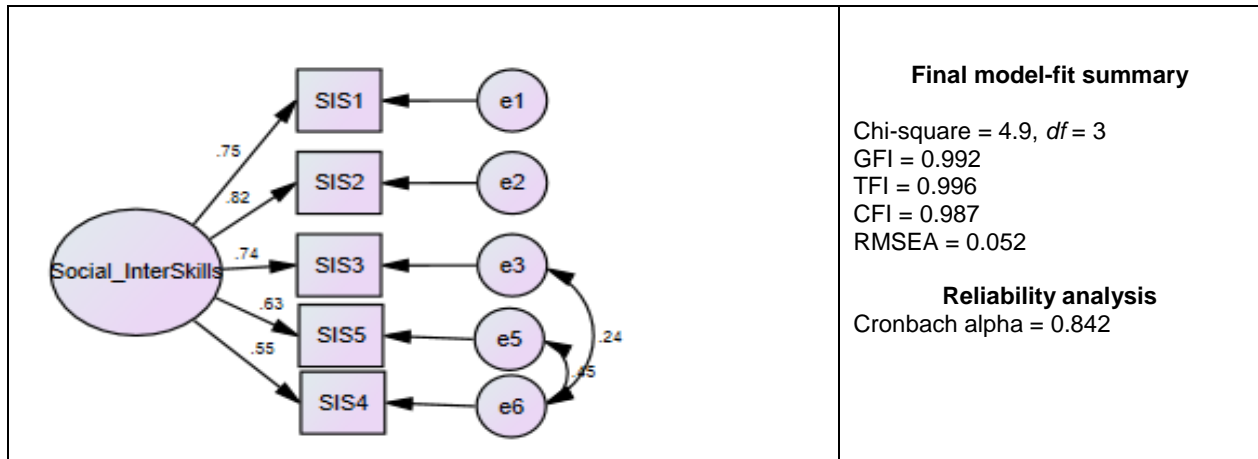


Figure 6-18: CFA social and interpersonal skills

When the model was computed for the first time, the global fit indicators were found to be outside the expected values, thus chi-square = 91.3 *df* = 14, GFI = 0.898, CFI = 0.797 and RMSEA = 0.154. The poor fit was probably due to poor loading of SIS6 (political skill) and SIS7 (networking). In addition, the high correlation of SIS1 (sensitivity to people’s emotions) and SS2 (communicating well with people) contributed to a poorly fit model. Modification of the model resulted in a good fit of chi-square = 4.9, *df* = 3, GFI = 0.992, CFI = 0.987 and RMSEA = 0.052. The reliability analysis was run on the remaining factors and had a Cronbach alpha of 0.842 which met the requirements of internal consistency. Therefore, factors on social and interpersonal skills are: showing sensitivity to people’s feelings, communication, listening, building relationships and cultural sensitivity.

i) Personal skills

CFA was run on personality skills to determine if the measurement items on the scale would load on the personal skills construct. Results are shown below:

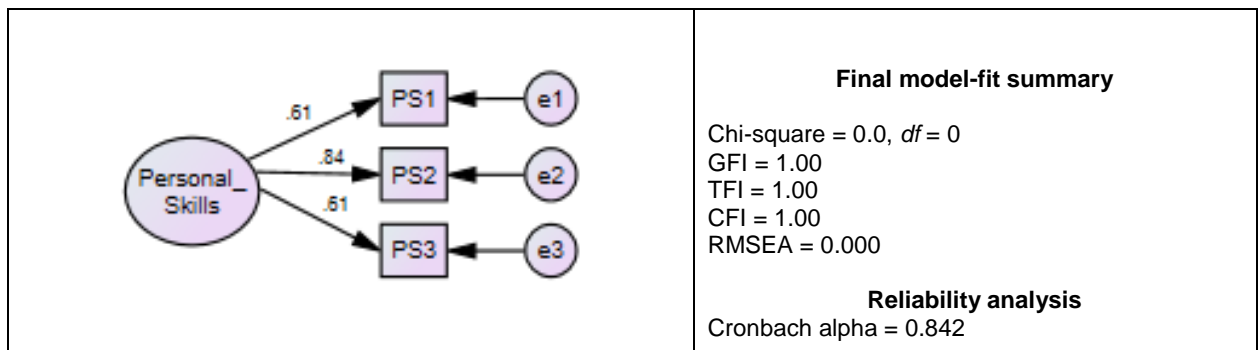


Figure 6-19: CFA personality skills

The initial factor loading produced a poorly fitting model with chi-square = 150.6, $df = 20$, GFI = 0.872, CFI = 0.719 and RMSEA = 0.167. Accordingly, the factors PT4 (drive), PT5 (time management), PT6 (assertiveness), PT7 (managing stress) and PT8 (resilience), which had low factor loadings of 0.40, were removed from the model. Model modification resulted in the global fit indices of chi-square = 0.00, $df = 0.00$, GFI = 1.00, CFI = 1.00 and RMSEA of 0.000. The reliability analysis was run on the remaining factors and results showed a Cronbach alpha of 0.842. So the remaining three factors that represented personality skills are: hard work, applying intuition in decision-making and self-motivation. The reason for few factor loadings on the personal skills construct is that some factors were behaviours or traits rather than skills. This aspect is discussed in detail in the next chapter.

6.4.2 Second-level CFA – skills clusters

To make the analysis much simpler, some categories of skills were clustered together. CFA was run to determine if the clusters were significant. The main clusters of skills compared across the phases are: start-up skills, personal and leadership skills, core business skills and technical skills. The start-up and technical skills were not part of any cluster, thus remained as stand-alones.

a) Core business skills cluster

Depicted below is business management, human resource management, marketing and financial management skills which were grouped to form a cluster of core business skills.

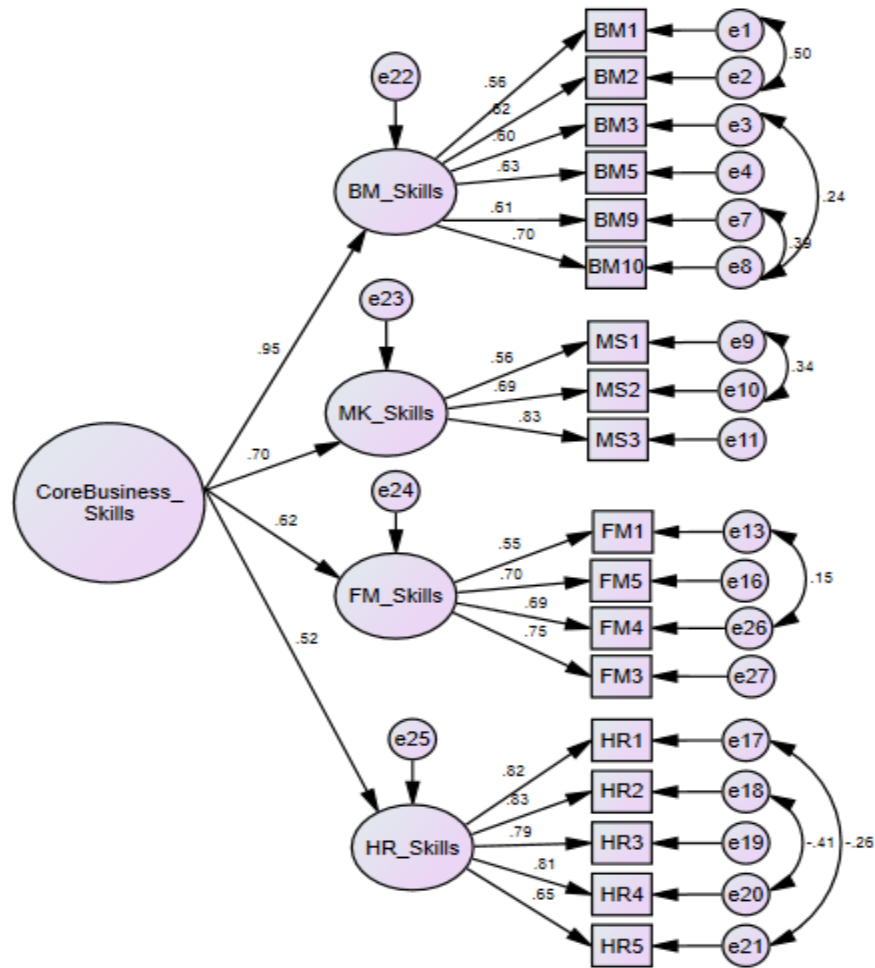


Figure 6-20: CFA core business skills cluster

The first computation of the model showed that data on the four skills categories did not fit the model. Initial results had a chi-square = 413.0, $df = 178$, GFI = 0.852, CFI = 0.892 and RMSEA = 0.075. To get a good fit, factors which had cross-loadings were removed (BM5: negotiation, BM6: decision-making and MS3: positioning the business) to ensure discriminant validity. After model trimming, global model-fit indices improved to chi-square = 221.9, $df = 124$, GFI = 0.905, CFI = 0.945, TLI = 0.932 and RMSEA = 0.058. The reliability analysis was run on the measurement items and results showed a Cronbach alpha of 0.874 for the 18 items in the core business skills cluster. Therefore the core business skills cluster consists of financial management, human resource management, marketing and business management skills.

b) Personal and leadership skills cluster

The social and interpersonal, personality and leadership skills were combined to form a cluster of personal and leadership skills. The CFA model is depicted below:

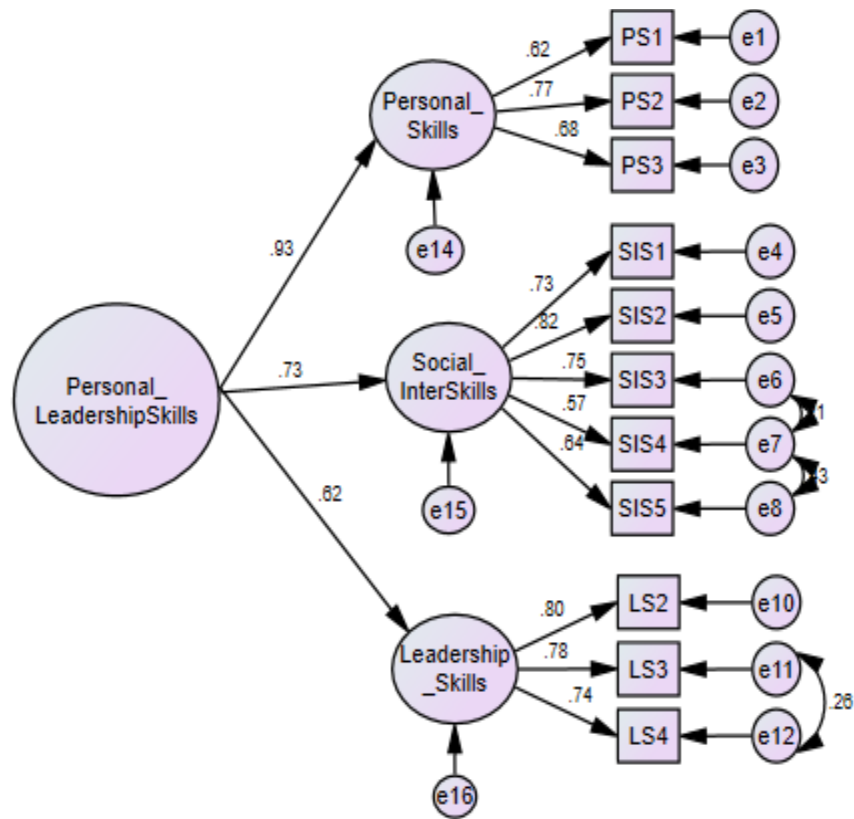


Figure 6-21: CFA personal and leadership skills

The first model computed with the three categories (social and interpersonal, personality and leadership) of skills almost met the good-fit criteria with chi-square = 180.7, $df = 57$, CFI = 0.910, RMSEA = 0.096, except for GFI = 0.897. The modification indices showed that L1 (crafting a vision) and LS6 (leading responsibly) had poor loadings, and they were removed from the analysis. Model trimming improved the global-fit indicators to chi-square = 56.3, $df = 38$, GFI = 0.958, CFI = 0.983, TLI = 0.975 and RMSEA of 0.045. The reliability tests of the personality and leadership skills cluster had a Cronbach alpha of 0.860. Therefore, based on these results, social and interpersonal, personality and leadership skills form a cluster of personality and leadership skills.

6.4.3 Summary of research question 1

The table shows the summary of skill codes, categories and clusters derived from CFA.

Table 6-36: Summary of research question 1

Skills clusters	Skills categories and codes
Start-up skills	Start-up (SS): SS1 (growth planning), SS2 (environmental scanning), SS3 (innovation), SS4 (calculated risk-taking) and SS5 (opportunity recognition)
Core business skills	Business management (BM): BM1 (planning), BM2 (problem-solving), BM3 (business modelling), BM5 (legal skill), BM6 (decision-making), BM7 (delegation), BM9 (business development) and BM10 (strategic competence)
	Marketing (MS): MS1 (market research), MS2 (benchmarking competition), MS3 (business positioning) and MS4 (selling)
	Financial management (FM): FM1 (pricing products), FM3 (cash-flow management), FM4 (calculating costs) and FM5 (reading financial statements)
	Human resource management (HR): HR1 (recruitment), HR2 (employee skills assessment), HR3 (defining job specifications), HR4 (performance management) and HR5 (paying salaries)
Technical skills	Technical (TS): TS1 (industry-specific skills), TS2 (product development), TS3 (managing operations) and TS4 (quality audit)
Personal and leadership skills	Leadership (LS): LS1 (crafting vision), LS2 (inspiring employees), LS3 (sharing the vision), LS4 (cultivating excellent performance) and LS6 (leading responsibly)
	Social and interpersonal (SIS): SIS1 (people skills), SIS2 (communication), SIS3 (listening), SIS4 (building relationships) and SIS5 (cultural sensitivity)
	Personal (PS): PS1 (hard work), PS2 (intuition in decision-making), and PS3 (self-motivation)

This research question investigated the skills applied by entrepreneurs in different phases, although the comparison is provided in research question 2. Results showed the measurement items that loaded on the latent variables. Categories of skills were grouped into clusters, and confirmed through CFA. Therefore, the main skills clusters include entrepreneurial skills, core business skills (business management, financial management, marketing and human resource management), technical, and personal and leadership skills (personal, social and interpersonal, and leadership). The subsequent research questions compared skills across the different entrepreneurship phases.

6.5 RESEARCH QUESTION 2 AND HYPOTHESIS 1

The second research question is about how skills vary in significance as the entrepreneurship phases unfold. The summarised hypotheses are that skills (H1a: start-up, H1b: business management, H1c: financial management, H1d: marketing, H1e: human resource management, H1f: technical and H1g: leadership) are used unequally in the different entrepreneurship phases, while some skills (H1h: social and interpersonal, and H1i: personal) are applied equally in the different entrepreneurship phases. Kruskal-Wallis and Mann-Whitney tests were used to compare skills across the different entrepreneurship phases.

6.5.1 Kruskal-Wallis and Mann-Whitney tests

The requirement to compare the difference in applying skills was to first summate the factor items for each of the nine constructs of skills (start-up, business management, financial management, marketing, human resource management, technical, personal, social and interpersonal, and leadership) into new scale variables. The added advantage for conducting Kruskal-Wallis and Mann-Whitney tests was to enable comparison of individual skill categories across the different phases. The table below shows the descriptive statistics of summated scores of the categories of skills.

Table 6-37: Descriptive statistics for summated scale

Categories of skills	N	Minimum	Maximum	Mean	Std deviation
Start-up skills	220	1.00	5.00	3.6773	.69757
Business management skills	220	2.00	5.00	3.9922	.63561
Marketing skills	220	1.29	5.00	3.3773	.67468
Financial management skills	220	1.43	4.86	3.2844	.64670
Human resources skills	220	1.00	5.00	2.5955	.86390
Technical skills	220	1.33	5.00	3.7220	.81687
Leadership skills	220	2.00	5.00	3.9523	.71238
Social and interpersonal skills	220	2.00	5.00	4.1638	.64437
Personal traits	220	2.50	5.00	4.1667	.53800

After summing the factors into new variables, the Kolmogorov-Smirnov test was conducted to assess distribution of the variables. A Kolmogorov-Smirnov p -value greater than 0.05 implies that the variable is normally distributed while a p -value less than 0.05 indicates non-normally distributed data (Cunningham & Aldrich, 2011). Results showed that all categories of skills had a

$p < 0.05$, indicating that the data is non-normally distributed (see appendix I). Non-parametric tests were deemed suitable to conduct further data analysis. Kruskal-Wallis presented in table 6-38 is a non-parametric test used to compare skill categories across the different entrepreneurship phases.

Table 6-38: Kruskal-Wallis for skills across entrepreneurship phases

Skills	Entrepreneurship phase	N	Mean rank	Chi-square	Df	Asymp
Entrepreneurial	Nascent	56	111.05	1.576	2	.455
	New business	54	127.06			
	Established	125	117.20			
	Total	235				
Business management	Nascent	56	105.20	3.391	2	.184
	New business	54	115.23			
	Established	125	124.93			
	Total	235				
Marketing	Nascent	56	129.28	4.773	2	.092
	New business	54	127.12			
	Established	125	109.01			
	Total	235				
Financial management	Nascent	56	93.49	134	2	0.00
	New business	54	99.64			
	Established	125	136.91			
	Total	235				
Human resource management	Nascent	56	127.50	7.218	2	.027
	New business	54	133.52			
	Established	125	107.04			
	Total	235				
Technical	Nascent	56	125.54	5.527	2	.063
	New business	54	132.12			
	Established	125	108.52			
	Total	235				
Personal	Nascent	56	124.48	.690	2	.708
	New business	54	116.10			
	Established	125	115.92			
	Total	235				
Leadership	Nascent	56	124.13	.998	2	.607
	New business	54	120.93			
	Established	125	113.99			
	Total	235				
Social and interpersonal	Nascent	56	123.09	3.610	2	.165
	New business	54	130.10			
	Established	125	110.49			
	Total	235				

Table 6-38 shows there is no statistically significant difference in the application of start-up skills in the different entrepreneurship phases. Although there seems to be no significant difference in the application of skills ($p = 0.455$), an observation at the mean showed that the application of entrepreneurial skills increases from the nascent phase to the new-business phase but decreases in the established phase ($\bar{X}(\text{nascent} = 111) < \bar{X}(\text{new business} = 127) > \bar{X}(\text{established} = 117)$). This is

contrary to the proposed hypothesis that entrepreneurial skills are unequal across the phases, with nascent phase applying most skills compared to the new-business and established phases.

The Kruskal-Wallis findings showed there is no statistical difference in the application of personal skills ($p = 0.708$), leadership skills ($p = 0.607$), and social and interpersonal ($p = 1.65$) across the different entrepreneurship phases. Although there is no statistically significant difference, results show that nascent business has the highest mean of personality skills compared to new-business and established phases ($\bar{X}(\text{nascent} = 124) > \bar{X}(\text{new business} = 116) > \bar{X}(\text{established} = 115)$). The nascent phase also has the highest mean of leadership skills ($\bar{X}(\text{nascent} = 124) > \bar{X}(\text{new business} = 120) > \bar{X}(\text{established} = 113)$) while the new-business phase has the highest mean of social and interpersonal skills ($\bar{X}(\text{nascent} = 123) < \bar{X}(\text{new business} = 130) > \bar{X}(\text{established} = 110)$). In sum, the nascent phase has better personal and leadership skills while the new-business phase has better social and interpersonal skills than the established phase.

Technical skills findings showed that there is no significant ($p = 0.063$) difference in the application of technical skills across the phases. Kruskal-Wallis results showed that the new-business phase has a higher mean rank than the nascent and established phase ($\bar{X}(\text{nascent} = 125) < \bar{X}(\text{new business} = 132) > \bar{X}(\text{established} = 108)$). Results indicate that technical skills are significant from the onset of the entrepreneurial process to the end. However, at the end or in the established phase, they are unnoticeable as entrepreneurs acquire other significant skills. Since results seem inconclusive, comparing the two phases through the Mann-Whitney U test will provide the conclusion on the utility of technical skills across the different phases.

It was hypothesised that business management skills and marketing skills are applied unequally but results ($p = 0.184$ and $p = 0.096$) showed that there is no significant difference in the application of business management and marketing skills across the phases. Despite the lack of a significant difference, an interesting observation is that the application of business management skills increases as the entrepreneurship phases unfold ($\bar{X}(\text{nascent} = 105) < \bar{X}(\text{new business} = 115) < \bar{X}(\text{established} = 124)$). The application of marketing skills is significant in the nascent phase, but as the entrepreneurship phase unfolds into the new-business and established stages, application of the skills decreases ($\bar{X}(\text{nascent} = 129) > \bar{X}(\text{new business} = 127) > \bar{X}(\text{established} = 109)$).

The results also showed that financial management skills ($p = 0.00$) and human resource management skills ($p = 0.027$) are applied unequally in the different entrepreneurship phases (nascent phase \neq new business phase \neq established phase). To assess which phase applied

financial and human resource management skills differently; the Mann-Whitney U test was run to compare the difference between the nascent and new-business phases, new-business and established phases, and nascent and established phases. Results are shown in table 6-39:

Table 6-39: Mann-Whitney U for financial and business management skills

Skill categories	Entrepreneurship phase	N	Mean rank	Sum of ranks	Chi-square		
Financial management	Nascent	56	53.04	2 970.00	0.407		
	New business	54	58.06	3 135.00			
	Total	110					
	Financial management	New business	54	69.08	3 730.50	0.00	
		Established	125	99.04	12 379.50		
		Total	179				
		Financial management	Nascent	56	68.96	3 861.50	0.00
			Established	125	100.88	12 609.50	
			Total	181			
Human resource management	Nascent	56	54.28	3 039.50	0.679		
	New business	54	56.77	3 065.50			
	Total	110					
	Human resource management	New business	54	104.25	5 629.50	0.015	
		Established	125	83.84	10 480.50		
		Total	179				
	Human resource management	Nascent	56	101.72	5 696.50	0.064	
		Established	125	86.20	10 774.50		
		Total	181				

Financial management: The Mann-Whitney U test to compare nascent and new-business phases indicated there are no significant differences in the application of financial skills between the two phases ($p = 0.950$). The results revealed a significant difference between new-business and established phases since the p -value is less than 0.05. The mean rank for respondents in the new-business category is lower than in the established category ($\bar{X}(\text{new business} = 69) < \bar{X}(\text{established} = 99)$). Results also showed that application of financial skills in the nascent phase is different from the established phase ($p = 0.0$) with a mean rank lower than the established phase. In sum, the established phase applies financial skills most compared to new business and nascent business ($\bar{X}(\text{nascent} = 68) < \bar{X}(\text{new business} = 69) < \bar{X}(\text{established} = 100)$). Therefore these results are consistent with CFA findings.

Human resource management skills: The comparison of nascent and new-business phases using Mann-Whitney U indicated no significant difference in applying human resource management skills between the two phases ($p = 0.679$). The results revealed that a significant difference between new-business and established phases with a $p = 0.015$, which is less than 0.05 ($\bar{X}(\text{new business} = 104) > \bar{X}(\text{established} = 83)$). There was no significant difference in the application of human resource management skills between the nascent and established phases ($p = 0.064$). The mean rank of application of human resource management skills of entrepreneurs

in the new-business phase is highest compared to those in the nascent and established phase ($\bar{X}(\text{nascent} = 54) < \bar{X}(\text{new business} = 104) > \bar{X}(\text{established} = 83)$). This means that entrepreneurs in the new-business phase apply human resource management skills to a greater extent than entrepreneurs in the established and nascent phase.

Combined phases (nascent + new business phase = start-up)

Due to a limited sample size in the nascent and new-business phases, these phases were merged to form the start-up phase. Therefore the Mann-Whitney U test in table 6-40 compares the application of skills between the start-up and established phase.

Table 6-40: Mann-Whitney U for start-up and established phases

Skills	Entrepreneurship phase	N	Mean rank	Sum of ranks	Asymp sig
Entrepreneurial	Start-up	110	118.91	13 080.00	0.847
	Established	125	117.20	14 650.00	
	Total	235			
Business management	Start-up	110	110.12	12 113.50	0.095
	Established	125	124.93	15 616.50	
	Total	235			
Marketing	Start-up	110	128.22	14 104.00	0.029
	Established	125	109.01	13 626.00	
	Total	235			
Financial management	Start-up	110	96.51	10 616.00	0.000
	Established	125	136.91	17 114.00	
	Total	235			
Human resource management	Start-up	110	130.45	14 350.00	0.008
	Established	125	107.04	13 380.00	
	Total	235			
Technical	Start-up	110	128.77	14 165.00	0.022
	Established	125	108.52	13 565.00	
	Total	235			
Personal	Start-up	110	120.37	13 240.50	0.611
	Established	125	115.92	14 489.50	
	Total	235			
Leadership	Start-up	110	122.55	13 481.00	0.333
	Established	125	113.99	14 249.00	
	Total	235			
Social and interpersonal	Start-up	110	126.53	13 918.50	0.069
	Established	125	110.49	13 811.50	
	Total	235			

The results revealed that financial skills with a $p = 0.00$ were applied more in the established phase than in start-up phase ($\bar{X}(startup = 96) < \bar{X}(established = 136)$). At $p = 0.008$, human resource management was applied more in the start-up than established phase ($\bar{X}(startup = 130) > \bar{X}(established = 107)$). An interesting observation is that comparison of the two phases showed that technical skills are different between the phases, with start-up having a higher mean rank than established phase ($p = 0.022$; $\bar{X}(nascent = 128) > \bar{X}(established = 107)$).

Another point of note is that marketing skills are applied differently across the different phases, with start-up applying more skills than established phase ($p = 0.029$; $\bar{X}(nascent = 128) > \bar{X}(established = 109)$). The Mann-Whitney test output of the remaining skills categories had a $p < 0.05$, indicating no significant difference in the application of skills across the different entrepreneurship phases. These results are consistent with the Kruskal-Wallis test, except for marketing and technical skills which were found to be different across start-up and established entrepreneurship phases.

6.5.2 Summary of research question 2 and hypothesis 1

The table below shows the summary of the hypothesis.

Table 6-41: Summary of hypothesis 1

Hypothesis	Outcome	Explanation
H1a: Start-up skills are applied unequally in the different entrepreneurship phases. <i>Entrepreneurs in the nascent phase apply more start-up skills than entrepreneurs in the new-business and established business [nascent phase (P1) > new-business phase (P2) > established phase (P3)]</i>	Not supported	There was no significant difference. However they increase from nascent to new-business but decrease in the established phase
H1b: Business management skills are applied unequally in the different entrepreneurship phases. <i>Entrepreneurs in the established phase apply more business management skills than entrepreneurs in the nascent and new-business phases [established phase (P3) > new business phase (P2) > nascent phase (P1)]</i>	Partially supported	The p -value was insignificant but the mean comparison showed that established > new business > nascent
H1c: Financial management skills are applied unequally in the different entrepreneurship phases. <i>Entrepreneurs in the established phase apply more financial management skills than those in the new-business and nascent phases [established phase (P3) > new business phase (P2) > nascent phase (P1)]</i>	Supported	The financial management skills were applied differently across the three phases.
H1d: Marketing management skills are applied unequally in the different entrepreneurial phases. <i>Entrepreneurs in the new-business phase apply more marketing skills than entrepreneurs in the nascent and established phases [nascent phase (P1) < new business phase (P2) > established business phase (P3)]</i>	Supported	The comparisons showed that the start-up phase (nascent and new-business) applies more skills than the established phase
H1e: Human resource management skills are applied unequally in the different entrepreneurship phases. <i>Entrepreneurs in the nascent phase apply fewer human resource skills compared to entrepreneurs in the new-business and established-business phases [nascent phase (P1) < new business (P2) < established phase (P3)]</i>	Supported	New-business entrepreneurs apply human resource management skills most compared to nascent and established entrepreneurs
H1f: Technical skills are applied unequally in the different entrepreneurship phases. <i>Entrepreneurs in the nascent and new-business phases apply more technical skills compared to entrepreneurs in the established-business phase [nascent phase(P1) < new business (P2)> established phase (P3)]</i>	Supported	Comparing the three groups showed there is no difference, but comparison of nascent and established showed there is a difference
H1g: Leadership skills are applied equally in the different entrepreneurship phases. <i>Entrepreneurs in the nascent phase apply fewer leadership skills compared to entrepreneurs in the new-business and established-business phases [nascent phase (P1) < new business (P2) < established phase (P3)]</i>	Not supported	The results showed leadership skills are applied equally, with the nascent phase having the highest mean compared to new-business and established phases
H1h: Social and interpersonal skills are applied equally in the different entrepreneurship phases. <i>Entrepreneurs in the nascent business, new-business and established phases have similar social and interpersonal skills</i>	Supported	Although there is no difference, the mean of the new-business phase was highest when compared to

Hypothesis	Outcome	Explanation
<i>[nascent phase (P1) = new business phase (P2) = established business phase (P3)]</i>		nascent and established phases
H1i: Personal skills are applied equally in the different entrepreneurship phases. <i>Entrepreneurs in the nascent business, new-business and established phases have similar personality skills [nascent phase (P1) = new business phase (P2) = established business phase (P3)]</i>	Supported	Results showed personal skills are applied equally across the phases, but the nascent phase has the highest mean compared to the new-business and established business phases

In sum, results showed that technical, start-up, marketing, and personal and leadership skills are significant in the nascent phase. Social and interpersonal, technical, start-up and human resource management skills are most visible in the new-business phase. Although start-up and technical skills are applied in the nascent phase, they are applied minimally, while in the new-business phase they are more prominent (with the highest mean) than in the nascent and established phases. Financial management and business management skills are emphasised in the established phase. The application of business management skills increases as the entrepreneurship phases unfold from nascent, through to new-business and established-business phases.

6.6 RESEARCH QUESTION 3 AND HYPOTHESIS 2

It was established in the qualitative study that entrepreneurs learn skills from various sources. So the related hypothesis is that the application of skills learned from human capital investments (H2a: formal education, H2b: work experience, H2c: entrepreneurship education and H2d: previous experience) is unequal in the different entrepreneurship phases.

Entrepreneurs indicated that they apply self-taught skills learned from failure and reading books, therefore the suggested hypothesis is that skills learnt from H2e: failure and mistakes, and H2f: reading books are applied unequally in the different entrepreneurship phases. Since it was also discovered that entrepreneurs learn skills from actors in their social networks, the hypothesis that was tested is that skills learned from social actors (H2g: mentors and coaches, and H2h: family and friends) are applied unequally in the different phases. These hypotheses are presented in full in the summary of research question 3 and hypothesis 2.

The Kolmogorov-Smirnov test for normality was performed on the human capital investment variables to determine distribution of the data. The output of the results had a $p = 0.000$ which indicated that the variables were not normally distributed, therefore analysis of the data required non-parametric tests. The Kruskal-Wallis (a non-parametric test) was performed to determine the difference in applying skills acquired from human capital investments across the three entrepreneurship phases (nascent, new-business and established). The results of the Kruskal-Wallis are presented in table 6-42.

Table 6-42: Kruskal-Wallis for human capital investments

Human capital and social actors	Entrepreneurship phase	N	Mean Rank	Chi-square	(df)	Asymp sig
Formal education	Nascent	56	136.57	10.759	2	.005
	New business	54	128.76			
	Established	125	105.03			
	Total	235				
Work experience	Nascent	56	114.28	3.195	2	0.202
	New business	54	107.13			
	Established	125	124.36			
	Total	235				
Entrepreneurship education	Nascent	56	102.73	25.854	2	.000
	New business	54	88.46			
	Established	125	137.60			
	Total	235				
Previous business ownership	Nascent	56	97.03	12.337	2	0.002
	New business	54	108.14			
	Established	125	131.66			
	Total	235				
Self-taught (failure & mistakes)	Nascent	56	146.33	85.757	2	.000
	New business	54	172.42			
	Established	125	81.80			
	Total	235				
Self-taught (reading books)	Nascent	56	138.54	29.516	2	.000
	New business	54	146.53			
	Established	125	96.48			
	Total	235				

The results of the Kruskal-Wallis show that skills learned from work experience ($p = 0.202$) are applied equally across the entrepreneurship phases, while skills learned from formal education, entrepreneurship education, previous entrepreneurship experience, entrepreneurship education, self-taught through failure and reading books ($p = 0.005$, $p = 0.00$, $p = 0.002$, $p = 0.000$, $p = 0.000$, $p = 0.000$ and $p = 0.000$ respectively) are applied unequally across the different entrepreneurship phases. The Mann-Whitney U test was run to determine the difference between the phases. Table 6-43 shows Mann-Whitney U test results of human capital investments compared across the entrepreneurship phases.

Table 6-43: Mann-Whitney U for human capital investments

Human capital investments	Entrepreneurship phase	N	Mean rank	Sum of ranks	Chi-square
Formal education	Nascent	56	57.41	3215.00	0.51
	New business	54	53.52	2890.00	
	Total	110			
	New business	54	102.74	5548.00	0.026
	Established	125	84.50	10562.00	
	Total	179			
Nascent	56	107.66	6029.00	0.03	
Established	125	83.54	10442.00		
Total	181				
Entrepreneurship education	Nascent	56	57.08	3196.50	0.568
	New business	54	53.86	2908.50	
	Total	110			
	New business	54	63.94	3453.00	0.00
	Established	125	101.26	12657.00	
	Total	179			
Nascent	56	72.38	4053.00	0.01	
Established	125	99.34	12418.00		
Total	181				
Previous entrepreneurship experience	Nascent	56	53.46	2993.50	0.483
	New business	54	57.62	3111.50	
	Total	110			
	New business	54	78.02	4213.00	0.034
	Established	125	95.18	11897.00	
	Total	179			
Nascent	56	72.07	4036.00	0.01	
Established	125	99.48	12435.00		
Total	181				
Self-taught (failure & mistakes)	Nascent	56	48.99	2743.50	0.014
	New business	54	62.25	3361.50	
	Total	110			
	New business	54	137.67	7434.00	0.00
	Established	125	69.41	8676.00	
	Total	179			
Nascent	56	125.84	7047.00	0.00	
Established	125	75.39	9424.00		
Total	181				
Self-taught (reading books)	Nascent	56	53.44	2992.50	0.464
	New business	54	57.64	3112.50	
	Total	110			
	New business	54	116.39	6285.00	0.00
	Established	125	78.60	9825.00	
	Total	179			
Nascent	56	113.60	6361.50	0.00	
Established	125	80.88	10109.50		
Total	181				

Formal education: Results showed no difference in the application of skills learned from formal education across the nascent and new-business phases ($p = 0.51$). The difference in application is noted between the new-business phase and established phase, with new-business having a higher mean ($p = 0.026$; $\bar{X}(\text{new business} = 102) > \bar{X}(\text{established} = 84)$). The application of skills learned from formal education is different between the nascent phase and established phase,

where the nascent phase has a higher rank mean ($p = 0.03$; $\bar{X}(\text{nascent} = 107) > \bar{X}(\text{established} = 83)$). This suggests formal education is a more significant source of skills in the nascent and new-business phase rather than the established phase.

Entrepreneurship education: There was no difference in the application of skills learned from entrepreneurship education across the nascent and new-business phases ($p = 0.568$). The difference in application is seen between the new-business phase and established phase, with the latter having a higher mean ($p = 0.000$; $\bar{X}(\text{established} = 101) > \bar{X}(\text{new business} = 64)$). When the established phase was compared with the nascent phase, results showed the application of skills learned from entrepreneurship education is higher in the established phase ($p = 0.001$; $\bar{X}(\text{nascent} = 72) > \bar{X}(\text{established} = 99)$). Therefore skills learned from entrepreneurship education are applied to a greater extent by entrepreneurs in the established phase than those in the nascent and new-business phase.

Prior entrepreneurship experience: The application of skills learned from previous entrepreneurship experience in the nascent and new-business phases was not statistically different ($p = 0.483$). There is a statistically significant difference in the application of skills learned from previous entrepreneurship education between the nascent and established phases ($p = 0.034$). The established phase has a higher mean than the new business phase ($\bar{X}(\text{new business} = 78) < \bar{X}(\text{established} = 95)$). The findings also showed a difference between the application of skills learned from previous education in the new-business and established phases with the nascent having a lower mean ($p = 0.001$; $\bar{X}(\text{nascent} = 72) < \bar{X}(\text{established} = 99)$). Therefore it can be said that entrepreneurs in the established phase rely more on skills learned from previous business experience than entrepreneurs in the nascent and new-business phase.

Self-taught (failures and mistakes): Entrepreneurs were asked about how they apply skills learned from failure. Results showed that the application of skills learned from failure is different across all entrepreneurship phases (all p -values are greater than 0.005). The results showed that the new businesses have a higher rank mean than established businesses, meaning that entrepreneurs in the new-business phase apply skills learned from failure to a greater extent ($p = 0.00$; $\bar{X}(\text{established} = 69) < \bar{X}(\text{new business} = 137)$). The nascent phase has a higher mean than the established phase ($p = 0.014$; $\bar{X}(\text{nascent} = 125) > \bar{X}(\text{established} = 75)$). Comparison of the nascent phase and new-business phase showed that entrepreneurs in the new-business phase apply more skills learned from failure and mistakes than those in the nascent phase ($p = 0.014$; $\bar{X}(\text{new business} = 62) > \bar{X}(\text{nascent} = 48)$). This suggests entrepreneurs in the nascent and

new-business phase apply skills learned from failures and mistakes more often than established entrepreneurs.

Self-taught (reading books): With the application of skills learned from reading books, results showed a difference between the new-business and established phases ($p = 0.00$). The new-business phase has a higher mean than the established phase ($\bar{X}(\text{new business} = 116) > \bar{X}(\text{established} = 78)$). In addition, entrepreneurs in the nascent phase apply more skills acquired from reading books than entrepreneurs in the established phase ($p = 0.000$; $\bar{X}(\text{nascent} = 113) > \bar{X}(\text{established} = 80)$). Results suggest that nascent and new-business entrepreneurs apply skills learned from reading entrepreneurial books and reading about other entrepreneurs.

Skills learned from social actors

It was discovered in the qualitative interviews that some of the skills entrepreneurs applied in their businesses were learned from social actors in the form of family, friends, mentors and coaches. The table below shows Kruskal-Wallis test results which compared the application of skills acquired from social actors across the three entrepreneurship phases.

Table 6-44: Kruskal-Wallis for social actors

Social actors as source of skills	Entrepreneurship phase	N	Mean rank	Chi-square	(df)	Asymp sig
Family and friends	Nascent	56	90.05	25.361	2	0.000
	New business	54	101.76			
	Established	125	137.54			
	Total	235				
Mentors and coaches	Nascent	56	87.89	68.767	2	0.000
	New business	54	74.26			
	Established	125	150.38			
	Total	235				

Results showed that the application of skills learned from social actors is different across the entrepreneurship phases ($p = 0.00$). Thus, skills learned from family and friends are applied most by entrepreneurs in the established phase, followed by those in the new-business and nascent phases ($\bar{X}(\text{nascent} = 90) < \bar{X}(\text{new business} = 101) < \bar{X}(\text{established} = 137)$). Regarding mentors and coaches, entrepreneurs in the established phase apply skills acquired from mentors and coaches to a greater extent than entrepreneurs in the nascent and new-business phase ($\bar{X}(\text{nascent} = 87) > \bar{X}(\text{new business} = 74) < \bar{X}(\text{established} = 150)$). A Mann-Whitney test was run to determine the difference across the groups (table 6-45).

Table 6-45: Mann-Whitney U for social actors

Social actors as source of skills	Entrepreneurship phase	N	Mean rank	Sum of ranks	Chi-square	
Family and friends	Nascent	56	52.77	2955.00	0.330	
	New business	54	58.33	3150.00		
	Total	110				
	New business	54	70.93	3830.00	0.001	
	Established	125	98.24	12280.00		
	Total	179				
Family and friends	Nascent	56	65.79	3684.00	0.000	
	Established	125	102.30	12787.00		
	Total	181				
Mentorship and coaching	Nascent (less than 1.5 years)	56	58.61	3282.00	0.278	
	New business (1.5-3.5 years)	54	52.28	2823.00		
	Total	110				
	New business (1.5-3.5 years)	54	49.48	2672.00	0.00	
	Established (above 3.5 years)	125	107.50	13438.00		
	Total	179				
	Mentorship and coaching	Nascent (less than 1.5 years)	56	57.79	3236.00	0.00
		Established (above 3.5 years)	125	105.88	13235.00	
Total		181				

Family and friends: Entrepreneurs were asked if they apply skills learned from family members and friends. The comparison of the nascent and new-business phases did not show any statistically significant difference ($p = 0.330$). Results showed that the difference in applying skills learned from family and friend is between the new-business and established phase, with the established phase having a higher mean ($p = 0.001$; $\bar{X}(\text{new business} = 70) < \bar{X}(\text{established} = 98)$). Further analysis showed that entrepreneurs in the established phase apply more skills acquired from family and friends than those in the nascent phase ($p = 0.000$; $\bar{X}(\text{nascent} = 65) < \bar{X}(\text{established} = 102)$). Therefore, it can be said that entrepreneurs in the established phase apply skills learned from family and friends to a greater extent than entrepreneurs in the nascent and new-business phase.

Mentorship and coaching: The table above showed no statistically significant difference in the application of skills learned from mentors and coaches between the nascent and new-business phase ($p = 0.278$). Entrepreneurs in the established phases apply skills acquired from mentors and coaches more than entrepreneurs in the new business phase ($p = 0.000$; $\bar{X}(\text{nascent} = 49) < \bar{X}(\text{established} = 107)$). When compared with the nascent phase, established entrepreneurs have a higher rank mean ($p = 0.000$; $\bar{X}(\text{nascent} = 57) < \bar{X}(\text{established} = 105)$) which means they apply skills learned from mentors and coaches more than entrepreneurs in the nascent phase. Therefore, established entrepreneurs apply skills acquired from mentors and coaches more than entrepreneurs in the nascent and new-business phase.

6.6.1 Summary of research question 3 and hypothesis 2

The summary of the hypothesis that the application of skills acquired from human capital investments is unequal in the different entrepreneurship phases is presented below:

Table 6-46: Summary of hypothesis 2

Hypothesis	Outcome	Revised hypothesis
H2a: Entrepreneurs in the nascent phases apply skills acquired from formal education most compared to entrepreneurs in the new-business and established business phases	Supported	
H2b: Entrepreneurs in the nascent phases apply skills acquired from work experience most compared to entrepreneurs in the new-business and established phases	Not supported	There is no significant difference in the application of skills from work experience across the entrepreneurship phases
H2c: Entrepreneurs in the established-business phases apply skills acquired from entrepreneurship education most compared to entrepreneurs in the new-business and nascent phases	Supported	
H2d: Entrepreneurs in the nascent phase apply skills acquired from previous business experience most compared to entrepreneurs in the new-business and established business phases	Not supported	Established entrepreneurs apply skills from previous experience more than entrepreneurs in the nascent and new-business phase
H2e: Entrepreneurs in established businesses apply skills they learned from failure most compared to entrepreneurs in the nascent and new-business phase	Not supported	Entrepreneurs in all phases learn skills from failure, however those in the nascent and new-business phase apply the skills more than established entrepreneurs
H2f: Entrepreneurs in nascent and new-business phases apply skills learned from reading entrepreneurial books more than entrepreneurs in the established phase	Supported	
H2g: Entrepreneurs in established businesses apply skills acquired from coaches and mentors most compared to nascent and new-business entrepreneurs	Supported	
H2h: Entrepreneurs in the nascent phase apply skills acquired from family and friends to a greater extent than entrepreneurs in the new-business and established phases	Not supported	Established entrepreneurs apply skills from family and friends more than entrepreneurs in the nascent and new-business phase

6.7 RESEARCH QUESTION 4 AND HYPOTHESIS 3

Research question 4 asked “what is the relationship between the human capital investments, skills and entrepreneurship phases?” The related hypothesis was: there is a relationship between human capital investments, skills and entrepreneurship phases. To understand the relationship between human capital investments, skills and entrepreneurship phases, a regression analysis was conducted. The summated score of skills was treated as a scale-dependent variable predicted by human capital investments. The human capital investments variables used are questions asked in the demographic information about level of formal education, years of work experience, exposure to entrepreneurship education and previous entrepreneurship experience.

The comparison was between the different phases, so the entrepreneurship phase was introduced as an interaction or moderator variable. Since the dependent variable was a scale item and independent variables were more than two, either ordinal or nominal, a hierarchical multiple regression was considered a suitable statistical analysis to determine the relationship (Hair et al., 2010). The multiple regression was run in a series of steps, first with predictors and secondly by including the interaction variable. A one-sample Kolmogorov-Smirnov test displayed in table 6-47 was performed to determine the distribution of skills.

Table 6-47: One-sample Kolmogorov-Smirnov test

Ranks		Skills
N		235
Normal parameters ^{a,b}	Mean	3.7459
	Std deviation	0.52552
Most extreme differences	Absolute	0.055
	Positive	0.035
	Negative	-0.055
Test statistic		0.055
Asymp sig (2-tailed)		0.085 ^c
a) Test distribution is normal b) Calculated from data c) Lilliefors significance correction		

The p -value of the one-sample Kolmogorov-Smirnov test (0.085) was greater than 0.05. This means overall skills follow a normal distribution and thus parametric tests were conducted, specifically a hierarchical multiple regression, to determine the moderating effect of entrepreneurship phases on the relationship between human capital investments and skills. This suggests that the effects of human capital investments as sources of skills can be higher in one phase than the other. For example the effect of entrepreneurship education on skills can be higher for the established phase than the nascent phase.

a) Formal education, skills and entrepreneurship phases

Hierarchical regression analysis was run with formal education as an independent variable, skills as the dependent variable and entrepreneurship phase as a moderating variable. Age and gender were introduced as control variables. Since gender was measured on a nominal scale, it was dummy coded as male = 1 and female = 0. Running a regression analysis also tests the assumptions of regression analysis. So the normal probability plot (normal p-p plot) showed a linear relationship between dependent and independent variables, which is a requirement of regression analysis (see appendix J). The collinearity statistics showed that the values for tolerance are around 0.999 and variance inflation factor (VIF) about 1.00, which proved the absence of multicollinearity. Multivariate outliers which had Mahalanobis D^2 with probability less than 0.001 were excluded from the analysis. After excluding outliers, regression analysis was run and table 6-48 shows the model summary.

Table 6-48: Formal education model summary^d

Model	R	R square	Adjusted R square	Std error of the estimate	Change statistics					Durbin-Watson
					R square change	F change	df1	df2	Sig F change	
1	.060 ^a	.004	-.005	.52874	.004	.418	2	230	.659	
2	.065 ^b	.004	-.013	.53090	.001	.065	2	228	.937	
3	.078 ^c	.006	-.016	.53155	.002	.442	1	227	.507	1.758
a Predictors: (constant) gender, age										
b Predictors: (constant) gender, age, formal education, entrepreneurship phase										
c Predictors: (constant) gender, age, formal education, entrepreneurship phase, formal education X entrepreneurship phase										
d Dependent variable: skills overall										

After controlling age and gender, the second model with formal education and entrepreneurship phase as independent variables and skills as the dependent variable had an $R = 0.065$ and $R^2 = 0.04$. This implies that formal education and entrepreneurship phase explained only 0.4% of variation in skills applied. Adding the interaction or moderator variable '*entrepreneurship phase x formal education*' in model 3 had an insignificant impact on the R^2 value as it minimally improved to 0.06, and R increased to 0.078. Without age and gender, the moderating effect explains only 0.2% variability (R^2 change = 0.002). This change was not statistically significant (p -value of the F change = 0.507).

Table 6-49: Formal education ANOVA^a

Model		Sum of squares	df	Mean square	F	Sig
1	Regression	.234	2	.117	.418	.659 ^b
	Residual	64.300	230	.280		
	Total	64.534	232			
2	Regression	.271	4	.068	.240	.915 ^c
	Residual	64.263	228	.282		
	Total	64.534	232			
3	Regression	.395	5	.079	.280	.924 ^d
	Residual	64.138	227	.283		
	Total	64.534	232			

a Dependent variable: skills overall
b Predictors: (constant) gender, age
c Predictors: (constant) gender, age, formal education, entrepreneurship phase
d Predictors: (constant) gender, age, formal education, entrepreneurship phase, formal education X entrepreneurship phase

The results of the ANOVA showed that model 3 with the interaction variable is still not significant $F(5) = 0.280, p = 0.924 > 0.05$. The table below shows the coefficients:

Table 6-50: Formal education coefficients^a

Model		Unstandardised coefficients		Standardised coefficients	t	Sig	Correlations			Collinearity statistics	
		B	Std error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.841	.110		34.964	.000					
	Age	-.032	.043	-.050	-.740	.460	-.055	-.049	-.049	.959	1.043
	Gender	-.028	.074	-.025	-.376	.707	-.035	-.025	-.025	.959	1.043
2	(Constant)	3.843	.132		29.100	.000					
	Age	-.031	.052	-.049	-.602	.548	-.055	-.040	-.040	.647	1.546
	Gender	-.031	.075	-.028	-.418	.676	-.035	-.028	-.028	.942	1.061
	Entrepreneurship phase	-.002	.051	-.003	-.037	.970	-.033	-.002	-.002	.667	1.500
	Formal education	.012	.033	.024	.359	.720	.015	.024	.024	.975	1.025
3	(Constant)	3.850	.133		29.027	.000					
	Age	-.034	.052	-.054	-.655	.513	-.055	-.043	-.043	.642	1.557
	Gender	-.029	.075	-.026	-.385	.700	-.035	-.026	-.025	.940	1.064
	Entrepreneurship phase	-.001	.052	-.002	-.026	.979	-.033	-.002	-.002	.667	1.500
	Formal education	.013	.033	.027	.406	.685	.015	.027	.027	.970	1.031
	Formal education X entrepreneurship phase	-.026	.040	-.044	-.665	.507	-.039	-.044	-.044	.985	1.015

a Dependent variable: skills overall

The coefficients in the table above show that independent variables, including the interaction variable, are not statistically significant ($p > 0.05$). Therefore, entrepreneurship phase does not have a moderating effect on the relationship between formal education and skills applied by entrepreneurs.

b) Work experience, skills and entrepreneurship phases

To determine the interaction effect of the entrepreneurial phases, a multiple regression test was run in three steps: i) age and gender as control variables; ii) dependent variable as skills and the independent variable being entrepreneurship phase and work experience; and iii) an interaction variable '*entrepreneurship phase X work experience*' was introduced. The normality p-p plots showed a linear relationship between dependent and independent variables (see appendix J). The results of collinearity statistics showed that tolerance = 1.000 and VIF = 1.00, which ruled out multicollinearity. Multivariate outliers were identified using Mahalanobis D^2 and Cooks distance values. The cases which had Mahalanobis D^2 with a probability of less than 0.001 were excluded from the analysis. After ensuring that the basic assumptions were met, a hierarchical regression was run and the output presented in table 6-51.

Table 6-51: Work experience model summary^d

Model	R	R square	Adjusted R square	Std error of the estimate	Change statistics					Durbin-Watson
					R square change	F change	df1	df2	Sig F change	
1	.060 ^a	.004	-.005	.52874	.004	.418	2	230	.659	
2	.071 ^b	.005	-.012	.53066	.001	.168	2	228	.845	
3	.247 ^c	.061	.040	.51662	.056	13.558	1	227	.000	1.910
a Predictors: (constant) gender, age										
b Predictors: (constant) gender, age, work experience, entrepreneurship phase										
c Predictors: (constant) gender, age, work experience, entrepreneurship phase, entrepreneurship phase X work experience										
d Dependent variable: skills overall										

The second model with work experience and entrepreneurship phase as independent variables and skills as dependent variable had an R = 0.071 and R² of 0.005. This implies that work experience and entrepreneurship phase explain only 0.5% of variation in skills applied by entrepreneurs in running their businesses. Adding the interaction or moderator variable (*entrepreneurship phase x work experience*) significantly increased R² from 0.014 to 0.061, meaning that 6.1% of variation in skills is explained by predictor variables which include the moderator variable. This change was statistically significant (p -value of the F change = 0.006). With age and gender controlled, the moderating effect explains 5.6% (R² change = 0.056) variation in skills.

The ANOVA table below shows that the second model was not significant ($F(4, 228) = 0.292$, $p = 0.883 > 0.05$) while the second model with the moderator was significant ($F(5, 227) = 2.958$, $p = 0.013 < 0.05$).

Table 6-52: Work experience ANOVA^a

Model		Sum of squares	df	Mean square	F	Sig
1	Regression	.234	2	.117	.418	.659 ^b
	Residual	64.300	230	.280		
	Total	64.534	232			
2	Regression	.329	4	.082	.292	.883 ^c
	Residual	64.205	228	.282		
	Total	64.534	232			
3	Regression	3.947	5	.789	2.958	.013 ^d
	Residual	60.586	227	.267		
	Total	64.534	232			
a Dependent variable: skills overall						
b Predictors: (constant) gender, age						
c Predictors: (constant) gender, age, work experience, entrepreneurship phase						
d Predictors: (constant) gender, age, work experience, entrepreneurship phase, entrepreneurship phase X work experience						

The coefficients of the two models are shown below, demonstrating that the moderating effect of ‘*entrepreneurship phase x work experience*’, $t_{232} = -3.682$, $p=0.00 < 0.05$ has a significant relationship in predicting skills.

Table 6-53: Work experience coefficients^a

Model		Unstandardised coefficients		Standardised coefficients	t	Sig	Correlations			Collinearity statistics	
		B	Std error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.841	.110		34.964	.000					
	Age	-.032	.043	-.050	-.740	.460	-.055	-.049	-.049	.959	1.043
	Gender	-.028	.074	-.025	-.376	.707	-.035	-.025	-.025	.959	1.043
2	(Constant)	3.794	.153		24.816	.000					
	Age	-.012	.061	-.019	-.201	.841	-.055	-.013	-.013	.473	2.115
	Gender	-.027	.074	-.024	-.361	.718	-.035	-.024	-.024	.958	1.044
	Entrepreneurship phase	-.006	.052	-.009	-.116	.908	-.033	-.008	-.008	.653	1.532
	Work experience	-.016	.027	-.046	-.579	.563	-.062	-.038	-.038	.688	1.454
3	(Constant)	3.871	.150		25.755	.000					
	Age	-.032	.060	-.050	-.535	.593	-.055	-.035	-.034	.469	2.132
	Gender	-.031	.072	-.028	-.427	.670	-.035	-.028	-.027	.958	1.044
	Entrepreneurship phase	-.016	.051	-.025	-.315	.753	-.033	-.021	-.020	.651	1.536
	Work experience	-.008	.027	-.022	-.288	.773	-.062	-.019	-.019	.683	1.464
	Entrepreneurship phase X work experience	-.100	.027	-.240	-3.682	.000	-.230	-.237	-.237	.975	1.025
a Dependent variable: skills overall											

Therefore the interaction variable ‘*entrepreneurship phase x work experience*’ is a significant predictor of skills applied by entrepreneurs. This implies that the relationship between work experience and skills is moderated by the entrepreneurship phase of the business.

c) Entrepreneurship education, skills and entrepreneurship phases

Since entrepreneurship education was measured as a metric variable, for this to be used in regression analysis it was dummy coded as 1 if yes and 0 if no. Before running a regression analysis, two groups were compared: those who attended entrepreneurship education and those who did not. The Mann-Whitney U test shows there is a difference between those who had received training and those who had not, with entrepreneurs who received training having a better mean rank of skills.

Table 6-54: Mann-Whitney U test entrepreneurship education

Ranks					Test statistic ^a	
	Entrepreneurship education	N	Mean rank	Sum of ranks	Mann-Whitney U	5207.500
Skills overall	Yes	83	131.26	10894.50	Wilcoxon W	16835.500
	No	152	110.76	16835.50	Z	-2.209
	Total	235			Asymp sig (2-tailed)	0.027

a Grouping variable: entrepreneurship education

Hierarchical multiple regression analysis was run with entrepreneurship education as an independent variable, skills as dependent variable and entrepreneurship phase as a moderating variable. The effects of age and dummy-coded gender on the dependent variable 'skills' were controlled. Before proceeding with regression, the normality p-p plots showed the assumption of linearity was met (see appendix J). Collinearity statistics showed there was no multicollinearity among the variables as tolerance values were around 9.40 while VIF values were slightly above 1.000. The Mahalanobis $D^2 = 6.12$, Cook's distance = 0.067 and centred leverage value = 0.026 excluded the presence of multivariate outliers. Since assumptions were met, the multiple regression model was run in two steps and results are presented in table 6-55.

Table 6-55: Entrepreneurship education model summary^d

Model	R	R square	Adjusted R square	Std error of the estimate	Change statistics					Durbin-Watson
					R square change	F change	df1	df2	Sig F change	
1	.060 ^a	.004	-.005	.52874	.004	.418	2	230	.659	
2	.134 ^b	.018	.001	.52724	.014	1.656	2	228	.193	
3	.220 ^c	.048	.027	.52017	.030	7.239	1	227	.008	1.771

a Predictors: (constant) gender, age

b Predictors: (constant) gender, age, entrepreneurship education, entrepreneurship phase

c Predictors: (constant) gender, age, entrepreneurship education, entrepreneurship phase, entrepreneurship phase X entrepreneurship education

d Dependent variable: skills overall

In the first model, which controlled age and gender, these accounted for 0.4% variation in skills. The second model with entrepreneurship education and entrepreneurship phase as independent

variables and skills as dependent variable had an $R^2 = 0.018$. This implied entrepreneurship education and entrepreneurship phase explained only 1.8% of the variation in skills applied. Introducing the interaction term (*entrepreneurship phase x entrepreneurship education*) significantly increased R^2 from 0.018 to 0.048, suggesting that 4.8% explained the variation in skills applied. This change was statistically significant with p -value of F change = 0.008. When age and gender are controlled, the moderating effect can explain 3.0% of the variation in skills.

The ANOVA in table 6-56 supported these findings by indicating that a third model with moderation effect could accurately explain the variation in the dependent variable ($F(5, 227) = 2.301, p = 0.045 < 0.05$).

Table 6-56: Entrepreneurship education ANOVA^a

Model		Sum of squares	df	Mean square	F	Sig
1	Regression	.234	2	.117	.418	.659 ^b
	Residual	64.300	230	.280		
	Total	64.534	232			
2	Regression	1.155	4	.289	1.038	.388 ^c
	Residual	63.379	228	.278		
	Total	64.534	232			
3	Regression	3.113	5	.623	2.301	.046 ^d
	Residual	61.420	227	.271		
	Total	64.534	232			
a Dependent variable: skills overall						
b Predictors: (constant) gender, age						
c Predictors: (constant) gender, age, entrepreneurship education , entrepreneurship phase						
d Predictors: (constant) gender, age, entrepreneurship education , entrepreneurship phase, entrepreneurship phase X entrepreneurship education						

The coefficients are presented below. Results show that the entrepreneurship phase has a moderating effect with $t_{234} = 2.691, p = 0.008 < 0.05$.

Table 6-57: Entrepreneurship education coefficients^a

Model		Unstandardised coefficients		Standardised coefficients	t	Sig	Correlations			Collinearity statistics	
		B	Std error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.841	.110		34.964	.000					
	Age	-.032	.043	-.050	-.740	.460	-.055	-.049	-.049	.959	1.043
	Gender	-.028	.074	-.025	-.376	.707	-.035	-.025	-.025	.959	1.043
2	(Constant)	3.792	.133		28.484	.000					
	Age	-.016	.052	-.026	-.315	.753	-.055	-.021	-.021	.634	1.578
	Gender	-.009	.075	-.008	-.121	.904	-.035	-.008	-.008	.940	1.064
	entrepreneurship phase	.006	.051	.010	.118	.906	-.033	.008	.008	.662	1.510
	Entrepreneurship education	.138	.076	.125	1.819	.070	.132	.120	.119	.908	1.102
3	(Constant)	3.839	.132		28.975	.000					
	Age	-.031	.052	-.048	-.591	.555	-.055	-.039	-.038	.627	1.595
	Gender	.002	.074	.002	.032	.974	-.035	.002	.002	.937	1.067
	Entrepreneurship phase	.004	.051	.006	.081	.936	-.033	.005	.005	.662	1.510
	Entrepreneurship education	.159	.075	.145	2.121	.035	.132	.139	.137	.897	1.114
	Entrepreneurship phase X entrepreneurship education	.234	.087	.178	2.691	.008	.151	.176	.174	.963	1.038

^a Dependent variable: skills overall

Therefore, it can be concluded that entrepreneurship education was significant in predicting skills applied. The interaction or moderation effect of '*entrepreneurship phase x entrepreneurship education*' was significant in predicting skills. The entrepreneurship phase does moderate the relationship between entrepreneurship education and skills applied by entrepreneurs in running their businesses.

d) Prior entrepreneurship experience, skills and entrepreneurship phases

Prior entrepreneurship experience was treated as the independent variable and skill as the dependent variable, and this relationship was moderated by the entrepreneurship phases. Since prior entrepreneurship experience was measured as a metric variable, it was dummy coded as 1 if yes and 0 if no. The normality p-p plots showed linearity between dependent and independent variables (see appendix J). The test for multivariate outliers excluded any possible outliers, thus Mahalanobis $D^2 = 6.03$ and Cook's distance = 0.064. Collinearity statistics showed no correlations

among independent variables (see tolerance and VIF values in table 6-57). Results of the hierarchical multiple regression analysis with the effects of age and gender controlled are depicted in table 6-58.

Table 6-58: Prior entrepreneurship experience model summary^d

Model	R	R square	Adjusted R square	Std error of the estimate	Change statistics					Durbin-Watson
					R square change	F change	df1	df2	Sig F change	
1	.060 ^a	.004	-.005	.52874	.004	.418	2	230	.659	
2	.067 ^b	.004	-.013	.53084	.001	.091	2	228	.913	
3	.067 ^c	.004	-.017	.53199	.000	.016	1	227	.898	1.763
a Predictors: (constant) gender, age										
b Predictors: (constant) gender, age, prior experience, entrepreneurship phase										
c Predictors: (constant) gender, age, prior experience, entrepreneurship phase, prior experience X entrepreneurship phase										
d Dependent variable: skills overall										

Model 2 with prior entrepreneurship experience and entrepreneurship phase as the independent variable and skills as the dependent variable had an $R^2 = 0.067$. The R^2 of 0.004 indicates prior entrepreneurship experience and entrepreneurship phase explained only 0.4% of the variance in an individual's skills. Adding the interaction variable '*prior experience x entrepreneurship phase*' did not improve the R^2 value as it remained at 0.004. This change was statistically not significant (p -value of the F change = 0.872). The results instead showed that the impact on the variation of skills is due to control variables as the R^2 change = 0.00, suggesting the moderation effect does not have any explanation for the variation of skills.

The ANOVA below shows that the final model with the moderating effect of '*entrepreneurship phase x prior experience*' was not statistically significant $F(5, 227) = 0.205, p = 0.960 > 0.05$.

Table 6-59: Prior entrepreneurship experience ANOVA^a

Model		Sum of squares	df	Mean square	F	Sig
1	Regression	.234	2	.117	.418	.659 ^b
	Residual	64.300	230	.280		
	Total	64.534	232			
2	Regression	.285	4	.071	.253	.908 ^c
	Residual	64.248	228	.282		
	Total	64.534	232			
3	Regression	.290	5	.058	.205	.960 ^d
	Residual	64.244	227	.283		
	Total	64.534	232			
a Dependent variable: skills overall						
b Predictors: (constant) gender, age						
c Predictors: (constant) gender, age, prior experience, entrepreneurship phase						
d Predictors: (constant) gender, age, prior experience, entrepreneurship phase, prior experience X entrepreneurship phase						

The coefficients depicted below show that p -value for all independent variables, including the moderator variable, is greater than 0.05. This indicates that prior entrepreneurship experience does not predict the skills that entrepreneurs apply in their businesses.

Table 6-60: Prior entrepreneurship experience coefficients^a

Model	Unstandardised coefficients		Standardised coefficients	t	Sig	Correlations			Collinearity statistics		
	B	Std error	Beta			Zero-order	Partial	Part	Tolerance	VIF	
1	(Constant)	3.841	.110		34.964	.000					
	Age	-.032	.043	-.050	-.740	.460	-.055	-.049	-.049	.959	1.043
	Gender	-.028	.074	-.025	-.376	.707	-.035	-.025	-.025	.959	1.043
2	(Constant)	3.849	.133		28.844	.000					
	Age	-.033	.052	-.052	-.628	.531	-.055	-.042	-.041	.641	1.559
	Gender	-.034	.076	-.031	-.453	.651	-.035	-.030	-.030	.919	1.088
	Entrepreneurship phase	-.002	.051	-.003	-.043	.966	-.033	-.003	-.003	.666	1.500
	Prior experience	.031	.073	.029	.426	.671	.012	.028	.028	.927	1.079
3	(Constant)	3.848	.134		28.731	.000					
	Age	-.033	.053	-.051	-.620	.536	-.055	-.041	-.041	.640	1.563
	Gender	-.035	.076	-.032	-.459	.647	-.035	-.030	-.030	.916	1.092
	Entrepreneurship phase	-.002	.052	-.004	-.046	.963	-.033	-.003	-.003	.666	1.501
	Previous experience	.032	.073	.030	.431	.667	.012	.029	.029	.925	1.081
	Entrepreneurship phase X prior experience	.011	.086	.008	.128	.898	.008	.008	.008	.993	1.007

a Dependent variable: skills overall

As such, it can be said there is not enough statistical evidence to conclude that the moderation of entrepreneurship phase on the relationship between prior entrepreneurship experience and skills is statistically significant.

e) Social actors

Hierarchical multiple regression analysis was run on two sets of social actors: family and friends, and mentors and coaches. Age and gender were introduced as control variables. Results showed that family, friends, mentors and coaches are statically significant as sources of skills that entrepreneurs apply in their businesses.

Family and friends

A multiple regression test was run in two steps to determine if friends and family are the source of skills applied by entrepreneurs and if the relationship is moderated by entrepreneurship phase. The assumptions test for multiple regression was met, hence regression could be computed. Among the assumptions, the normality p-p plot showed a positive relationship between dependent and independent variables (see appendix J). Collinearity findings indicated that VIF was slightly above 1.00 and tolerance at 0.900, which confirmed that independent and dependent variables are not correlated. Table 6-61 shows the regression model that was computed:

Table 6-61: Family and friends model summary^d

Model	R	R square	Adjusted R square	Std error of the estimate	Change statistics					Durbin-Watson
					R square change	F change	df1	df2	Sig F change	
1	.060 ^a	.004	-.005	.52874	.004	.418	2	230	.659	
2	.371 ^b	.138	.123	.49395	.134	17.770	2	228	.000	
3	.376 ^c	.141	.122	.49407	.003	.883	1	227	.349	1.812
a Predictors: (constant) gender, age										
b Predictors: (constant) gender, age, family and friends, entrepreneurship phase										
c Predictors: (constant) gender, age, family and friends, entrepreneurship phase, family and friends X entrepreneurship phase										
d Dependent variable: skills overall										

The results showed that control variables (age and gender) counted for only 0.4% variation in skills. In model 2, the R value of 0.371 indicates a weak positive correlation between family and friends as the source of skills applied by entrepreneurs in running their businesses. When the moderator variable was introduced, the model improved with 0.003 but the change was insignificant (F change = 0.696). The improved R² of 0.141 suggest that 14.1% of the variation in skills can be explained by family and friends and the moderator variable (*entrepreneurship phase x family and friends*). However model 2 without the moderating effect had a significant change (F change = 0.00) which suggest that family and friends as sources of skills account for 13.8% variation of the skills applied by entrepreneurs. Table 6-67 shows the ANOVA output:

Table 6-62: Family and friends ANOVA^a

Model		Sum of squares	df	Mean square	F	Sig
1	Regression	.234	2	.117	.418	.659 ^b
	Residual	64.300	230	.280		
	Total	64.534	232			
2	Regression	8.905	4	2.226	9.125	.000 ^c
	Residual	55.628	228	.244		
	Total	64.534	232			
3	Regression	9.121	5	1.824	7.473	.000 ^d
	Residual	55.413	227	.244		
	Total	64.534	232			
a Dependent variable: skills overall						
b Predictors: (constant) gender, age						
c Predictors: (constant) gender, age, family and friends, entrepreneurship phase						
d Predictors: (constant) gender, age, family and friends, entrepreneurship phase, family and friends X entrepreneurship phase						

Results showed that both models (with and without moderation variable) are significant, with $p < 0.05$. Analysis of the coefficients table shows a significant relationship between family and friends ($t_{232} = 6.032$, $p = 0.00 < 0.05$) and skills applied by entrepreneurs. In simple terms, family and friends are a source of skills that entrepreneurs apply in running their businesses. The table also shows that the moderating effect of entrepreneurial phase was not significant ($t_{232} = -.939$, $p = 0.349 > 0.05$).

Table 6-63: Family and friends coefficients^a

Model		Unstandardised coefficients		Standardised coefficients	t	Sig	Correlations			Collinearity statistics	
		B	Std error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.841	.110		34.964	.000					
	Age	-.032	.043	-.050	-.740	.460	-.055	-.049	-.049	.959	1.043
	Gender	-.028	.074	-.025	-.376	.707	-.035	-.025	-.025	.959	1.043
2	(Constant)	3.731	.124		30.149	.000					
	Age	.029	.049	.047	.596	.552	-.055	.039	.037	.621	1.610
	Gender	-.048	.069	-.043	-.690	.491	-.035	-.046	-.042	.956	1.046
	Entrepreneurship phase	.043	.048	.068	.893	.373	-.033	.059	.055	.651	1.537
	Family and friends	.198	.033	.394	5.961	.000	.358	.367	.367	.865	1.157
3	(Constant)	3.738	.124		30.140	.000					
	Age	.022	.050	.035	.441	.659	-.055	.029	.027	.606	1.651
	Gender	-.047	.069	-.043	-.682	.496	-.035	-.045	-.042	.956	1.046
	Entrepreneurship phase	.048	.049	.076	.986	.325	-.033	.065	.061	.644	1.554
	Family and friends	.204	.034	.406	6.032	.000	.358	.372	.371	.837	1.195
	Entrepreneurship phase X family and friends	-.040	.043	-.060	-.939	.349	.018	-.062	-.058	.930	1.076
a Dependent variable: skills overall											

Therefore it can be said that family and friends are contributors to individual's skills. The entrepreneurship phase does not have a moderating effect ($t_{232} = -.939$, $p = 0.349 > 0.05$) on the relationship between family and friends as source of skills applied by entrepreneurs.

Mentors and coaches

Mentors and coaches are a source of skills that entrepreneurs apply in their businesses. However, this study hypothesised that the entrepreneurship phase acts as a moderator of the relationship between mentors and coaches and skills entrepreneurs apply in their business venturing. The interaction or moderation effect of the entrepreneurship phase on the relationship between mentors and coaches and skills entrepreneurs apply in their businesses was analysed using a hierarchical multiple regression. Assumption tests were run to determine if the data will be fit to run a regression model. The normality p-p plot showed a linear relationship between dependent and independent variables (see appendix J). The initial computation showed that VIF values were very high, with the highest value of 44.924 suggesting multicollinearity. As a result, both variables (mentors and coaches, and entrepreneurship phases) were transformed into centred variables which lowered VIF values to 1.00. The regression model run is presented in table 6-64.

Table 6-64: Mentors and coaches model summary^d

Model	R	R square	Adjusted R square	Std error of the estimate	Change statistics					Durbin-Watson
					R square change	F change	df1	df2	Sig F change	
1	.060 ^a	.004	-.005	.52874	.004	.418	2	230	.659	
2	.254 ^b	.064	.048	.51459	.061	7.412	2	228	.001	
3	.292 ^c	.086	.065	.50988	.021	5.226	1	227	.023	1.759
a Predictors: (constant) gender, age										
b Predictors: (constant) gender, age, mentors and coaches, entrepreneurship phase										
c Predictors: (constant) gender, age, mentors and coaches, entrepreneurship phase, mentor and coaches X entrepreneurship phases										
d Dependent variable: skills overall										

Model 1 indicated that gender and age have a low control effect of 0.4%. R-value, which is a positive correlation, significantly increased from 0.254 in model 2 to 0.292 in model 3 after introducing the interaction variable. R² value also improved from 0.064 to 0.086 ($p = 0.023 < 0.05$), indicating that 8.6% variation in skills can be explained by mentors and coaches and the moderating effect of entrepreneurship phases. The ANOVA table indicates how well the data fits the regression model.

Table 6-65: Mentors and coaches ANOVA^a

Model		Sum of squares	df	Mean square	F	Sig
1	Regression	.234	2	.117	.418	.659 ^b
	Residual	64.300	230	.280		
	Total	64.534	232			
2	Regression	4.159	4	1.040	3.927	.004 ^c
	Residual	60.375	228	.265		
	Total	64.534	232			
3	Regression	5.518	5	1.104	4.245	.001 ^d
	Residual	59.016	227	.260		
	Total	64.534	232			
a Dependent variable: skills overall						
b Predictors: (constant) gender, age						
c Predictors: (constant) gender, age, mentors and coaches, entrepreneurship phase						
d Predictors: (constant) gender, age, mentors and coaches, entrepreneurship phase, mentor and coaches X entrepreneurship phases						

Table 6-66 illustrates that the second model with entrepreneurship phase as a moderating variable predicts the dependent variable very well ($F(5,227) = 4.245, p = 0.001 < 0.05$).

Table 6-66: Mentors and coaches coefficients^a

Model		Unstandardised coefficients		Standardised coefficients	t	Sig	Correlations			Collinearity statistics	
		B	Std error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.841	.110		34.964	.000					
	Age	-.032	.043	-.050	-.740	.460	-.055	-.049	-.049	.959	1.043
	Gender	-.028	.074	-.025	-.376	.707	-.035	-.025	-.025	.959	1.043
2	(Constant)	3.859	.128		30.239	.000					
	Age	-.052	.051	-.083	-1.033	.303	-.055	-.068	-.066	.640	1.563
	Gender	.021	.073	.019	.286	.775	-.035	.019	.018	.930	1.075
	Entrepreneurship phase	-.077	.054	-.122	-1.443	.151	-.033	-.095	-.092	.577	1.732
	Mentors and coaches	.156	.040	.285	3.850	.000	.199	.247	.247	.751	1.332
3	(Constant)	3.871	.127		30.585	.000					
	Age	-.044	.050	-.069	-.867	.387	-.055	-.057	-.055	.636	1.572
	Gender	.036	.073	.033	.493	.622	-.035	.033	.031	.922	1.084
	Entrepreneurship phase	-.078	.053	-.122	-1.461	.146	-.033	-.096	-.093	.577	1.732
	Mentors and coaches	.128	.042	.233	3.045	.003	.199	.198	.193	.686	1.458
	Entrepreneurship phase X mentors and coaches	-.112	.049	-.154	-2.286	.023	-.210	-.150	-.145	.885	1.130
a Dependent variable: skills overall											

The coefficients of the second model show that mentors and coaches ($t_{235} = 3.850, p = 0.000 < 0.05$) have an impact on skills applied by entrepreneurs. Introducing the interaction variable 'entrepreneurship phase' showed that skills acquired from mentors and coaches are moderated by the entrepreneurship phase ($t_{235} = -2.286, p = 0.023 < 0.05$). As such, there is enough statistical evidence showing entrepreneurship phase as the moderating variable of the relationship between mentors and coaches and skills entrepreneurs apply in running their business ventures.

6.7.1 Summary of research question 4 and hypothesis 3

This research question aimed to discover the relationship between human capital investments, skills and entrepreneurship phases. Results showed that the entrepreneurship phase can act as a moderator variable of the relationship between human capital investments and skills applied by entrepreneurs. The summary of the hypothesis tested is presented below:

Table 6-67: Summary of hypothesis 3

Hypothesis	Outcome	Explanation
H3a: The relationship between formal education and skills is moderated by the entrepreneurship phase	Not supported	There was no statistical evidence of entrepreneurship phase as a moderator
H3b: The relationship between work experience and skills is moderated by the entrepreneurship phase	Supported	
H3c: The relationship between entrepreneurship education and skills is moderated by the entrepreneurship phase	Supported	
H3d: The relationship between prior entrepreneurship experience and skills is moderated by the entrepreneurship phase	Not supported	There was no statistical evidence of entrepreneurship phase as a moderator
H3e: The relationship between family and friends as source of skills applied by entrepreneurs is moderated by the entrepreneurship phase	Not supported	Although the model was significant ($F(30) = 12.487, p = 0.00$), results showed a significant relationship between family and friends as a source of skills applied by entrepreneurs. There was no statistical evidence of entrepreneurship phase as a moderator
H3f: The relationship between mentors and coaches as source of skills applied by entrepreneurs is moderated by the entrepreneurship phase	Supported	

6.8 SUMMARY OF QUANTITATIVE FINDINGS

The quantitative findings showed the skills entrepreneurs apply in the day-to-day running of their businesses. This was done through confirmatory factor analysis where factors that had loadings of 0.5 and above were considered valid skills. There were nine categories of skills that were grouped into four clusters: start-up skills, core business skills (business management, financial

management, marketing, human resource management), personal and leadership skills (social and interpersonal skills, leadership skills and personal), and technical skills.

After confirmation of the clusters and categories of skills, skills were compared across different entrepreneurship phases. The comparison was non-parametric Kruskal-Wallis and Mann-Whitney U tests to compare skills in the nascent, new-business and established phases. Results showed that, indeed, skills are applied differently across the phases. Marketing, personal and leadership skills are significant in the nascent phase, while start-up, technical, human resource management, social and interpersonal skills are significant in the new-business phase. Financial management and business management are significant in the established phase.

Since it was argued that human capital investments, which are the source of skills, differ from one phase to the next, the Kruskal-Wallis and Mann-Whitney tests showed that entrepreneurs apply skills learned from formal education, entrepreneurship education and prior entrepreneurship experience unequally across the different entrepreneurship phases. Entrepreneurs in all stages apply skills from work experience and the results showed no significant differences. In the nascent and new-business phases, entrepreneurs rely more on formal education to start businesses while established entrepreneurs apply skills learned from previous entrepreneurship exposure and entrepreneurial education.

Statistical evidence also showed that entrepreneurs apply skills learned from social actors (family, friends, mentors and coaches) unequally across the different entrepreneurship phases. Established entrepreneurs apply skills learned from social actors to the greatest extent compared to entrepreneurs in the nascent and new-business phases.

Through hierarchical multiple regression, entrepreneurship phase was found to have a moderating effect on the relationship between some human capital investments and skills applied by entrepreneurs. It was found that the relationship between entrepreneurship education/work experience/social actors and skills is moderated by the entrepreneurship phase.

CHAPTER 7

DISCUSSION OF FINDINGS

7.1 INTRODUCTION

This chapter integrates the qualitative and quantitative findings. The findings of the study are discussed in light of previous literature for similar and divergent viewpoints. The four research themes presented in this chapter relate to the main research questions and hypotheses, being clusters and categories of skills, skills specific to each entrepreneurship phase, human capital investments as the source of skills, and moderating effect of entrepreneurship phases. The chapter concludes with a summary of the discussion on findings.

7.2 RESEARCH QUESTION 1: CLUSTERS AND CATEGORIES OF SKILLS

The study began by identifying skills applied by entrepreneurs in running their businesses. As a result, nine categories of skills were identified from the qualitative data analysis and were validated in the quantitative phase through CFA. The categories of skills found to be important in carrying out entrepreneurial activities are start-up, technical, business management, financial management, marketing, human resource management, social and interpersonal, leadership and personal skills. These categories of skills were reduced to four clusters: start-up, technical, core business, personal and leadership skills. The core business skills cluster comprises marketing, business management, financial management and human resource management skills. Finally, the personal and leadership skills cluster includes social and interpersonal skills, leadership and personal skills.

Start-up skills are necessary to identify and exploit a business opportunity. Consistent with the literature, these can also be termed entrepreneurial or opportunity-recognition skills (Loué & Baronet, 2012; Wasdani & Mathew, 2014). Start-up skills include opportunity recognition and exploitation, calculated risk-taking, innovation, environmental scanning and planning the growth of the business.

Technical skills include an understanding of and proficiency in specific activities involving methods, processes and techniques in the business's line of operation. Technical skills include

industry-specific skills, product development, management of operations and quality monitoring skills.

Core business skills focus on the internal business environment which involves financial management, human resource management and technical skills.

- a *Business management skills* are needed to run the business daily. Business management skills considered significant were planning, problem-solving, legal skills, decision-making, developing and executing a business model, strategic competence, delegation and business development.
- b *Financial management skills* are required to manage capital efficiently to meet the financial obligations of the business. Financial management skills were pricing products (tangible or service), cash-flow management, calculating costs and interpreting financial statements.
- c *Marketing skills* are about communicating the value of tangible and service products to customers, for the purpose of selling. Skills under the marketing category are market research, benchmarking competition, positioning the business in the market and selling.
- d *Human resource management skills* pertain to the ability to manage people in the business, including designing and implementing workplace policies. Skills under this category were recruitment, employee skills assessment, defining job specifications, performance management and paying salaries.

Personal and leadership skills focus on leading employees to achieve maximum results and interaction with stakeholders. The stakeholders can either be internal, for instance employees, or external, such as customers and suppliers. Categories of skills in this cluster were social and interpersonal, leadership and personal skills.

- a *Social and interpersonal skills*: to interact and form relationships with other people, entrepreneurs need social and interpersonal skills. The significant skills in this category are: people skills, communication skills, listening, building relationships and cultural sensitivity.
- b *Leadership skills* are needed to lead 'self' and employees in the business. Sub-skills in this category include crafting vision, inspiring employees, sharing the vision, cultivating excellent performance and leading responsibly.
- c *Personal skills*: The skills in this category are hard work, intuition and self-motivation.

The four main clusters of skills derived from this study were consistent with Chandler and Jansen (1992), Man and Lau (2000), Loué and Baron (2012) and Chell (2013). However, the identified clusters had more exhaustive categories and sub-skills than those in the literature. Also, Pyysiäinen et al. (2006) noted the scarcity of exhaustive list of skills that match different functional areas in the business, arguing that skills should be related to the different functions of the business. In each functional area, there are activities that need to be performed and those activities have requisite skills. Therefore this study addressed the categories and their sub-sets of skills that deal with functional areas such as: marketing, finance, human resource, business management and technical.

Besides skills specific to functional business areas, there were skills that differentiate entrepreneurs from non-entrepreneurs and these were start-up skills (Carland, Hoy, Boulton & Carland, 1984). In addition, there were personal and leadership skills that can be seen as 'soft skills' relating to the entrepreneur's relations and engagements with stakeholders.

There were inconsistencies within the identification of sub-skills in the personal skills category. Some sub-skills identified in the qualitative phase did not load well on the personal skills construct in confirmatory factors analysis. The skills that did not load well were assertiveness, passion, single-mindedness, emotional coping and accountability. An explanation may be that these skills are assumed to be behaviours or personal traits (Rauch & Frese, 2007), as a result they will load better when classified with other personality traits. Baum et al. (2001) separated skills from traits by empirically showing that personality traits may impact the development of skills for running a business. Therefore, this study supports the belief that skills should be considered as different from traits.

Summary of discussions on research question 1

Using both qualitative and quantitative methods, this study identified an exhaustive list of skills with operational definitions (presented as entrepreneurship skills framework in chapter 4). The clusters and categories of skills discussed above were found to be consistent with existing literature but were more exhaustive and included new skills not identified in prior literature (see appendix E). The application of these skills across the different entrepreneurship phases is presented in the subsequent discussions.

7.3 RESEARCH QUESTION 2 AND HYPOTHESIS 1: SKILLS IN THE DIFFERENT ENTREPRENEURSHIP PHASES

The overall findings for research question 2 supported the argument in this study that the application of skills differs across different entrepreneurship phases. Some skills are more significant when starting a new business while others are applied later in running an established business. For example, personal, social and interpersonal, start-up and technical skills are essential in the nascent and new-business phases while financial and business management are key in the established phase. The hypotheses tested in this study are reviewed based on existing literature for similarities and contradictory views.

Due to the paucity of research on skills in the different entrepreneurship phases, the discussions will draw some insights from organisational development literature (Kroeger, 1974; Lewis & Churchill, 1983; Scott & Bruce, 1987). Although these studies lack empirical evidence, they succeeded in theoretically or conceptually showing the different skills (regarded as managerial competencies) at different phases of a business.

H1a: Start-up skills across entrepreneurship phases

There was no significant difference in applying start-up skills across different entrepreneurship phases, meaning they are important in all phases. Despite this insignificant difference, some nuances were observed on the application of start-up skills. In the nascent phase, start-up skills were used to identify and exploit business opportunities. These skills gained momentum until the new-business phase, which is a platform for full exploitation of identified business opportunities. After the opportunity is exploited or business started, the application of start-up skills declines in the established phase. The qualitative data showed that some entrepreneurs in the established phase attempt to revive start-up skills by identifying new opportunities for growing the current business, while others identify new opportunities that may require them to exit the current business and start new ones.

The results of this study were consistent with the literature. Firstly, empirical evidence by Wasdani and Mathew (2014) showed that opportunity-recognition skills, also termed 'start-up' or 'entrepreneurial skills', continue throughout the entrepreneurship phases. Secondly, Brixey et al. (2012) showed that recognition of opportunities is greater among nascent and new-business

entrepreneurs and considerably smaller among established entrepreneurs. Thirdly, opportunity-recognition skills are affected by prior entrepreneurship experience. For example, an empirical study of 630 entrepreneurs by Ucbasaran et al. (2008a) revealed that established entrepreneurs with more business experience identified fewer opportunities compared to those in the nascent phase. As the level of business experience increases, established entrepreneurs may become increasingly prone to decision-making biases that may retard opportunity-recognition skills. This explains the reduced application of start-up skills in the established phase.

H1b: Business management skills across entrepreneurship phases

Despite a lack of statistically significant differences as anticipated, there was a slight difference in the application of business management skills across the entrepreneurship phases. Business management skills were employed minimally in the nascent phase, increased in the new-business phase which continued to the established phase. In the nascent and new-business phases, the business is run informally hence business management skills are low. However, as the entrepreneurship phases unfold to the established phase, entrepreneurs focus more on managing the business daily. The qualitative interviews showed that established entrepreneurs also implement formalised systems to support and make business management easy.

Examination of the literature demonstrated that, in the nascent phase, systems and formal planning are minimal to non-existent (Lewis & Churchill, 1983). In addition, nascent entrepreneurs do not emphasise management activities as do those in the new-business and established phases (Greiner, 1998). In the established phase, entrepreneurs use formalised and intensively reviewed internal management systems that make overall management of the business much easier (Kroeger, 1974; Scott & Bruce, 1987). Unlike start-up skills, which are used by early-phase entrepreneurs to start the businesses, business management skills are used most by established entrepreneurs to grow the business (Mitchelmore & Rowley, 2010; Man et al., 2002).

Accordingly, the importance and application of business management skills positively increases from one entrepreneurship phase to the next. Previously applied or acquired business management skills may form a foundation to acquire other business management skills in subsequent entrepreneurship phases.

H1c: Financial management skills across entrepreneurship phases

Financial management skills were found to be significantly different across the entrepreneurship phases. These skills were used most by established entrepreneurs compared to nascent and new-business entrepreneurs. In the nascent phase, there is typically little to no capital to manage, which means financial management skills are only minimally applied. As capital inflow increases in the new-business phase, the application of financial management skills becomes more prominent. In the established phase, an assumption made is that the business is generating higher levels of revenue, therefore financial management skills are vital. The qualitative interviews revealed that this skill is most outsourced in the new-business phase but, in the established phase, entrepreneurs attend financial management courses to learn simple skills.

In support of these findings, Kroeger (1974) alluded to the fact that, in the early business phase, there is usually less capital to manage, but as the business moves to the next phase, which in the context of this study is the new-business phase, entrepreneurs show better financial management skills. A recent study of 402 entrepreneurs by Loué and Baronet (2012) indicated that financial skills are significant in the established phase. Diochon et al. (2008) also found that financial management skills can lead to the sustainability of the business in the long term. These skills include financial forecasting, raising capital, calculating costs, managing cash flow and understanding income and balance sheets (Loué & Baronet, 2012). Established entrepreneurs apply financial management skills to finance growth and product innovation (Scott & Bruce, 1987). In summary, financial management skills are important in the established phase.

H1d: Marketing management skills across entrepreneurship phases

The comparison of marketing skills in the start-up phase and established phase indicated these are applied differently. The application of skills starts at a high level in the nascent and new-business phase and declines in the established phase. In the nascent phase, entrepreneurs frequently advertise their products and promote their brands. They attend exhibitions to present their products and attract potential customers and investors. Since there is minimal cash flow in the nascent phase, these entrepreneurs emphasise selling products to generate income. Those in the established phase have already positioned themselves in the market and have a good customer base, and therefore find the application of marketing skills less important. The application of marketing skills across the entrepreneurship phases was inconclusive in the

qualitative findings, but the quantitative phase demonstrated that marketing skills are important mainly in the nascent phase.

Scholars generally agree that the main problems in the nascent phase relate to obtaining customers and delivering the products or services purchased (Scott & Bruce, 1987). As such, nascent entrepreneurs take time to recognise the needs of the customers and derive better ways of satisfying those needs (Kroeger, 1974). They also conduct pilot market studies to understand their customer base and try to attract a broader base or market than entrepreneurs who are established (Lewis & Churchill, 1983). By the established phase, entrepreneurs have created a broader customer base and focus more on continuously adapting the products to suit their customers' needs (Chang & Rieple, 2013). Therefore the study's finding that nascent entrepreneurs use marketing skills to find customers and sell products to a greater extent than entrepreneurs in other phases is supported by the literature.

H1e: Human resource management skills across entrepreneurship phases

There is a significant difference in the application of human resource management skills across the three entrepreneurship phases. In the nascent phase, when entrepreneurs start businesses, they perform all business functions from marketing to operations, human resources and finance. However, as the entrepreneurship phase unfolds to the new-business phase, entrepreneurs begin to recruit and manage employees. In the new-business phase, entrepreneurs stop performing all business functions and assign job roles to functional managers. Once they have the right employees in place, the application of human resource management skills, especially recruitment and evaluating the skills of employees, reduces in the established phase. The qualitative findings suggested that one of the benefits of having worked in all business functions in the early entrepreneurship phases is that, through their own prior experience, entrepreneurs are better able to identify and recruit employees with the right skills.

In support of these findings, Sambasivan et al. (2009) empirically demonstrated that, in the nascent phase, entrepreneurs perform multiple activities in the business. This is because the business is relatively simple at that stage, allowing the entrepreneur to do everything and directly supervise any subordinates (Lewis & Churchill, 1983). When the nascent phase unfolds into the new-business phase, application of human resource management skills increases as the entrepreneur starts to hire staff and appoint key supervisors to assume the most responsibilities

as functional specialists (Greiner, 1998). In summation, human resource management skills are applied in the new-business phase.

A note of caution from the qualitative findings was that the entrepreneur's constant personal engagement in daily business activities may stagnate the business's growth. As a result, entrepreneurs need to take themselves out of the business and start delegating activities to functional managers or employees (Sambasivan et al., 2009). Although entrepreneurs can act as jack-of-all trades as suggested by Lazear (2004, 2005), they need to reach a point where they allow employees to take over (Timmons & Spinelli, 2004). This simultaneously serves to minimise business activities and give the entrepreneur the opportunity to grow the business. In this study, it was found that human resource skills, especially hiring and assigning responsibilities to employees, are a challenge for nascent and new-business entrepreneurs. Once the business is in the established phase, human resource management skills become a somewhat lower priority.

Therefore, the importance of human resource management skills increases as the entrepreneurship phases unfold from nascent to new-business phase, but notably decreases in the established phase.

H1f: Technical skills across entrepreneurship phases

There was a significant difference in the application of technical skills across the entrepreneurship phases, highlighting that technical skills are used more in the start-up phase than in the established phase. When a business starts, entrepreneurs in the nascent and new-business phases acquaint themselves with industry-specific skills. Entrepreneurs who start their businesses in unfamiliar industries first learn skills relating to that industry, for example production processes of the product or service. Moving to the new-business phase, entrepreneurs engage in more rigorous processes of production, hence technical skills in this phase are applied to a greater extent than in the nascent and established phases. When the business is established, the application of technical skills declines, suggesting that entrepreneurs have well-established and robust production processes by this stage.

In the nascent phase, the main emphasis is on the technological development or innovation of a new product, process or service (Amorós & Bosma, 2014; Kroeger, 1974, Reynolds & Curtin, 2008). So, nascent entrepreneurs are usually technically orientated (Greiner, 1998). If a nascent entrepreneur has experience in the industry in which the business is operating, liabilities

associated with learning technical or industry-specific skills are minimised (Dimov, 2010; Timmons & Spinelli, 2004). In addition, skills to identify opportunities in the same sector are enhanced. Similar to the findings of this study, the literature demonstrates that as the entrepreneurship phases unfold to the new-business phase, more technical skills are applied to achieve efficient operations and expand the market (Lewis & Churchill, 1983).

Therefore, application of technical skills starts at a low level in the nascent phase, increases in the new-business phase, and declines in the established phase.

H1g: Social and interpersonal skills across entrepreneurship phases

The utility of social and interpersonal skills was not significantly different across the entrepreneurship phases, although these skills were used more in the new-business phase than in the nascent and established phases. As explained earlier, new-business entrepreneurs start to employ people and, as a result, relational skills when dealing with employees and other stakeholders become more important. Some of these skills include communication, emotional intelligence and networking. The ability to interact with other people and form relationships may facilitate social networks that, in turn, serve as a platform to transfer or share skills.

An argument presented by scholars is that social skills are vital in the early entrepreneurship phase as they impact on the social capital of nascent and new-business entrepreneurs (Baron & Markman, 2000). The new-business phase entrepreneurs have to develop relationships with government agencies, financial institutions and business associations (Kroeger, 1974). In addition, they have to be able to deal with challenges in the political, legal and social environments (Amorós & Bosma, 2014). Therefore, social and interpersonal skills contribute to social networks by increasing the number of ties and scope of social actors entrepreneurs can access.

H1h: Leadership skills across entrepreneurship phases

The investigations revealed no significant difference in applying leadership skills across the entrepreneurship phases. Even though the difference was found to be insignificant, results showed that leadership skills are applied to a greater extent in the nascent phase, compared with the new-business and established phases. This could be explained by the qualitative data, which suggested that nascent entrepreneurs regarded crafting and sharing the vision with the few

employees in the business as critical. Some even expanded on this by highlighting that they view themselves as leaders rather than managers in their business. As the business grows, entrepreneurs may adopt more of a managerial approach to the extent that perhaps sharing the business vision happens less and less often.

These findings were not anticipated as it was assumed that leadership skills are applied to a greater extent by established entrepreneurs than entrepreneurs who are still in the start-up phase. In their empirical study, Loué and Baronet (2012) noted that leadership skills which include motivating, instilling team spirit and arousing support were applied by established entrepreneurs. In contrast, Kroeger (1974) presented a notion that one of the qualities of an entrepreneur is to be a visionary who is able to evaluate the current and future prospects of the business. According to Kroeger (1974), this skill of crafting a vision which, in the context of this study is part of leadership skills, is more important in the start-up phase than in the established phase. As such, it can be argued that the findings of the study are to some extent aligned with the existing literature.

As guided by the empirical findings, leadership skills are applied maximally in the nascent phase, followed by minimal application in the new-business and established phases.

H1i: Personal skills across entrepreneurship phases

Although there was no statistically significant difference in the application of personal skills across the entrepreneurship phases, mean rank values indicated that entrepreneurs in the nascent phase used personal skills most compared with new-business and established entrepreneurs. Nascent entrepreneurs showed that they are hard-working, self-motivated and use intuition to make decisions. Since nascent entrepreneurs have limited resources that inform their decision-making processes, they tend to rely on their 'gut feelings'. Established entrepreneurs can conduct market research that aid in decision-making processes. In the nascent and new-business phases, hard work manifests as long hours spent getting the business off the ground.

The findings of this study are aligned with findings from the literature. In the nascent phase when entrepreneurs start businesses, they need to be highly motivated (Amorós & Bosma, 2014), have self-confidence (Markman & Baron, 2003), and apply intuition to exploit opportunities (Baron & Ensley, 2006). A decline in applying personal skills may also indicate that nascent entrepreneurs start by being highly motivated but, as the entrepreneurship phases unfold, they become less

motivated and some may even exit the entrepreneurship process. This supports the belief that there is a high failure rate among new businesses in the first years of operation (Narkhede et al., 2014; Herrington et al. 2014).

Summary of discussions on research question 2

Concluding on skills specific to the different entrepreneurship phases, this study found that each phase of the entrepreneurship process has skills used predominantly in that phase. Start-up, personal, leadership and marketing skills were applied maximally in the nascent phase. In the new-business phase, entrepreneurs emphasised the application of social and interpersonal, technical and human resource management skills. Finally, in the established phase, entrepreneurs predominantly used business and financial management skills to run their businesses. The proposed curvilinear relationships are explored fully in chapter 8, which presents the theoretical contribution.

7.4 RESEARCH QUESTION 3 AND HYPOTHESIS 2: HUMAN CAPITAL INVESTMENTS ACROSS THE DIFFERENT ENTREPRENEURSHIP PHASES

An argument raised in the literature review is that the utility of human capital investments as a source of skills is unequal across the different entrepreneurship phases. The findings of this study confirmed that the application of skills acquired from human capital investments is different in the nascent, new-business and established business phases. The discussions of hypotheses tested are presented with reference to existing literature.

H2a: Formal education across entrepreneurship phases

The skills acquired from formal education were applied differently across the entrepreneurship phases. Entrepreneurs in the nascent phase applied skills learned from formal education to a greater extent than entrepreneurs in the new-business and established phases. The application of skills learned from formal education starts at a high level in the nascent phase but declines in the new-business and established-business phases.

These findings are consistent with a meta-analytical study by Unger et al. (2011) which showed that outcomes of formal education in the form of skills may assist in the successful completion of the identification and exploitation phase. These results contrast to findings by Davidsson and Honig (2003) and Diochon et al. (2008) who argued that formal education is significant in the opportunity-identification phase but not in exploitation or pursuit of the opportunity.

In the South African context, entrepreneurship education is lacking (Herrington et al., 2014) and, as a result, entrepreneurs appear to use skills acquired from informal education to identify and exploit entrepreneurial opportunities. Although formal education provides skills necessary to exploit opportunities, it should be noted that the application of skills learned from formal education decreases over time.

Therefore formal education, which is part of generic human capital, is significant in identifying and exploiting business opportunities but plays a lesser role in sustaining the business over time.

H2b: Work experience across entrepreneurship phases

There was no significant difference in the utility of skills acquired from work experience across the entrepreneurship phases. Entrepreneurs in all phases used skills from work experience. It was strongly emphasised in the qualitative findings that work experience is the most significant source of practical skills required for performing entrepreneurial activities. Since the study was conducted on entrepreneurs with some form of work experience, entrepreneurs who start businesses without being exposed to a work environment may lack some practical skills for managing and running the business. Therefore, entrepreneurs who start businesses after being exposed to a work environment may have a lower likelihood of failure compared to those without work experience.

In the qualitative study, entrepreneurs reported that exposure to a variety of work experiences and job settings equipped them with functional business skills. This finding is aligned with the empirical study of 521 entrepreneurs conducted by Stuetzer, Obschonka, Davidsson and Schmitt-Rodermund (2013) who found that entrepreneurs with a varied set of work experiences have higher levels of the entrepreneurial skills relevant for starting and growing a business. Varied work experience also leads to better opportunity-recognition, exploitation and successfully running a business (Ganotakis, 2012). So, in addition to years of experience, work experience should

include the variety of work experiences, which may include exposure to different functional areas in a business.

Therefore, work experience is a significant source of skills in identifying, exploiting and sustaining the business.

H2c: Entrepreneurial education across entrepreneurship phases

One way in which entrepreneurs learn skills is through entrepreneurship education and training. Entrepreneurship education is mostly offered by academic institutions, either schools or universities, while training is conducted by enterprise development programmes and happens for short periods (Martin et al., 2013). There was a significant difference in the application of skills acquired from entrepreneurship education across the phases. Entrepreneurs running established businesses used skills learned from entrepreneurship training to a greater extent than those in the nascent and new-business phases. It would appear that, after running the businesses for some time, established entrepreneurs attend entrepreneurship courses to acquire skills for growing their businesses.

Considering the South African macro context in which the study was conducted, characterised by the absence of entrepreneurial education at secondary and tertiary level, most entrepreneurs in the start-up phase have not had access to any entrepreneurial education, thus they largely use skills learned from formal education to start and run their businesses. This makes formal education significant throughout the entrepreneurship phases. Since formal education does not contribute to sustenance of a business, this may contribute to the high failure rate of businesses in South Africa.

Indeed, entrepreneurship education gives entrepreneurs skills to identify and exploit opportunities by coming up with new ideas and marshalling needed resources (Martin et al., 2013; Chimucheka, 2014). The findings of this study are supported by an empirical study of 170 entrepreneurs that revealed a positive relationship between entrepreneurship education and managerial skills (Elmuti et al., 2012). In contrast, some studies showed that entrepreneurship courses do not have the intended effects on self-assessed entrepreneurial skills (Oosterbeek, Van Praag & Ijsselstein, 2010). This may indicate ineffective entrepreneurship courses or education.

Despite the contradictory views noted from the literature, this study argues in line with longitudinal empirical evidence by Herrington and Kelley (2013) that entrepreneurship education has an

impact on the development of skills applied by entrepreneurs, especially in a context of poor formal education. Since this study showed that it is mostly entrepreneurs in the established phase who have a need or choice to acquire entrepreneurship training, there should be a concerted effort to make entrepreneurship education and training available to entrepreneurs in the nascent and new-business phases and to tailor entrepreneurship education to the needs of established entrepreneurs.

As explained earlier, the relevance of formal education erodes over time, which forces entrepreneurs to seek entrepreneurship education and training to grow their businesses. As the business environment changes, established entrepreneurs periodically update their skills. They do so by attending management programmes used to groom entrepreneurs in skills required to grow their businesses (Martin et al., 2013).

Therefore this study argues that, in the context of poor education, the application of skills learned from entrepreneurship education and training is low in the nascent and new-business phase, but increases in the established phase as established entrepreneurs acquire entrepreneurship education to improve skills for growing their businesses.

H2d: Previous entrepreneurship experience across entrepreneurship phases

The role of prior entrepreneurial experience as a source of skills in the different entrepreneurship phases is notably unequal. Prior entrepreneurship experience is different from previous work experience in that prior entrepreneurship experience is exposure to working in an entrepreneurial business or start-up business while work experience focuses on any job setting (Becker, 1964). Entrepreneurs in the established phase were more likely to apply skills learned from previous entrepreneurship experience than those in the nascent and new-business phases. Also, established entrepreneurs use skills developed during previous entrepreneurial experiences to start and run new business ventures. As for entrepreneurs in the nascent and new-business phases, especially novice or first-time entrepreneurs, they have less entrepreneurial experiences to apply.

In the reviewed literature, Dimov (2010) argued that prior entrepreneurial experience leads to skills needed in starting, but not running, the business. Therefore the results of this study add to Dimov's (2010) view that established and repeat entrepreneurs use skills acquired from prior entrepreneurship experience to start and run new business ventures. Similar to this study's

findings, Baron and Ensley (2006) indicated that experienced or established entrepreneurs have developed mental frameworks that make the application of some skills, like opportunity-recognition and decision-making, easier. In addition, when starting new business ventures, established entrepreneurs may be able to deal with the liabilities of newness better than those in the start-up phase (Politis, 2008).

Another study of 630 entrepreneurs showed that experienced entrepreneurs use previous experiences that give them mental frameworks for skills such as opportunity-recognition (Ucbasaran, Westhead & Wright, 2009). As they become richer with experience, this facilitates quicker and more effective information processing. Although reliance on mental frameworks reduces the burden on cognitive processing, and allows greater concentration on unique information, some actions become habitual. As a result, those with significant prior entrepreneurship experience can become so mechanical that they end up missing new pieces of information or connecting the dots towards opportunity-recognition (Ucbasaran et al., 2008a; Ucbasaran et al., 2009). This may also explain the earlier discovery of a decrease in applying start-up skills in the established phase. Therefore, complete reliance on prior entrepreneurship experience may reduce the application of significant skills like opportunity-recognition.

H2e: Failure across the entrepreneurship phases

The qualitative interviews revealed that entrepreneurs learned some skills from failure, but there were no specific details of how applying skills learned from failure differs across the entrepreneurship phases. Confirmation of the application of skills was achieved in the quantitative phase where it was found that entrepreneurs in the nascent and new-business phases were more likely to apply skills learned from failures and mistakes made in the process of starting and establishing their businesses than entrepreneurs in the established phase. Since it is logical that established entrepreneurs have more experience, which probably includes failures, the expectation was that established entrepreneurs would report that they applied skills learned from failures to a greater extent than nascent and new-business entrepreneurs. However, the findings suggest this was not the case.

The literature reports that established entrepreneurs have a more positive attitude to failure and credit learning from failure as a more important part of their experience than do nascent and new-business entrepreneurs (Politis & Gabrielsson, 2009; Stokes & Blackburn, 2002; Ucbasaran, Westhead, Wright & Flores, 2010). In contrast, Yusuf (2012) argued that nascent entrepreneurs

are in the process of experimentation or trial and error, where they try out ideas they thought would be great. In the process of experimentation, others discover that initial ideas that led to the start-up are not so great, and they may decide to exit the entrepreneurship process. This suggests that as much as established entrepreneurs learn from failure, nascent entrepreneurs also learn from failure through the process of trial and error. Therefore, this observation may explain the high failure rate of businesses in the nascent and new-business phases of the entrepreneurship process.

Second, as much as established entrepreneurs acknowledge failure as part of learning, they may also draw some learning from experiences of success. They would not be established entrepreneurs if not for the success experiences they encountered when running their businesses. The national experts interviewed in this study raised a significant point that experienced entrepreneurs not only learn from failure, they also learn from success. Therefore, the results of the study are aligned with views from Oser and Volery (2012) who noted that in addition to learning from failures, entrepreneurs also learn skills from success.

Based on these discussions, this study proposes that entrepreneurs in the nascent and new-business phases draw experiences from failures, while entrepreneurs who are established draw learnings from success. Therefore, the current systems of supporting and financing nascent and new-business entrepreneurs needs to accept failure as a necessary part of the journey to successful business venturing.

H2f: Reading books across entrepreneurship phases

The application of skills or practices acquired from reading entrepreneurial books was found to be unequal in the different entrepreneurship phases. Perhaps due to a lack of resources or role models in the early entrepreneurship phases, nascent and new-business entrepreneurs learn relevant skills through reading books by other entrepreneurs. Established entrepreneurs are less active in this respect.

The study's findings are in line with the view that nascent and new-business entrepreneurs model entrepreneurs' stories they read in the media (Baron & Ensley, 2006). In addition, Rae's (2005) empirical study of 30 entrepreneurs revealed that theories created from the practical experiences of "what works" for entrepreneurs may play a role in shaping entrepreneurs. The approach of teaching entrepreneurship based on the narratives of what worked for entrepreneurs may bridge

the gap between theoretical knowing and practical action. Also, Markman and Baron (2003) argued that because nascent entrepreneurs have self-confidence in their own skills, they rather try out things by themselves and not seek help. This is why some of them read the success stories of other entrepreneurs. However, simply copying what other entrepreneurs in different business contexts did may lead to failure in the nascent phase.

Therefore, the study suggests that, due to lack of resources in the nascent phase, nascent entrepreneurs adopt skills in opportunity-recognition, decision-making, venture-creation and growing the business by reading about what other entrepreneurs applied.

H2g: Family and friends across the entrepreneurship phases

It was established from the qualitative findings that friends and family play an important role in an entrepreneur's process of starting a business. The hypothesis was that nascent and new-business entrepreneurs use skills learned from family and friends more than established entrepreneurs. However, the results of this study contradicted this hypothesis by revealing that entrepreneurs in the established phase applied skills learned from family and friends to a greater extent than entrepreneurs in the nascent and new-business phases.

An explanation of the contradictory results is that, in the context of a low level of entrepreneurial activity, most individuals who start businesses do not come from entrepreneurial families. Although family and friends may serve as sources of funding and effective support, they are less likely to be able to offer relevant entrepreneurship skills and advice. In cases where an entrepreneur comes from an entrepreneurial family, they may learn relevant skills from the family businesses.

It would appear that, in a low entrepreneurial activity context, it takes time for entrepreneurs to establish an entrepreneurial network and form entrepreneurial friendships, which are not freely available at start-up. Also, as they become established, they may also attract and encourage other family members and friends to be entrepreneurial. The newly created network of entrepreneurial family and friends then becomes a platform for sharing and transferring entrepreneurial skills.

In line with the existing literature, Davidsson and Honig (2003) argued that entrepreneurs who had entrepreneurial parents and friends were more likely to be entrepreneurs. Lamine, Jack, Fayolle and Chabaud (2015) shared the same view, that having a parent or close friend who

owned a business was a good predictor of those engaged in nascent entrepreneurship. In addition, the presence of an entrepreneur in the family can compensate for financial and managerial restrictions (Greve & Salaff, 2003). Therefore, in a context of high entrepreneurial activity, where family and friends are entrepreneurial, the nascent entrepreneur will rely on these as a source of skills needed to start a business.

With reference to the above discussions, it can be argued that nascent entrepreneurs will use their entrepreneurial families and friends as a source of skills to start businesses. However, if their family and friends are not entrepreneurial, as is typically the case in low entrepreneurship contexts, nascent entrepreneurs will be forced to create entrepreneurial networks over time to share and transfer skills.

H2h: Mentors and coaches across the different entrepreneurship phases

There was a notable difference in the application of skills learned from mentors and coaches across the phases. Entrepreneurs in the established phase applied skills learned from mentors and coaches to a greater extent than those in the nascent and new-business phases. Experienced entrepreneurs have better access to other successful entrepreneurs and consultants who may serve as coaches and mentors. Since entrepreneurs in the nascent phase have poor access to mentorship and coaching, they rely on self-taught skills acquired from reading about other entrepreneurs. As the businesses grow, entrepreneurs use skills obtained from mentors and coaches represented by bridging social capital (Putnam, 2001).

The literature revealed that coaching is a powerful technique for developing entrepreneurial skills relevant to starting and growing businesses (Audet & Couteret, 2012). In line with this study's findings, Ucbasaran, Alsos, Westhead and Wright (2008b) argued that established entrepreneurs may acquire contacts that provide them with the information and skills necessary to exploit business opportunities. Further, established entrepreneurs with prior entrepreneurship experience have broader and deeper relationships with coaches and mentors from which they learn skills. In the nascent and new-business phases entrepreneurs may be reluctant to recognise the need for outside assistance (Markman & Baron, 2003), so it is not surprising that the application of skills from social actors or social networks is low.

Therefore, this study suggests that, in a context of limited access to entrepreneurial networks, over time established entrepreneurs are more likely to create networks that facilitate the transfer and acquisition of skills required to grow their businesses.

Summary discussions on research question 3

Lichtenstein and Lyons (2001) argued that entrepreneurship involves a set of skills that are the result of cultivation and development rather than innate endowment. Chell (2013) and Silva (2007) also indicated that skills are a product of lifelong learning and practice. This means skills are not innate, rather there is the possibility of communication and change over time. Entrepreneurs in the nascent and new-business phase applied skills learned from formal education to a greater extent than established entrepreneurs. The skills acquired from work experience were found to be significant across all entrepreneurship phases. Due to lack of resources in the nascent and new-business phases, these entrepreneurs applied skills learned from failure and mistakes, and skills learned from reading books on what worked for other entrepreneurs. Unlike nascent entrepreneurs with limited resources, established entrepreneurs applied skills acquired from previous business experience and entrepreneurship education.

In addition to human capital investments, established entrepreneurs applied skills acquired from actors in their social networks (entrepreneurial friends and family, mentors and coaches). As much as entrepreneurs apply skills acquired from human capital differently across the entrepreneurship phases, the same applies to skills acquired from social actors. The findings on the unequal role of social networks as sources of skills are supported by Huggins, Izushi, Prokop and Thompson (2015) who demonstrated that the role of social networks in the entrepreneurship phases (that is emergent phase, growth phase and mature phase) is different.

The inclusion of social actors as a source of skills indicates that human capital alone is not sufficient in explaining entrepreneurial skills, as there are other factors to be considered (Lazear, 2005). The inclusion of other factors would mean that skills will be a result of lifelong learning. However, the challenge of regarding skills as a result of lifelong learning will be to develop accurate measurements for skills and control unobservable characteristics that lead to the accumulation of skills. Since skills needed in the different entrepreneurship phases are continuous and ongoing, learning-by-doing may be the most effective way to learn skills (Cope, 2005).

7.5 RESEARCH QUESTION 4 AND HYPOTHESIS 3: RELATIONSHIP BETWEEN HUMAN CAPITAL INVESTMENTS, SKILLS AND ENTREPRENEURSHIP PHASES

Unexpectedly, the findings of the study showed that entrepreneurship phase acts as a moderator of the relationship between human capital investments (asked as part of the demographic data) and skills applied by entrepreneurs. Another moderator is the contextual setting in which entrepreneurship activities take place. Although contextual factors were not tested in the quantitative phase, qualitative findings suggest that context may have a moderating effect on human capital investments and skills applied by entrepreneurs.

7.5.1 Entrepreneurship phase as a moderator

The study investigated the relationship between human capital investments, skills and entrepreneurship phases. The results showed that entrepreneurship phases can act as a moderating variable between human capital investments and the skills applied by entrepreneurs. The moderating effect was found in the relationship between work experience and entrepreneurship education as independent variables and skills as a dependent variable. In addition, entrepreneurship phase has a moderating effect on the relationship between mentors and coaches as independent variables and skills as dependable variables. The diagram below shows the moderating effect of entrepreneurship phases.

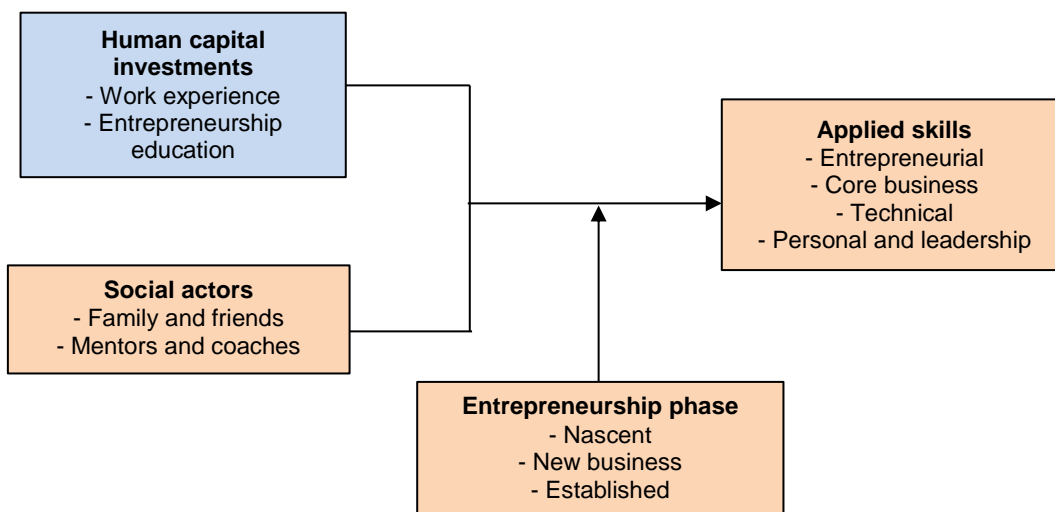


Figure 7-22: Entrepreneurship phase as a moderator

Unger et al. (2011) hypothesised that business age – distinguishing firms in the early phase of the entrepreneurship process from those that are established – has a moderating effect on the relationship between successful business venturing and human capital investments. Their findings indicated that human capital effects were higher for early-phase businesses than for established businesses, which is in line with this study's findings. In the same vein, Marvel et al. (2014) pointed out that human capital investments in start-up firms may be of unequal value to those in a larger established firm. The results of this study showed that entrepreneurship education had higher effects for established entrepreneurs than nascent entrepreneurs.

Therefore, this study made a contribution by indicating that entrepreneurship phases have a moderating effect on the human capital investments and skills applied in running a business.

7.5.2 Context as a moderator

To comprehend the facets of human capital specific to the different entrepreneurship phases, the contextual conditions in which entrepreneurship occurs should be carefully considered. The contextual factors depicted in diagram 7-23 that had material bearing on the skills applied by entrepreneurs in different entrepreneurship phases are: poor formal education; poor entrepreneurial education (poor methods of teaching entrepreneurship, lack of curriculum for entrepreneurship in secondary and tertiary institutions); and a low level of entrepreneurial activity. Due to poor entrepreneurship and formal education in the context of the study, entrepreneurs indicated that skills obtained from education are not aligned with what the real business world requires. Edelman, Manolova and Brush (2008) also emphasised the gap between skills learned from formal education or in the classroom and skills required in the real business world.

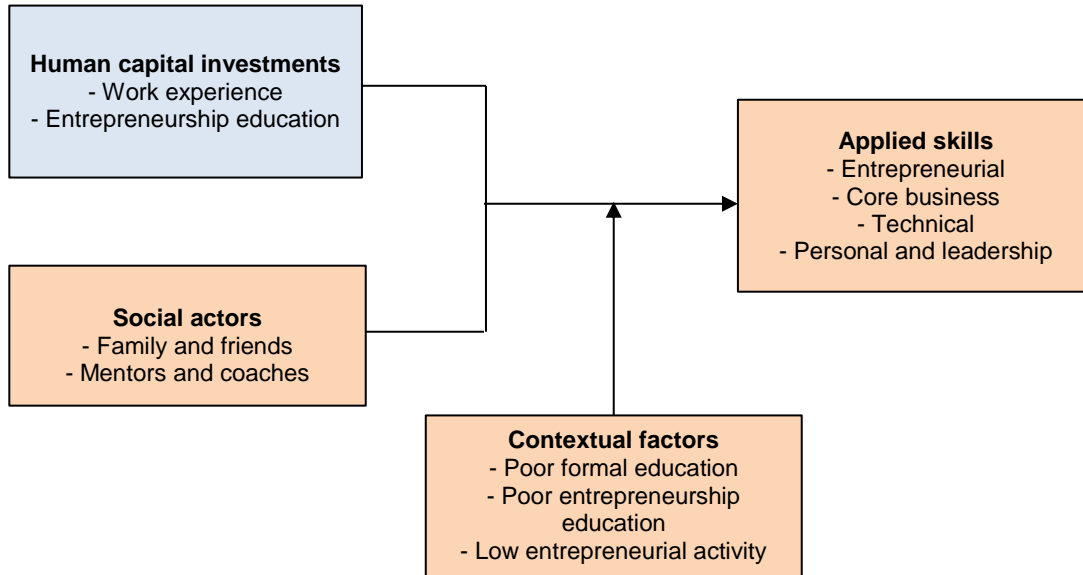


Figure 7-23: Context as a moderator

As discussed earlier, in a context characterised by poor entrepreneurship education, entrepreneurs use formal education as the main source of skills with which to start and run their businesses. The results also showed that, since formal education is relatively poor, it does not guarantee the sustainability of the business over the long term, hence most businesses in this context fail in their first years of operation. So, based on empirical evidence from this study and support by Marvel et al. (2014), it is suggested that contextual factors can affect the skills outcomes of human capital investments needed to start and run a business.

Low entrepreneurial activity as one of the contextual factors suggests that most entrepreneurs come from a background of non-entrepreneurial families and friends, which makes it difficult for them to learn entrepreneurial skills from these close ties. Families and friends may serve as a source of funding and motivation, but not entrepreneurial competencies. Finally, work experience has a great impact on the practical skills needed to start and run a business, therefore in contexts characterised by high unemployment levels, entrepreneurs may start businesses without exposure to practical skills that are instrumental in starting and running a business. This could lead to struggle and failure in the first years of running the business.

7.6 SUMMARY OF THE DISCUSSION

This chapter presented the discussions on qualitative and quantitative findings with reference to the existing literature. The categories of skills required in carrying out entrepreneurial activities across the entrepreneurship phases are start-up, technical, core business (business management, financial management, marketing, human resource management) and personal and interpersonal (social and interpersonal, leadership and personal skills). These skills sets were found to be consistent with the literature themes.

In addition, this study found that each phase of the entrepreneurship process has skills that are accessed predominantly for that stage. Start-up, personal, leadership and marketing skills were used maximally in the nascent phase. In the new-business phase, entrepreneurs emphasised the use of social and interpersonal, technical and human resource management skills. Finally, in the established phase, entrepreneurs predominantly used business and financial management skills to run their businesses. The proposed curvilinear relationships between utility of skills and entrepreneurship phases are explored fully in chapter 8, which presents the theoretical contribution.

The notion that the utility of human capital investments and skills in the different entrepreneurship phases is unequal was supported by the literature. Entrepreneurs in the nascent and new-business phase applied skills learned from formal education to a greater extent than established entrepreneurs. Skills acquired from work experience were found to be significant across all entrepreneurship phases. In addition to human capital investments, established entrepreneurs applied skills acquired from actors in their social networks (entrepreneurial friends and family, mentors and coaches). Nascent and new-business entrepreneurs have limited access to other sources of skills, instead using skills learned from failure and mistakes, and skills learned from reading books on what worked for other entrepreneurs. Therefore, entrepreneurs apply skills acquired from human capital investments and other sources differently across the entrepreneurship phases.

The results showed that the entrepreneurship phase and contextual factors have moderating effects on the relationship between human capital investments and skills required by entrepreneurs, and were supported by the literature. Thus, in a context of poor educational systems, investments in formal education may not produce the skills required by entrepreneurs in their businesses.

CHAPTER 8

THEORETICAL CONTRIBUTION

8.1 INTRODUCTION

The theoretical contribution of this study is presented in this chapter. This study showed that the application of skills across the entrepreneurship phases is curvilinear. The subsequent contribution is the unequal utility of human capital investments and social actors as sources of skills across the different entrepreneurship phases. The chapter concludes with a proposed model that can be tested in future studies.

8.2 SKILLS AND ENTREPRENEURSHIP PHASES

Figure 8-24 shows that the application of start-up, social and interpersonal, technical and human resource management skills across the entrepreneurship phases is an inverted U-shaped curvilinear relationship, thus their utility positively increases from the nascent to new-business phase, and declines in the established phase. In simple terms, these skills are important in starting the business in the nascent phase and taking it to the new-business phase. However, in the established phase, their utility becomes less pronounced.

Marketing, personal and leadership skills have a negative curvilinear relationship with the entrepreneurship phases as they are applied maximally in the nascent phase, but decrease in the new-business and established phases. This means that a person starting a business needs to have the motivation, vision and ability to sell their products. As the entrepreneurship phases unfold, the reliance on these skills is notably reduced.

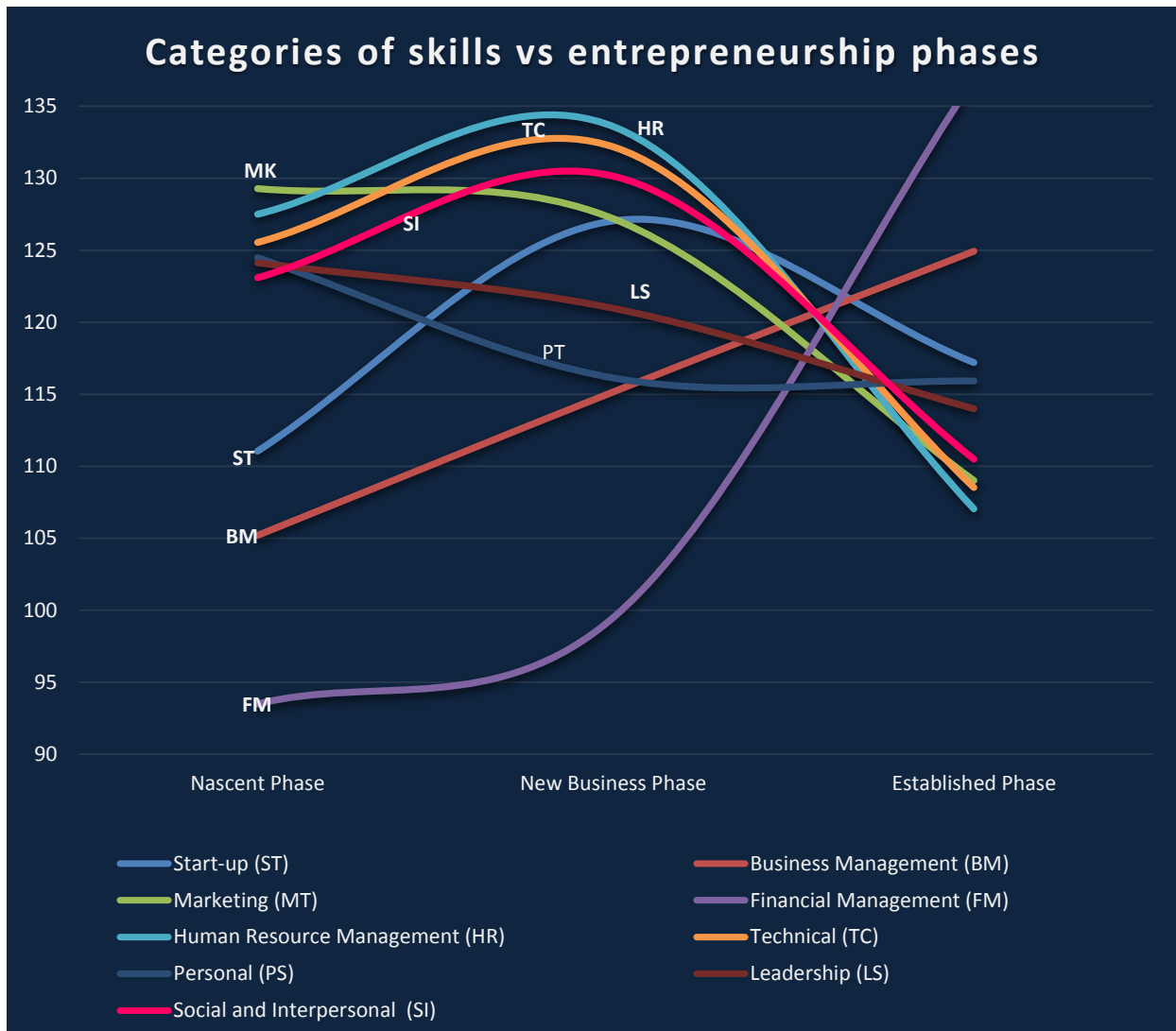


Figure 8-24: Categories of skills across the entrepreneurship phases

Finally, the diagram shows that financial management and business management skills have a positive curvilinear relationship with the entrepreneurship phases as they increase from the nascent phase, through new-business to the established phase. It should be noted that the application of business management skills seems to be a linear rather than curvilinear relationship. This means established entrepreneurs use business and financial management skills less than nascent and business entrepreneurs. As entrepreneurship phases unfold, these skills become more significant.

This diagram is simplified in table 8-68 which shows the application of skills in the three entrepreneurship phases scored as low, medium and high.

Table 8-68: Typology of categories of skills utility across the entrepreneurship phases

Skills	Nascent	New business	Established
Start-up skills	Medium	High	Low
Business management	Low	Medium	High
Financial management	Low	Medium	High
Marketing management	High	Medium	Low
Human resource management	Medium	High	Low
Technical skills	Medium	High	Low
Social and interpersonal	Medium	High	Low
Leadership	High	Medium	Low
Personal	High	Medium	Medium

Different categories of skills vary in importance across the entrepreneurship phases. Reference to the table above indicates that, in addition, entrepreneurs in the nascent and new-business phases need more skills to start and run the business than is true of established entrepreneurs. Since the skills were grouped into clusters, the cluster analysis per entrepreneurship phase is presented next.

Clusters of skills

Comparing the clusters of skills across the entrepreneurship phases as depicted in figure 8-25 shows that the application of start-up, technical and core business skills clusters increased from the nascent to new-business phase, and declined from new-business to the established phase. This suggests the application of these clusters of skills follows an inverted U-shaped curvilinear relationship across the entrepreneurship phases. Therefore, these skills are used most by entrepreneurs in the nascent and new-business phases compared to those in the established phase.

Although reliance on core business skills across the entrepreneurship phases is an inverted U-shaped curvilinear relationship, the skills category analysis in figure 8-25 showed that financial and business management skills are not an inverted U-shaped curvilinear, they are a simple curvilinear as they positively increase from nascent, through new-business to the established phase.

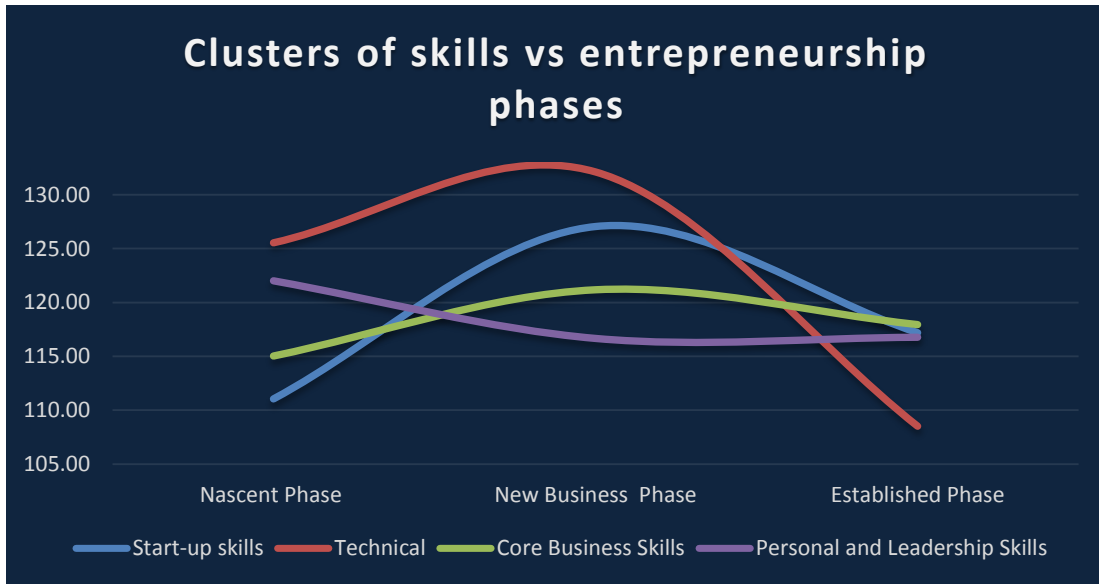


Figure 8-25: Clusters of skills across entrepreneurship phases

A final look at figure 8-25 shows that the personal and leadership cluster is maximally functional in the nascent phase, followed by declining application in the new-business and established phases. This suggests a negative curvilinear relationship with an assumption that, as entrepreneurs engage in entrepreneurial activities, the application of personal and leadership skills declines over time. Declining personal skills can lead to disengagement in the entrepreneurial process. The figure above indicates that technical skills are employed more than start-up skills. The typology of skills clusters across the different entrepreneurship phases is presented next.

Table 8-69: Typology of clusters of skills utility across entrepreneurship phases

Skills	Nascent	New Business	Established
Start-up skills	Medium	High	Low
Technical skills	Medium	High	Low
Core business skills	Low	High	Medium
Personal and leadership skills	High	Medium	Low

Table 8-69 shows that the application of skills in the nascent, new-business and established business phases ranges across low, medium and high. Entrepreneurs who employ skills optimally are those in the new-business phase compared to the nascent and established-business phases. To start a business, nascent entrepreneurs are most likely to need personal and leadership skills,

followed by technical skills. The new-business phase sees an increase in the importance of start-up, technical and core business skills. Technical skills are most significant in the new-business phase, as the entrepreneur needs to have formal production processes. In the established phase, entrepreneurs are most likely to use core business skills, reflecting the increasingly managerial nature of their roles.

Overall skills

The relationship between skills and entrepreneurship phases as depicted in figure 8-26 is an inverted U-shaped curvilinear one, thus the utility of skills positively increases from the nascent to new-business phase and declines from the new-business to established phase. The decline in application of skills suggests that the established entrepreneur needs to acquire new skill sets. However, a decline may also indicate a need for new personnel with innovative and financial management skills to improve financial performance and strengthen the control processes of the business. In addition, this may suggest the failure to apply more skills to grow the business further, thus creating a need for skills to identify new opportunities, launch new products and increase the interpersonal relations of the firm.

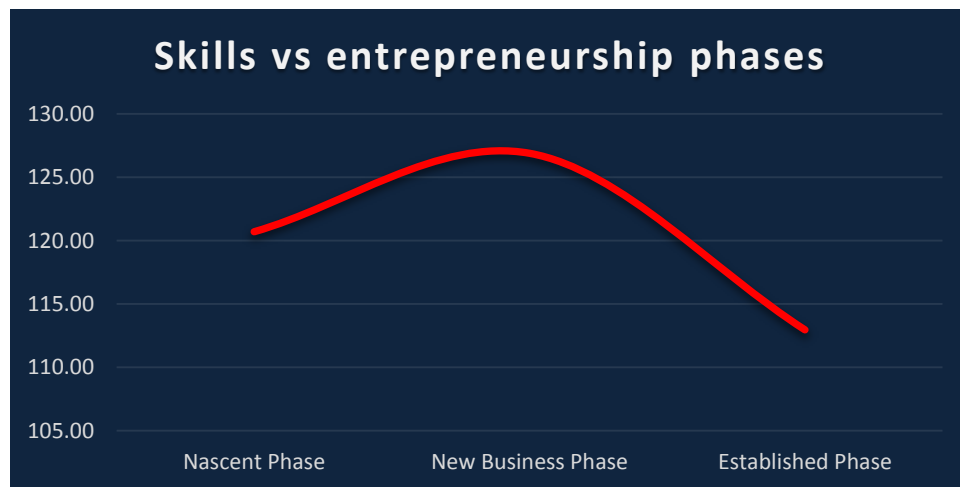


Figure 8-25: Overall skills across the entrepreneurship phases

In support of the summary diagram, table 8-70 shows the application of skills in the three entrepreneurship phases.

Table 8-70: Typology of overall skills utility in different entrepreneurship phases

Skills	Nascent	New business	Established
Overall skills	Medium	High	Low

The study was able to contribute to theory by revealing that skills used by entrepreneurs in running their businesses follow an inverted U-shaped curvilinear relationship, and depreciate over time. In the new-business phase, entrepreneurs use skills most compared with nascent and established entrepreneurs. This means entrepreneurs in the early business phases require the use of more skills than those who are already established. This poses a question on the availability of sources of relevant skills to meet the high demand and utility of outlined skills in the early phases of the entrepreneurship process.

8.3 HUMAN CAPITAL INVESTMENTS AND ENTREPRENEURSHIP PHASES

The sources of skills were found to be human capital investments, social actors, and self-taught through failure and reading books. Figure 8-27 displays the utility of social actors and human capital investments as source of skills across the entrepreneurship phases, being medium in the nascent, followed by low in the new-business and high in the established phases. Therefore, the study suggests a U-shaped curvilinear relationship for the use of skills acquired from human capital investments and social actors across the entrepreneurship phases. This means human capital investments and social actors serve as sources of skills when the business starts; however they become obsolete as the entrepreneurship phases unfold. If an entrepreneur has access to other human capital investments, like entrepreneurship education, they will increase the utility of sources of functional skills, particularly in the established phase.

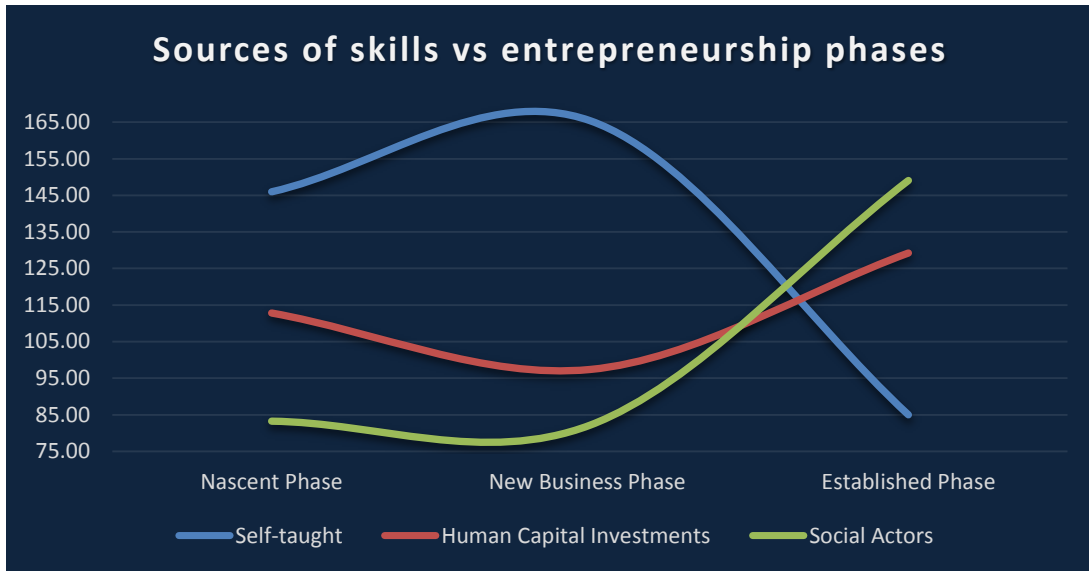


Figure 8-26: Human capital investments across the entrepreneurship phases

Table 8-71 presents a simplified version of how sources of skills are accessed in the different entrepreneurship phases.

Table 8-71: Typology of sources of skills across entrepreneurship phases

Skills	Nascent	New business	Established
Self-taught	Medium	High	Low
Human capital investments	Medium	Low	High
Social actors	Low	Low	High

Figure 8-27 and table 8-71 also illustrate that the application of self-taught skills across the phases is an inverted U-shaped curvilinear relationship, thus self-taught skills are applied most in the nascent and new-business phases, compared to the established phase. Due to limited or lack of access to other significant sources of skills, like mentorship and entrepreneurship education, entrepreneurs starting businesses rely on their own learnings from failure, mistakes and reading entrepreneurial books. However, as the entrepreneurship phases unfold, they realise the need for additional training and forming social networks, hence the decline in self-taught skills and corresponding increase in the utility of human capital investments and social networks in the established phase.

The utility of skills across the different entrepreneurship phases was combined with the utility of sources of skills depicted in figure 8-28. Analysis of this diagram shows that new-business entrepreneurs harness skills most compared to those in the nascent and established phases.

However, looking at the source of skills available to new-business phase entrepreneurs, results showed that they rely on self-taught skills – books and failures. This indicates that as much as new-business entrepreneurs use more skills, paradoxically, they have the most limited sources of skills.

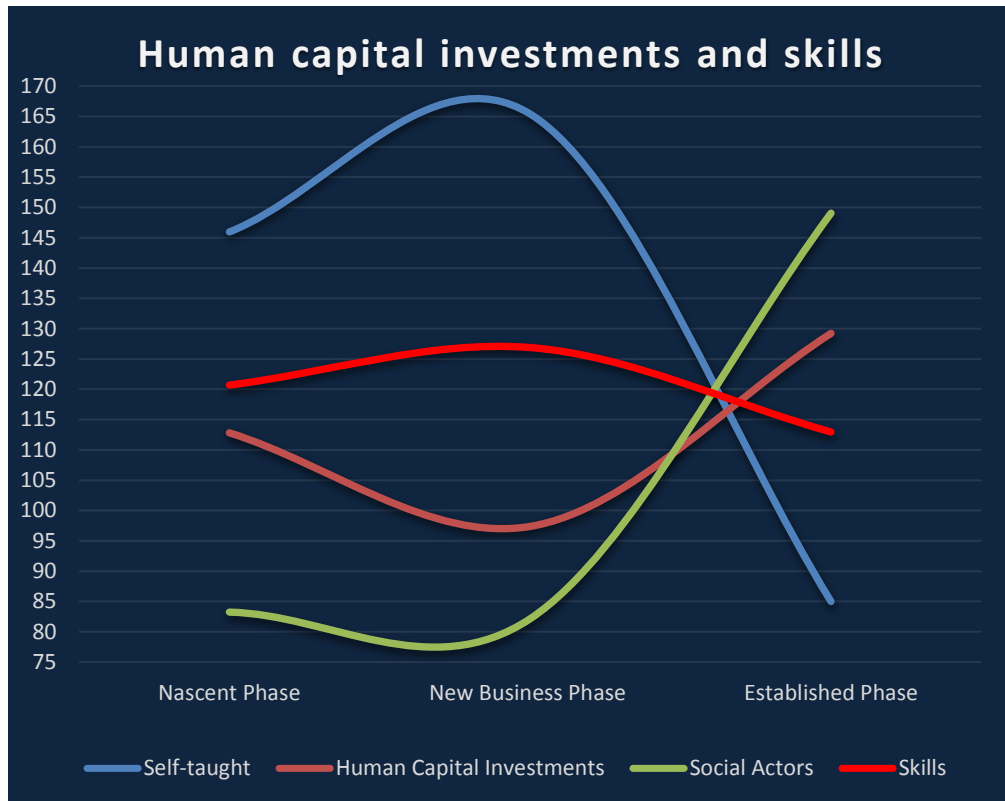


Figure 8-27: Utility of the sources of skills and skills

The significant sources of skills, like human capital investments and social actors, are at their lowest in the new-business phase. This picture clearly indicates one of the problems that may explain the failure of new business.

Overall human capital investments

An overall analysis of the human capital investments showed that when a nascent entrepreneur starts a business, the application of skills from human capital investments is high (especially formal education). As the entrepreneur transitions from the nascent to new-business phase, the human capital investments that provided skills to start the business become less important, thus creating a demand to update human capital investments for the next entrepreneurship phase.

Figure 8-29 shows how the use of human capital investments as sources of skills changes over time.

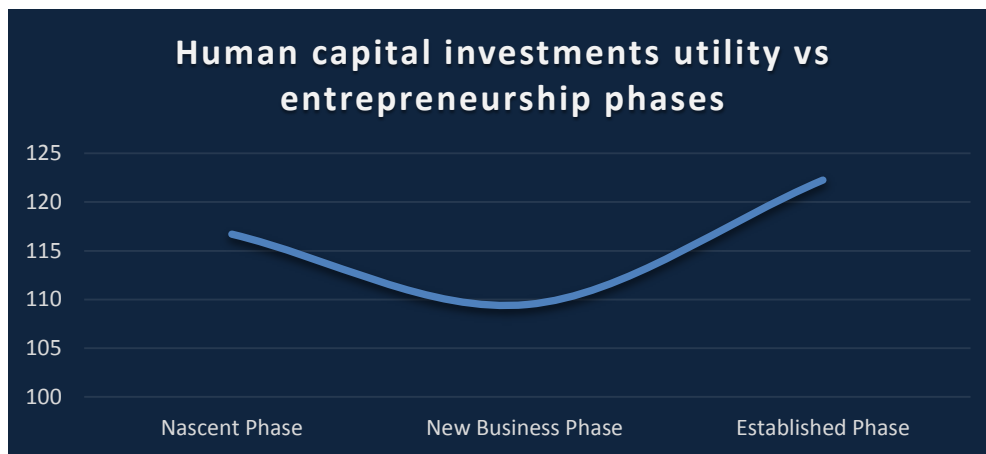


Figure 8-28: Human capital investments utility across the entrepreneurship phases

The table below shows the typology of human capital investments as source of skills in the three entrepreneurship phases.

Table 8-72: Typology of human capital investments utility across entrepreneurship phases

Human capital investments	Nascent	New business	Established
Human capital investments	Medium	Low	High

A decline in the utility of human capital investments, for example formal education, as sources of skills in the new-business phase stimulates entrepreneurs to seek out entrepreneurship courses, as well as mentoring and coaching programmes which then increase the utility of human capital investments from a low in the new-business phase to a high in the established phase. Therefore, the study contributes to the body of knowledge by proposing that skills acquired from human capital investments are applied unequally in the different entrepreneurship phases, following a U-shaped curvilinear relationship. Thus, the human capital investments that were the sources of skills when the business started become obsolete as the entrepreneurship phases unfold, consequently creating a demand on entrepreneurs to look for other sources. In essence, established entrepreneurs have benefits from entrepreneurship education because the enterprise development programme focuses on skills that are more relevant to established rather than nascent or new-business entrepreneurs.

Human capital investments and skills outcomes

When the application of skills in running a business increases (as shown in figure 8-30), there is a decline in the utility of human capital investments as a source of skills. Therefore, an increase in the utility of human capital investments as applicable skills in the established phase confirms the argument raised earlier that since established entrepreneurs experience a decline in skills over time, they are offered additional investments such as entrepreneurship education, coaching and mentoring to acquire skills to revive and grow the business.

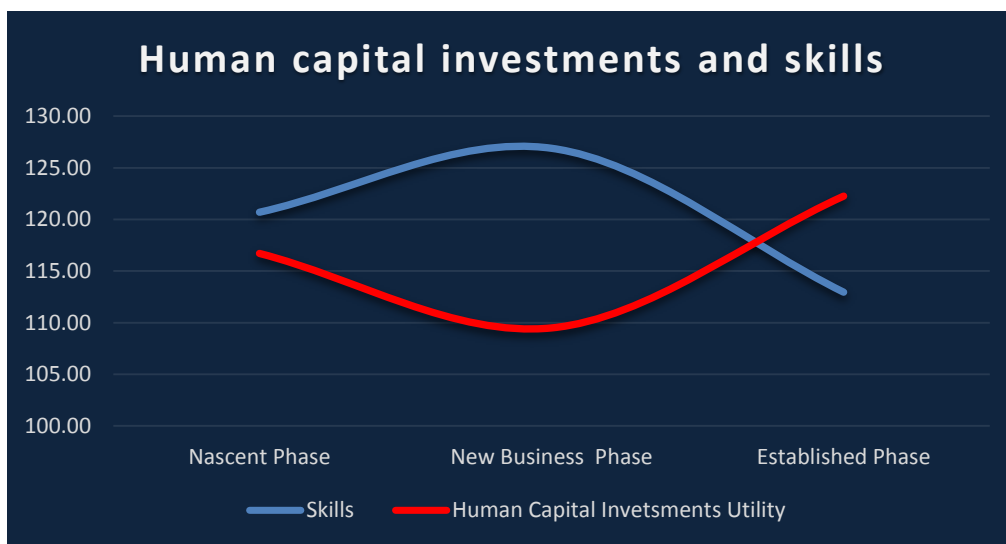


Figure 8-29: Human capital investments and skills utility

To support this diagram, table 8-73 details the application of skills in running a business and the utility of human capital investments.

Table 8-73: Typology of human capital investments and skills utility

Skills	Nascent	New business	Established business
Overall skills	Medium	High	Low
Human capital investments	Medium	Low	High

As such, this study contributes to the existing body of knowledge by arguing that an increase in the application of skills in running a business is accompanied by a decline in the utility of human capital investments as sources of those skills. As skills decline, entrepreneurs counterbalance

this by increasing human capital investments as sources of skills. When skills and human capital investments as source of skills are needed most, they are least available.

Summary on human capital investments and skills in different phases

The application of skills is unequal across the different entrepreneurship phases. Table 8-74 sums up the typology of the utility of human capital investments as a source of skills applied by entrepreneurs in the nascent, new-business and established phases. In simple terms, the typology indicates the significant skills in each entrepreneurship phase.

Table 8-74: Typology of overall human capital investments and skills utility

Human capital investments and skills		Nascent phase	New business phase	Established phase
Skills	Start-up skills	Medium	High	Low
	Business management	Low	Medium	High
	Financial management	Low	Medium	High
	Marketing management	High	Medium	Low
	Human resource management	Medium	High	Low
	Social and interpersonal	Medium	High	Low
	Leadership	High	Medium	Low
	Personal	High	Medium	Medium
	Technical skills	Medium	High	Low
	Core business skills	Low	High	Medium
	Personal and leadership skills	High	Medium	Low
Overall skills	Medium	High	Low	
Sources of skills	Human capital investments	Medium	Low	High
	Social actors	Low	Low	High
	Self-taught	Medium	High	Low
Sources of skills and skills	Overall skills	Medium	High	Low
	Human capital investments	Medium	Low	High

Entrepreneurs in the nascent and new-business phase use more skills on a day-to-day basis to run their businesses while those in the established phase use fewer skills. Regarding human capital investments, in the early phases of the entrepreneurship process, entrepreneurs rely on conventional interventions such as formal education; however the utility of these investments decreases as the entrepreneurship phases unfold. In the established phase, entrepreneurs have better access to other sources of skills, which increases the utility of human capital investments as a source of skills.

8.4 CONCEPTUAL MODEL

Development of the proposed model unfolded in five steps. Step 1 was conceptualising the proposed model which started in the literature review. In step 2, the model was improved by incorporating the qualitative findings and extending these to form a foundation for the quantitative phase. Step 3 happened in the quantitative phase, where skills were statistically validated and compared across the different phases. The final model with corresponding hypotheses was presented in step 4. The fifth and final step outstanding would be to test the proposed model empirically. The diagram below depicts the process that led to the proposed model.

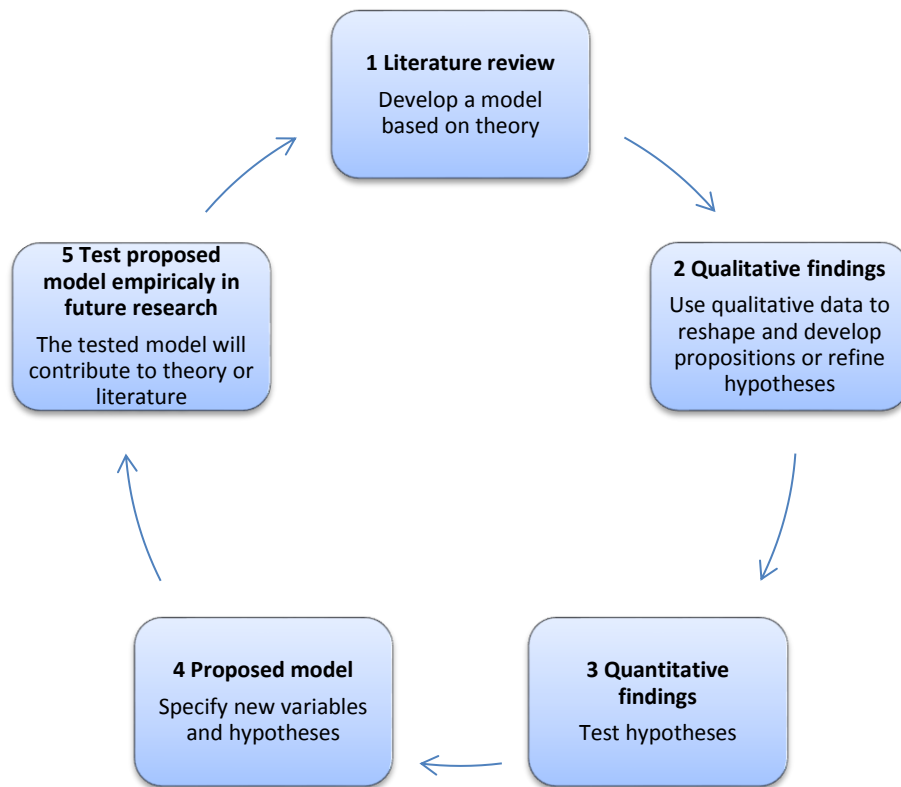


Figure 8-30: Conceptual model development process

Step 1: Literature review

In the literature review, Becker (1964) indicated that human capital investments lead to skills of economic value. The human capital investments – represented by work experience and formal education, entrepreneurship education and prior entrepreneurship experience – lead to skills needed to perform entrepreneurial activities. Regarding the skills, the literature review indicated that there are many inconsistent lists of skills applied by entrepreneurs and these were

conceptual, lacking empirical evidence. In addition, these skills were not related to the entrepreneurship phases. The first proposed model, captured in figure 2-5, was built on the notion that human capital investments lead to skills which need to be related to the entrepreneurship phases. The proposed model showed that skills applied by entrepreneurs across the entrepreneurship phases were unknown. This motivated the study to start with the qualitative phase to discover the skills across the different phases, and later confirm the skills quantitatively against a larger population.

STEP 2: Qualitative findings

From the qualitative findings, the skills identified comprised start-up, core business, technical, and personal and leadership skills. These skills were compared across the different phases, which led to refining the hypotheses. This second phase of the study showed that, in addition to human capital investments as sources of skills across the different entrepreneurship phases, there were other identifiable sources. These included social actors who are family, friends, mentors and coaches. It was also discovered that entrepreneurs reported self-taught skills through failure and reading books. The qualitative findings indicated that contextual factors had an impact on human capital investments and skills. Therefore skills identified, social actors, self-taught skills and contextual factors were added to the model (figure 4-7).

STEP 3: Quantitative findings

The quantitative phase was able to statistically show that skills differ according to the entrepreneurship phase. It also emerged that human capital investments were unequally applied in the different entrepreneurship phases. In addition, when the regression test was run, the entrepreneurship phase was found to have a moderating effect on the relationship between human capital investments and skills. Thus, human capital investments such as entrepreneurship education have a higher effect as a source of skills used by established entrepreneurs than nascent entrepreneurs while formal education has a higher effect for nascent entrepreneurs. This confirmed the study's notion that the role of human capital investments is unequal across the entrepreneurship phases. Although the moderating effect was not positive for some human capital investments, future studies can explore this further. In this step, the effects of age and gender were controlled.

STEP 4: Proposed model

In addition to the frameworks, models and typologies already discussed in this chapter, figure 8-32 depicts the relationships drawn from the various model-development steps. The diagram shows human capital investments and skills representing human capital and social actors that are used differently in the three entrepreneurship phases (nascent, new-business and established phases). The utility of human capital investments, skills and social actors across the three entrepreneurship phases is moderated by contextual factors. The variables in the model and corresponding hypotheses are discussed in the preceding paragraphs.

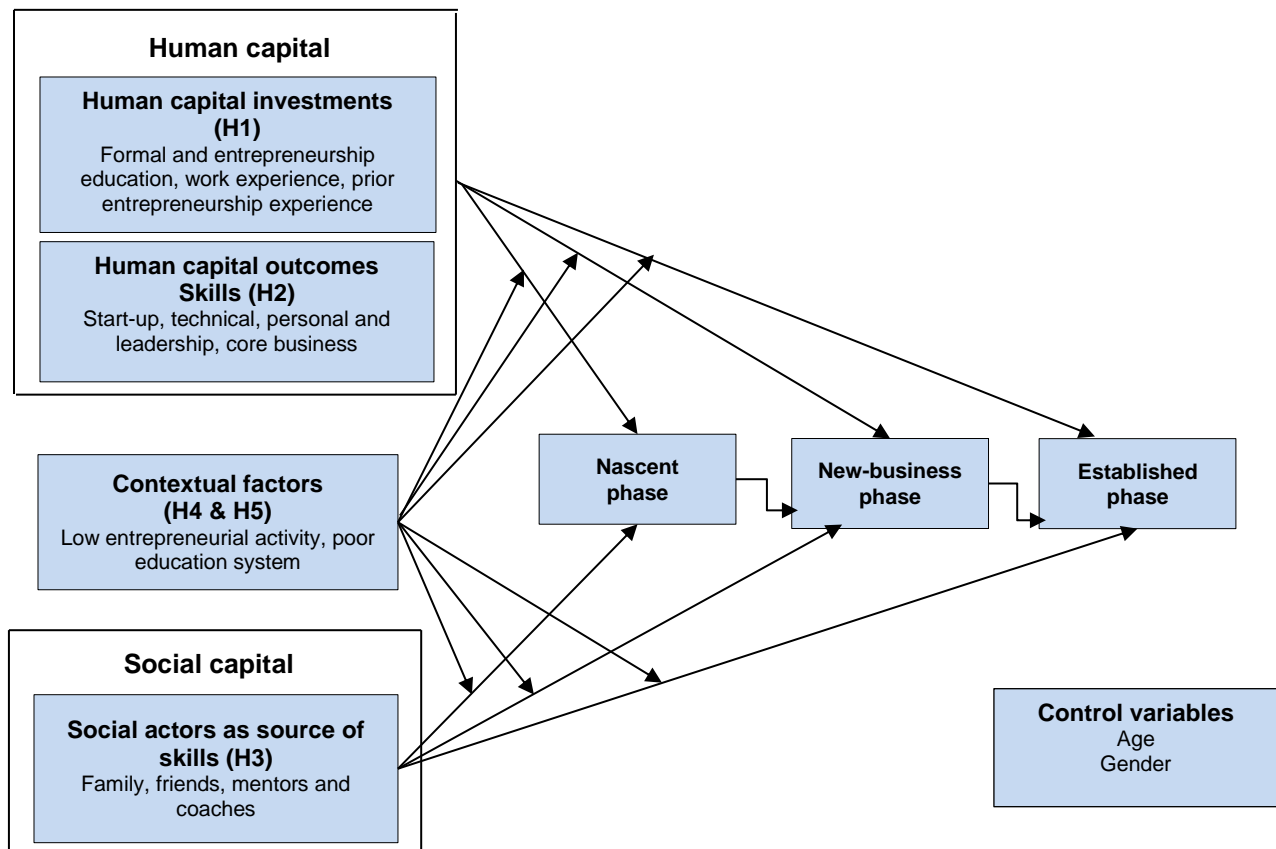


Figure 8-31: Human and social capital across entrepreneurship phases

Human capital investments are measured as formal education (highest level attained and field of study), work experience (number of years in management position), entrepreneurship education (academic vs non-academic training), and prior entrepreneurship experience (owning a business or working in an entrepreneurial business). These investments are the sources of skills

applied by entrepreneurs in running their businesses. The study showed that the utility of human capital investments as sources of skills is different across the entrepreneurship phases. Therefore each phase has its own specific human capital investment requirements.

Skills in the context of this study are regarded as the proficiency in performing a task, as a result of human capital investments (formal and education, entrepreneurial education, work, industry and entrepreneurship experiences) and can be improved by training, practice and development. The skills significant in running a business fall in four main clusters: start-up, technical, core business, and personal and leadership skills. The results revealed that skills are used unequally in the three entrepreneurship phases. Therefore it can be argued that the utility of skills across the entrepreneurship phases is dynamic and an inverted U-shaped curvilinear relationship.

Social actors: These actors form part of social capital and can be classified as bonding social capital that includes family and friends while bridging social capital consists of mentors and coaches (Putnam, 2001). Social actors with entrepreneurship experience will be a source of entrepreneurship-specific skills while social actors without entrepreneurship experience will be a source of generic skills not specific to entrepreneurial tasks. The role of social actors as sources of skills was found to be unequal across the entrepreneurship phases.

Contextual factors serve as moderating variables of the utility of human capital (investments and skills) across the different entrepreneurship phases. Factors in South African include low entrepreneurial activity and the poor national education system. These factors vary from country to country, especially when comparing developing and developed economies. A contextual setting can also be industry of operation, which is high- versus low-technology industries.

Entrepreneurship phases: The study argued that entrepreneurs are treated the same despite the phase of development they are in. The findings indicated that entrepreneurs in the nascent, new-business and established phases have different skills and human capital investment requirements, therefore they should be treated differently. The three entrepreneurship phases are clearly defined in chapter 1.

The five hypotheses based on the model and results of the study are as follows:

Hypothesis 1

H1: The utility of human capital investments as sources of skills applied by entrepreneurs to run their businesses is unequal across the entrepreneurship phases (nascent ≠ new business ≠ established).

Sub-hypothesis of hypothesis 1

The utility of H1a) formal education; H1b) work experience; H1c) entrepreneurship education; and H1d) prior entrepreneurship experience as sources of skills is unequal across the entrepreneurship phases.

Hypothesis 2

H2: The utility of skills required to run a business is not equal across the entrepreneurship phases (nascent ≠ new business ≠ established).

Sub-hypothesis of hypothesis 2

The utility of H2a) start-up; H2b) business management; H2c) financial management; H2d) marketing; H2e) human resource management; H2f) technical; H2g) social and interpersonal; H2h) leadership; and H2i) personal skills is unequal across the nascent, new-business and established phases.

Hypothesis 3

H3: The utility of social actors as sources of skills applied by entrepreneurs to run their businesses is unequal across the entrepreneurship phases (nascent ≠ new business ≠ established).

Sub-hypothesis of hypothesis 3

The utility of H3a) family; H3b) friends; H3c) mentors; and H3d) coaches as sources of skills applied by entrepreneurs to run their businesses is unequal across the entrepreneurship phases.

Hypothesis 4

H4: The contextual factors moderate the utility of human capital (investments and skills) across the different entrepreneurship phases.

Hypothesis 5

H5: The contextual factors moderate the utility of social actors (family, friends, mentors and coaches) across the different entrepreneurship phases.

STEP 5: Test the proposed conceptual model empirically

The proposed model and hypotheses can be tested in future research studies. Details on future research are outlined in chapter 9. The results of the empirically tested model will contribute to the entrepreneurship literature.

8.5 SUMMARY OF THEORETICAL CONTRIBUTION

This chapter presented the theoretical contribution of the study to the sources of skills and skills specific to the entrepreneurship phases. The use of line graphs clearly demonstrated how the role of human capital investments and skills changes over time (see appendix K for line graph statistics). Overall results showed that the application of skills and utility of human capital investments across the entrepreneurship phases is not linear but curvilinear, indicating that the utility of skills and human capital investment as source of skills is not constant. The typology of skills utility clearly showed how skills are used differently across the entrepreneurship phases, which has both theoretical and practical contributions.

The contribution concluded with a conceptual model that can be tested to understand the mediating role of skills on the human capital investments-venture outcomes relationship and many other hypothesised relationships. These relationships are another significant part of the model and could be tested in future research. Other contributions to methodology and business practice are presented in the next chapter.

CHAPTER 9

CONCLUSION AND RECOMMENDATIONS

9.1 INTRODUCTION

The objectives of this study were:

- First to identify the skills applied by entrepreneurs in running their businesses;
- Second determine the utility of skills across the different entrepreneurship phases;
- Third establish the utility of human capital investments as sources of skills in the different entrepreneurship phases; and
- Fourth define the relationship between skills, human capital investments and entrepreneurship phases.

The literature review was anchored on these constructs: human capital theory, human capital investments, skills and entrepreneurship phases. This study applied the human capital theory to expand on the work of Marvel et al. (2014) and Unger et al. (2011), who argued that the different dimensions of human capital, which are investments and skills, may be suitable in the different entrepreneurship phases. In addition, authors recommended that future studies should examine skills relevant to the different entrepreneurship phases (Chell, 2013; Morales & Marquina, 2013). The gap identified in this study is that the utility of human capital investments and their outcomes, which are skills, is different in each entrepreneurship phase.

The focus on skills in the different entrepreneurship phases was a response to the call by Brixy et al. (2012) who argued that entrepreneurship should be studied at the different phases of the process. The existing literature adopted a single-phase approach to understanding entrepreneurial skills, therefore this study filled the gap by exploring the different skills that entrepreneurs at different phases use in running their businesses.

The study employed a sequential mixed-method research design, effecting interviews and survey methods. The qualitative interviews were conducted first in phase I, followed by quantitative research in phase II. Face-to-face interviews were conducted to identify the skills across the different entrepreneurship phases and develop a survey instrument that was used to measure skills against a larger population of entrepreneurs. After developing the quantitative measuring instrument, a questionnaire survey was conducted on a population of 11 001 entrepreneurs which

resulted in 235 valid cases. The purpose of the quantitative study was to confirm the skills derived from the qualitative findings, determine their utility across the different entrepreneurship phases, and test the relationship between human capital investments, skills and entrepreneurship phases. Confirmatory factor analysis and inferential statistics were used to test the hypotheses.

The purpose of this chapter is to present the final conclusions of this research. The chapter starts with conclusions on the study's research questions. The three main contributions of the study to theory, methodology and practice are clearly articulated. Recommendations for future research conclude the chapter.

9.2 CONCLUSIONS ON RESEARCH QUESTIONS

Investigations into the four research questions that this study set out to answer are concluded as follows:

a) RESEARCH QUESTION 1: SKILLS APPLIED BY ENTREPRENEURS

The first research question was: *what are the skills applied by entrepreneurs in the different entrepreneurship phases?* Significant skills applied by entrepreneurs to start and run their businesses are start-up skills; core business skills (business management, financial management, human resource management and marketing skills), personal and leadership skills (social and interpersonal, leadership and personal skills) and technical skills. This study provided an exhaustive list of skills that included skills not identified in prior literature. The identified skills were related to the business areas, namely marketing, finance, human resource and technical operations. This means skills should be related to the different functions of the business. If what the entrepreneur needs to do is articulated and known, it will be easy to identify the skills required.

Therefore the study was able to answer the research question and related research objective by designing a framework of skills applied by entrepreneurs in the different phases.

b) RESEARCH QUESTION 2: SKILLS ACROSS THE ENTREPRENEURSHIP PHASES

This research question investigated how the utility of skills differs across the entrepreneurship phases. Indeed, the hypothesis that skills are used unequally in the different entrepreneurship

phases was supported. When a business starts in the **nascent phase**, an entrepreneur uses personal, leadership, marketing and technical skills. Personal and technical skills emerged as the most significant skills for entrepreneurs starting a business. They use technical and industry-specific skills for producing products, either service or tangible products. They also need to work hard, use intuition and have self-motivation to exploit the opportunity. In addition, crafting the vision and sharing it with their few employees is critical. Further, in this phase, the skills to advertise and sell the products to increase cash flow are critical. Contrary to the notion that start-up skills are most significant in the nascent phase, technical, marketing, personal and leadership skills are the most-used skills by people starting businesses. This suggests some entrepreneurs start businesses more because of the technical expertise they have than identifying opportunities.

In the **new-business phase**, technical, start-up, human resource, social and interpersonal skills are most relevant. Technical skills become more significant as the business starts to use formalised production processes. In this phase, entrepreneurs start hiring personnel, hence the significance of human resource management skills. A significant component of the new-business phase is the entrepreneur's ability to let go of some responsibilities and start delegating tasks to employees. Unlike the nascent phase where start-up skills were not dominantly applied, in this phase, entrepreneurs are fully exploiting identified opportunities. As the business starts to grow, entrepreneurs also grow their networks, hence the increased importance of social and interpersonal skills.

The skills for crafting the vision and sharing it with employees, which were significant in the nascent phase, decline in the new-business phase. In addition, the utility of marketing skills in this phase declines as entrepreneurs have established their customer base. As the business continues running, the application of personal skills also starts declining, suggesting that some personal skills like applying intuition in decision-making are substituted by the use of formalised systems that aid in more rigorous decision-making processes. Conversely, the decline may be an indication that entrepreneurs at times become less motivated as the entrepreneurship phases unfold, which may be one explanation for the high failure rate of businesses in this phase.

In the **established phase**, social and interpersonal, leadership, technical, start-up, marketing, human resource and personal skills are operationalised to a lesser extent than financial and business management skills. Businesses in this phase are already generating cash, hence skills to manage cash flow, costs and read financial statements are important. In this phase, many businesses tend to focus more on development through diversification and venturing into other

industries. As a result, entrepreneurs apply skills to plan the financial resources that will support growth. In this phase, financial skills also include selling the company's shares as a way of raising capital. Since the business is run more formally in the established phase than in the early phases, business management skills are used most by established entrepreneurs.

An **overall analysis of skills** showed that the utility of skills increases from the nascent to the new-business phase, and declines in the established phase. Entrepreneurs in the nascent and new-business phase use more skills to run the businesses than established entrepreneurs. The high utility of skills in the nascent and new-business phases suggests entrepreneurs in these phases have a higher need of skills and they should not be neglected in entrepreneurship development programmes.

Therefore, the study was able to answer the research question and related research objective by showing that the utility of skills in the different entrepreneurship phases is not the same. The nascent and new-business entrepreneurs draw on skills to start and run their businesses that are quite distinct from those used by established entrepreneurs. The new-business phase employs a larger pool of skills compared to nascent and established entrepreneurs.

c) RESEARCH QUESTION 3: HUMAN CAPITAL INVESTMENTS ACROSS THE DIFFERENT ENTREPRENEURSHIP PHASES.

For this research question, the theory indicated that human capital investments were the source of skills, so their utility was compared across the different entrepreneurship phases. Other sources of skills identified from the study include social actors (family, friends, mentors and coaches) and self-taught skills through reading books and failures. Their utility as sources of skills was also compared across the different entrepreneurship phases.

Human capital investments: Regarding the sources of skills, the utility of human capital investments is different across the entrepreneurship phases. Entrepreneurs in the nascent phase rely on formal education as a source of skills. However, as the entrepreneurship phases unfold, investments that were significant sources of skills become less relevant, creating a need to look for other sources of skills. In the new-business phase, the utility of skills from human capital investments is at its lowest, increasing the need to look for further sources of skills. This is the stage at which a diversity of skills is most heavily used and yet the sources of skills have not been

available. If entrepreneurs do not get access to other sources, they may face difficulty in growing the business, hence some of the new venture failures seen in this phase.

In the context of this study, established entrepreneurs have access to other sources, like entrepreneurship training, mentoring and coaching that are not available to entrepreneurs in the nascent and new-business phases. In South Africa, established entrepreneurs have been able to access public and private enterprise development initiatives which equip them with the skills needed to run a business.

These enterprise development programmes have tended to focus on established entrepreneurs who happen to be least reliant on skills in their business as opposed to nascent and new-business phase entrepreneurs who rely heavily on skills when starting and running their businesses. Since nascent and new-business entrepreneurs have limited access to entrepreneurship education, they use skills acquired from formal education, which was discovered to be poor. Formal education provides skills that are disconnected from the real business world, and does not lead to sustaining a business in the long term. Again, this may explain why some businesses fail in the first years of operation.

In essence, the application of skills learned from human capital investments across the entrepreneurship phases was found to be U-curvilinear, implying that the utility of human capital investments declines from the nascent phase to the new-business phase and increases from the new-business to established phase. This means that, as entrepreneurs run businesses, the human capital investments that were the major sources of skills in the start-up phase become less important in the new-business phase, thus requiring entrepreneurs to update their human capital investments in the established phase.

Human capital investments vs skills: As the application of skills increases in the early phases, the utility of human capital investments as a source of skills decreases. This means that the more entrepreneurs use skills to carry out entrepreneurial tasks, the less significant the investments they had when the business started become as sources of skills. So, a decline in the utility of skills in later stages is accompanied by an increased use of human capital investment implying that, when skills decline, entrepreneurs seek additional capability investments to increase their skills base.

Social actors (family, friends, mentors and coaches): The utility of social actors as sources of skills across the different entrepreneurship phases was found to be unequal. Established

entrepreneurs apply more skills from social actors than entrepreneurs in the nascent and new-business phases. Those in the established phase have access to mentoring and coaching programmes that serve as platforms to acquire guidance and grooming. In addition, these entrepreneurs have established friends with whom they share skills. Contrary to the notion that family and friends are important in the nascent phase, the study showed that if family and friends do have some level of exposure to entrepreneurship, they will be a significant source of skills for nascent entrepreneurs. But if family and friends do not have entrepreneurship experience, they will be a source of funding and emotional support and not entrepreneurial skills. Finally, in some instances, it is not necessarily poor access to resources that explains why nascent and new-business entrepreneurs use skills from social actors minimally compared to established entrepreneurs, but nascent entrepreneurs can be over-confident about their own skills and not seek help from social actors.

Self-taught form failure and reading books: Due to lack of skills resources in the nascent phase, these entrepreneurs rely on skills learned from reading books about other entrepreneurs. However, it is in the new-business phase that the utility of books as a source of skills is at its highest compared to the nascent and established phase. The results showed that the leverage of skills in the new-business phase is highest compared to the other two phases, but these entrepreneurs do not have access to significant sources of skills. For example, the utility of skills from social actors and human capital investments, like education, is lowest in the new-business phase. This makes entrepreneurs rely on skills learned from reading books, which may contribute to the failure of the business.

In addition, the usefulness of skills learned from books declines in the established phase as these entrepreneurs have access to other sources of skills, like entrepreneurship education, mentorship and coaching.

Finally, the trial-and-error nature of the nascent phase forces these entrepreneurs to learn skills from failure encountered in the process of testing their ideas more than entrepreneurs in the established phase. The lack of skills resources, use of skills learned from reading books by other entrepreneurs, and over-confidence can be an explanation of why nascent entrepreneurs make serious mistakes that could lead to business failure in the early phases of the entrepreneurship process.

Therefore, the study was able to answer the research question and related research objective by showing that the sources of skills are used unequally in the different entrepreneurship phases. The comparison of the phases indicates that new-business entrepreneurs, who use more skills, do not have any significant sources of skills except for reading books by other entrepreneurs.

d) RESEARCH QUESTION 4: HUMAN CAPITAL INVESTMENTS, SKILLS AND ENTREPRENEURSHIP PHASE

The study also aimed to bring the three constructs (human capital investments, skills and entrepreneurship phases) together and determine if there is any relationship between them. The entrepreneurship phase acted as the moderating variable of the relationship between human capital investments as independent variable and skills applied in running the business as the dependable variable. Thus, entrepreneurship education had more impact on skills used by established entrepreneurs than entrepreneurs in the nascent and new business phase. Also, work experience was more dominant as a source of skills for established entrepreneurs than nascent entrepreneurs.

The entrepreneurship phase moderated the relationship between the social actors, who are a source of skills, and the skills applied by entrepreneurs. Thus, entrepreneurs in the established phase used skills acquired from social actors more than entrepreneurs in the nascent and new-business phases. This validated the notion that utility of human capital investments and skills is different across the nascent, new-business and established phases of the entrepreneurship process.

The contextual factors were found to have a moderating effect. Thus, in a context of poor formal and entrepreneurship education, entrepreneurs may lack the significant skills required to run the day-to-day business. Poor formal education gives entrepreneurs skills that are disconnected with the requirements of the real business world, which can contribute to failure in carrying out entrepreneurial tasks.

Therefore, the study answered the research question and related research objective by indicating that the entrepreneurship phase can act as a moderator of the relationship between human capital investments and skills.

9.3 CONTRIBUTIONS OF THE STUDY

Reflections on the contribution of the study

The potential contributions of the study were influenced by two conversations. Firstly, the real-world conversation (Ryne, 2002) where entrepreneurs who attended entrepreneurship education programmes were treated the same despite their level of development. However, what was not clear was what skills entrepreneurs need at each entrepreneurship phase. So how can entrepreneurs be treated according to their phases if the skills they require in that phase are unknown?

The second influence centred on the theory conversation (Ryne, 2002). To understand the practice problem of skills according to phases, there was no entrepreneurship theory or model that showed skills at different phases. Had this model existed, this study would not have been required. Therefore, human capital theory as it emphasises the study of skills was considered appropriate, although it does not show how skills change as entrepreneurship phases unfold. In addition, prior entrepreneurship skills researchers never looked at more than one phase of the entrepreneurship process. This was the main theoretical contribution.

The study added a new perspective (Corley & Gioia, 2011; Whetten, 1989) by showing the utility and the dynamic and curvilinear nature of the different dimensions (investments and skills) of human capital across the entrepreneurship phases. It is of value (Whetten, 1989) to entrepreneurship scholars to adopt a multiphase approach to the entrepreneurship process and for practitioners (Corley & Gioia, 2011) to treat entrepreneurs according to their different phases. Although the study was based on what and how (Whetten, 1989), it did not come up with just a list of skills and other variables, but showed the relationships among the variables. The detailed theoretical, methodological, empirical and practice contributions are discussed next.

9.3.1 Theoretical contribution

Below is the theoretical contribution in addition to what was presented in chapter 8.

a) Human capital theory in entrepreneurship

Human capital investments and skills

Since publication of the most-cited and criticised “The promise of Entrepreneurship as a Field of Research” by Shane and Venkataraman (2000), debates have centred on the lack of frameworks and theories in the field of entrepreneurship (Moroz & Hindle, 2012). The lack of frameworks makes it challenging to determine skills employed in the different entrepreneurship phases. This study filled the gap noted by Chell (2013), Brixy et al. (2012) and Marvel et al. (2014) to identify human capital investments and skills in the entrepreneurship phases rather than making a composite list of skills unrelated to phases of the entrepreneurship process.

This study made a contribution by advancing on the human capital theory that human capital investments and skills outcomes change in significance in the different entrepreneurship phases. The skills were found to be used most by entrepreneurs in the nascent and new-business phase than entrepreneurs in the established phase. This simply suggests that human capital is not static and linear, but dynamic, curvilinear and changes over the entrepreneurship phases.

The study further contributed by analysing skills as learned constructs that must be separated from competencies and entrepreneurial qualities or personality traits, which are difficult to change (Mitchelmore & Rowley, 2010). The study showed that skills do not necessarily imply innateness but can be learned through different developmental investments.

In the entrepreneurship field, competencies and skills are treated the same. However, through the literature review, this study contributed to the body of knowledge by clearly distinguishing skills from competencies. Skills were regarded as one aspect of competencies.

Conceptual model

This research developed a conceptual model which shows that the application of human capital investments and social actors as sources of skills is different across the entrepreneurship phases. The model also indicates that the utility of skills is unequal in the different entrepreneurship phases. In addition, contextual factors were found to have a moderating effect on the application of skills and human capital investments across the entrepreneurship phases. The model contributes to the body of knowledge in that, previously, human capital was related to one entrepreneurship phase: this study introduced the application of human capital across different phases of the entrepreneurship process.

Hypotheses

To understand human capital investments and skills, this study used qualitative findings (chapter 4) as the guiding anchor to develop hypotheses (chapter 5) that were tested quantitatively. Other hypotheses were developed after proposing the model of human capital investments, skills and venture outcomes. Therefore, the suggested hypotheses can contribute to theory development in entrepreneurship, particularly on understanding entrepreneurial skills and entrepreneurship phases.

Entrepreneurship skills wheel and framework

The skills wheel showed the most significant skills in each entrepreneurship phase. In support of the wheel, the framework of skills provided exhaustive lists of skills with operational definitions. The wheel showed that skills do not occur in a vacuum, but need to be related to the entrepreneurship phases. Further, the context in which entrepreneurship activities occur impacts on the sources of skills, which consequently influences the skills required by entrepreneurs.

Typology of skills and human capital investments across the different phases

The typology of skills showed the use of skills across the different entrepreneurship phases. The typology is an appropriate explanation of the line graphs, which indicated that the use of skills across the different phases is curvilinear. In addition, the typology provided a clear explanation of how human capital investments are used across the different phases. Therefore, these profiles can be used to determine the skills applied most in the different entrepreneurship phases.

b) Social capital theory: social actors

Lamine et al. (2015) lamented that research does not focus on the kind of social networks that evolve with entrepreneurial activities. In addition, Huggins et al., (2015) argued that the role of social networks is not the same in different entrepreneurship phases (emergent, growth and mature). This study contributed to the body of knowledge by showing that the role of social actors or networks as a source of skills is different across the entrepreneurship phases. For example, mentors and coaches are a more significant source of skills for established entrepreneurs than

for nascent and new-business phase entrepreneurs. Therefore, this finding will help in assigning social actors according to the entrepreneur's level of development.

c) Entrepreneurship process: entrepreneurship phases

The study showed that entrepreneurs in each entrepreneurship phase have different skills requirements and should not be treated the same. In addition, the study showed that the comparison of more than two phases can provide a better understanding of entrepreneurship phases over time. Although the study focused on skills, there could be many other factors like personal characteristics that are different, depending on the respective phase of the entrepreneur. As such, this study advocates for a multiphase approach to understanding entrepreneurial behaviours in the different phases of the entrepreneurship process.

9.3.2 Methodological contribution

Mixed-methods research is becoming an increasingly popular approach in several fields (Molina-Azorín et al., 2012), but such research design remains scarce in the entrepreneurial domain. The mixed-method design is significant in triangulating empirical results, generating and testing theory in the same study, thus increasing the breadth and range of inquiry (Molina-Azorín et al., 2012). Through the use of mixed methods, this study developed and tested skills research instruments that can be used in other studies to measure the skills levels of entrepreneurs (see appendix F).

As much as scholars are advocating the use of mixed-methods research in entrepreneurship (Molina-Azorín et al., 2012), few studies describe a clear step-by-step process of converting rich qualitative data into a survey questionnaire in sequential exploratory research methods. Therefore, the study contributed to methodology by suggesting seven detailed and iterative steps to designing a quantitative questionnaire based on qualitative results analysed using computer-assisted qualitative data analysis software (CAQDAS). Other scholars can adopt this conversion procedure when designing quantitative questionnaires. Therefore, embracing this methodology enables qualitative conclusions to be drawn and then tested as hypotheses in one study.

9.3.3 Empirical contribution

This study added knowledge about the application of human capital theory to study skills in the context of an emerging market that is relatively unexplored (Adendorff et al., 2013).

The study made a contribution by empirically focusing on more than one phase of the entrepreneurial process as opposed to a single-phase approach where entrepreneurs are treated the same despite their point in the entrepreneurship phase.

9.3.4 Implications for stakeholders

The lack of practical applicability of the research in management has led to the disconnect between theory and what is applied in the practice of business (Corley & Gioia, 2011). Therefore, this study focused on research questions that existed not only in theory but also in business practice. The following practice implications are for stakeholders involved in entrepreneurship.

a) Policy developers and financial institutions

Policy-makers concur that entrepreneurship is significant for the wellbeing of society (Turton & Herrington, 2012). This study will assist policy-makers to understand the role of skills as drivers of entrepreneurship and provide an effective foundation for mapping plans to nurture, support and harvest entrepreneurial activities. It will also assist in designing policies aimed at developing skills of entrepreneurs and meeting their needs according to specific entrepreneurship phases. It would appear that a consequence of existing policies is that skills development and support are provided to established entrepreneurs more easily than to start-ups, who need skills most.

The contextual setting of skills should not be underestimated (Morales & Marquina, 2013) therefore this study will enable policy-makers in an emerging-market context, characterised by low entrepreneurial activity, constrained resources and poor education, to develop measures to minimise the negative impact of contextual factors on the skills development of entrepreneurs. The results showed that entrepreneurship education is significant in the skills development of entrepreneurs, therefore the method teaching entrepreneurship should be emphasised, especially to those in the nascent and new-business phases who do not have access. Teaching entrepreneurship can be another way of improving the levels of formal education.

Financiers need to appreciate that some entrepreneurs learn from their mistakes and may be highly motivated in subsequent ventures (Ucbasaran et al., 2008b). This study showed that entrepreneurs in the nascent and new-business phases learn skills from mistakes and failures. Therefore, financing institutions need to adopt the culture of failure as an important part of the entrepreneurship journey and associated learning. Entrepreneurs with a record of failure should not be denied an opportunity to start again.

b) Academic and training institutions

Collectively, the entrepreneurship skills wheel, framework and typology of skills set a baseline for skills training, support, mentoring and development programmes to develop practical and critical skills required in the process of entrepreneurship – what cannot be identified cannot be developed. There is a need for different training programmes at different stages rather than looking at age, demographics and background of an entrepreneur which fails to capture the unique characteristics of an individual.

Skills development programmes can be seen as inadequate in preparing entrepreneurs for start-up and supporting them through the business development process. Those training entrepreneurs should do so according to their different phases rather than focusing on all entrepreneurs irrespective of the phase of development.

Since this study identified a mismatch between skills taught in classrooms and skills needed in the real business world, the identified skills will also help educators to teach and design academic programmes based on skills applied by active and practising entrepreneurs. In addition, educators should adopt experiential and action teaching methods that will help entrepreneurs learn skills from simulating experiences more closely related to actually running a business.

Entrepreneurship education was found to have an impact on the skills development of entrepreneurship. Since it was observed that the context of the study had a poor entrepreneurship education track record, academic and training institutions should incorporate entrepreneurship development in the curriculum as early as primary school and maintain it throughout secondary and tertiary education. This will equip nascent entrepreneurs with the depth of skill required to start and maintain a business. If entrepreneurship education and training based on identified skills are implemented, even in a weaker overall educational system, the level of entrepreneurship activity can be improved.

It was found that early entrepreneurs rely mostly on self-taught skills as they do not have access to coaching and mentoring, so the government, private sector and successful entrepreneurs can offer mentoring and coaching to nascent entrepreneurs to minimise failure. Currently, criteria used by enterprise development programmes focus on established entrepreneurs who minimally apply skills compared to early business entrepreneurs who need these skills most. Therefore, enterprise development systems need to start focusing on nascent and new-business entrepreneurs who have a higher need of skills. This shift in focus could reduce the failure rate of businesses in the early phases of the entrepreneurship process.

For the enterprise development programme, the skills wheel and framework can be adapted into a skills tool for pre- and post-training assessment of skills. This will assist in determining the skills needs of entrepreneurs before training and in assessing the impact of training on skills development. In addition, the enterprise development programme can use the typology of skills use proposed in this study to determine skills needed in each entrepreneurship phase.

c) Entrepreneurs

Potential, nascent, new-business and established entrepreneurs could reference the detailed skills framework to identify essential skills in establishing, growing and sustaining a business venture. Also, entrepreneurs should be aware of the specific entrepreneurship phase they are in so that they can develop the skills required for that phase. In addition, they will be able to pursue the significant sources of skills relevant for their entrepreneurship phase.

9.4 RESEARCH LIMITATIONS

Obtaining the required sample sizes for nascent and new-business phase entrepreneurs was a challenge since most start-up businesses are not formally registered and it is difficult to access databases from some entrepreneurial incubators. To perform some statistical tests, the nascent and new-business phases were combined to form the start-up phase.

Another limitation was with the classification of entrepreneurship phases. It was noted from the qualitative and quantitative pilot findings that it would be a challenge to find nascent businesses that paid salaries of any kind for less than three months as described by Herrington et al. (2014), and Turton and Herrington (2012). Therefore, the study used Kelley et al. (2012) and Reynolds

et al. (2005) for a classification of nascent phase as businesses that have paid salaries of any kind for less than 1.5 years. The prolonged duration in the nascent phase is due to the notion that, in the context of this study, it takes longer to start and establish a business. For the other measures – paying salaries of any kind for 1.5 to 3.5 years denoting the new-business phase and above 3.5 years denoting established businesses – no limitations were detected.

There is no clear evidence on how and when entrepreneurs transition from one entrepreneurship phase to the next. The study used two variables (duration of business existence and payment of salaries) to determine the entrepreneurship phase. Respondents who had different or misaligned scores on the two variables were assumed to have been in transition or delayed in that phase, and were excluded from the study.

The final sample used in the study was 235 against 11 001 individuals invited to participate. So, due to a small number of respondents who participated, the sample may not be representative of the specified population.

The limitation with a test of significance used in this study is that it yielded the probability of a result occurring under the null hypothesis, however not the probability that the result would occur again if the study was replicated. Simply, a test of significance does not guarantee results will be same if the study is replicated (Shaver, 1993).

Although the categories of skills may be generalisable in a different contextual setting, a probable limitation is that subsets of the skills may not all be generalisable in a different contextual application.

The empirical evidence of the impact of skills on venture outcomes remains unknown as this study did not have an outcome variable of skills. Due to the lack of outcome variable, a structural model could not be performed, and the analysis was based on confirmatory factor analysis. The focus was purely on distinguishing skills in different entrepreneurship phases.

The research was positioned in a context characterised by low entrepreneurial activity and low skills levels, therefore the study may be less generalisable in contexts where entrepreneurial activity and skills are very high.

Since this study was a cross-sectional design, it should have provided within-subjects analysis in addition to between-subjects analysis. However the focus was on between subjects analysis.

9.5 RECOMMENDATIONS FOR FUTURE RESEARCH

a) Theory

There is a need to look deeper into the sources of entrepreneurial skills and determine the informal platforms from which entrepreneurs learn skills. Social capital theory and other theories of entrepreneurial learning can be applied to investigate from where and how entrepreneurs in the different entrepreneurship phases learn skills.

The model proposed in this study can be tested to determine the mediating role of skills on the relationship between human capital investments and venture outcomes. Skills are assumed to have more immediate impact on venture outcomes than human capital investments.

The study did not focus on entrepreneurial tasks and their requisite skills, so future studies can discover the entrepreneurial tasks in each entrepreneurship phase, and the skills required to perform those activities.

Future research should also test the generalisability of the skills framework in a different contextual setting and to a larger population.

This study did not focus on the level of skills, so a future study should determine the level of skills according to the different entrepreneurship phases. The same research instrument developed in this study can be adopted to measure the level of skills.

The empirical evidence of the impact of skills on venture outcomes remains unknown as this study did not have an outcome variable of skills. The focus was purely on distinguishing skills in different entrepreneurship phases. Therefore future research can investigate the impact of skills identified in this study on venture performance.

In the literature review, it was argued that skills are complementary as they raise the productivity of skills in the next entrepreneurship phases. Also, skills are self-producing, implying that skills in the previous phases remain productive and facilitate the acquisition of new skills. This means that new skills may be a result of old skills. Therefore, to fully comprehend the change in skills across the entrepreneurship phases, future studies should look into the complementarity together with self-productivity of skills in the long term.

b) Educational focus

Future research should investigate the impact of entrepreneurship education on skills development of entrepreneurs, curriculum development of entrepreneurial courses and best methods to teach entrepreneurship. The curriculum design and content should be context-specific as what works in one context may not work in the other.

Since this study was limited to entrepreneurs with some training, future research should investigate skills applied by entrepreneurs who are not trained and compare skills between trained and untrained entrepreneurs.

c) Methodology

This study showed that entrepreneurs are heterogeneous and have different skills requirements, so future studies should focus on the different sample sizes. The future studies should sample entrepreneurs according to phases in the entrepreneurship process, thus adopting a multiphase approach.

This study focused on businesses that are run formally, are registered and have an email address. Future studies should also change the sample size and understand the skills employed by entrepreneurs who run businesses informally.

Future research should also focus on longitudinal studies to establish changes in skills of entrepreneurs over time.

Since obtaining the an equal sample size for the three phases, future studies can focus on balanced sample sizes.

d) Contextual focus

Since this study was conducted in a context characterised by poor or low levels of formal and entrepreneurial education, future studies should compare the skill sets of entrepreneurs in a context of poor entrepreneurial education (developing markets) with those in a context of high levels of formal and entrepreneurship education (developed markets). The studies can also attempt to investigate unique contextual factors that may serve as moderators of the relationship between human capital investments, skills and venture outcomes.

Future research should compare how skills differ across different sectors, especially manufacturing and service industries or high-tech and low-tech industries. Also, the focus can be on comparison of human capital requirements between start-up, new-business and established businesses in the same industry.

Since this study was conducted in an emerging-market country, it can be replicated in other emerging markets.

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APPENDICES

APPENDIX A: SAMPLE LETTER SENT TO PARTICIPANTS

QUALITATIVE INTERVIEW INVITATION LETTER

Dear Entrepreneur

You are invited to participate in an academic research study conducted by Anastacia Mamabolo, a Doctoral student from the Gordon Institute of Business Science at the University of Pretoria.

The purpose of this study is to investigate skills needed by entrepreneurs in the different phases of business development (start-up, new business and established businesses). The results will be used to develop a model of entrepreneurial skills in as they are needed in the different entrepreneurship phases as the basis for the development of entrepreneurship training and development programmes.

Please note the following:

- a) This study involves an anonymous interview. Your name will not appear on the questionnaire and the answers you give will be treated as strictly confidential. You cannot be identified in person based on the answers that you give. [Kindly note that consent cannot be withdrawn once the questionnaire is submitted as there is no way to trace the particular questionnaire that has been filled in].
- b) Your participation in this study is very important to us. You may, however choose not to participate and you may also stop participating at any time without any negative consequence.
- c) Please answer the questions in the attached questionnaire as completely and honestly as possible. This should not take you more than 60 minutes of your time.
- d) The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our results on request.
- e) Please contact my supervisor (**Dr Kerrin Myres, XXX** or co-supervisor (**Dr Tumo Kele XXX**) if you have any questions or comments regarding the study.

Thank you for agreeing to participate in the study

Kind regards
Anastacia Mamabolo

SURVEY INVITATION EMAIL VIA SURVEY MONKEY

Human capital investments and skills outcomes specific to different entrepreneurship phases

Dear Entrepreneur

You are invited to participate in an academic research study conducted by Anastacia Mamabolo, a Doctoral student from the Gordon Institute of Business Science at the University of Pretoria.

The purpose of this study is to investigate skills needed by entrepreneurs in the different phases of business development (start-up, new business and established businesses). The results will be used to develop a model of entrepreneurial skills in as they are needed in the different entrepreneurship phases as the basis for the development of entrepreneurship training and development programmes. By participating in the study you can have an individualised assessment report of your skill set as it compares to the study population. Should you wish to have the report, please email mamaboloa@qibs.co.za

Please note the following:

- This study is an anonymous **survey**. Your name will not appear on the questionnaire and the answers you give will be treated as strictly confidential.
- Your participation in this study is very important to us.
- Please answer the questions completely and honestly as possible. This should not take you more than 15 minutes of your time.
- The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our results on request.
- Please contact my supervisor (Dr Kerin Myres,) or co-supervisor (Dr Tumo Kele,) if you have any questions or comments regarding the study.

Thank you so much for your time and cooperation

Anastacia Mamabolo

[Click here to begin with the survey](#)

Please do not forward this email as its **survey** link is unique to you.
[Opt out of receiving surveys](#) from this sender

Powered by  SurveyMonkey

APPENDIX B: ENTREPRENEURS' DISCUSSION GUIDE (PHASE I)

1. Introduction

- Introduce self, job and PHD
- Review the purpose of the study, explain method of data capture and analysis
- Confidentiality and anonymity
- Estimated completion time
- Benefits to respondent, any questions?

2. Entrepreneur's personal history

- Business Profile

3. Interview questions

- a) Please share about what you do on daily basis.
- b) Describe your basic understanding of what a skill is.
- c) What is the highest level of your education? What type of education? What are the skills that you obtained from your work experience that you are using in the business?
- d) Have you worked before? What type of work? What are the skills that you obtained from your work experience that you are using in the business?
- e) Have you been engaged in entrepreneurial activities before? What are the skills that you obtained from your work experience that you are using in the business?
- f) Where else have you learnt skills?
- g) What are the skills that you are currently using to run the business on day to day basis?
- h) At this stage what are the most important skills required to run the business on daily basis? Why are they important?
- i) Did the skills improve, if so, are the experiences that lead to the improvement of the skills?
- j) What are the new skills that you have now?

Thank You.

APPENDIX C: NATIONAL EXPERTS' DISCUSSION GUIDE (PHASE I)

1. Introduction

- Introduce self, job and PHD
- Review the purpose of the study, explain method of data capture and analysis
- Confidentiality and anonymity
- Estimated completion time
- Benefits to respondent, any questions?

2. Personal history

- Career development \ Engagements
- Exposure in entrepreneurship in *academic field* or *practice*

3. Human Capital Investments

- Please describe your basic understanding of what a skill is.
- What is significance of education in the development of skills needed in each phase? What types of skills are produced? Is there any disconnect between the skills taught and skills experienced by entrepreneurs?
- What is the significance of work experience in the development of skills needed in the entrepreneurship? What types of skills are produced?
- What is the entrepreneurship experience in each phase? What types of skills are produced?
- Besides the discussed capital investments, how can one acquire skills? What types of skills are produced?
- Which of the above investment is most significant per entrepreneurship phase?

4. Qualitative study interviews with national experts

- How significant are the entrepreneurial skills in the entrepreneurial phases?
- Do skills help entrepreneurs to proceed to the next phase of entrepreneurship?
- For a person who is intending to start a business what skills are significant at this stage?
- What are the significant skills needed by a person who have just started a business?
- What is the nature of skills that are required when a person is established?
- What are the most significant skills in each entrepreneurship phase? Why are they important?

5. Concluding comments

- Is there any other comment? Is there anything not asked?

Thank you

APPENDIX D: QUALITATIVE CODE-BOOK

CATEGORY	CODE	OPERATIONAL DEFINITION
Financial management Skills (Ability to manage money in an efficient and effective way in such a manner as to accomplish the objectives of the organization)	Analysing income statement	Reading and understanding income statements
	Managing cash	Ability to manage the money transferred in and out of the business
	Managing billing	Managing invoicing, debt recovery, minimising payment delays and negotiating those delays with clients.
	Understanding financial results	Knowing how to read and analyse a balance sheet and to draw conclusions and derive potential courses of action from it.
	Using financial ratios	Using financial ratios, indicators and operating reports to analyse firm's performance.
	Calculating costs	Calculating costs, cost prices and the margins.
	Pricing Skills	Setting prices for the products to be sold or the services be rendered.
	Filling up tax reports	Completing fiscal, Para-fiscal, and social returns.
	Identifying financial needs	Identifying and meeting the firm's financial needs in the short and long term.
Managerial skills (Business skills are required to run the business on a day to day basis)	Planning	Planning the daily, monthly and yearly firm's activities.
	Monitoring	Monitoring the firm's production and productivity, checking, verifying, keeping oneself informed
	Delegation	Implementing an employee-driven management system by delegating tasks
	Arousing support	Garnering support from collaborators, being able to persuade them to follow a particular course of action
	Organising work	Delegating tasks to collaborators, developing organisational charts and organising work schedules
	Motivating	Implementing systems to motivate employees
	Decision making	The ability to choose between the alternatives.
	Listening	Listening to employees and dealing with problems regarding them
	Supervising	Overseeing the employee's tasks.

CATEGORY	CODE	OPERATIONAL DEFINITION
	Legal skills	Applying the knowledge relating to the law enforced through social institutions
	Networking skills	Interaction with other people to exchange information and develop social contacts.
	Problem solving	High order skills related to learning & problem solving
	Strategic competence	Able to grow and sustain the enterprise
	Negotiation skills	Settling differences and reaching an agreement
Marketing skills (Ability to communicating the value of a product or service to customers, for the purpose of selling that product or service)	Building sales argument	Deploying sales arguments with a view to persuading clients to buy
	Exhibition of products	Seeking out new clients at trade shows, organising mail shots and telesales campaigns, using professional internet websites
	Selling	Developing commercial strategies and means whereby to attract new clients (weekly, monthly action plans, etc.)
	Managing salespeople team	Running commercial teams and sales teams, defining turnover objectives and monitoring results
	Adapting products	Adapting products to client demands, 'targeting' clients and developing the right product for the right client, etc.
	Creating customer loyalty	Using specific techniques to encourage client loyalty.
	Building relationships	Building relationships of trust with clients, building commercial partnerships, developing client relationships and providing help and advice.
	Managing firm image	Creating a positive image of the firm and promoting an ethical image of the firm.
	Doing market research	Conducting market studies, producing SWOT analyses, comparing prices set by the firm with those set by the competition
	Monitoring competitors	Benchmarking, monitoring the competition
Opportunity recognition skills	Detecting opportunities	Recognition of the opportunities
	Starting up a venture	Giving direction to an organisation by gathering together human, material, and financial resources (starting up a new venture)

CATEGORY	CODE	OPERATIONAL DEFINITION
	Counterfactual thinking	Ability to work out the means end framework
	Prototyping	Awareness of factors conducive to opportunity recognition
	Environmental scanning,	Ability to acquire and use the information about trends and events outside the business's environment
	Developing business model	Developing a plan for the operation of the business, how it creates, delivers and captures value.
	Having strategic vision	Being able to determine the most effective strategic approaches aligned with the vision
		Developing a guide or a roadmap for the business that outlines key goals and a plan to achieve those goals.
	Innovating	Creative ability to develop novel ideas, developing new products or envision possibilities.
	market knowledge	Recognition of market need.
	Judgement	Ability to differentiate amongst opportunities/information
	Creating partnerships	Developing partnerships, cultivating networks
Attracting investors	Attracting investors and potential partners (business angels) by presenting the firm in an attractive light	
Entrepreneurial skills (The ability to identify an opportunity and start a business venture)	*opportunity recognition,	Detecting and realizing opportunities
	Prototyping	Awareness of factors conducive to opportunity recognition
	Starting up a venture	Giving direction to an organisation by gathering together human, material, and financial resources (starting up a new venture)
	Counterfactual thinking	Ability to work out the means end framework
	Developing business model	Developing a plan for the operation of the business, how it creates, delivers and captures value
	Judgement	Ability to differentiate amongst opportunities/information
	market knowledge	Recognition of market need.
	Innovating	Creative ability to develop novel ideas, developing new products or envision possibilities.
	Formalising a business plan	Developing a guide or a roadmap for the business that outlines key goals and a plan to achieve those goals.
	Environmental scanning,	Ability to acquire and use the information about trends and events outside the business's environment
	New resource skills,	Ability to gather new resources
	Calculated risk/risk propensity,	Ability to select options to with a lower probability of success, but greater rewards.
	* change orientation,	ability to set or arrange in a new or different determinate position
* inner control,		

CATEGORY	CODE	OPERATIONAL DEFINITION
	*creativity,	the ability to use of the imagination or original ideas
	*persistence	ability to continue with the course of action despite the hard challenges
Leadership skills (Ability to lead people in the business venture)	Visionary	Having a foresight about the future of the company
	Sharing vision	Ability to share the vision with the employees
	Leading others	The capacity to impose oneself as a leader and to lead the fellow employees
	Instilling team spirit	Fostering the spirit of working together in the business and creating a good atmosphere
	Inspiring employees	Motivating employees to achieve goals of the business
Human resource management skills (Ability to deal with how people are managed in the organisation and designed and implementing workplace policies)	Interviewing for recruitment	Conducting a recruitment interview
	Defining job descriptions	Defining jobs in terms of activities and skills and drawing up position cards
	Drawing employment contract	Writing up clear terms and conditions of employment.
	Implementing policies	Implementing training policies, linking training policies to key skills in the firm and providing employees with adequate training
	Establishing compensation	Implementing pay policy by defining salaries, bonuses, variables and every individual component of the overall pay structure
	Evaluating skills	Evaluating the skills of individual employees
	Evaluating performance	Evaluating the performance of employees at annual evaluation interviews
	Evaluating potential	Evaluating employee potential and overseeing employee career plans
	Laying off	Terminating employee contracts while respecting employment law
	Managing conflict	Managing conflict resolution within teams
Behavioural skills (Skills which are associated with a behaviour and desire to achieve)	Stress management	Dealing with stress and uncertainty
	Sociable	Being sociable, adaptable and open-minded
	Intuition	Having an ability to understand something instinctively without a need for conscious reasoning.
	Creativity	Being creative, innovative, seeking to stand out from the competition
	Perseverance	Pushing oneself to the limit, achieving things
	Rigorousness	Having an ability to be thorough and careful
	Meticulousness	Being precise and aiming for perfection
	Tenacity	Quality of being determined and not giving up
Persuasiveness	Ability to convince others of the opportunity	

CATEGORY	CODE	OPERATIONAL DEFINITION
Social Skills (These are learnable behaviour used by individuals in their interactions with others)	social adaptability	Ability to conform to the prevailing norms in the society
	Sociable	Ability to engage in activities with other people
	social perception	Ability to learn about other's feelings and emotions
	Political astuteness	Ability to overcome institutional and other constraints
	Perception and social influence.	Ability to exert influence and create change
Personal Skills (Skills which are needed to attain self-awareness, emotional maturity, ability and willingness to accept responsibility)	*Self-awareness,	Conscious knowledge of one's own character, feelings, motives, and desires.
	Communication skills,	Ability to communicate well in speech and writing to different stakeholders
	*Change orientation,	
	*Accountability,	Taking responsibility for the running of the business
	Interpersonal skills	Ability to relate and manage others
	*emotional coping,	the ability to deal with stressful situations
	*motivation,	
	*self-efficacy,	Belief in one's capacity to execute behaviors necessary to produce specific performance attainments
	Self confidence	Trust in own judgement
expressiveness	Ability to convey one's feeling	
Technical Skills (Technical skills imply an understanding of, and proficiency in a specific activity involving methods, processes and procedures of techniques in ones line of business).	Resourcefulness	Ability to garner and use the necessary resources
	Managing operations,	Ability to ensure that the day to day activities of the business are performed
	Managing supplies and supply chains,	Ability to manage the production of the product and distribution
	Production space skills,	
	Managing plant and equipment,	Ability to take care of production assets.
	Technology and production processes,	Ability to make use of the technology in the production processes
	Written and oral communication skills,	Ability to speak and write in a clear manner.
	Applying the manufacturing technology	Ability to use the specialised manufacturing technologies
Motivational skills	Commitment	Able to go the distance, energetic, motivation and effort expended.
	Stamina	
	Motivation, passion	

CATEGORY	CODE	OPERATIONAL DEFINITION
	achievement motivation	
	passion	

APPENDIX E: CODE LIST WITH NEW SKILLS

Business Management Skills

BM: Administrative skills
BM: Business Development
BM: Compliance to regulations (**NEW SKILL**)
BM: Decision making
BM: Delegation
BM: Distribution model (**NEW SKILL**)
BM: Legal contracts
BM: Management systems using software (**NEW SKILL**)
BM: Managing change (**NEW SKILL**)
BM: Managing people\stakeholders
BM: Negotiation
BM: Networking
BM: Organising work
BM: Partnerships (**NEW SKILL**)
BM: Planning
BM: Problem solving
BM: Strategic competence

Entrepreneurial Skills

E: Assess own capabilities
E: Calculated risk
E: Counterfactual thinking
E: Environmental Scanning
E: Formalising business plan\model
E: Growth Aspirations
E: Innovation
E: Opportunity recognition
E: Perceived capability
E: Prototyping
E: Starting up a venture

Entrepreneurship Education Skills

EDS: Business management skills: Focus
EDS: Business management skills: Functional skills
EDS: Business management skills: Managing people\teams
EDS: Business management skills: Networking
EDS: Business management skills: Strategic competence
EDS: Entrepreneurial skills: Business plan\model
EDS: Financial management skills: Calculating costs
EDS: Financial management skills: Cash flow
EDS: Financial management skills: Financial projections
EDS: Financial management skills: Reading financials
EDS: Marketing skills
EDS: Marketing skills: Customer relations
EDS: Marketing skills: Strategic market plan
EDS: Marketing skills: Understanding current & future trends
EDS: Personal skills: Confidence
EDS: Personal skills: Motivation
EDS: Personal skills: Tenacity & resilience
EDS: Technical skills: Managing operations

Financial Management Skills

F: Book keeping\financial reporting
F: Calculating costs
F: Filing up tax reports
F: Financial forecasting (**NEW SKILL**)
F: Managing billing (**NEW SKILL**)
F: Managing cash flow
F: Pricing
F: Raising capital
F: Selling\buying shares (**NEW SKILL**)
F: Understanding financial results
F: Using financial software (**NEW SKILL**)

General Education Skills

GS: Business management skills: Problem solving
GS: Business management skills: Strategic competence
GS: Business management skills: Streamlining the business
GS: Business management skills: Understanding business environment
GS: Business management skills: Understanding legal contracts
GS: Entrepreneurial skills: Business plan
GS: Entrepreneurial skills: Calculated risk taking
GS: Entrepreneurial skills: Counterfactual thinking
GS: Entrepreneurial skills: Starting a business
GS: Financial skills: Analysing financial records
GS: Financial skills: Financial resources
GS: Financial skills: Pricing skills
GS: Leadership skills
GS: Marketing skills: Analysing the market
GS: Meta skills: Perseverance
GS: Not relevant now
GS: Technical skills: Industry specific
GS: Technical skills: Understanding processes\operations

Human Resource Management Skills

HM: Developing employees
HM: Evaluating employee's skills
HM: Evaluating performance
HM: Laying off
HM: Paying salaries
HM: Recruitment
HM: Recruitment: Hire managers\operational people (**NEW SKILL**)
HM: Recruitment: People aligned with vision\values (**NEW SKILL**)
HM: Setting roles
HM: Using HR software (NEW SKILL)

Sources of Skills: Informal Learning

INF LEARNING: People: Customers
INF LEARNING: People: Family
INF LEARNING: People: Friends
INF LEARNING: People: Industry Experts
INF LEARNING: People: Mentor

INF LEARNING: People: Partners
INF LEARNING: People: Successful entrepreneurs

Leadership Skills

L: Culture of performance **(NEW SKILL)**
L: Inspiring employees
L: Sharing vision
L: Thought leadership **(NEW SKILL)**
L: Visionary

Marketing Skills

M: Adapting products
M: Branding **(NEW SKILL)**
M: Creating customer experience **(NEW SKILL)**
M: Exhibition of products **(NEW SKILL)**
M: Getting the business out there
M: Market Research
M: Marketing plan
M: Monitoring competitors
M: Network marketing **(NEW SKILL)**
M: Selling
M: Social media marketing **(NEW SKILL)**

Personal Skills

P: Accountability
P: Assertiveness
P: Communication skills
P: Determination
P: Discipline
P: Emotional coping
P: Hard work
P: Intuition
P: Passion
P: Patience
P: Perseverance
P: Resilience
P: Self confidence
P: Self-motivation
P: Single mindedness **(NEW SKILL)**
P: Social responsibilities
P: Tenacity
P: Time management

Prior Entrepreneurship Education Skills

PE: Business management skills: Delegation
PE: Business management skills: Functional skills
PE: Business management skills: Managing people
PE: Business management skills: Negotiating
PE: Business management skills: Planning
PE: Business management skills: Strategy
PE: Business management skills: Understanding laws
PE: Entrepreneurial skills: Counterfactual thinking
PE: Entrepreneurial skills: Identifying gaps
PE: Financial management skills: Allocating cash
PE: Marketing skills: Selling skills

PE: Personal skills: Confidence
PE: Personal skills: Patience
PE: Personal skills: Time management

Social and Interpersonal Skills

S: Building relationships
S: People skills
S: Political astuteness
S: Sociable
S: Social Influence **(NEW SKILL)**
S: Understanding cultures **(NEW SKILL)**

Technical Skills

T: Industry specific
T: Managing operations
T: Managing supplies/Forecasting **(NEW SKILL)**
T: Producing service
T: Product development
T: Quality checks **(NEW SKILL)**
T: Technology & production process

Work Experience Skills

WS: Business management skills: Administration
WS: Business management skills: Decision making
WS: Business management skills: Functional skills
WS: Business management skills: Managing people
WS: Business management skills: Understanding business environment
WS: Entrepreneurial skills: Mitigating risks
WS: Entrepreneurial skills: Opportunity recognition
WS: Financial management skills: Cost management
WS: Financial management skills: Identifying financial needs
WS: Human resource management: Employee development
WS: Marketing skills: Branding
WS: Marketing skills: Competitor analysis
WS: Marketing skills: Customer experience
WS: Marketing skills: Market research
WS: Marketing skills: Positioning
WS: Marketing skills: Selling
WS: Personality skills: Communication
WS: Personality skills: Confidence
WS: Personality skills: Passion
WS: Social skills: Engaging other people
WS: Social skills: Political astuteness
WS: Social skills: Understand cultures
WS: Technical skills: Compliance with standards
WS: Technical skills: Industry specific

APPENDIX F: SURVEY QUESTIONNAIRE (PHASE II)

1. What is your gender?

- 1. Male
- 2. Female

2. What is your age?

- 1. 18 – 29 years old
- 2. 30 – 49 years old
- 3. 50 – 64 years old
- 4. 65 years and over

3. Do you currently own and run a business?

- 1. Yes
- 2. No

4. Are you in employment in addition to working on this business?

- 1. Yes
- 2. No

5. Have you ever owned and run a business before?

- 1. Yes
- 2. No

If yes how many_____?

6. How long have you been running the current business?

- 1. Less than 1.5 years
- 2. 1.5 – 3.5 years
- 3. above 3.5 years

7. How long has the current business paid any salaries, wages, or payments in kind, including your own? “Payments in kind” refers to goods or services provided as payments for work rather than cash.

- 1. Less than 1.5 years
- 2. 1.5 – 3.5 years
- 3. above 3.5 years

8. Which industry is your business operating in?

- 1. Agriculture and environmental management
- 2. Mining and quarrying
- 3. Manufacturing, engineering and technology
- 4. Electricity, gas and water supply
- 5. Construction
- 6. Wholesale and retail trade
- 7. Transport and communication
- 8. Financial services
- 9. Community, social and personal services
- 10. Other (specify_____)

9. What is the highest level of education you have completed?

- 1. Primary school
- 2. Some high school
- 3. Completed high school
- 4. Technical or college training after matric
- 5. Undergraduate university
- 6. Post graduate university

10. If you have a tertiary qualification, please indicate the field of study.

- 1. Agriculture and environmental management
- 2. Arts and culture
- 3. Business, commerce and management studies
- 4. Communication studies and language
- 5. Education, training and development
- 6. Manufacturing, engineering and technology
- 7. Human and social studies
- 8. Law, military science and technology
- 9. Health sciences and social services
- 10. Physical, mathematical, computer and life sciences
- 11. Services
- 10. Planning and construction

11. How long did you work before starting the business?

- 1. Never worked
- 2. Less than 5 yrs.
- 3. 5-10 yrs.
- 4. 10-15 yrs.
- 5. 15-20 yrs.
- 6. More than 20 yrs.

12. The position occupied in the previous employment.

- 1. Employee
- 2. Low management
- 3. Middle management
- 4. Top management

13. Have you received entrepreneurship education or attended an entrepreneurship course?

- 1. Yes
- 2. No

If yes, please indicate: Which course? _____

How long was the course? _____

14. Thinking about the last 30 days of running your business, to what extent have you used the following start up skills?

ITEM	1 Never	2 Almost never	3 Some- times	4 Almost every day	5 Every day
14.1 Planning the growth of the business in both short and long term					
14.2 Scanning business trends outside the business's environment					
14.3 Developing new ideas, new products and envision possibilities					
14.4 Taking calculated risks to run the business					
14.5 Identifying business opportunities					

15. Thinking about the last 30 days of running your business, to what extent have you used the following business management skills?

ITEM	1 Never	2 Almost never	3 Some- times	4 Almost every day	5 Every day
15.1 Planning and organising the activities in the business					
15.2 Identifying and solving problems encountered in the business					
15.3 Implementing the business model or plan to run the business					
15.4 Complying with the law and regulations set by government					
15.5 Negotiating to get better business deals					
15.6 Making decisions in running the business					
15.7 Delegating tasks to employees					
15.8 Attracting investors and potential partners					
15.9 Developing or growing the business					
15.10 Implementing and executing the business strategy					

16. Thinking about the last 30 days of running your business, to what extent have you used the following marketing skills?

ITEM	1 Never	2 Almost never	3 Some- times	4 Almost every day	5 Every day
16.1 Conducting market research					
16.2 Monitoring and benchmarking the competition					
16.3 Positioning the business in the market					
16.4 Selling the product or service to the market					
16.5 Seeking out new clients e.g. at trade shows or exhibitions					
16.6 Creating a positive brand or image of the business					
16.7 Creating good customer experience and loyalty					
16.8 Using social media to advertise the business					
16.9 Adapting products to client demands					

17. Thinking about the last 30 days of running your business, to what extent have you used the following financial management skills?

ITEM	1 Never	2 Almost never	3 Some- times	4 Almost every day	5 Every day
17.1 Setting prices for products or services					
17.2 Gathering financial resources to grow the business					
17.3 Managing the money transferred in and out of the business					
17.4 Calculating costs, cost prices and the margins					
17.5 Reading and analysing balance sheet and income statement					
17.6 Filing tax returns					
17.7 Invoicing and collecting payments from clients					
17.8 Selling a certain portion of the company shares					
17.9 Using financial software to produce financial reports					

18. Thinking about the last 30 days of running your business, to what extent have you used the following human resource management skills?

ITEM	1 Never	2 Almost never	3 Some- times	4 Almost every day	5 Every day
18.1 Recruiting and employing right people for the job					
18.2 Evaluating if the employees have the right skills to perform the tasks					
18.3 Defining jobs in terms of activities and skills and drawing up job descriptions					
18.4 Assessing the overall performance of employees					
18.5 Implementing pay policy by defining salaries and bonuses					
18.6 Terminating employee contracts while respecting employment law					
18.7 Using software to manage human resource matters					

19. Thinking about the last 30 days of running your business, to what extent have you used the following technical skills?

ITEM	1 Never	2 Almost never	3 Some- times	4 Almost every day	5 Every day
19.1 Applying skills that are relevant in the industry					
19.2 Developing the product or service					
19.3 Managing the production of the products or services					
19.4 Assessing if the product or service adheres to industry norms or standards					
19.5 Making use of the specialised technology in the production processes or services					
19.6 Continuously innovating existing products or services					

20. Thinking about the last 30 days of running your business, to what extent have you used the following leadership skills?

ITEM	1 Never	2 Almost never	3 Some- times	4 Almost every day	5 Every day
20.1 Having a vision about the future of the business					
20.2 Encouraging and bringing the best out of employees					
20.3 Sharing the vision of the company with the employees					
20.4 Encouraging employees to carry out their tasks with good performance					
20.5 Establishing oneself as the leader in the industry					
20.6 Leading with responsibly and integrity					

21. Thinking about the last 30 days of running your business, to what extent have you used the following social and interpersonal skills?

ITEM	1 Never	2 Almost never	3 Some- times	4 Almost every day	5 Every day
21.1 Showing sensitivity to people's feelings and emotions					
21.2 Communicating meaningfully with employees, customers and other stakeholders					
21.3 Listening to and hearing what other people are saying					
21.4 Building relationships of trust with clients					
21.5 Working well with people of different cultures					
21.6 Identifying and overcoming the political challenges that affect the business					
21.7 Networking to build resources and opportunities					

22. Thinking about the last 30 days of running your business, to what extent have you used the following personal skills?

ITEM	1 Never	2 Almost never	3 Some- times	4 Almost every day	5 Every day
22.1 Going the extra mile and working long hours					
22.2 Following your gut feeling when making decisions					
22.3 Courageous and enthusiastic in executing entrepreneurial activities					
22.4 Showing compelling drive to achieve the set objectives					
22.5 Executing activities within allocated time					
22.6 Saying no to business deals without being too desperate					
22.7 Dealing with stressful situations					
22.8 Enduring in hard situations					

23. Thinking about the last 30 days of running your business, to what extent have you used the skills learnt from the following?

ITEM	1 Never	2 Almost never	3 Some- times	4 Almost every day	5 Every day
23.1 General education at school, college or university					
23.2 Work experience					
23.3 Entrepreneurial education					
23.4 Business ownership experience					
23.5 Skills I taught myself from failures and mistakes					
23.6 Skills I taught myself by reading books					
23.7 Family and friends					
23.8 Mentors and advisors					

24. Thinking about the skills you needed when you started the business, to what extent have you used them in the past 30 days?

ITEM	1 Never	2 Almost never	3 Some- times	4 Almost every day	5 Every day
24.1 I am currently using the skills that I needed when the business started					

25. To what extent do you believe your skills have assisted in growing your business in the past?

ITEM	1 Strongly disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
25.1 The skills that I have assisted in growing the business from where it started to where it is today					

26. To what extent are you confident that you have the skills you need to grow your business in the future?

ITEM	1 Not developed	2 Beginner	3 Quite capable	4 Very capable
26.1 I can practically perform the different skills needed to run and manage the business				

27. Any additional skill(s) you believe have been important to the development of your business?

28. Any additional comment (s) on the survey _____

APPENDIX G: INFORMED CONSENT LETTERS

Informed consent for participation in an entrepreneurship research study

HUMAN CAPITAL INVESTMENTS AND SKILLS OUTCOMES SPECIFIC TO THE DIFFERENT ENTREPRENEURSHIP PHASES

Research Conducted by
Ms. M.A. Mamabolo (14192269)
Cell: XXX
anastaciamamabolo@gmail.com

Dear Respondent

You are invited to participate in an academic research study conducted by Anastacia Mamabolo, a Doctoral student from the Gordon Institute of Business Science at the University of Pretoria.

The purpose of this study is to investigate skills needed by entrepreneurs in the different phases of business development (start-up, new business and established businesses). The results will be used to develop a model of entrepreneurial skills in as they are needed in the different entrepreneurship phases as the basis for the development of entrepreneurship training and development programmes.

Please note the following:

- a) This study involves an anonymous interview. Your name will not appear on the questionnaire and the answers you give will be treated as strictly confidential. You cannot be identified in person based on the answers that you give. [Kindly note that consent cannot be withdrawn once the questionnaire is submitted as there is no way to trace the particular questionnaire that has been filled in].
- b) Your participation in this study is very important to us. You may, however choose not to participate and you may also stop participating at any time without any negative consequence.
- c) Please answer the questions in the attached questionnaire as completely and honestly as possible. This should not take you more than 60 minutes of your time.
- d) The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our results on request.
- e) Please contact my supervisor (**Dr Kerrin Myres, XXX**) or co-supervisor (**Dr Tumo Kele, XXX**) if you have any questions or comments regarding the study.

Please sign the form to indicate that:

- You have read and understand the information provided above.
- You give your consent to participate in the study on voluntary basis.

Respondent's signature

Date

Researcher's signature

Date

Informed consent for participation in an academic research study

Gordon Institute of Business Science

HUMAN CAPITAL INVESTMENTS AND SKILLS OUTCOMES SPECIFIC TO DIFFERENT ENTREPRENEURSHIP PHASES

Research Conducted by
Ms. M.A. Mamabolo (14192269)
Cell: XXX
anastaciamamabolo@gmail.com

Dear Respondent

You are invited to participate in an academic research study conducted by Anastacia Mamabolo, a Doctoral student from the Gordon Institute of Business Science at the University of Pretoria.

The purpose of this study is to investigate skills needed by entrepreneurs in the different phases of business development (start-up, new business and established businesses). The results will be used to develop a model of entrepreneurial skills in as they are needed in the different entrepreneurship phases as the basis for the development of entrepreneurship training and development programmes.

Please note the following:

- a) This study is an anonymous survey. Your name will not appear on the questionnaire and the answers you give will be treated as **strictly confidential**. You cannot be identified in person based on the answers that you give. [Kindly note that consent cannot be withdrawn once the questionnaire is submitted as there is no way to trace the particular questionnaire that has been filled in].
- b) Your participation in this study is very important to us. You may, however, choose not to participate and you may also stop participating at any time without any negative consequence.
- c) Please answer the questions in the attached questionnaire as completely and honestly as possible. This should not take you more than **15 minutes** of your time.
- d) The results of the study will be used for **academic purposes** only and may be published in an academic journal. We will provide you with a summary of our results on request.
- e) Please contact my supervisor (**Dr Kerrin Myres, XXX**) or co-supervisor (**Dr Tumo Kele, XXX**) if you have any questions or comments regarding the study.

Please proceed to the link for the survey to indicate that you participate in this study on voluntary basis.

Respondent's signature

Date

Researcher's signature

Date

APPENDIX H: RELIABILITY ANALYSIS

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
What is your gender?	325.08	1307.023	.045	.928
What is your age?	324.01	1301.122	.116	.928
Previous Business?	324.99	1310.819	-.063	.928
Duration Age	324.03	1297.973	.182	.928
Entrepreneurship Phase	324.13	1298.408	.163	.928
Entrepreneurship Phase	324.90	1303.081	.152	.928
Which industry is your business operating in?	320.40	1286.858	.074	.933
Formal Education	321.39	1307.685	-.001	.929
Formal Education	321.38	1305.573	.027	.929
If you have a tertiary education, please indicate field of study.	320.89	1289.776	.023	.937
Work Experience	322.78	1304.192	.020	.930
Position at Work	323.75	1291.905	.179	.928
Entrepreneurship Education	324.78	1310.151	-.046	.928
SS1	322.70	1273.554	.507	.927
SS2	322.85	1281.774	.380	.927
SS3	322.68	1284.944	.425	.927
SS4	322.89	1275.468	.486	.927
SS5	322.46	1278.840	.499	.927
BM1	322.33	1278.590	.505	.927
BM2	322.22	1281.040	.520	.927
BM3	322.77	1276.703	.465	.927
BM4	322.52	1277.966	.436	.927
BM5	322.83	1274.013	.531	.927
BM6	322.02	1283.215	.509	.927
BM7	322.59	1260.690	.529	.926
BM8	323.80	1277.169	.360	.927
BM9	322.69	1265.284	.590	.926
BM10	322.58	1264.185	.663	.926
MS1	323.43	1284.539	.329	.927
MS2	323.36	1277.525	.462	.927
MS3	323.11	1275.179	.515	.927
MS4	322.59	1274.181	.545	.927
MS5	323.17	1286.424	.107	.931
MS6	322.48	1268.681	.584	.926
MS7	322.21	1271.250	.565	.926
MS8	323.54	1267.323	.414	.927
MS9	322.72	1274.093	.459	.927
FM1	322.83	1282.261	.439	.927
FM2	323.45	1278.808	.398	.927
FM3	322.43	1274.679	.516	.927
FM4	322.83	1273.685	.513	.927
FM5	323.10	1268.346	.516	.926
FM6	324.43	1299.130	.118	.928
FM7	323.30	1275.150	.344	.927
FM8	324.27	1285.259	.282	.928
FM9	323.69	1275.134	.390	.927
HR1	323.65	1276.119	.450	.927
HR2	323.45	1270.504	.512	.926
HR3	323.68	1269.869	.536	.926
HR4	323.83	1271.253	.446	.927
HR5	324.22	1273.414	.403	.927

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
HR6	323.06	1271.209	.368	.927
HR7	323.39	1267.989	.420	.927
TS1	322.52	1277.180	.431	.927
TS2	322.68	1270.238	.522	.926
TS3	322.82	1266.042	.483	.927
TS4	322.70	1272.305	.484	.927
TS5	322.65	1272.338	.441	.927
TS6	322.66	1266.564	.550	.926
LS1	322.49	1275.463	.460	.927
LS2	322.53	1261.281	.597	.926
LS3	322.64	1267.050	.542	.926
LS4	322.20	1272.968	.537	.926
LS5	322.36	1280.694	.454	.927
LS6	322.15	1277.278	.566	.927
SIS1	322.23	1283.987	.448	.927
SIS2	322.06	1281.333	.548	.927
SIS3	322.05	1283.776	.502	.927
SIS4	322.25	1278.954	.457	.927
SIS5	322.30	1278.706	.448	.927
SIS6	322.34	1276.587	.515	.927
SIS7	322.39	1284.487	.388	.927
PT1	322.18	1283.772	.452	.927
PT2	322.19	1278.009	.546	.927
PT3	322.19	1281.764	.487	.927
PT4	322.68	1290.225	.275	.928
PT5	322.42	1279.898	.495	.927
PT6	322.84	1282.507	.377	.927
PT7	322.54	1283.402	.327	.927
PT8	322.13	1284.825	.417	.927
HC1	322.87	1286.485	.229	.928
HC2	322.10	1285.368	.412	.927
HC3	322.51	1279.450	.352	.927
HC4	322.88	1277.235	.361	.927
HC5	322.70	1289.439	.230	.928
HC6	322.76	1287.244	.273	.928
HC7	322.64	1280.470	.433	.927
HC8	322.41	1284.293	.342	.927
Thinking about the skills you needed when you started the business, to what extent have you used them in the past 30 days?	322.67	1295.624	.257	.928
Growing the Business	322.08	1294.674	.295	.928
To what extent are you confident that you have the skills you need to grow your business in the future?	323.09	1298.875	.233	.928

APPENDIX I: KOLMOGOROV-SMIRNOV TEST

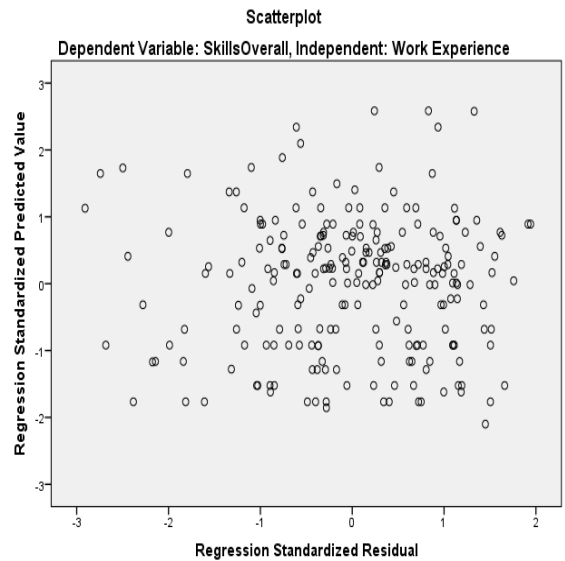
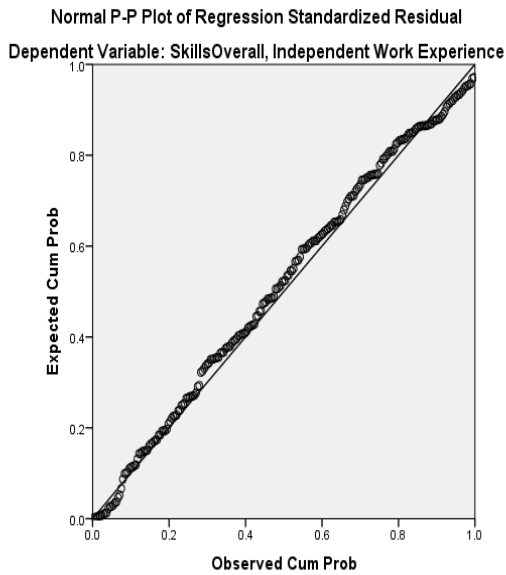
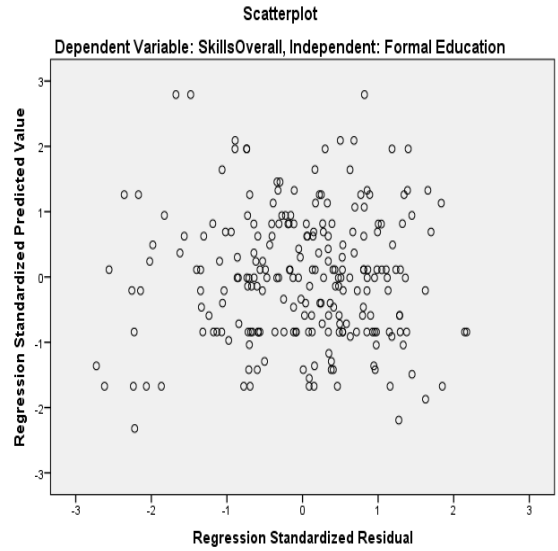
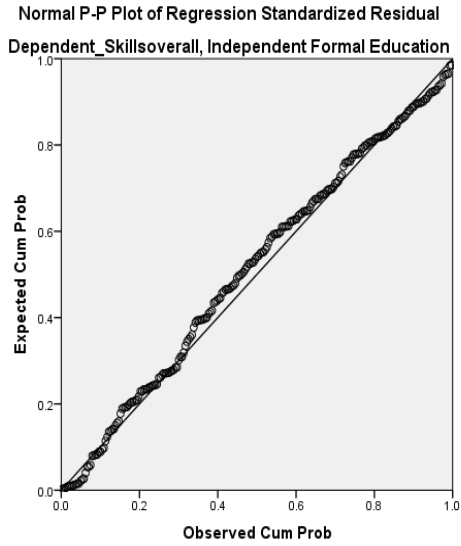
One-Sample Kolmogorov-Smirnov Test								
	N	Normal Parameters ^{a,b}		Most Extreme Differences			Test Statistic	Asymp. Sig. (2-tailed)
		Mean	Std. Deviation	Absolute	Positive	Negative		
What is your gender?	235	1.35	.480	.414	.414	-.261	.414	.000 ^c
What is your age?	235	2.42	.835	.267	.267	-.192	.267	.000 ^c
Previous Business?	235	1.43	.497	.375	.375	-.307	.375	.000 ^c
Duration Age	235	2.40	.780	.362	.221	-.362	.362	.000 ^c
Entrepreneurship Phase	235	2.29	.829	.335	.197	-.335	.335	.000 ^c
Combined Entre Phase 2	235	1.53	.500	.357	.324	-.357	.357	.000 ^c
Industry	235	6.03	2.724	.229	.229	-.212	.229	.000 ^c
Formal Education	235	5.06	1.071	.301	.189	-.301	.301	.000 ^c
Formal Education	235	5.05	1.065	.299	.186	-.299	.299	.000 ^c
Tertiary education	235	5.54	3.621	.282	.282	-.143	.282	.000 ^c
Work Experience	235	3.65	1.535	.175	.175	-.134	.175	.000 ^c
Position at Work	235	2.67	1.205	.237	.203	-.237	.237	.000 ^c
Entrepreneurship Education	235	1.65	.479	.416	.265	-.416	.416	.000 ^c
SS1	235	3.72	.950	.261	.190	-.261	.261	.000 ^c
SS2	235	3.58	.959	.204	.192	-.204	.204	.000 ^c
SS3	235	3.74	.764	.239	.227	-.239	.239	.000 ^c
SS4	235	3.54	.935	.215	.215	-.192	.215	.000 ^c
SS5	235	3.97	.821	.223	.194	-.223	.223	.000 ^c
BM1	235	4.10	.818	.274	.216	-.274	.274	.000 ^c
BM2	235	4.21	.732	.246	.227	-.246	.246	.000 ^c
BM3	235	3.66	.940	.212	.188	-.212	.212	.000 ^c
BM4	235	3.91	.961	.207	.159	-.207	.207	.000 ^c
BM5	235	3.60	.897	.216	.216	-.204	.216	.000 ^c
BM6	235	4.41	.688	.320	.209	-.320	.320	.000 ^c
BM7	235	3.84	1.239	.274	.171	-.274	.274	.000 ^c
BM8	235	2.63	1.175	.184	.184	-.144	.184	.000 ^c
BM9	235	3.74	1.012	.250	.159	-.250	.250	.000 ^c
BM10	235	3.85	.929	.236	.164	-.236	.236	.000 ^c
MS1	235	3.00	.987	.236	.228	-.236	.236	.000 ^c
MS2	235	3.07	.922	.249	.249	-.232	.249	.000 ^c
MS3	235	3.31	.893	.234	.234	-.230	.234	.000 ^c
MS4	235	3.84	.870	.240	.186	-.240	.240	.000 ^c

One-Sample Kolmogorov-Smirnov Test								
	N	Normal Parameters ^{a,b}		Most Extreme Differences			Test Statistic	Asymp. Sig. (2-tailed)
		Mean	Std. Deviation	Absolute	Positive	Negative		
MS5	235	3.26	2.258	.248	.248	-.186	.248	.000 ^c
MS6	235	3.94	.943	.221	.145	-.221	.221	.000 ^c
MS7	235	4.22	.912	.293	.197	-.293	.293	.000 ^c
MS8	235	2.89	1.345	.150	.150	-.129	.150	.000 ^c
MS9	235	3.71	1.027	.217	.150	-.217	.217	.000 ^c
FM1	235	3.60	.823	.233	.233	-.220	.233	.000 ^c
FM2	235	2.97	1.017	.229	.213	-.229	.229	.000 ^c
FM3	235	4.00	.903	.255	.175	-.255	.255	.000 ^c
FM4	235	3.60	.935	.232	.174	-.232	.232	.000 ^c
FM5	235	3.33	1.070	.203	.203	-.188	.203	.000 ^c
FM6	235	2.00	1.017	.263	.263	-.178	.263	.000 ^c
FM7	235	3.13	1.302	.182	.111	-.182	.182	.000 ^c
FM8	235	2.16	1.105	.241	.241	-.189	.241	.000 ^c
FM9	235	2.74	1.161	.203	.151	-.203	.203	.000 ^c
HR1	235	2.78	.987	.268	.213	-.268	.268	.000 ^c
HR2	235	2.98	1.021	.268	.204	-.268	.268	.000 ^c
HR3	235	2.74	.993	.278	.211	-.278	.278	.000 ^c
HR4	235	2.60	1.141	.200	.145	-.200	.200	.000 ^c
HR5	235	2.21	1.182	.238	.238	-.170	.238	.000 ^c
HR6	235	3.37	1.363	.165	.130	-.165	.165	.000 ^c
HR7	235	3.04	1.307	.172	.147	-.172	.172	.000 ^c
TS1	235	3.91	.994	.263	.162	-.263	.263	.000 ^c
TS2	235	3.75	1.009	.245	.159	-.245	.245	.000 ^c
TS3	235	3.60	1.202	.229	.123	-.229	.229	.000 ^c
TS4	235	3.73	1.027	.217	.148	-.217	.217	.000 ^c
TS5	235	3.77	1.119	.231	.137	-.231	.231	.000 ^c
TS6	235	3.77	1.050	.243	.152	-.243	.243	.000 ^c
LS1	235	3.94	.985	.209	.145	-.209	.209	.000 ^c
LS2	235	3.90	1.093	.244	.157	-.244	.244	.000 ^c
LS3	235	3.79	1.053	.223	.130	-.223	.223	.000 ^c
LS4	235	4.23	.913	.295	.198	-.295	.295	.000 ^c
LS5	235	4.06	.842	.249	.194	-.249	.249	.000 ^c
LS6	235	4.28	.765	.279	.190	-.279	.279	.000 ^c
SIS1	235	4.20	.756	.242	.217	-.242	.242	.000 ^c

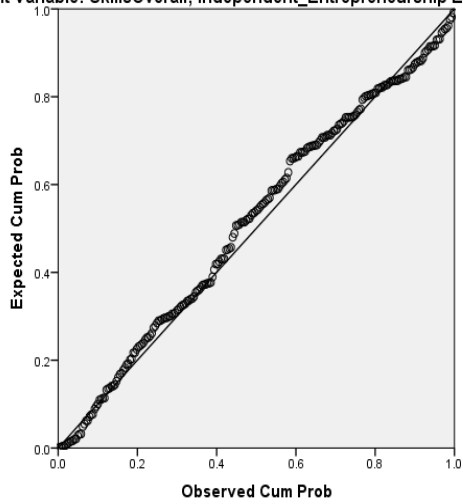
One-Sample Kolmogorov-Smirnov Test								
	N	Normal Parameters ^{a,b}		Most Extreme Differences			Test Statistic	Asymp. Sig. (2-tailed)
		Mean	Std. Deviation	Absolute	Positive	Negative		
SIS2	235	4.37	.688	.309	.215	-.309	.309	.000 ^c
SIS3	235	4.37	.683	.310	.219	-.310	.310	.000 ^c
SIS4	235	4.18	.889	.276	.179	-.276	.276	.000 ^c
SIS5	235	4.13	.914	.265	.169	-.265	.265	.000 ^c
SIS6	235	4.09	.855	.235	.163	-.235	.235	.000 ^c
SIS7	235	4.04	.849	.216	.173	-.216	.216	.000 ^c
PS1	235	4.25	.756	.270	.198	-.270	.270	.000 ^c
PS2	235	4.23	.774	.269	.189	-.269	.269	.000 ^c
PS3	235	4.24	.759	.268	.198	-.268	.268	.000 ^c
PS4	235	3.74	.898	.248	.248	-.170	.248	.000 ^c
PS5	235	4.01	.798	.234	.209	-.234	.234	.000 ^c
PS6	235	3.59	.940	.212	.212	-.191	.212	.000 ^c
PS7	235	3.89	1.038	.199	.165	-.199	.199	.000 ^c
PS8	235	4.29	.781	.294	.183	-.294	.294	.000 ^c
HC1	235	3.56	1.264	.174	.131	-.174	.174	.000 ^c
HC2	235	4.33	.774	.300	.194	-.300	.300	.000 ^c
HC3	235	3.92	1.117	.232	.166	-.232	.232	.000 ^c
HC4	235	3.55	1.170	.194	.136	-.194	.194	.000 ^c
HC5	235	3.73	1.098	.187	.151	-.187	.187	.000 ^c
HC6	235	3.67	1.045	.210	.153	-.210	.210	.000 ^c
HC7	235	3.79	.889	.210	.196	-.210	.210	.000 ^c
HC8	235	4.02	.963	.233	.155	-.233	.233	.000 ^c
a. Test distribution is Normal.								
b. Calculated from data.								
c. Lilliefors Significance Correction.								

Kolmogorov-Smirnov for Categories of Skills				
	Kolmogorov-Smirnov^a			Decision
	Statistic	df	Sig.	
Start-up skills	.101	220	.000	Not normally distributed
Business Management skills	.111	220	.000	Not normally distributed
Marketing skills	.063	220	.033	Not normally distributed
Financial Management skills	.071	220	.009	Not normally distributed
Human Resources skills	.118	220	.000	Not normally distributed
Technical skills	.097	220	.000	Not normally distributed
Leadership skills	.093	220	.000	Not normally distributed
Social and Interpersonal Skills	.097	220	.000	Not normally distributed
Personality Traits	.090	220	.000	Not normally distributed

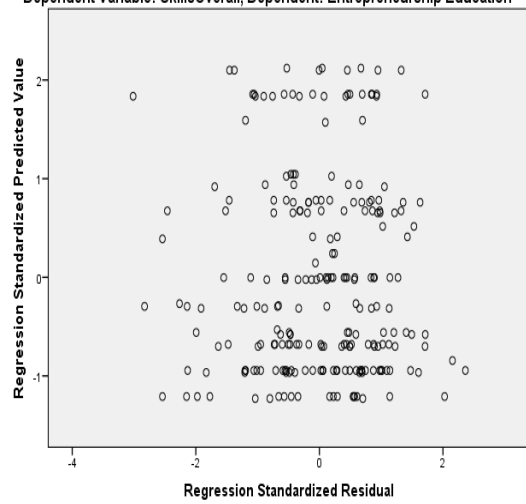
APPENDIX J: NORMAL PROBABILITY AND SCATTER PLOTS



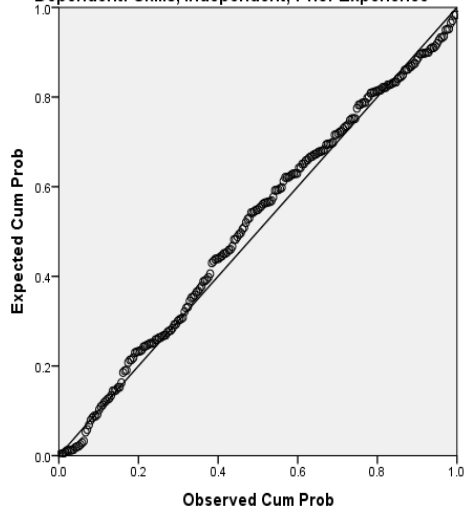
Normal P-P Plot of Regression Standardized Residual
Dependent Variable: SkillsOverall; Independent: Entrepreneurship Education



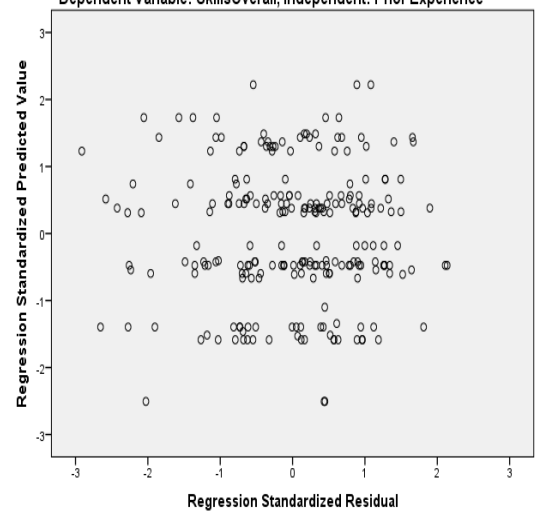
Scatterplot
Dependent Variable: SkillsOverall, Dependent: Entrepreneurship Education



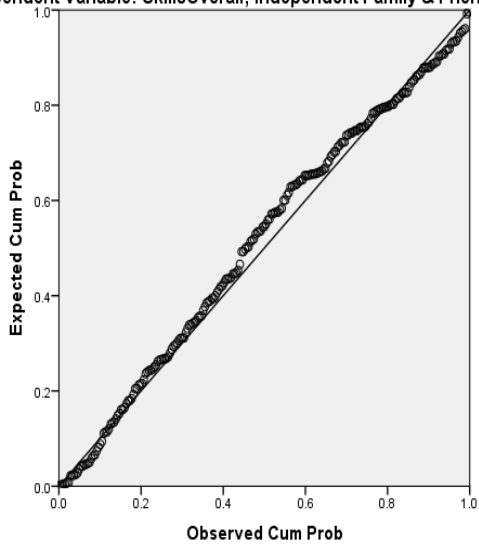
Normal P-P Plot of Regression Standardized Residual
Dependent: Skills, Independent: Prior Experience



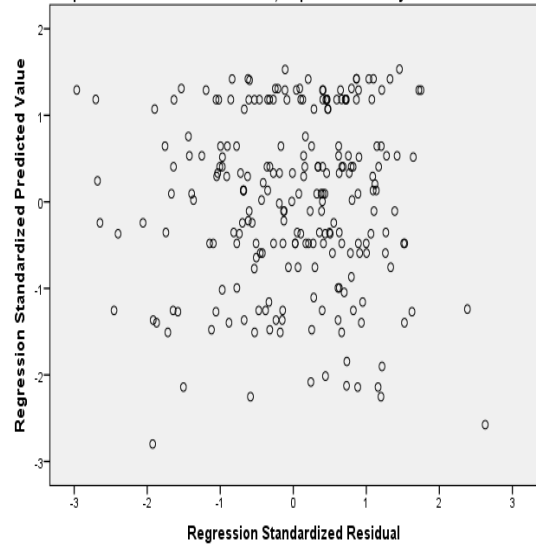
Scatterplot
Dependent Variable: SkillsOverall, Independent: Prior Experience



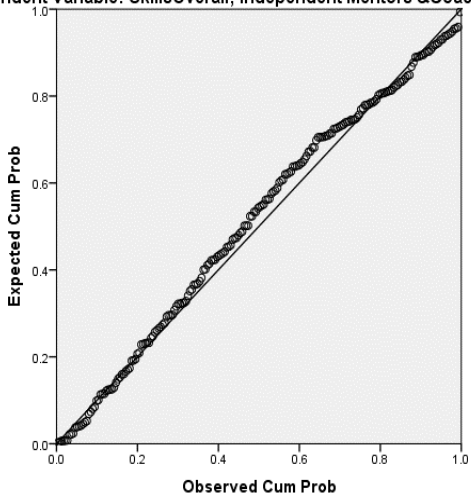
Normal P-P Plot of Regression Standardized Residual
Dependent Variable: SkillsOverall; Independent Family & Friends



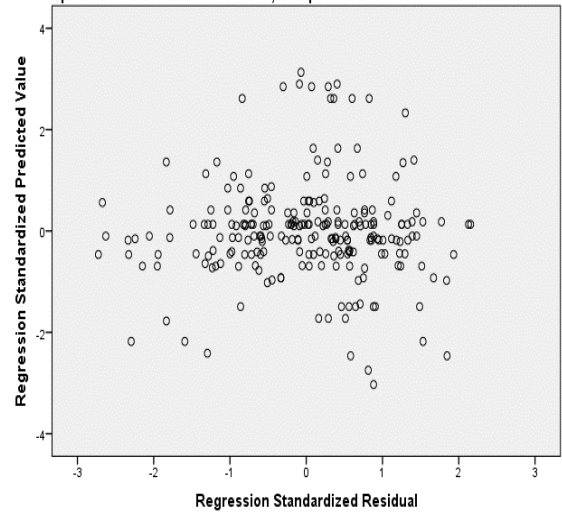
Scatterplot
Dependent Variable: SkillsOverall, Dependent: Family and Friends



Normal P-P Plot of Regression Standardized Residual
Dependent Variable: SkillsOverall; Independent Mentors & Coaches



Scatterplot
Dependent Variable: SkillsOverall, Independent: Mentors and Coaches



APPENDIX K: LINE GRAPHS

Human Capital Investments and Skills		Nascent	New Business	Established
Skills	Start-up	111.1	127.1	117.2
	Business Management	105.2	115.2	124.9
	Marketing	129.3	127.1	109.0
	Financial Management	93.5	99.6	136.9
	Human Resource Management	127.5	133.5	107.0
	Technical	125.5	132.1	108.5
	Personal	124.5	116.1	115.9
	Leadership	124.1	120.9	113.9
	Social and Interpersonal	123.1	130.1	110.5
	Core Business Skills Cluster	115.0	121.2	117.9
	Personal and Leadership Skills Cluster	122.0	116.6	116.7
	Overall Skills	120.7	126.9	112.9
Human Capital Investments and other sources of skills	Self-taught	145.9	165.4	84.9
	Social Actors	112.8	97.4	129.2
	Human Capital Investment Utility	116.7	109.5	122.3

APPENDIX L: ENTREPRENEURSHIP SKILLS WHEEL

