

Investigation of Barriers to Innovation Capacity: A Case of Food Processing Small and Medium Enterprises (SMEs) in Lusaka's Industrial Area

BY

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A Dissertation submitted to the University of Zambia in partial fulfilment of the requirements for the award of the Degree of Master of Business Administration General

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DECLARATION

I, **Miyanda Kapepe**, do hereby declare that this work is my original work achieved through personal reading and research. This work has never been submitted to the University of Zambia or any other Universities. All sources of data used and literature on related works previously done by others, used in the production of this Dissertation have been duly acknowledged. If any omission has been made, it is not by choice but by error.

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APPROVAL

This Dissertation by **Miyanda Kapepe** is approved as a partial fulfilment of the requirements for the award of the Degree of Master of Business Administration General

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ABSTRACT

Food industry is faced with a lot of changes driven by ever changing consumer demands, adaption of new technology, family structures, health concerns and global trends. Small and medium enterprises are key in food processing and have opportunities in food production, processing and marketing targeting local and international markets. Innovation enhances a firm's competitiveness and production capacity. The role of innovation in enhancing returns on investment and market penetration is underscored by the struggles faced by several food processing SMEs in Zambia. This study, therefore, sought to comprehensively investigate barriers to innovation capacity among food processing Small and Medium Enterprises in Lusaka's Industrial Area. To achieve the objectives of the study, primary data was collected from 100 food processing SMEs and analyzed using SPSS version 25. Logistic regression model and cross tabulations were used to Analyse results. The study highlights the interplay of factors such as innovation costs, market dominance, and uncertainties surrounding the innovation process. The lack of funds that firms need affects their ability to innovate, implying that lack of funds hampers the ability to innovate. In relation to innovation cost; firms reported that they encounter innovation costs however, innovation cost in itself does not lead to failure to engage in innovations. It is an important factor to consider in the innovation process for individual companies; however, it is not a key factor in determining the firm's ability to innovate. The study suggests strategic initiatives to mitigate these constraints, such as resource allocation, conducting cost and benefit assessments, focusing on internal innovation and clear innovation roadmaps. Future research should explore the profitability impact of innovation and research methodologies like time series to capture the capacity to innovate over an extended period.

KEY WORDS: Innovation, Food Processing, Innovation Capacity, Innovation Cost, Small and Medium Enterprises

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DEDICATION

I dedicate this work to my family and my dear friend Edgar Madalitso Mwansa, who have consistently provided me with much needed support and encouragement during the course of my studies. I am forever grateful for their presence every step of the way, as cheerleaders especially when school, family and work balance seemed impossible. I further dedicate this dissertation to my friend and mentor Dr. Father Victor Mwanamwambwa who has always believed in my ability and encouraged me to work hard. His constant reminders of the need to spare a few hours every day to attend to my school work made it possible for me to create a balanced schedule in order to complete this work. This dissertation is also dedicated to my children Tawana Msusa and Mpho-Michelle Khulila, my bundle of joy, pillars of strength, and source of inspiration. I love you! Last but not least, I dedicate this dissertation to my Mum and late Dad, Mrs. Lizzie Kapepe and Mr. Nelson Himpande Kapepe. Thank you, Mum, for single-handedly making sure that I went to university under the most difficult of circumstances. To my late Dad, I wish you were here to see that I did not only fulfil his desire for me to be a university graduate but that I have gone further to pursue a Master's degree.

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LIST OF ACRONYMS

CBD	Central Business District
CIS	Commonwealth of Independent States
Ha	Alternative Hypothesis
Ho	Null Hypothesis
IMF	International Monetary Fund
Logit	Log Odds Function
MS	Micro Soft
N	Population
n	Sample
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Co-operation and Development
OLR	Ordered Logistic Regression
p.a	Per Annum
PhD	Doctor of Philosophy
R&D	Research & Development
SMEs	Small and Medium Enterprises
SPSS	Statistical Package for the Social Sciences
UK	United Kingdom
USA	United States of America
Vol.	Volume
ZDA	Zambia Development Agency

CHAPTER 1

INTRODUCTION

1.1 Introduction

The food industry is facing a period of rapid change driven by globalisation, trade liberalisation, genetics development, processing and information technology, intellectual property rights, changes in family structure, and health and food safety concerns Ghani (2016). Innovation is finding a better way to do something new and updated, and it can also be viewed as the application of better solutions that meet new requirements. This is achieved through more effective products, processes, services, technologies, or ideas readily available to markets, governments, and society (Režek, 2021). Food Technology is a branch of food science that deals with the actual process & Production of the making of foods. Food technology also implements the study of many scientific-based technologies using different machinery to produce ready-made foods (ibid.).

In a rapidly changing world, the imperative for innovation increases. Innovation is common to all organizations' technology development and management, no matter how large a company is at a given time. "Innovation is the implementation of a new or significantly improved product or process, a new marketing, or organizational method in business practices" (OECD, 2020). Innovation is regarded as the most critical competitive advantage enabling a company to thrive in today's dynamic business environment. Innovation derives prosperity for organizations and nations. Nowadays, it is commonly agreed that innovation is the critical path toward growth and prosperity for countries and individual firms. It is the key to technology adoption, and creation and explains the vast difference in productivity across and within countries (ibid).

However, countries must be able to engage effectively in innovation activities. In that case, they will inevitably depend on other countries' innovative products, imported by hard currency from developed and developing countries. This typically holds for countries like Zambia. Likewise, firms' engagement in such activities is becoming mandatory unless they lose their market share and customers in the future because of shifts in demand of existing customers for new technology. Therefore, innovation helps to meet customer requirements and enables firms to introduce technology which has become one of the most important concerns for enterprises. Hence, a company's ability to keep up with its current business performance and exceed its and its

competition's expectations are critical to survive. About this, it is realized that if firms are not ready to renew their products and processes continuously, their chances of survival are seriously threatened (Tahi, 2011).

1.2 Background

Zambia has not exhausted its potential in the food processing sector in the past fifty years of independence from Britain. However, Zambia offers a range of investment opportunities in its food processing sector. The most promising and investable opportunities in the Zambian food industry are aquaculture, baby and high-nutrition foods, dairy, edible oils, horticulture and poultry. These value chains offer viable business opportunities, especially in integrated food production, processing and marketing businesses targeting local, regional, and continental markets (Zambia Development Agency, 2020). Aquaculture: Increasing fish imports and Zambia's vast freshwater bodies, wetlands, and plains present excellent investment opportunities in aqua-feeds, fish farming (cage and pond culture), and fish processing. Zambians are avid fish consumers; hence, the increasing local fish supply gap of up to 127,000 tons p.a. With stagnated capture fisheries output (80,000 tons p.a.) and a current aquaculture growth rate of 6%–7% p.a., imports have become Zambia's primary source of fish. Imports are expected to increase further to 173,000 tons p.a. by 2030. At that point, fish imports will account for nearly 60% of Zambia's total fish consumption. Zambia needs to more than double its aquaculture growth rate and output if it is to avoid imports increasing to 173,000 tons p.a. processed health foods: High levels of stunting (40%) and underweight (15%) among children under five years of age have created investment opportunities in processed health foods. Commercialisation of processed health food products is another promising business opportunity brought about by the current nutritional challenges that affect Zambia (Zambia Development Agency, 2020).

The ability to identify barriers in the firms results from the firms' involvement in innovation activity. Exports involving commodities that have an added value (finished or manufactured products) tend to fetch higher returns than those with little value added to them (primary products). Innovation is one-way firms can improve their returns on investment and efficiently penetrate the market. Unfortunately, several food processing SMEs in Zambia have developed marginally low capacity to innovate their products and, as such, remain in the lower bracket in terms of revenue

generated locally and from sales abroad. This study, therefore, seeks to investigate barriers to innovation capacity among food processing Small and Medium Enterprises.

1.3 Statement of the problem

The pivotal role of innovation in enhancing a firm's competitiveness and production capacity cannot be overstated. Identifying and comprehending barriers to innovation is crucial for firms aiming to navigate the complexities of the innovation process successfully (D'Este et al., 2012). Notably, firms actively engaged in innovation activities demonstrate a heightened awareness of and ability to perceive these barriers (ibid.). The linkage between a firm's participation in innovation and its ability to recognize barriers underscores the intricate relationship between innovation engagement and the identification of hindrances.

Studies underscore the economic significance of exports involving commodities with added value, which typically yield higher returns compared to those with minimal value addition (primary outcomes). Insights from Galia and Legros (2004) and Hoffman et al. (1998) reveal that firms undertaking internal research and development (R&D) and persistently innovating in products are more likely to encounter obstacles. Furthermore, financial constraints pose significant challenges, especially for firms with larger innovative capabilities that lack internal funds.

Historical perspectives from Schumpeter (1934) highlight the dichotomy faced by entrepreneurs as agents of destructive creation, introducing new products while grappling with the imperfections of capital markets that favor larger firms. Ortega-Argiles et al. (2009) emphasize the challenges faced by SMEs compared to their larger counterparts, citing financial gaps, weak powers, reduced capabilities, and an inability to leverage economies of scale. Hölzl & Janger (2014) further reinforce these challenges, particularly in the context of SMEs in developing countries, illustrating a negative association between external environmental factors (including market and infrastructure obstacles) and innovation outcomes.

With a marginally low capacity to innovate, these enterprises find themselves locally and internationally in the lower echelons of revenue generation. The pivotal role of innovation in enhancing competitiveness and production capacity has been the subject of a steadily growing body of literature. Some scholars have tried to identify and comprehend the barriers to innovation. This scholarship has been crucial for firms aiming to successfully navigate the innovation process and

its complexities (D'Este et al., 2012). Notably, researchers have established a casual linkage between firms actively engaged in innovation activities and their heightened awareness of and ability to overcome these barriers (D'Este et al., 2012). However, not many studies have explored the barriers to innovation capacity among food processing SMEs in Zambia. Whereas there is no dispute regarding the connection between higher export and value addition on one hand, and higher yield return on the other, the failure of Zambian SMEs in tapping into this lucrative export market has not been studied closely, hence the current study.

1.4 General objective

The primary objective: Explore the barriers or impediments faced by Food Processing Small and Medium Enterprises (SMEs) in Lusaka's Industrial Area with respect to their innovation capacity.

1.5 Specific Objectives

The specific objectives were:

- i.** To ascertain the correlation between the availability of funds and the capacity of a firm to innovate products and services.
- ii.** To scrutinize the relationship between a firm's innovation capacity and the associated costs of innovation.
- iii.** To evaluate the extent to which specific firms dominate markets for products and services through pioneering innovations.
- iv.** To identify contributing factors to uncertainties influencing demand for innovation in the food processing sector.

1.6 Hypotheses

The hypothesis was:

H₀: There is no significant relationship between the innovation capacity of SMEs in Lusaka and the economic and market barriers to innovation.

H_a: The innovation capacity for SMEs in Lusaka is significantly related to economic and market barriers to innovation.

1.7 Research questions

Research questions were:

1. What is the impact of insufficient funds on firm's ability to innovate products and services?
2. How does a firm's innovation capacity correlate with the costs incurred during the innovation process?
3. In what ways are markets for products and services dominated by specific firms that lead in innovative practices?
4. What are the contributing factors to uncertainties that shape the demand for innovation in the food processing sector?

1.8 Rationale

This study was aimed at investigating barriers to innovation capacity among food processing small and medium enterprises in industrial area Lusaka. Additionally, the researcher was interested in establishing key factors that act as a barrier to attaining total innovation capacity of firms in the food processing market. There is not so much work done around the topic of Barriers to Innovation Capacity among food processing SMEs in Zambia. The significance of this study lies in its potential to add to a pool of already existing knowledge on the Barriers to Innovation Capacity. It may also provide empirical evidence for policy makers and decision makers wishing to catalyze the food processing SME sector in Zambia and beyond. Furthermore, this study would help motivate other researchers to take an interest in the area of innovation, as it is vital to attaining long-term growth of the economy.

1.9 Ethical considerations

This study sought to uphold ethical considerations for respondents and all other parties involved in ensuring that no individual private or confidential information is disclosed. To achieve total privacy and confidentiality; the researcher only used grouped or aggregated data for analysis. The information collected using a questionnaire did not contain any names or identifiers of the respondents who participated in the study. Further, the researcher requested that respondents provide written consent prior to answering the questionnaire, as this served as a tool for ensuring confidentiality and anonymity of respondents. Ethical Clearance given by the University for this research is in **Appendix 2**.

CHAPTER 2

LITERATURE REVIEW

2.1 Chapter overview

This chapter reviewed related literature on barriers of innovation capacity to SMEs. It began by empirically reviewing studies conducted on barriers to innovation capacity among food processing SMEs at the global, regional, and local levels. Further; the study examined related theories and finally a conceptual framework was designed to illustrate the variable interlinks.

2.2. Empirical review

Small and medium-sized firms have gained increasing attention in the innovation literature. Exactly how innovation occurs in these firms still needs to be discovered. This study was carried out in a large number (N=300) of small and medium food processing firms in Zambia. With increasing competition and the rapid spread of knowledge, the future of many businesses depends on their ability to innovate.

2.3 Firm's ability to innovate products

The first group of literature enquired about the characteristics of the perceptions of firms regarding obstacles to innovation. Studies found that firms that engaged in internal R&D (Galia and Legros, 2004) and innovative persistently in products were more prone to perceiving several obstacles. In the same vein, Hoffman et al, (1998) studied the determinants of firms' financial barriers, finding that firms with more considerable innovative capabilities experienced more constraints than those with lower capabilities, especially if they also lacked internal funds. Firms that have initiated innovative projects are more likely to be aware of the factors hampering the process than firms that have not been involved in innovation (Galia and Legros, 2004). Thus, later studies attempted to distinguish between innovators, potential innovators, and noninnovators and found that noninnovators interested in innovation tend to perceive more obstacles than noninnovators not interested in innovation using the Community Innovation Survey, or CIS, for 18 countries). Thus, when analysing obstacles, the qualification of being, they also found that foreign firms perceived fewer obstacles than domestic ones.

2.4 Firm's innovation capacity and cost of innovation

When considering a firm's innovation capacity and the associated costs, it's crucial to examine their operating environment, particularly in nations positioned near the technological forefront. This concept is highlighted in studies such as the one conducted by García-Quevedo and Pellegrino (2018) on innovation probabilities within French firms. These firms, situated in advanced technological landscapes, face distinct challenges and opportunities concerning innovation investment and expenditure. It evaluated financial factors that hamper innovation using information from innovation surveys rather than internal liquidity. The proxy for the barrier was a dummy taking the value of one for firms that claimed either that the interest rate was too high, that there were not enough financial sources available, or that the procedures to access the funds were too slow. The paper dealt with sample selection by restricting the relevant sample to firms that either performed or identified at least one obstacle to innovation.

2.5 Specific firms that lead in innovations

Eichner (2015) excluded from their analysis two groups of companies: (i) those that did not innovate and claimed that “there were no market conditions for innovation” and (ii) those that did not innovate and did not identify any barriers to innovation. The authors carefully showed that the effects of obstacles on innovation were sensitive to sampling decisions, and the coefficient turned negative only when the relevant sample was identified. When controlling for endogeneity by using a bivariate Probit model, the coefficient remained negative and of similar size. A pertinent aspect of innovation obstacles that must be considered is that they tend to be complementary (Galia and Legros, 2004). This hints at the need to follow an integrative framework in the analysis rather than separately analysing the different factors hampering innovation.

The latest studies widened the focus to adopt a more systemic approach by jointly analysing several factors. However, only a few followed the taxonomy that Oslo suggested in 2005. The study by Hidalgo et al. (2014) is an important precedent for this paper. Using innovation survey data from the UK, they estimated a panel data model on the probability of obtaining innovative outputs, either product or process innovations.

Differences between small and large companies in terms of resources, capabilities, motivations, and strategies are expressed in their perception of obstacles, which arguably plays an important role in how these obstacles affect innovation behaviour and performance. In fact, several papers analysed obstacles specifically for SMEs. For example, Euchner (2015) used interview data from

a sample of 294 managers within a Spanish region and grouped obstacles to innovation using factor analysis. As a result, they identified three main types of barriers: (i) the external environment, which includes a mixed set of blocks related to the market characteristics and infrastructure, (ii) human resources, including qualification and attitudinal issues; and (iii) economic risks, which are related to market obstacles as defined by Oslo 2005.

2.6 Contributing factors to uncertainties that influence demand for innovation

The economic risk barriers rendered insignificant coefficients and the external environment showed the wrong sign for process innovation. In turn, Hölzl & Janger (2014) focus on SMEs in a developing country by analysing a sample of 308 Mexican service SMEs. Using a structural equation modeling for three types of barriers external environment, human resources, and finance, which were defined using factor analysis on innovative outcomes, they found a negative association in all cases, with the first (external environment, which comprises market and infrastructure obstacles) showing the most substantial effect. There are other pretty descriptive papers using interviews or low scale data.

One of the main issues encountered when investigating the topic of innovation, which is of great importance to the managers of top firms, is barriers. For this reason, it is necessary to study the origin, nature, and importance of each barrier. In addition, the influence, the consequences, and effects of each barrier in the process of innovation must be taken into account. Thus, these barriers can be classified in several ways. One of the most commonly used is to differentiate between internal and external barriers in relation to organizations, in other words, endogenous and exogenous barriers (Piatier, 1984). Barriers may occur at one or several points in the innovation process. Different levels of implementation of innovation may have varying results in this process. For example, financial difficulties will normally create more problems in the innovation implementation phase.

The assumption in the approach to the theme of barriers is that, from the moment they are identified, the objective is to understand them, fight them and, if possible, eliminate them, so that innovation can follow its normal course (Tidd et al., 1997). The empirical literature on innovation, as happens with the CIS, which exploits the nature of innovation and its influence on firms, is extensive and well consolidated. Two points have been emphasized about the role of barriers in innovation: they may focus on the factors that affect the perception of the importance of barriers (Mohnen and Rosa, 2000; Baldwin and Lin, 2002; Iammarino et al., 2009) or the influence of a barrier on 245 Barriers

to innovation activities Downloaded by Professor Filipe APDuarte At 10:27 22 September 2017 (PT) innovation and the intensity of innovation (Tourigny and Le, 2004; Mohnen and Röller, 2005; Mancusi and Vezzulli, 2010). Although these two points ultimately converge, the truth is that both fail to identify the nature of barriers to innovation about how they are revealed and can dissuade, as well as the context in which barriers can coexist with innovation. In most available investigations, these tend to submit their data from a financial perspective to the detriment of non-financial barriers and do not always provide evidence for obstacles that include non-financial issues, such as marketing and knowledge, which are central in the context of innovation policies and management (D'Este et al., 2012). Schumpeter (1934) began by developing the idea that entrepreneurs are agents of destructive creation by introducing new products. Later he indicated that, while the imperfections of capital markets favour large firms, SMEs are discouraged from innovating owing to the high costs and the barriers to entry (Schumpeter, 1942). Ortega-Argiles et al. (2009) reinforced this idea by stating that, comparing SMEs with large firms, the first have a gap in financial assets, have weak powers and reduced capabilities, and are unable to benefit from economies of scale.

On the other hand, they have many advantages, as they have greater flexibility, dynamism, efficiency, and proximity to the market (Hewitt-Dundas, 2006). If we combine the sector size of SMEs, regardless of the economy, with the importance of the growth of innovation, we can observe that it is central to innovation in SMEs. The factors that cause delays and dropouts in SMEs deserve special attention. Because their resources and capacities are limited, they may further degrade these delays and cause abandonment of projects (Hewitt-Dundas, 2006). Tepic et al. (2013) argue that proficiency of innovation process execution, as well as the synergy between firm resources and capabilities and the requirements of the innovation, is important for high innovation performance. Shepherd and Ahmed (2000) refer to the fact that a company warmly welcomes the success of product and process innovation to enhance their competitive advantage. Nicholas et al. (2011) affirms that one of the challenges that firms faced is that they currently lack a structure to integrate sustainability into business.

The lack of financial resources, time, staff, technical expertise, and organisational structures are barriers that SME owners typically face in sustainability. Panayides (2006) stated that instilling an innovation culture requires the investment of resources, especially managerial time, manifested by encouraging and targeting more frequent introduction of products and services in the marketplace,

although outcomes may not be readily apparent. Intensive cooperation with partners was shown to enhance knowledge sharing and the creation of new knowledge that may be useful to all parties in developing valuable innovations. There are few studies on the failures of the determinant factors of innovation. Mohnen et al. (2008) analysed the influence of financial constraints on firms that decide to abandon innovation, stop prematurely, encounter difficulties, or do not even start their innovation projects. In this work, the authors reported that the constraints on the financial level have a positive effect on a premature stop, a slowdown or the start of the project, but do not have the same effect on the abandonment of innovation projects.

Another similar work is by Landry et al. (2008), who analysed failure in innovation. They studied several determinants of the failure of innovation projects, including variables related to the creation of knowledge based on R&D, the firm's strategy, external sources of knowledge, financing, barriers to innovation, vulnerability, and degree of innovation novelty. These characteristics are, among others, the size, sector, age, competitive environment and variables related to the activities of innovation, which include technological intensity, financial support for innovation, externalization of R&D activities, R&D expenses, and introduction of technological innovation and novelties of innovation, among others. Firms that face problems in innovation, such as (among others) the size of the firm (Dahl and Moreau, 2002), activities related to R&D (Santamaría et al., 2009), uncertain costs and lack of warranties of return on investment (Ceccagnoli, 2009), need, in most cases, to acquire skills and techniques through their customers and suppliers to overcome their shortcomings regarding their technological capabilities (Miotti and Sachwald, 2003).

Hall and Martin (2005) and Hall et al. (2011) described the possible causes of the existence of barriers relating to technological issues, the commercial area, the organisational area, and the social uncertainty, which normally originate from environmental changes such that the dynamics of firms or those of the markets into which they are inserted are obliged to follow (Barreto, 2010). In terms of consensual conclusions, there is the fact that firms need to take into account the perception of a heterogeneous range of characteristics and variables and in this way assess the obstacles to innovation properly. Mohnen and Röller (2005) and Lööf and Heshmati (2006) analysed the influence that the obstacles to innovation have on their own innovation. In these works, these obstacles were measured through R&D, innovation activities or the results of innovation, noting that the obstacles to innovation positively affect their own innovation. However, these results cannot be considered conclusive because there are common factors that affect innovation or

obstacles to innovation. Savignac (2008), Tiwari et al. (2008), Hajivassiliou and Savignac (2011), and Blanchard et al. (2013) focused their work on the effect of limitations on financing and observed that these obstacles have a negative effect on innovation. Some of these studies focused on markets close to Portugal, as they tackled the French and European markets. Brancati (2015) stated that the literature addressing the theme of financial constraints on innovations is vast, but inconclusive. The question of financing is important when talking about barriers, because, in the absence of financial resources, firms begin a process of rationing of resources that leads to the various types of barriers being weighted (Brancati, 2015). Koziot et al. (2015) stressed the importance of customers and other participants at the market level in relation to cooperation aimed at the creation of innovations. Villareal and Calvo (2015) highlighted the importance of sources of funding, technical assistance, and support to establish businesses as determinants of success while creating an environment conducive to innovation. Hueske et al. (2015), in their work, concluded that the environments in which firms are situated could be a factor of barriers to innovation. For example, owing to the financial crisis that emerged some years ago, product development processes involve high costs; in particular, the technological and commercial barriers are factors that hinder innovation, as 247 Barriers to innovation activities Downloaded by Professor Filipe APDuarte At 10:27 22 September 2017 (PT) as well as issues concerning the financial capacity of the undertakings themselves (Deeds, 2001; Hall and Martin, 2005; Kranich, 2008).

In addition to financial matters, Hueske et al. (2015) concluded that the lack of capacity of human resources is a barrier that firms cannot always overcome. Issues such as emerging industries and social uncertainties were also pointed out as deterrents to innovation. This means that factors that are external to the enterprise can be one of the greatest obstacles to innovation projects in progress and may even lead to their abandonment. Hueske et al. (2015) mentioned in their work that if firms manage, in terms of their organization, to identify the barriers in good time, they have more chances of facing them and finding solutions capable of overcoming them, implementing greater dynamics in the process. These authors also reported that limiting the analysis in terms of strategy, structure, and resources disregards and negatively influences the organisational level, the level of learning, or the cultural level of the organisation. Hence, it is fundamental that firms with better innovation have a greater capacity to identify the barriers and achieve better preparations (Silva et al., 2008). Silva et al. (2008) highlighted in their work that barriers such as the high cost of innovation, lack of funding, organisational rigidity, lack of qualified personnel, lack of market information,

government regulations, and lack of customer response are variables that hinder and restrict the development of innovation activities, implying that firms feel less impelled to innovate.

Bowers and Khorakian (2014) studied the market of Iran and concluded by interviewees from all the companies studied, as all agreed that innovation always entails risk. Some of them recognised the need to manage risk more explicitly. Companies also refer that when various actions are undertaken that are consistent with good risk management, these actions typically involve resolving specific technical problems rather than systematically considering project risk management. About the work of Ortt et al. (2008), we can see that a disadvantage of contextual innovation may be that having different approaches to innovation management within a single company may make innovation processes within that company more difficult. An example is when a lead customer-driven approach (e.g. business units of Philips operating in business markets) is incompatible with a technology push (e.g., incubators at Philips).

More recent studies have provided evidence of barriers that explain why firms are unable to put the ideas that they conceive into practice, namely, the lack of capacity in terms of internal efficiency, technical support, protection of innovation, and lack of ability of human resources (Najda-Janoszka and Kopera, 2014; Meijer, 2015). The question of the lack of investment in R&D concerns the technological level, in that the level of human resources is caused mainly by a lack of financing, a lack of knowledge, or the relationship between the size of the firm and the development of innovation, which does not always correspond to reality (Song and Oh, 2015; Yu et al., 2015). With regard to the work of Hadjimanolis (1999) and Barrau (2000), we can see the set of barriers to innovation that exist and the number of obstacles that deter firms from continuing with their innovation projects.

The main types of barriers to innovation, which complements what is advocated by several authors, as well as dividing the barriers into internal barriers (endogenous) and external barriers (exogenous), as the resources and capacities of undertakings are a pivotal factor in acquiring a competitive advantage (Avermaete et al., 2003; Silva, 2003; Barbosa, 2006).

Innovative performance varies from firm to firm and is influenced by internal, external, stimulating, and restrictive factors, which exert a significant impact on the design, implementation and diffusion of innovation (Hadjimanolis, 1999; Conceição and Ávila, 2001; Perel, 2002; Landry et al., 2008; Garcia-Veja and López, 2010). Despite the importance of the barriers to innovation in this study, some authors argue that, with the digital revolution, some barriers have already declined (Euchner,

2015). These barriers may be classified and grouped in different ways as external (or exogenous, arising when firms acquire resources or knowledge externally) and internal (or endogenous, normally associated with difficulties in implementing internal changes in their organisational processes) to the firm (Hadjimanolis, 1999; Thakur and Hale, 2013; Lewandowska, 2014).

According to Saatcioglu and Ozmen (2010), the internal barriers include the following: (i) lack of qualified personnel; (ii) bureaucracy; (iii) lack of R&D, design, testing, and other technical problems in firms; (iv) long timeline for return on innovation; (v) perception of innovation as risky; (vi) difficulty in controlling innovation costs; and (vii) financing innovation. Meanwhile, the external barriers include the following: (i) patent and license policies; (ii) lack of government incentives; (iii) foreign trade policy; and (iv) competition. Barriers to innovation are classified into (i) economic factors, (ii) knowledge factors, (iii) market factors, and (iv) reasons not to innovate. Madeira, M.J., Carvalho, J., Miguel Moreira, J.R., Duarte, F.AP. & de São Pedro Filho, F. (2017) Barriers to Innovation and the Innovative Performance of Portuguese Firms. *Journal of Business*, Vol.9 (1): 2-22 7 The economic factors are most important in terms of their impact innovation and are highly associated with a lack of internal and external funding, higher financing costs, and greater financial risk (Frenkel, 2003; Vermeulen, 2005; Kenny and Reedy, 2006; MadridGuijarro, Garcia and Van Auken, 2009; Xie, Zeng and Tam, 2010; Lewandowska, 2014; Amara et al., 2016). The study conducted by Hadjimanolis (1999) identifies the role of financing problems in the development of new products and the role of bureaucracy as the greatest barriers to the innovation process. Other studies using the CIS data for industrial firms have identified the high costs and lack of funding as the most frequently encountered obstacles responsible for delays and the nondevelopment of innovation projects (Silva, Leitão and Raposo, 2008). Regarding cancelled projects, other than high costs, the perception of excessive risks and the regulations and norms emerge as major barriers (Conceição and Ávila, 2001). The studies carried out by Barbosa (2006) and Segarra-Blasco, Garcia-Quevedo, and TeruelCarrizosa (2008) also conclude that the high investment costs influencing the innovative process are the main barrier to the development of technological innovation processes.

Recent studies also highlight the lack of funding as a major barrier that prevents companies from investing in R&D at both the technological and employee training levels (Song and Oh, 2015; Yu et al., 2015). So, economic factors are critical because financing constraints and uncertainty of innovation projects affect the incentives of firms to invest in innovation (Hölzl and Janger, 2014).

Knowledge factors, which are related to the concept of absorptive capacity, include the lack of qualified personnel, a long-term view of leadership and corporate courage, a lack of information regarding technology and markets, and the difficulty in finding cooperative partners for innovation projects. In terms of innovation, internal resistance to innovation is a factor that can jeopardise the competitiveness of a company. For example, a high level of resistance from employees may be caused by the perceived risk of job loss following the introduction of an innovation. This resistance can be decreased through guarantees or compensation given to employees before introducing innovation or by reducing the costs related to innovation (Zwick, 2002).

The latest studies show that when conceived ideas are put into practice, the factors that hinder businesses are the lack of capacity in terms of internal efficiency and technical support and the lack of ability of workers (Najda-Janoszha and Kopera, 2014; Meijer, 2015; Song and Oh, 2015; Yu et al, 2015). Lack of technical and market information is a barrier to developing innovative corporate processes (Nunes and Silva, 2010), mainly due to the pressure currently exerted on firms by demanding and sophisticated customers, which provides a strong incentive to compete and innovate (Porter, 1990). Amara et al. (2016) mention that customers who are not receptive to adopting new products and replacing frozen products with competitive products constitute an obstacle to innovation. In this sense, the study by authors et al. (2008) concludes that the lack of customer receptivity to new products leads firms to demonstrate a lower propensity to innovate. *Journal of Business*, Vol.9 (1): 2-22 8 firms that perceive the market as not interested in new products have no incentive to innovate; this perception acts as an obstacle to innovation (Silva et al., 2009). The difficulty in finding cooperative partners on projects in the field of innovation is an extremely important barrier to innovation, as financial incentives for innovation are one of the key requirements of innovative projects.

Several studies have shown that collaboration between firms is a factor that drives innovation (Franco, 2003), as is a collaboration between firms and their customers, suppliers (Xie Zeng and Tam, 2010), scientific and technological system entities and competitors (Xie, Zeng and Tam, 2010). It must be emphasised that establishing contact with external sources of knowledge has an important influence on the innovation ability of firms (Fukugawa, 2006). Firms that establish relationships with external partners are more likely to introduce new products (Sawang and Matthews, 2010). However, it should be noted that many firms innovate successfully without

resorting to cooperation partners, suggesting that strategies based on firms' capabilities are significantly more important than those that involve foreign partners (Freel and Harrison, 2006).

2.7 Theoretical Framework

This section focused on reviewing theories that the researcher will use to understand the relationships among the study's variables. The researchers reviewed two theories; industrial economics and evolutionary economics.

2.7.1 Industrial Economics in the Context of Food Processing SMEs in Lusaka's Industrial Area

Arrow's seminal work, as discussed by Solow (1957), delves into the allocation of resources for invention under uncertainty. In the case of Food Processing SMEs operating in Lusaka's Industrial Area, characterized by financial constraints, a free enterprise (perfectly competitive) economy might face challenges in investing adequately in invention and research due to inherent risks. The possibility of limited product appropriation and increasing returns in use further complicates this scenario. Emphasizing the financial constraints specific to SMEs in the food processing sector, it becomes crucial to recognize that these enterprises may underinvest in innovation.

Further, in the context of Food Processing SMEs, the monopoly power dynamic acts as a disincentive to innovation compared to perfect competition. This highlights the potential impact of external support, specifically government intervention, as a means to address financial constraints and stimulate Research and Development (R&D) activities within these SMEs. The firm's private considerations, distinct from social benefits, underscore the need for external intervention to align private and social interests in the pursuit of innovation.

The size of the firm emerges as a critical factor in the innovative performance of Food Processing SMEs. While large firms can achieve scale economies, diversify, and develop market reputation, the efficiency gains due to size may plateau after a certain extent. Recognizing the financial constraints faced by SMEs, it becomes imperative to explore how external support, particularly in the form of government intervention, can offset these constraints and foster a conducive environment for innovation within the food processing sector.

2.7.2 Evolutionary Economics: Internal Dynamics and Environmental Factors

In contrast to neoclassical theories, evolutionary economics aligns with Schumpeter's dynamic vision of the financial world. In the specific context of Food Processing SMEs in Lusaka's Industrial Area, where innovation is a critical factor for growth and sustainability, evolutionary economics takes on added significance. Unlike viewing innovation as an exogenous force, evolutionary economics considers it as an endogenous process shaped by internal dynamics and environmental factors.

For Food Processing SMEs, the internal dynamics encompass the firm's organizational structure, culture, and strategic approach to innovation. Moreover, the environment in which these SMEs operate is vital. In the food processing sector, considering the literature on innovation methods (Edquist, 1997; Lundvall, 1992), it becomes evident that both internal and external factors play a crucial role in influencing the innovation capacity of SMEs.

2.8 Conceptual framework

Figure 2.1 shows an illustration of the relationships that exist between the outcome and the explanatory variables of the study as follows:

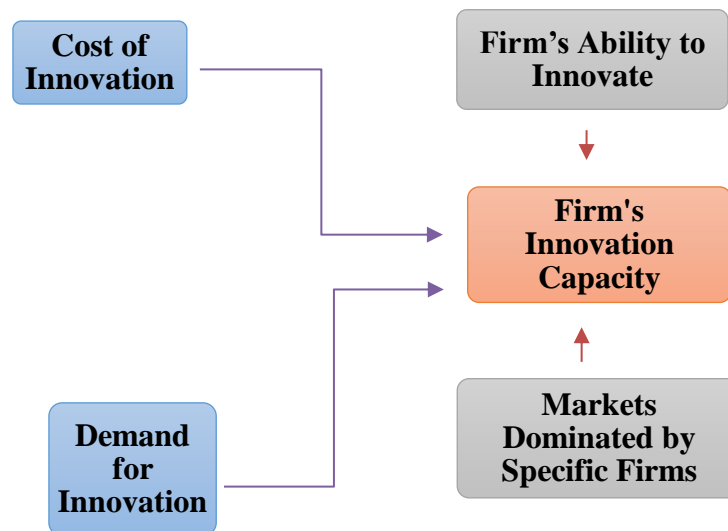


Figure 2.1 Conceptual Framework

The outcome variable is the firm's capacity to innovate, which in the context of literature reviewed in this study is influenced by the cost of innovation, demand for innovation, firm's ability to innovate, and market domination by specific firms.

2.9 Research gaps

Although the review of literature brought out insightful information regarding barriers to innovation capacity among food processing SMEs, there are some gaps in relation to the extent to which the following are considered.

There is insufficient and imprecise information on the types of barriers that are key to note the decline in innovation in food processing industries; much of the information from literature focuses on manufacturing and other sectors however there is little to learn in the food processing sector from the literature available.

Likewise; biased information does exist on food processing, and much of the scholarly work brought forward is focused on lack of incentives to innovate in this industry; however, only few articles actually bring out the aspect that innovations do exist in the food processing industry.

Inconsistent and unknown results are mainly due to lack of proper definition of study variables. The researcher noted that many writers are not specific to particular variables under consideration; thus, the analyses do not bring out meaningful findings hence most of the works reviewed tend to take a general approach other than being specific to particular aspects of the topic.

Furthermore, the researcher identified that there needs to be more right information that one can use to decipher the causes of barriers to innovate in the food processing industry and the extent to which the barriers reflect the lack of innovations.

2.9.1 Literature Review Matrix

Table 2.1 shows the characteristics of firms that engage in innovative products and services, based on a review of the literature by Galia and Legros (2004), Hoffman et al. (1998), Ortega-Argiles et al. (2009), and Tepic et al. (2013).

The table shows that firms that engage in innovative products and services are more likely to:

- Invest in internal R&D
- Have higher levels of innovative capabilities

- Be aware of the factors that hamper innovation
- Have a high level of proficiency in innovation process execution
- Have a strong synergy between the firm's resources and capabilities and the requirements of the innovation

The table also shows that the obstacles faced by firms as they innovate these products tend to have higher returns compared to firms that do not innovate.

The findings of this table suggest that firms that are serious about innovation should invest in internal R&D, develop their innovative capabilities, and become aware of the factors that can hinder innovation. They should also focus on developing their innovation process execution skills and ensuring that there is a strong synergy between their resources and capabilities and the requirements of the innovation.

Table 2.1 Obstacles to Innovation in Small and Medium-Sized Enterprises

Author and Year	Study Focus	Key Findings	Implications/Conclusions
Tepic et al. (2013)	Analysed factors causing delays and dropouts in SME development	- Proficiency in innovation process execution and synergy between firm resources and innovation requirements are crucial.	- Companies value the success of product and process innovation to enhance their competitive advantage.
Ortega-Argiles et al. (2009)	Studied entrepreneurs as agents of destructive creation by introducing new products	- Economic risk barriers had insignificant coefficients for process innovation.	- Negative association found with external environment, including market and infrastructure obstacles.
Galia and Legros (2004)	Investigated the characteristics of firms' perceptions regarding obstacles to innovation	- Firms engaging in internal R&D and innovative projects are more prone to perceiving several obstacles.	- Obstacles faced by innovative firms tend to yield higher returns compared to non-innovative firms.

Hoffman et al. (1998)	Examined the determinants of firms' financial barriers	- Firms with greater innovative capabilities experience more constraints, especially if they lack internal funds.	- Firms initiating innovative projects are more likely to be aware of factors hindering the process.
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CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1: Chapter overview

This chapter outlines the overall methodology used in carrying out this study. It describes the research design, population, sampling techniques, data collection methods, research procedures, and methodology employed in the study.

3.2: Research design

The study was a cross-section that used a quantitative method. The study embarked on the use of quantity survey approach to collect current data in relation innovation in the food processing industry; further this non-experimental design was appropriate to the study as it focused on using statistical tools to create an understanding of the determinants of innovation.

As of recent data, there are approximately 1,500 food processing businesses in Zambia, with about 300 of these being SMEs located in Lusaka (TechnoServe, 2020; FAO, 2019; Blekking et al., 2017; BRRA, 2023; PACRA, 2023). Applying the Cochran formula (Conchran, 1997) to determine the sample size from the unknown population works out as follows:

$$n = n_0 / 1 + (n_0 - 1)/N \quad \text{Equation 3.1}$$

where “n” is the adjusted sample size, “n₀” is the recommended Cochran sample size, and “N” is the population. Our recommended Cochran sample “n₀” is 150. This works out as follows:

$$n = 150 / (1 + (150 - 1)/300)$$
$$n = 150 / 1.50 = \mathbf{100 \text{ Sample size.}}$$

3.2.1: Sampling and sampling procedure

The study used probability sampling to select the sample from the target population. The study employed a structured questionnaire as an instrument of data collection.

$K^{\text{th}} = N / n$, where “N” is the population sample, and “n” is the sample size obtained from the Cochran Formula (Conchran, 1997).

$K^{\text{th}} = 300/100 = 3$ implying that every 3rd SME was selected. In descriptive studies, a sample of 30 per cent of the population is acceptable. The study targeted a 50 per cent threshold in computing

sample size to achieve a strong representative sample. This translated into 100 respondents considering the estimated population of 300 SMEs in the informal economy operating in the Lusaka industrial area.

3.3: Empirical model

The study adopted the following multiple regression model:

$Y_i = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + u$ where Y_i represents the firm's innovation capacity (This is the independent variable); X_1 represents demand for innovation; X_2 represents the cost of innovation; X_3 represents the firm's ability to innovate X_4 represents market dominated by the specific firm "u" is the error term. B_0 is the intercept whereas B_1 , B_2 , B_3 and B_4 are the coefficients of the response variables.

3.4 Data collection and analysis.

Data was be coded from the questionnaire (see **Appendix 1**), entered into Ms Excel 2016 and after that, exported for analysis to SPSS version 25. The analysis was conducted in three stages; the first stage involved univariate analysis in which frequencies and percentages was drawn for individual variables of the study in table and graph formats; the second stage was bivariate in which the researcher used the cross-tabulations and correlations to understand the associations among the key variables and thirdly the logistic regression was used to report the odds ratio and p-values in an attempt to measure the effects of each independent variable on the dependent variable.

3.5 Logistic Regression model

Logistic regression model was used to analyse the relationship between ability to innovate and determinants of innovation in the food processing sector in Lusaka. The determinants of innovation were estimated as parameters at 95 % confidence interval with the statistical level of significance set at 0.05. The analysis imputed all the variables in the model using systematic variable selection; with this criterion any variable in the model with less than 0.05 significance is regarded as a determinant of innovation.

3.6 Questionnaire Design

This section explains the methodology employed in crafting the questionnaire, providing a delineation of the rationale behind each question. It illustrates how each question contributes to addressing the research objectives, research questions, and hypotheses. The questionnaire is positioned as a strategic tool utilized for the collection of pertinent data essential for comprehensive analysis and the generation of insightful findings.

- a.** The process of designing the questions for the questionnaire involved a meticulous approach to ensure alignment with the research objectives, questions, and hypotheses. Each question was crafted with a specific rationale in mind, aiming to extract information that would contribute meaningfully to the overall study.
- b.** The first step in the design process was a comprehensive review of the research objectives. This involved a careful examination of the overarching goals of the study, understanding the key areas that required exploration, and identifying the critical aspects that would contribute to a thorough analysis.
- c.** Subsequently, the research questions and hypotheses were considered. Each question in the questionnaire was tailored to directly address one or more research questions, ensuring that the data collected would be directly relevant to the study's primary inquiries. This alignment was crucial to guarantee the questionnaire's effectiveness in providing targeted insights.
- d.** Further, the rationale behind each question was informed by the need to capture diverse perspectives and nuances related to the research topic. The questions were designed to cover a spectrum of variables, ensuring a comprehensive exploration of the subject matter. This approach aimed to avoid bias and obtain a holistic understanding of the phenomena under investigation.
- e.** The clarity and specificity of each question were prioritized to facilitate respondents' understanding and accurate data collection. The wording and structure were crafted to minimize ambiguity and encourage thoughtful responses, fostering data quality.
- f.** The design of the questionnaire reflects a purposeful and strategic process. The careful consideration of research objectives, questions, and hypotheses guided the formulation of each question, ensuring that the collected data would be both relevant and insightful for a comprehensive analysis of the research topic.

CHAPTER 4

RESULTS

4.1 Introduction

This chapter presents the study findings from the data collected and analysed using SPSS version 25. The analysis is presented in tabulating and figure formats for easier understanding of the study results. The study analysis was conducted at Univariate, Bivariate, and Multivariate levels to make meaningful presentations of the study findings.

4.2 Demographic characteristics

Age and gender of respondents:

According to **Table 4.1**, most of the respondents as shown by 43% of the respondents were aged between 20 to 30 years, 20% of the respondents indicated age between 31 to 40 years, 17% of the respondents indicated age between 41 to 50 years, 12% of the respondents indicated age 51 to 60 years and 3% of the respondents indicated age above 60 years.

Table 4.1: Age of respondents

Age groups	Frequency	Percent
20 years to 30 years	43	43.0
31 years to 40 years	20	20.0
41 years to 50 years	17	17.0
51 years to 60 years	12	12.0
Above 60 years	3	3.0

Mean age = 35.93, Median Age = 32.00, Modal age = 27, Minimum age = 20 and Maximum age = 71.

Table 4.2 below shows the gender distribution of the research participants, 62 respondents (62%) of the research participants were male whilst 34% (34 respondents) were female. A further 3 respondents declined to reveal their gender.

Table 4.2: Gender of respondents

	Gender	Frequency	Percent
Valid	Male	62	62.0
	Female	34	34.0
	Not willing to disclose	3	3.0
	Total	99	99.0

Table 4.3 below shows the highest level of education attained by the research participants. From the results, 38 respondents (38%) indicated that they attained Diplomas whilst 22 of the respondents indicated that they had attained Degrees. 14 and 12 further respondents indicated that they had attained at least a Grade 12 (School Leaver) Certificate and Master's Degree respectively. 8 more respondents indicated that they had attained Crafts Certificates and 2 respondents indicated that they had Doctor of Philosophy (PhD) qualification. A further 3% of the respondents indicated that they had other forms of qualifications.

Table 4.3: Respondents level of education

Education	Frequency	Percent
Grade 12 (School Leaver) Certificate	14	14.0
Crafts Certificate	8	8.0
Diploma	38	38.0
Degree	22	22.0
Masters	12	12.0
Ph. D	2	2.0
Other	3	3.0
Total	99	99.0
Missing System	1	1.0
Total	100	100.0

The results from **Table 4.4** shows the responses for how long the research respondents worked at their current organizations. 38 respondents indicated that they had worked for their organizations between 1 and 3 years. A further 27% of the respondents stated that they had worked for their current organizations between 4 and 7 years. A further 12 respondents indicated that they had worked for their organizations between 8 and 10 years. The remaining 13 and 9 respondents stated that they had worked for their organization for more than 10 years and less than 1 year respectively.

Table 4.4: Tenure of Service at Organization

		Frequency	Percent
Valid	Less than 1 year	9	9.0
	Between 1 year and 3 years	38	38.0
	Between 4 years and 7 years	27	27.0
	Between 8 Years and 10 years	12	12.0
	More than 10 years	13	13.0
	Total	99	99.0
Missing	System	1	1.0
Total		100	100.0

The results represented in **Table 4.5** and **Figure 4.1** shows the response to what the profitability status which affects the firm's ability to innovate had been for the respondents various organisations. 28% of the respondents revealed that they had made profits over the last three months whilst 24% of the respondents indicated that the companies for which they had worked for broke-even. A further 25% of the respondents revealed that their various organisations did incur losses and made some profits in the previous three months. 20 respondents (20%) indicated that they were unsure of the profitability status of their organisations over the previous three months while 3 respondents revealed that the organisations for which they worked for had made losses in the same time-frame. The profitability of an organisation should have an effect on its ability to undertake innovations.

Table 4.5: Profitability status of the organization

What is the profitability status in the last three months of this organization?				
	Frequency	Percent	Valid Percent	Cumulative Percent
We made profits	28	28.0	28.0	28.0
We broke-even	24	24.0	24.0	52.0
We made losses	3	3.0	3.0	55.0
I am not sure	20	20.0	20.0	75.0
We have incurred losses and profits	25	25.0	25.0	100.0
Total	100	100.0	100.0	

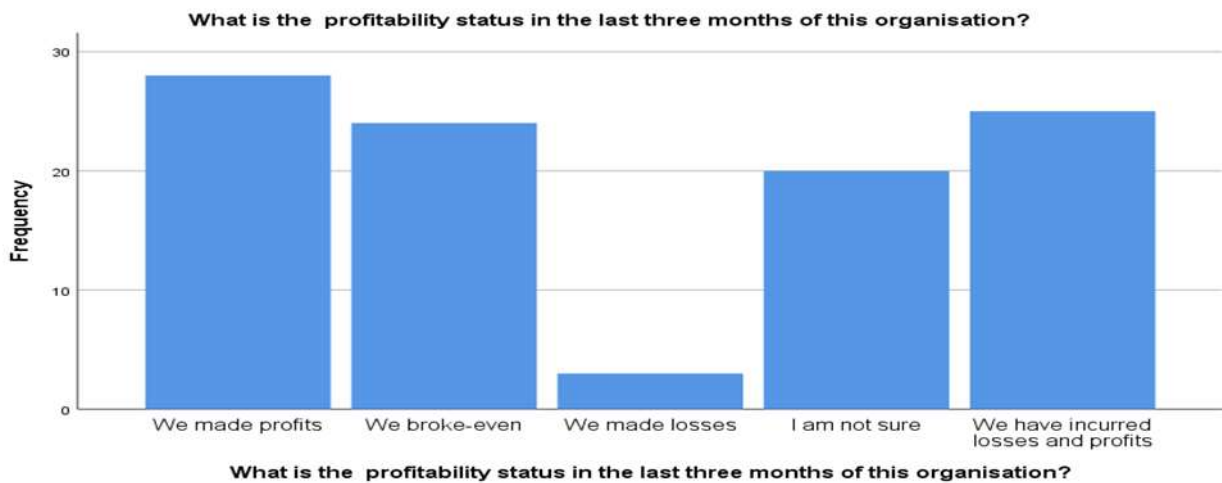


Figure 4.1 Profitability status of the organization

The results presented in **Table 4.6** and **Figure 4.2** shows the responses for how much respondents agreed to the notion that their organization's financial status affected its ability to come up with (innovate) new products and services. 43% and 21% of the respondents agreed and strongly agreed with this notion respectively. 18 respondents were not in support of this notion with 14 disagreeing to the notion and 4 strongly disagreeing. The remaining 18 respondents (18%) remained neutral as they were not sure on whether to support the notion or not.

Table 4.6: Financial status affecting innovation

Does this organization's financial status (profitability status) affect its ability to come - up with new products and services?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	21	21.0	21.0	21.0
	Agree	43	43.0	43.0	64.0
	Not sure	18	18.0	18.0	82.0
	Disagree	14	14.0	14.0	96.0
	Strongly disagree	4	4.0	4.0	100.0
	Total	100	100.0	100.0	

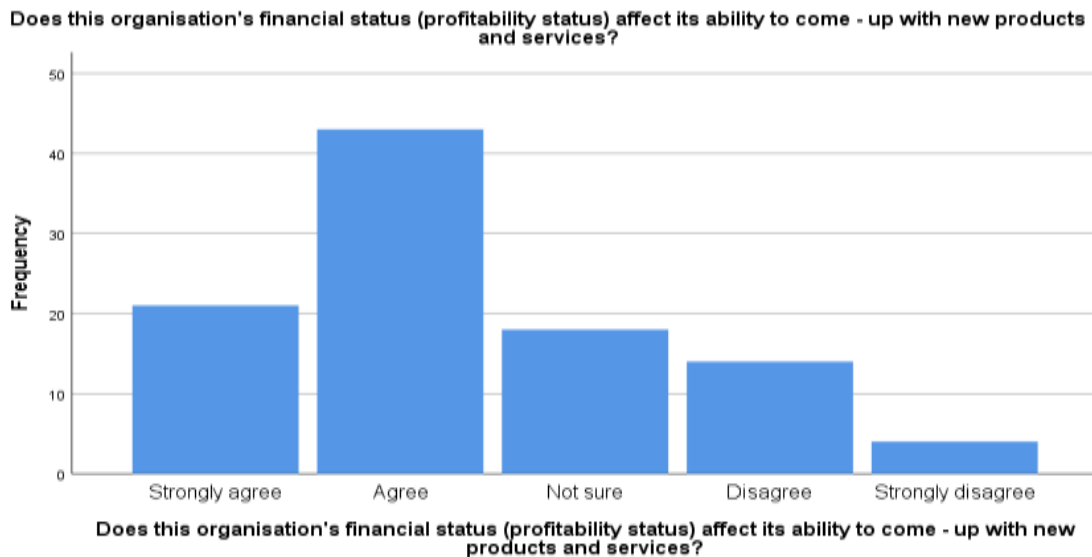


Figure 4.2: Financial status affecting innovation

The researcher sought to understand the source of funds for innovations in these organizations, and the responses are shown in **Table 4.7** and **Figure 4.3**. The majority of respondents which was 46% of them, indicated that the significant source of funds for innovative works in their organizations was through the profits that were generated from the core business, whilst 16% of the respondents showed that the main source of funds for innovative works was from the profits that were generated

from the sale of other goods or services that were provided by their various organizations and not necessarily from the core product. A further 15 respondents (15%) indicated that their organisations relied on finances from loan institutions such as banks for their innovative works. Of the remaining respondents, 14 indicated that the main source of such funds was through grants provided by an NGO or any other interested party whilst the 9 respondents indicated that they were not sure of the major source of financing or funds for any innovative works or processes.

Table 4.7: Sources of funds for innovation

Where do you see funds required for innovation coming from in this organization?					
Valid		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Profits generated from the core business	46	46.0	46.0	46.0
	Profits generated from sale of other goods/services provided by this organisation	16	16.0	16.0	62.0
	A loan from institutions e.g. bank	15	15.0	15.0	77.0
	Grant provided by an NGO or other interested parties	14	14.0	14.0	91.0
	Not sure	9	9.0	9.0	100.0

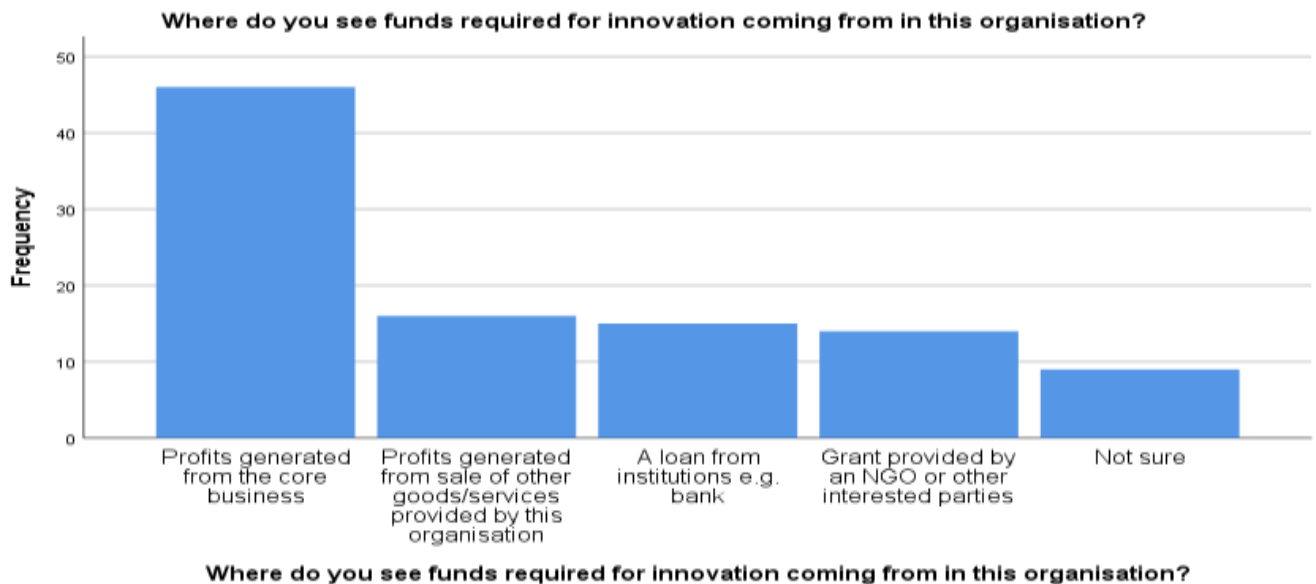


Figure 4.3: Sources of funds for innovation

According to **Table 4.8** and **Figure 4.4**, the respondents were requested to indicate whether the organization had invented a new product. From the findings, 48% of the respondents indicated that their organisation had indeed developed a new product in the past while 37% indicated that their organisations had not invented a new product in the past. The remaining 15% of the respondents indicated that they were unsure if their organisations had come up with a new product in the past.

Table 4.8: Organisation ever invented a new product

In the past; has this organisation ever invented a new product?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	48	48.0	48.0	48.0
	Maybe	15	15.0	15.0	63.0
	No	37	37.0	37.0	100.0
	Total	100	100.0	100.0	

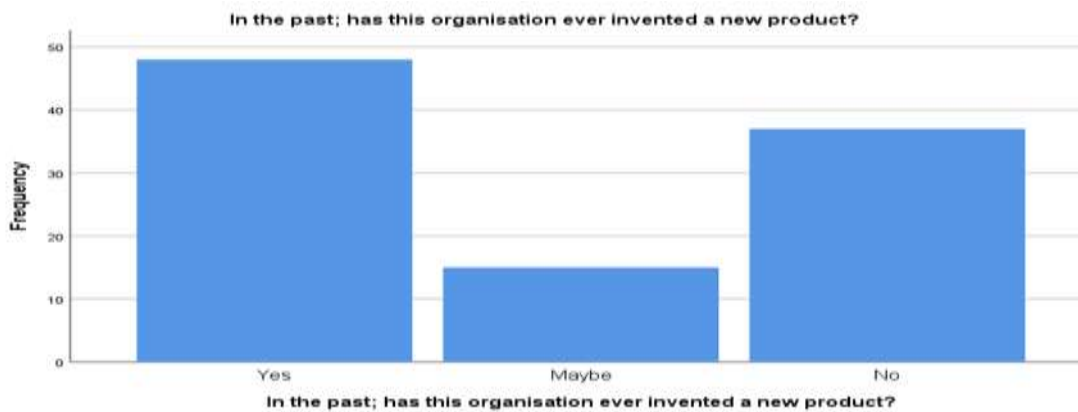


Figure 4.4: Organisation ever invented a new product

The researcher sought to identify the major challenges the respondents' organisations faced in the way of innovation and how much of an impact these factors had on them. **Table 4.9** shows the results of this query. The major factors with the most effect identified by the respondents were lack of resources/capacity and lack of funds. The respondents also highlighted the lack of a clearly defined process as a factor that challenges innovation in their organizations. Lack of leadership and fear of failure seemed to carry the least amount of impact as a challenge for innovation in the organizations.

Table 4.9: Rate the extent to which each of the challenges affects innovations [Fear of failure]

Rate the extent to which each of the challenges affects innovations [Fear of failure]							
		Fear of Failure	Lack of Funds	Lack of Leadership	Lack of Resource/ Capacity	No Time	No Clear Process
	Large extent	15	41	12	46	11	13
	Moderate extent	23	37	26	33	44	27
	Not affected	48	16	46	11	32	45
	Lower extent	3	0	4	2	2	5
	Lowest extent	2	0	2	1	2	
	Total	91	94	100	93	91	90
Missing	-1	9	6		7	7	10
Total		100	100.0	100	100	100	100

The results presented in **Table 4.10** shows the study findings on the organisation's capacity to innovate. The study revealed that 32 of the respondents indicated that the organisation's ability to innovate was high and a further 27 indicated that the capacity was at the highest. 29 other respondents gave a neutral rating of their firms' capacity to innovate. The remaining 12 participants indicated that their firms had low capacities to innovate.

Table 4.10: What is this organisation's capacity to innovate?

On a scale of 1 to 5 where 1 is lowest and 5 is highest; what is this organisation's capacity to innovate?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	5.0	5.0	5.0
	2	7	7.0	7.0	12.0
	3	29	29.0	29.0	41.0
	4	32	32.0	32.0	73.0
	5	27	27.0	27.0	100.0
	Total	100	100.0	100.0	

Mean = 3.69, Median = 4.00, Standard Deviation = 1.098 and Variance = 1.208

According to **Table 4.11**, the response on organisations' stance on the ability to innovate and how this is affected by the uncertainty for demand for innovation on the market. 35% of the respondents

indicated that the uncertainty of demand for innovation on the market had no impact on an organisations ability to innovate. 36% of the respondents believed that demand for innovation on the market had a high effect on organisation’s stance on ability to innovate with 23 and 13 indicating high and highest respectively. The remaining 29 respondents believed that it was of little effect with 18 and 11 indicating low and lowest respectively.

Table 4.11: Rate the organization’s stance to innovate

On a scale of 1 to 5 where 1 is lowest and 5 is highest; rate this organisation's stance on ability to innovate being affected by uncertainty for demand for the innovation on the market?

Scale of 1 to 5	Frequency	Percent	Valid Percent	Cumulative Percent
1	11	11.0	11.0	11.0
2	18	18.0	18.0	29.0
3	35	35.0	35.0	64.0
4	23	23.0	23.0	87.0
5	13	13.0	13.0	100.0
Total	100	100.0	100.0	

Mean = 3.09, Median = 3.00, Standard Deviation = 1.173 and Variance = 1.376

4.4 Cross tabulation

This section presents cross tabulations between the independent variables and dependent variable; the confidence level (**C.I.**) is at 95% with the value of $\alpha = 0.05$; this implies that if the P-value (chi-square value) is less than α there is a statistically significant relationship between the variables under consideration and otherwise the relationship is not statistically significant relationship.

The cross-tabulations are guided by the following hypotheses:

Ho: There is no significant relationship between the innovation capacity of SMEs in Lusaka and the economic and market barriers to innovation.

Ha: The innovation capacity for SMEs in Lusaka is significantly related to economic and market barriers to innovation.

Table 4.12 shows the results of the cross-tabulation test between the financial status (profitability status) over that last three months of a company and how this financial status affects the firm's ability to invent or come-up with new products. The findings yielded a chi square test statistic or P value of 0.035 which showed that there was indeed a form of relationship between a firm's financial status and its ability to be innovative in terms of developing new products. This is visibly noticeable given that the majority of the respondents who indicated that their companies had made profits also stated that their firm's financial status strongly increased the firm's ability to invent new products.

Table 4.12: Lack of funds and innovation capacity of the firm

What is the profitability status in the last three months of this organisation?	Does this organisation's financial status (profitability status) affect its ability to come - up with new products and services?					Total
	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	
We made profits	10	13	0	4	1	28
We broke-even	4	15	3	2	0	24
We made losses	0	1	1	0	1	3
I am not sure	2	2	10	6	0	20
We have incurred losses and profits	5	12	4	2	2	25
Total	21	43	18	14	4	100

P value = 0.035

The researcher sought to observe whether an organisation's financial status in the past recent months had an impact or affected whether or not an organisation invented a new product. The findings in **Table 4.13** revealed a p value of 0.95 that shows that there was no significance in this particular test and hence no relationship between the two variables.

Table 4.13: Organisation's financial status and innovation capacity of the firm

What is the profitability status in the last three months of this organisation?	In the past; has this organisation ever invented a new product?			Total
	Yes	Maybe	No	
We made profits	16	5	7	28
We broke-even	11	0	13	24
We made losses	0	1	2	3
I am not sure	6	6	8	20
We have incurred losses and profits	15	3	7	25
Total	48	15	37	100

P value = 0.95

The researcher also sought to understand the relationship between profitability status over the last three months in an organisation and the choice of financing or funding for innovation in these organisations. In **Table 4.14**, the cross-tabulation study yielded a test statistic value (p value) of 0.673 which showed that there was no relationship between the choice of funding an organisation used for innovation of products and its most recent short term financial performance or financial status.

Table 4.14: Profitability status and innovation capacity of the firm

What is the profitability status in the last three months of this organisation	Where do you see funds required for innovation coming from in this organisation?					Total
	Profits generated from the core business	Profits generated from sale of other goods/services provided by this organisation	A loan from institutions e.g. bank	Grant provided by an NGO or other interested parties	Not sure	
We made profits	14	6	4	3	1	28
We broke-even	9	4	7	4	0	24
We made losses	0	0	1	2	0	3
I am not sure	8	2	1	3	6	20
We have incurred losses and profits	15	4	2	2	2	25
Total	46	16	15	14	9	100

P value = 0.673

Table 4.15 shows the test finding for a cross tabulation between an organisation’s perceived capacity to innovate and whether or not this organisation had ever invented a new product. The findings revealed a test statistic value of 0.006 which showed statistical significance between an organisation’s capacity to innovate and whether or not the organisation had ever come up with new products.

Table 4.15: Organisation ever invented a new product and innovation capacity of the firm

In the past; has this organisation ever invented a new product?	On a scale of 1 to 5 where 1 is lowest and 5 is highest; what is this organisation's capacity to innovate?					Total
	1	2	3	4	5	
Yes	0	3	12	17	16	48
Maybe	1	0	5	4	5	15
No	4	4	12	11	6	37
Total	5	7	29	32	27	100

P-value = 0.006

Table 4.16 shows the whether an organisation’s stance to innovate hinges on the uncertainty for demand for innovation on the market and if this has had a role on whether or not an organisation has in the past ever invented a new product. The study yielded a P value of 0.04 which showed that there was statistical significance between the two variables and hence a relationship between the two variables.

Table 4.16: Organisation ever invented a new product and innovation capacity of the firm

In the past; has this organisation ever invented a new product?	On a scale of 1 to 5 where 1 is lowest and 5 is highest; rate this organisation's stance on ability to innovate being affected by uncertainty for demand for the innovation on the market?					Total
	1	2	3	4	5	
Yes	2	8	17	14	7	48
Maybe	2	3	5	3	2	15
No	7	7	13	6	4	37
Total	11	18	35	23	13	100

P value = 0.04

The researcher sought to understand if the rate of dominance of local firms in the industry had an impact on whether or not an organisation had ever invented a new product. The findings in **Table 4.17** revealed a P value of 0.690 which meant that there was no statistical significance between the two variable and therefore no relationship.

Table 4.17: Rate extent do the following firms dominate in your industry [Local firms] and innovation capacity of the firm

In the past; has this organisation ever invented a new product?	Rate extent do the following firms dominate in your industry [Local firms]					Total
	Extremely high	High	Neutral	Low	Extremely Low	
Yes	9	13	17	8	0	47
Maybe	2	6	6	0	0	14
No	9	7	18	2	1	37
Total	20	26	41	10	1	98

P value = 0.690

4.5 Correlations

Correlation coefficients measure the strength of the relationship between two variables. A correlation between variables indicates that as one variable changes in value, the other variable tends to change in a specific direction. Understanding that relationship is useful because using the value of one variable to predict the value of the other variable. There are different types of correlation coefficients that you can use for different kinds of data. The correlation coefficient is the unit of measurement used to calculate the intensity in the linear relationship between the variables involved in a correlation analysis, this is easily identifiable since it is represented with the symbol r and is usually a value without units which is located between 1 and -1. Correlation between two variables can be either a positive correlation, a negative correlation, or no correlation. Let's look at examples of each of these three types. Positive correlation: A positive correlation between two variables means both the variables move in the same direction. An increase in one variable leads to an increase in the other variable and vice versa. Negative correlation: A negative correlation between two variables means that the variables move in opposite directions. An increase in one variable leads to a decrease in the other variable and vice versa. Weak/Zero correlation: No correlation exists when one variable does not affect the other.

The results of the study in **Table 18** below shows a correlation study between an organisation ever innovating a new product against the challenges that affect innovation which included fear of failure, lack of funds, lack of leadership, lack of resources/capacity, no time and, no clearly defined process for innovation. The correlations studies show that an organisation ever innovating a new product is not impacted by the challenges mentioned. The table above shows a correlation study between extent of dominance of both the local and foreign firms against the challenges that affect innovation which included fear of failure, lack of funds, lack of leadership, lack of resources/capacity, no time and, no clearly defined process for innovation. The correlations studies show that the extent of dominance of local firms is only correlated to the innovative challenge of fear of failure in organisations. The correlations studies further reveal that the extent of dominance of foreign firms is correlated to the innovative challenges of lack of funds, no time and a lack of clearly defined process.

Table 4.18: Correlations

**. Correlation is significant at the 0.01 level (2-tailed).		In the past; has this organisation ever invented a new product?	Rate the extent to which each of challenges affect innovations [Fear of failure]	Rate the extent to which each of challenges affect innovations [Lack of funds]	Rate the extent to which each of challenges affect innovations [Lack of leadership]	Rate the extent to which each of challenges affect innovations [Lack of resource/capacity]	Rate the extent to which each of challenges affect innovations [No time]	Rate the extent to which each of challenges affect innovations [No clear process]
In the past; has this organisation ever invented a new product?	Pearson Correlation	1	.149	.127	-.065	-.054	-.038	-.029
	Sig. (2-tailed)		.159	.221	.541	.605	.719	.788
	N	100	91	94	90	93	91	90
Rate the extent to which each of challenges affect innovations [Fear of failure]	Pearson Correlation	.149	1	-.006	.540**	.047	.476**	.431**
	Sig. (2-tailed)	.159		.953	.000	.662	.000	.000
	N	91	91	89	89	89	90	88
Rate the extent to which each of challenges affect innovations [Lack of funds]	Pearson Correlation	.127	-.006	1	-.007	.194	-.035	-.009
	Sig. (2-tailed)	.221	.953		.950	.067	.746	.933
	N	94	89	94	88	90	90	88
Rate the extent to which each of challenges affect innovations [Lack of leadership]	Pearson Correlation	-.065	.540**	-.007	1	.188	.534**	.720**
	Sig. (2-tailed)	.541	.000	.950		.079	.000	.000
	N	90	89	88	90	88	89	87
Rate the extent to which each of challenges affect innovations [Lack of resource/capacity]	Pearson Correlation	-.054	.047	.194	.188	1	.264*	.161
	Sig. (2-tailed)	.605	.662	.067	.079		.012	.134
	N	93	89	90	88	93	90	88
Rate the extent to which each of challenges affect innovations [No time]	Pearson Correlation	-.038	.476**	-.035	.534**	.264*	1	.633**
	Sig. (2-tailed)	.719	.000	.746	.000	.012		.000
	N	91	90	90	89	90	91	89
Rate the extent to which each of challenges affect innovations [No clear process]	Pearson Correlation	-.029	.431**	-.009	.720**	.161	.633**	1
	Sig. (2-tailed)	.788	.000	.933	.000	.134	.000	
	N	90	88	88	87	88	89	90
**. Correlation is significant at the 0.01 level (2-tailed).								
*. Correlation is significant at the 0.05 level (2-tailed).								

Table 4.18 continued

		Rate extent do the following firms dominate in your industry [Local firms]	Rate extent do the following firms dominate in your industry [Foreign firm]	Rate the extent to which each of challenges affect innovations [Fear of failure]	Rate the extent to which each of challenges affect innovations [Lack of funds]	Rate the extent to which each of challenges affect innovations [Lack of leadership]	Rate the extent to which each of challenges affect innovations [Lack of resource/capacity]	Rate the extent to which each of challenges affect innovations [No time]	Rate the extent to which each of challenges affect innovations [No clear process]
Rate extent do the following firms dominate in your industry [Local firms]	Pearson Correlation	1	-.035	-.216*	.135	-.145	.120	-.029	-.132
	Sig. (2-tailed)		.738	.040	.197	.172	.253	.788	.216
	N	98	96	90	93	90	93	91	90
Rate extent do the following firms dominate in your industry [Foreign firm]	Pearson Correlation	-.035	1	.136	.299**	.168	.091	.210*	.218*
	Sig. (2-tailed)	.738		.203	.004	.116	.391	.047	.041
	N	96	97	90	92	89	91	90	89
Rate the extent to which each of challenges affect innovations [Fear of failure]	Pearson Correlation	-.216*	.136	1	-.006	.540**	.047	.476**	.431**
	Sig. (2-tailed)	.040	.203		.953	.000	.662	.000	.000
	N	90	90	91	89	89	89	90	88
Rate the extent to which each of challenges affect innovations [Lack of funds]	Pearson Correlation	.135	.299**	-.006	1	-.007	.194	-.035	-.009
	Sig. (2-tailed)	.197	.004	.953		.950	.067	.746	.933
	N	93	92	89	94	88	90	90	88
Rate the extent to which each of challenges affect innovations [Lack of leadership]	Pearson Correlation	-.145	.168	.540**	-.007	1	.188	.534**	.720**
	Sig. (2-tailed)	.172	.116	.000	.950		.079	.000	.000
	N	90	89	89	88	90	88	89	87

	N	93	91	89	90	88	93	90	88
Rate the extent to which each of challenges affect innovations [No time]	Pearson Correlation	-.029	.210*	.476**	-.035	.534**	.264*	1	.633**
	Sig. (2-tailed)	.788	.047	.000	.746	.000	.012		.000
	N	91	90	90	90	89	90	91	89
Rate the extent to which each of challenges affect innovations [No clear process]	Pearson Correlation	-.132	.218*	.431**	-.009	.720**	.161	.633**	1
	Sig. (2-tailed)	.216	.041	.000	.933	.000	.134	.000	
	N	90	89	88	88	87	88	89	90

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

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

4.6 Ordered Logistic Regression Model

The models below in **Tables 4.19, 4.20 and 4.21** show that among all the factors (variables) tested only a few influence the firm's ability to innovate these include: time to develop new products, lack of funds and capacity.

Table 4.19: Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	252.779			
Final	182.850	69.929	36	.001
Link function: Logit.				

Table 4.20: Pseudo R-Square

Cox and Snell	.565
Nagelkerke	.594
McFadden	.277
Link function: Logit.	

Table 21: Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[Organisations_Ability_to_Innovate_being_affected_Innovate_demand = 1]	-.485	3.333	.021	1	.884	-7.017	6.047
	[Organisations_Ability_to_Innovate_being_affected_Innovate_demand = 2]	.511	3.323	.024	1	.878	-6.002	7.024
	[Organisations_Ability_to_Innovate_being_affected_Innovate_demand = 3]	1.735	3.320	.273	1	.601	-4.771	8.241
	[Organisations_Ability_to_Innovate_being_affected_Innovate_demand = 4]	2.701	3.341	.654	1	.419	-3.847	9.248
Location	[Organisations_Capacity_to_Innovate=1]	-1.760	1.607	1.199	1	.274	-4.911	1.391
	[Organisations_Capacity_to_Innovate=2]	-.532	2.549	.043	1	.835	-5.528	4.465
	[Organisations_Capacity_to_Innovate=3]	-.492	.475	1.073	1	.300	-1.423	.439
	[Organisations_Capacity_to_Innovate=4]	-.452	.449	1.016	1	.313	-1.332	.427
	[Organisations_Capacity_to_Innovate=5]	0 ^a	.	.	0	.	.	.
	[Foreign_Firms_Dominance_on_Industry=1]	1.852	1.430	1.676	1	.195	-.951	4.655
	[Foreign_Firms_Dominance_on_Industry=2]	.955	1.443	.437	1	.508	-1.874	3.784
	[Foreign_Firms_Dominance_on_Industry=3]	2.132	1.446	2.172	1	.141	-.703	4.966
	[Foreign_Firms_Dominance_on_Industry=4]	1.660	1.422	1.364	1	.243	-1.126	4.446
	[Foreign_Firms_Dominance_on_Industry=5]	0 ^a	.	.	0	.	.	.
	[Local_Firms_Dominance_on_Industry=1]	-1.475	.911	2.625	1	.105	-3.260	.310
	[Local_Firms_Dominance_on_Industry=2]	-1.343	.910	2.176	1	.140	-3.127	.441
	[Local_Firms_Dominance_on_Industry=3]	-1.229	.925	1.765	1	.184	-3.043	.584
	[Local_Firms_Dominance_on_Industry=4]	-.501	.869	.332	1	.565	-2.205	1.203
	[Local_Firms_Dominance_on_Industry=5]	0 ^a	.	.	0	.	.	.
	[No_clear_process_on_Innovation=1]	-.106	1.016	.011	1	.917	-2.098	1.886
	[No_clear_process_on_Innovation=2]	.431	.901	.228	1	.633	-1.336	2.197
	[No_clear_process_on_Innovation=3]	.605	.874	.479	1	.489	-1.109	2.319
	[No_clear_process_on_Innovation=5]	0 ^a	.	.	0	.	.	.
	[No_Time_on_Innovation=1]	19.837	2.316	73.368	1	.000	15.298	24.376
	[No_Time_on_Innovation=2]	19.395	2.236	75.210	1	.000	15.011	23.778
	[No_Time_on_Innovation=3]	20.144	2.230	81.562	1	.000	15.772	24.515
	[No_Time_on_Innovation=4]	20.773	3.055	46.235	1	.000	14.785	26.760
	[No_Time_on_Innovation=5]	0 ^a	.	.	0	.	.	.
	[Lack_of_resources_on_Innovation=1]	-20.628	2.397	74.058	1	.000	-25.327	-15.930
	[Lack_of_resources_on_Innovation=2]	-20.478	2.431	70.936	1	.000	-25.244	-15.713
	[Lack_of_resources_on_Innovation=3]	-19.945	2.489	64.229	1	.000	-24.823	-15.067
	[Lack_of_resources_on_Innovation=4]	-20.840	.000	.	1	.	-20.840	-20.840
	[Lack_of_resources_on_Innovation=5]	0 ^a	.	.	0	.	.	.
	[Lack_of_Leadership_on_Innovation=1]	-.330	1.379	.057	1	.811	-3.032	2.372
	[Lack_of_Leadership_on_Innovation=2]	-.073	1.406	.003	1	.959	-2.828	2.682
	[Lack_of_Leadership_on_Innovation=3]	-.969	1.380	.494	1	.482	-3.674	1.735
[Lack_of_Leadership_on_Innovation=4]	0 ^a	.	.	0	.	.	.	
[Lack_of_Leadership_on_Innovation=5]	0 ^a	.	.	0	.	.	.	

Table 21 continued

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
	[Lack_of_Funds_on_Innovation=1]	.661	.475	1.934	1	.164	-.271	1.592
	[Lack_of_Funds_on_Innovation=2]	.910	.433	4.424	1	.035	.062	1.758
	[Lack_of_Funds_on_Innovation=3]	0 ^a	.	.	0	.	.	.
	[Fear_of_Failure_On_Innovation=1]	1.978	2.067	.916	1	.339	-2.074	6.030
	[Fear_of_Failure_On_Innovation=2]	2.048	2.064	.985	1	.321	-1.997	6.093
	[Fear_of_Failure_On_Innovation=3]	1.220	2.007	.370	1	.543	-2.713	5.154
	[Fear_of_Failure_On_Innovation=4]	2.020	2.189	.851	1	.356	-2.271	6.311
	[Fear_of_Failure_On_Innovation=5]	0 ^a	.	.	0	.	.	.
Scale	[Organisations_Capacity_to_Innovate=1]	.054	.921	.003	1	.953	-1.752	1.860
	[Organisations_Capacity_to_Innovate=2]	.858	.926	.858	1	.354	-.957	2.674
	[Organisations_Capacity_to_Innovate=3]	-.967	.311	9.640	1	.002	-1.578	-.357
	[Organisations_Capacity_to_Innovate=4]	-1.192	.313	14.541	1	.000	-1.805	-.579
	[Organisations_Capacity_to_Innovate=5]	0 ^a	.	.	0	.	.	.
Link function: Logit.								
a. This parameter is set to zero because it is redundant.								

CHAPTER 5

DISCUSSION

5.1 Chapter Overview

This chapter discusses findings of the study; general objective of the study was to explore the barriers or impediments faced by Food Processing Small and Medium Enterprises (SMEs) in Lusaka's Industrial Area with respect to their innovation capacity. The focus therefore of this chapter will be to identify the link between findings of this study to findings of similar studies in order to identify supporting evidence. Furthermore, study had four specific objectives; to ascertain the correlation between the availability of funds and the capacity of a firm to innovate products and services, to scrutinize the relationship between a firm's innovation capacity and the associated costs of innovation, to evaluate the extent to which specific firms dominate markets for products and services through pioneering innovations and to identify contributing factors to uncertainties influencing demand for innovation in the food processing sector. These specific objectives will guide the flow of the findings in this chapter.

5.2 Availability of funds is correlated to a firm's capacity to innovate products and services

Analysis in the preceding chapter showed no statistically significant relationship existing between availability of funds and ability to innovate. The regression model clearly showed that lack of funds is one of the factors leading SMEs to fail to innovate new products on the market. Studies found that firms that engaged in internal R&D (Galia and Legros, 2004) and firms that innovate persistently in products were more prone to perceiving several obstacles. In the same vein, Hoffman et al, (1998) studied the determinants of firms' financial obstacles, finding that firms with larger innovative capabilities experienced more constraints than those with lower capabilities, especially if they also lacked internal funds. Clearly, firms that have initiated innovative projects are more likely to be aware of the factors hampering the process than firms that have not been involved in innovation (Galia and Legros, 2004). Thus, later studies attempted to distinguish between innovators, potential innovators, and non-innovators and found that non-innovators that are interested in innovation tend to perceive more obstacles than non-innovators that are not

interested in innovation using the Community Innovation Survey, or CIS, for eighteen countries). Thus, when analysing obstacles, the qualification of being; they also found that foreign firms perceived fewer obstacles than domestic ones.

5.3 Relationship between a firm's innovation capacity and associated cost of innovation

Findings in chapter four from the model indicated that cost of innovation itself has low effect on firm's innovation capacity. In a number of investigations, data are often presented from a financial standpoint, which tends to overlook non-financial barriers. These studies may not adequately address obstacles such as marketing strategies and knowledge management, which are pivotal in the realm of innovation policies and management (D'Este et al., 2012). Schumpeter (1934) initially proposed the concept of entrepreneurs as agents of creative destruction, introducing novel products to the market. Subsequently, he suggested that imperfections in capital markets disproportionately favor large firms, while small and medium-sized enterprises (SMEs) face barriers to innovation due to high costs and entry barriers (Schumpeter, 1942). This idea is reinforced by Ortega-Argiles et al. (2009), who highlight the disparity between SMEs and large firms, noting that SMEs often lack financial resources, possess weaker bargaining power and capabilities, and are unable to leverage economies of scale.

5.4 Extent to which markets for products and services are dominated by specific firms that pioneer innovations

Markets for products contribute the firm's desire to involve itself innovating new products; the analysis on this showed that the availability of markets for new products can indeed influence the firm's desire to innovate new products. A study conducted by Janger & Hölzl indicated that the economic risks barriers rendered insignificant coefficients and the external environment showed the wrong sign for process innovation. In turn, Hölzl & Janger, (2014) focus on SMEs in a developing country by analysing a sample of 308 Mexican service SMEs. Using a structural equation modelling for three types of barriers external environment, human resources, and finance, which were defined using factor analysis on innovative outcomes, they found a negative association in all cases, with the first (external environment, which comprises market and infrastructure obstacles) showing the strongest effect. There are other fairly descriptive papers using interviews or low-scale data.

One of the main issues encountered when investigating the theme of innovation, which is of great importance to the managers of top firms, is the barriers. For this reason, it is necessary to study the origin, the nature and the importance of each barrier. In addition, the influence, the consequences and the effects of each barrier in the process of innovation must be taken into account. Thus, these barriers can be classified in several ways, one of the most commonly used being to differentiate between internal barriers and external barriers in relation to organizations, in other words endogenous and exogenous barriers (Piatier, 1984). The barriers may occur in one or several points of the innovation process. Different levels of implementation of innovation may have varying levels of results in this process. For example, financial difficulties will normally create more problems in the implementation phase of innovation. The assumption in the approach to the theme of barriers is that, from the moment that they are identified, the objective is to understand them, fight them and, if possible, eliminate them, so that innovation can follow its normal course (Tidd et al., 1997).

5.5 Contributing factors to uncertainties which influence demand for innovation in the food processing sector

Although this variable did not show any statistical significance to the dependent variable; some factors leading to uncertainty to innovation include lack of financial resources, time, staff, technical expertise and organizational structures are barriers that SME owners typically to take on sustainability. Panayides (2006) stated that instilling an innovation culture requires the investment of resources, especially managerial time, manifested by encouraging and targeting more frequent introduction of products and services in the marketplace, although, outcomes may not be readily apparent. Actually, intensive cooperation with partners was shown to enhance knowledge sharing and the creation of new knowledge that may be useful to all parties in the development of valuable innovations.

There are few studies about the failures of the determinant factors of innovation. Mohnen et al. (2008) analysed the influence of financial constraints on firms that decide to abandon innovation, stop prematurely, encounter difficulties or do not even start their innovation projects. In this work, the authors reported that the constraints on the financial level have a positive effect on a premature

stop, a slowdown or the start of the project but do not have the same effect on the abandon of innovation projects. Another similar work is by Landry et al. (2008), who analysed failure in innovation. They studied a number of determinants of the failure of innovation projects, including variables related to the creation of knowledge based on R&D, the strategy of the firm's, external sources of knowledge, financing, obstacles to innovation, vulnerability and the degree of novelty of innovation. Of these variables, the authors reached the conclusion that the issues of funding and the development of innovation are the main obstacles to innovation. Becker and Dietz (2004) concluded that cooperation in R&D is used to complement internal resources in the innovation process, allowing a greater probability of developing new products. Many researchers, such as Mohnen and Rosa (2000), Baldwin and Lin (2002) and Galia and Legros (2004), have taken account of several characteristics and variables of enterprises in work related to barriers to innovation.

These characteristics are, among others, the size, sector, age, competitive environment and variables related to the activities of innovation, which include technological intensity, financial support for innovation, externalization of R&D activities, R&D expenses, and introduction of technological innovation and novelties of innovation, among others. The firms that face problems in innovation, such as (among others) the size of the firm (Dahl and Moreau, 2002), activities related to R&D (Santamaría et al., 2009), uncertain costs and lack of warranties of return on investment (Ceccagnoli, 2009), need, in most cases, to acquire skills and techniques through their customers and suppliers to overcome their shortcomings regarding their technological capabilities (Miotti and Sachwald, 2003). Hall and Martin (2005) and Hall et al. (2011) described the possible causes of the existence of barriers relating to technological issues, the commercial area, the organizational area and the social uncertainty, which normally originate from environmental changes such that the dynamics of firms or those of the markets into which they are inserted are obliged to follow (Barreto, 2010).

In terms of consensual conclusions, there is the fact that firm's need to take into account the perception of a heterogeneous range of characteristics and variables, and in this way, assess the obstacles to innovation properly. Mohnen and Röller (2005) and Lööf and Heshmati (2006) analysed the influence that the obstacles to innovation have on their own innovation. In these works, these obstacles were measured through R&D, innovation activities or the results of

innovation, noting that the obstacles to innovation have a positive effect on their own innovation. However, these results cannot be considered conclusive, because there are common factors that affect either the innovation or the obstacles to innovation. Savignac (2008), Tiwari et al. (2008), Hajivassiliou and Savignac (2011) and Blanchard et al. (2013) focused their work on the effect of limitations to financing and observed that these obstacles have a negative effect on innovation. Some of these studies focused on markets close to Portugal, as they tackled the French and European markets.

5.6 Publication

This research was published on July 25, 2024, in the Open Journal of Business and Management, volume 12, pages 2709-2726, under the title "Barriers to Innovation Capacity: A Case of Food Processing Small and Medium Enterprises (SMEs) in Lusaka's Industrial Area." The publication can be accessed via DOI: <https://doi.org/10.4236/ojbm.2024.124140>. The first page of the manuscript is available in **Appendix 3**.

CHAPTER 6

CONCLUSION AND RECOMMENDATION

6.1 Conclusions

This section presents the conclusions of the study based on the findings and discussions provided in the preceding chapters. Studying the factors that hinder the innovation process is crucial because innovation is one-way firms can improve their return on investment and efficiently penetrate the market. There are four key areas around which these conclusions are based; the effect of a lack of funds on a firm's ability to innovate products and services, the relationship between a firm's innovation capacity and cost of innovation, whether markets of products and services were dominated by specific firms that lead in innovations and analysing the contributing factors lead to uncertainties influence demand for innovation in the food processing sector.

In relation to innovation cost; its concluded that firms encounter innovation costs however, innovation costs in itself does not lead to failure to engage in innovations. It is an important factor to consider in the process of innovation for individual firms however it is not a key factor in determining the firm's ability to innovate. Majority of SMEs believe that money to invest in innovation must be from profits generated within the firms.

In relation to markets for products and services being dominated by specific individual firms; the study concludes that there are individual firms that have dominated the food processing industry in Lusaka even among the SMEs. The model showed that specific firms actually influence the level of product innovation as they are perceived as market leaders for the food processing industry. The correlations studies show that the extent of dominance of local firms is only correlated to the creative challenge

Markets for products contribute to the firm's desire to involve itself innovating new products; the analysis showed that the availability of markets for new products could indeed influence the firm's desire to innovate new products. Although this variable did not show any statistical significance to the dependent regarding markets for products and services being dominated by specific firms; the study concludes that individual firms have dominated the food processing industry in Lusaka, even among the SMEs. Finally, there are many factors that influence or contribute to uncertainty in the food processing industry in Lusaka; these factors include, time to innovate, cost and profits

from new products to bring to the market and customer perception of the product. The model showed that specific firms influence product innovation as they are perceived as market leaders in the food processing industry.

6.2 Recommendations

The food processing industry in Lusaka is affected by a number of factors that influence its ability to develop new products on the market. The process of innovation is important for an industry to be able to create new products on the market that can be sold to the public, with this background the study therefore puts forward the following recommendations:

Firms in the food processing industry operating in Zambia should set aside a substantial amount of money to fund innovative ideas; lack of funds is perceived as one of the barriers to innovation as such when firms have a deliberate plan to set aside money for innovation it does not only motivate firms to develop new products but also creates an interest within the organisations to develop innovative products with the incentive of acquiring funds from the firm.

Another recommendation to firms in the food processing industry is that although there is a large cost associated with innovation; firms should begin to evaluate the costs and benefits of the innovation; the cost maybe large in the beginning however if the innovation is success the firm would reap a higher return from the innovation.

The study further recommends that SMEs in the food processing industry should not fail to pursue their innovations in fear of dominating players in the market. They should focus on their own innovations regardless of the stiff competition exerted on them by the larger firms.

The final recommendation is that SMEs in the food processing industry should develop a roadmap on innovation undertaking as there are a number of contributing factors to innovation uncertainty. Developing a plan on how the SME will undertake innovation will not only clear out some of the uncertainties but also create a clear roadmap that will foster a long-term innovation strategy.

6.3 Suggestions for future studies

The study recommends further research on innovation and capacity development of SMEs in the food processing industry. Future studies to consider expansion of geographical scope to include

other regions outside Lusaka or compare different contexts to enhance the findings' applicability and generalizability. An experimental study to evaluate the contribution of food processing SMEs to the business overall economic growth of the economy and how the government can step in to alleviate some of the challenges such SMEs encounter can lead to a rise in innovation. A Longitudinal approach may also be adopted to help understand the evolution of innovation barriers and strategies over time. Future studies to be considered to determine the effects of innovations on the profitability of SMEs. Integrating diverse theoretical frameworks could also enrich the analysis and offer new dimensions to understanding innovation barriers. Finally, it is important that future studies include qualitative research components by employing mixed methods such as interviews or case studies to provide deeper insight into the subjective experiences and challenges faced by SMEs.

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APPENDICES

Appendix 1 - Questionnaire

Dear Respondent,

I am a student at the University of Zambia in my final year pursuing a Master of Business Administration. As partial fulfilment for the award of a Master's Degree, I am conducting a baseline study on: "Investigation of Barriers to Innovation Capacity: a Case of Food Processing Small and Medium Enterprises (SMEs) in Lusaka's Industrial Area".

You have been randomly sampled to provide information for the topic indicated above. The information being collected is purely for academic purposes as such, it will be treated with maximum confidentiality. Subsequently, you are not supposed to indicate your name or any personal information that can lead to revealing of your identity. Your co-operation will be greatly appreciated.

For more information or any queries, kindly get in touch with the following:

Supervisor:

GSB Coordinator:

Question	Response <i>(Tick where appropriate)</i>	Official use
What was your age on your last birthday?	
What is your gender?	Male Female	
What is your level of education?	Grade 12 (School Leaver) Certificate Crafts Certificate Diploma Degree Masters Ph. D Other	
What is the name of your organisation?	
What is your job title?	
How long have you worked at this organisation?	Number of years	

	
What is the core/main business of this establishment?	
What is the profitability status in the last three months of this organisation?	<p>We made profits</p> <p>We broke-even</p> <p>We made losses</p> <p>I am not sure</p> <p>We have incurred losses and profit</p>	
Does this organisation's financial status (profitability status) affect its ability to come - up with new products and services?	<p>Strongly agree</p> <p>Agree</p> <p>Not sure</p> <p>Disagree</p> <p>Strongly disagree</p>	
Where do you see funds required for innovation coming from in this organisation?	<p>Profits generated from the core business</p> <p>Profits generated from sale of other goods/services provided by this organisation</p> <p>A loan from other institutions e.g. bank</p> <p>Grant provided by an NGO or other interested parties</p> <p>Not sure</p>	

In the past; has this organisation ever invented a new product?	Yes Maybe No					Official use
Rate the extent to which each of challenges affect innovations:						
	Large extent	Moderate extent	Not affected	Lower extent	Lowest extent	Official use
Fear of failure						
Lack of funds						
Lack of leadership						
Lack of resource/capacity						
No time						
No clear process						
Fear of failure						
Lack of funds						
Rate extent do the following firms dominate in your industry	Extremely high	High	Neutral	Low	Extremely low	Official use
Local firms						
Foreign firm						

On a scale of 1 to 5 where 1 is lowest and 5 is highest; what is this organisation's capacity to innovate?	1	2	3	4	5	
Innovation capacity						
On a scale of 1 to 5 where 1 is lowest and 5 is highest; rate this organisation's stance on ability to innovate being affected by uncertainty for demand for the innovation on the market?	1	2	3	4	5	Official use

Thank you; the end

Note that this information is for academic purpose only. Your responses will be regarded with strict confidentiality

Appendix 2 - Ethical Clearance Approval



THE UNIVERSITY OF ZAMBIA DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

Great East Road Campus | P.O. Box 32379 | Lusaka10101 | Tel: +260-211-290 258/291 777 Fax: (+260)-211-290 258/253 952 | E-mail: director.drgrs@unza.zm | Website: www.unza.zm

APPROVAL OF STUDY

IORG No. 0005376

HSSREC IRB No. 00006464

9th August, 2022

REF NO. HSSREC-2022-JUN-030

Miyanda Kapepe
The University of Zambia
Graduate School of Business
P.O. Box 32379
LUSAKA

Dear Mr. Kapepe,

RE: "INVESTIGATION OF BARRIERS TO INNOVATION CAPACITY: - A CASE OF FOOD PROCESSING, SMALL AND MEDIUM ENTERPRISES (SMEs) IN LUSAKA"

Reference is made to your submission of the protocol captioned above. The HSSREC resolved to approve this study and your participation as Principal Investigator for a period of one year.

REVIEW TYPE	ORDINARY REVIEW	APPROVAL NO. HSSREC-2022-JUN-030
Approval and Expiry Date	Approval Date: 9 th August, 2022	Expiry Date: 8 th August, 2023
Protocol Version and Date	Version - Nil.	8 th August, 2023
Information Sheet, Consent Forms and Dates	<input type="checkbox"/> English.	To be provided
Consent form ID and Date	Version - Nil	To be provided
Recruitment Materials	Nil	Nil
Other Study Documents	Questionnaire.	
Number of Participants Approved for Study		

Specific conditions will apply to this approval. As Principal Investigator it is your responsibility to ensure that the contents of this letter are adhered to. If these are not adhered to, the approval may be suspended. Should the study be suspended, study sponsors and other regulatory authorities will be informed.

CONDITIONS OF APPROVAL

- No participant may be involved in any study procedure prior to the study approval or after the expiration date.
- All unanticipated or Serious Adverse Events (SAEs) must be reported to HSSREC within 5 days.
- All protocol modifications must be approved by HSSREC prior to implementation unless they are intended to reduce risk (but must still be reported for approval). Modifications will include any change of investigator/s or site address.
- All protocol deviations must be reported to HSSREC within 5 working days.
- All recruitment materials must be approved by HSSREC prior to being used.
- Principal investigators are responsible for initiating Continuing Review proceedings. HSSREC will only approve a study for a period of 12 months.
- It is the responsibility of the PI to renew his/her ethics approval through a renewal application to HSSREC.
- Where the PI desires to extend the study after expiry of the study period, documents for study extension must be received by HSSREC at least 30 days before the expiry date. This is for the purpose of facilitating the review process. Documents received within 30 days after expiry will be labelled "late submissions" and will incur a penalty fee of K500.00. No study shall be renewed whose documents are submitted for renewal 30 days after expiry of the certificate.
- Every 6 (six) months a progress report form supplied by The University of Zambia Humanities and Social Sciences Research Ethics Committee as an IRB must be filled in and submitted to us. There is a penalty of K500.00 for failure to submit the report.
- When closing a project, the PI is responsible for notifying, in writing or using the Research Ethics and Management Online (REMO), both HSSREC and the National Health Research Authority (NHRA) when ethics certification is no longer required for a project.
- In order to close an approved study, a Closing Report must be submitted in writing or through the REMO system. A Closing Report should be filed when data collection has ended and the study team will no longer be using human participants or animals or secondary data or have any direct or indirect contact with the research participants or animals for the study.
- Filing a closing report (rather than just letting your approval lapse) is important as it assists HSSREC in efficiently tracking and reporting on projects. Note that some funding agencies and sponsors require a notice of closure from the IRB which had approved the study and can only be generated after the Closing Report has been filed.

- A reprint of this letter shall be done at a fee.
- All protocol modifications must be approved by HSSREC by way of an application for an amendment prior to implementation unless they are intended to reduce risk (but must still be reported for approval). Modifications will include any change of investigator/s or site address or methodology and methods. Many modifications entail minimal risk adjustments to a protocol and/or consent form and can be made on an Expedited basis (via the IRB Chair). Some examples are: format changes, correcting spelling errors, adding key personnel, minor changes to questionnaires, recruiting and changes, and so forth. Other, more substantive changes, especially those that may alter the risk-benefit ratio, may require Full Board review. In all cases, except where noted above regarding subject safety, any changes to any protocol document or procedure must first be approved by HSSREC before they can be implemented.

Should you have any questions regarding anything indicated in this letter, please do not hesitate to get in touch with us at the above indicated address.

On behalf of HSSREC, we would like to wish you all the success as you carry out your study.

Yours faithfully,



Dr. J. I. Ziwa

DR. J. I. Ziwa

**ACTING CHAIRPERSON
THE UNIVERSITY OF ZAMBIA HUMANITIES AND
SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE - IRB**

CC: Director, Directorate of Research and Graduate Studies
Assistant Director (Research), Directorate of Research and Graduate Studies
Assistant Registrar (Research), Directorate of Research and Graduate Studies

Barriers to Innovation Capacity: A Case of Food Processing Small and Medium Enterprises (SMEs) in Lusaka's Industrial Area

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Abstract

The food industry undergoes constant changes due to evolving consumer demands, technological advancements, shifts in family structures, health considerations, and global trends. Small and medium enterprises (SMEs) play a vital role in food processing, with opportunities spanning production, processing, and marketing for both local and international markets. Innovation is instrumental in enhancing a firm's competitiveness and production capacity, yet many food processing SMEs in Zambia face challenges in this regard. This study aims to investigate barriers to innovation capacity among SMEs in Lusaka's Industrial Area. Primary data from 100 SMEs were collected and analysed using SPSS version 25, employing logistic regression models and cross-tabulations. The study reveals the influence of factors such as innovation costs, market dominance, and uncertainties on the innovation process. Lack of funds significantly impedes firms' ability to innovate, although innovation costs alone do not necessarily deter engagement in innovation activities. Strategic measures, including resource allocation, cost-benefit assessments, internal innovation focus, and clear innovation roadmaps, are recommended to address these constraints. Future research should delve into the profitability impact of innovation and explore methodologies like time series analysis for capturing innovation capacity over time.

Keywords

Innovation, Food Processing, Resource Allocation, Production Capacity, Innovation Cost, Small and Medium Enterprises

1. Introduction and Background

The food industry is undergoing rapid transformations due to various factors