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# **Resource mobilization by frugal entrepreneurs in South Africa**

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## ABSTRACT

This study explores how frugal entrepreneurs navigate South Africa's resource-constrained environment, focusing on the types of resources they utilize and how they mobilize these resources. The constrained environment presents both limitations and opportunities for innovative practices. Frugal entrepreneurs, characterized by resourcefulness and cost-effectiveness, employ innovative strategies to overcome the economic and social barriers they face.

The research investigates how frugal entrepreneurs mobilize and utilize human, economic, environmental, and technological resources to innovate in resource-constrained settings. A new typology and suggestions for future research are provided. This study is based on qualitative data collected through in-depth interviews with ten frugal entrepreneurs, identified for their commitment to frugal practices.

The study contributes to the under-researched field of frugal entrepreneurship in South Africa, highlighting the importance of a balanced strategy that integrates both effectuation and causation. The results call for improved public support schemes and underscore the significant role of technology in facilitating entrepreneurial growth, offering insights relevant to researchers in the field of entrepreneurship.

Findings reveal that frugal entrepreneurs utilize a combination of effectuation and causation strategies to effectively manage their resources. Effectuation is more prevalent in the startup phase, where frugal entrepreneurs leverage existing resources and networks. As their businesses mature, they increasingly adopt causal strategies, setting specific goals and acquiring necessary resources. This hybrid approach allows for flexibility and strategic adaptation, essential for operating in South Africa's unpredictable and resource-limited environments.

By proposing the practical and theoretical implications of frugal entrepreneurship, this study seeks to inspire entrepreneurial activity in similar contexts globally. It also proposes directions for future research, emphasizing the need for a more nuanced understanding of resource mobilization strategies in varied economic landscapes.

This thesis aims to deepen the understanding of how frugal entrepreneurs in South Africa navigate resource constraints and the strategies they employ in their resource mobilization processes.

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# 1. INTRODUCTION

## 1.1 MOTIVATION

In the spring of 2023, we completed our internships at Stellenbosch University in South Africa (SA) through the Norwegian University of Life Science (NMBU). We participated in two distinct internships: one at a biotechnology startup and the other within social entrepreneurship. Although these experiences spanned different sectors, both greatly enhanced our understanding of entrepreneurship across diverse cultural contexts. Mina, with her internship background in social entrepreneurship, brought practical experience from working on innovation projects in the townships around Stellenbosch. This provided us with firsthand knowledge of and insights into the local townships where many of our informants were based. Reinert, having completed his internship in biotechnology, was involved in administrative duties and acquired a broader understanding of the cultural dimensions within the entrepreneurial landscape.

During the time at our internships, we encountered a new approach to entrepreneurship that was previously unfamiliar to us. We witnessed how entrepreneurs in townships and local communities addressed socioeconomic and environmental challenges using extremely limited resources, creating significant value. Based on our experiences, we understood the tremendous need for research regarding innovation and entrepreneurship within the informal and low-income sector of society. At the same time, our new experience inspired us to learn more about the entrepreneurial environment abroad.

When planning our master's thesis, we were offered the opportunity to participate in the UTFORSK project, a "*Norwegian – South African partnership for sustainable entrepreneurial internships (SUSTENTSHIP)*". This project is a collaboration between NMBU, Western Norway University of Applied Science (HVL), and University of Pretoria (UP). The project aims to strengthen the partnership between South Africa and Norway, focusing on comparative research in entrepreneurial ecosystems and facilitating knowledge transfer across borders. Considering our interest in South African culture and the need for more research on innovation in townships and rural areas, this was an opportunity we did not want to let go. Motivated by the prospect of an engaging and unique master's thesis, we applied to participate in the project.

## 1.2 BACKGROUND OF THE STUDY

South Africa is currently experiencing the highest unemployment rate in the world (Williams, 2023). The country faces infrastructural challenges, especially in terms of electricity shortages that have persisted since 2007. These shortages lead to constant power outages that disrupt business operations and the daily life of the population (World Bank, 2023). Rising unemployment and a decline in formal employment opportunities have made the informal sectors more important in the business environment (Bate, 2021).

The informal sector is characterized by unregulated, small-scale activities often governed by social norms, customs, and culture within the entrepreneurial environment. It differs from the formal sector, where activities are regulated, taxed and follows laws and business agreements (Hossain & Sarkar, 2023). The informal sector is dominating in South Africa, specially within townships. A challenge within South Africa is that approximately eleven million citizens live in informal townships with difficulties to get employment (Blakeley, 2023). Townships, historically crafted during apartheid to segregate and utilize cheap labor, today present both challenges and opportunities for entrepreneurship (Urban & Ndou, 2019; SACN, 2015).

In the challenging economic environment of South Africa, with high inequality and infrastructure constraints, consumers might be excluded due to high prices and inaccessibility and the average entrepreneur might see barriers not possible to cross due to resource constraints. Within the context, entrepreneurship takes on a unique shape forcing adaptation to these limitations. This context is where the concept of frugal entrepreneurship is emerging (Zeschky, Widenmayer & Gassmann, 2011). Frugal entrepreneurs are bringing affordable innovations, often characterized by efficient and creative problem-solving, creating maximum value from minimal resources (Hossain & Sarkar, 2023; Michaelis et al., 2020). With high unemployment rates and informal markets, frugal entrepreneurship can provide employment or products that serve low-income markets (Hossain & Sarkar, 2023). However, it remains unclear which resources are fundamental for the frugal entrepreneur and how they mobilize them (Hossain, 2022). It is therefore of relevance to explore the types of resources frugal entrepreneurs utilizes within the South African context and their strategies for utilizing them.



### 1.3 RELEVANCE OF THE RESEARCH

The purpose of this study is to gain a better understanding and insight of how the frugal entrepreneur in South Africa (SA) are mobilizing their resources in order to navigate in a resource constrained environment. Firstly, we aim to identify the resources essential for the frugal entrepreneurs in SA. In previous research, Hossain (2022) emphasizes six key resources for the frugal entrepreneur based on his study in India. We found no existing studies on frugal entrepreneurs in South Africa. This indicates a significant gap in the research field.

Secondly, we aim to enhance the understanding of how frugal entrepreneurs in South Africa strategically mobilize their resources. We look into two decision-making approaches used by entrepreneurs: effectuation and causation (Sarasvarthy, 2001). The causation approach suggests that entrepreneurs set a predetermined goal and then seek the means to achieve it. On the contrary, the effectuation approach entails entrepreneurs focusing on the resources available to them, which they then mold into one or more goals that may not have been predefined. Our investigation aims to explore how effectuation and causation come to play in the acts and thinkings patterns by the frugal entrepreneurs, with the use of a hypothesis in which the frugal entrepreneur is using effectual approach in their resource mobilization.

### 1.4 PROBLEM STATEMENT

Considering the motivation, background of the study and relevance of the research, we have developed the following problem statement:

*How do frugal entrepreneurs mobilize their available resources to overcome resource constraints in South Africa?*

We seek to investigate the problem statement with the structure of the following research questions:

- 1. What are the most essential resources for the frugal entrepreneur to innovate in South Africa?*
- 2. How do effectuation and causation come to play in the frugal entrepreneur's resource mobilization process?*

## 1.5 OVERVIEW OF THE STUDY

The research is organized into five main chapters: *theoretical framework*, *method*, *findings*, *discussion and analysis*, and *conclusion*. In the next chapter, chapter 2, we will explore the theoretical framework and conduct a literature review to present relevant research. This review will establish the foundation for our research questions. Chapter 3 details our methodology, including research design and the method choices we made for data collection, how we conducted the study, and how the analysis was carried out. Chapter 4 focuses on the findings, where we systematically organize the insights gained from the interviews to address the research questions. In Chapter 5, during the analysis and discussion, we will evaluate our findings in relation to the research questions and theoretical perspectives. In final chapter 6 will offer a conclusion and emphasizing the study's implications, limitations, and recommendations for future research.

## 1.6 DEFINITION OF TERMS

**BMC:** Business model canvas.

**Bootstrapping:** Using limited resources, relying on personal funds and tries to raise business for the company and return its capital.

**EdTech:** The use of technology tools and software to enhance learning for educational process.

**Financial constraints:** Limited access to capital and funding restricts a business ability to invest and grow.

**Formal economy:** Consist of all economic activities that are regulated by the government and included in the official calculation of a country's gross domestic product (GDP).

**Incubator:** Institution that supports entrepreneurs in developing their business, especially in initial stages.

**Informal economy:** Economic activities that operate outside of government regulation and are not included in a country's official gross domestic product (GDP).

**Low-income markets:** Economic sectors or regions predominantly characterized by consumers with limited disposable income, often targeted by businesses offering affordable products or services. Earnings are less than 99 rand (= 58 NOK) per day.

**Market gaps:** Gaps in the market where there is an underserved consumer need in the market, offering opportunities to introduce products or services to fill this demand.

**MVP:** Minimum Viable Product.

**Rand:** South African currency, one rand is equal to 0.59 NOK (last updated currency exchange 13.05.2024)

**Resource mobilization:** The process of gathering and deploying financial, human and material resources needed for initiatives such as starting a project or running a business.

**Smallholding farmers:** Small farm operating small-scale agricultural model.

**SMME:** Small, medium and micro enterprises.

**Social capital:** Network, relationships, and connections. Is often used to gain information, resources, and help essential for business success.

**Sustainable growth:** The realistically attainable growth that a company can maintain without running into problems.

## 2. LITERATURE REVIEW

In this chapter we will provide the relevant literature and theoretical framework of the research. The chapter will explain what frugal entrepreneurship is, different concept related to frugal entrepreneurship and explain what effectuation and causation are. It will also discuss how frugal entrepreneurs make use of limited resources through resource mobilization strategies like bricolage.

### 2.1 DEFINING FRUGAL ENTREPRENEURSHIP

The emergence of frugal innovation has gained attention in both academic fields and in developing countries to meet market demand and secure an inclusive growth (Hossain, Agarwal, Bhatti & Levänen, 2022). Frugal entrepreneurship (FE), a concept from frugal innovation, has emerged from different regions in the world, serving low-income customers with affordable innovations, often with an unpredictable future (Shahid, Hoossain, Karami & Anwar, 2023). Affordable innovations are *“low-cost products, services, processes, or business models, using limited resources and operating in resource-constrained environments”* (Hossain & Sarkar, 2023). FE refers to the practice of bringing affordable innovations, often characterized by efficiency and creative problem-solving, emphasizing the maximizing of value from minimal resources. (Hossain & Sarkar, 2023; Michaelis et al., 2020).

Frugal entrepreneurs operate in typically low-income markets, but not exclusively. Hossain, Simula & Halme’s (2016) definition of low-income market is being formed by individuals’ earnings which is less than 5€ per day, equal to 99 South African rand. Research on frugal entrepreneurship is predominantly concentrated on emerging economies such as India (Hossain et al., 2021) and China (Ma, Chai & Hang, 2015; Hossain et al., 2021). Frugal entrepreneurs are often responding to the needs of underserved “customers” living in low-income markets and developing countries (Alzaim, 2022). The typical frugal entrepreneur focusses on maximizing the value they can generate from minimal inputs, rather than relying heavily on external funding or extensive infrastructure. The strategy of the FE emphasizes efficiency, creativity, and innovation in utilizing available resources to achieve sustainable growth and profitability (Shahid et al, 2023).

The FE concept is closely related to or overlaps with other concepts of entrepreneurship established in literature in terms of characteristics and key traits. Concepts such as social entrepreneurship (Martin & Osberg, 2007), opportunity and necessity entrepreneurship (Fairlie & Fossen, 2018), informal entrepreneurship (Salvi, Belz & Bacq, 2023), township entrepreneurship (Urban & Ndou, 2019), black entrepreneurship (Preisendoerfer, Bitz, & Bezuidenhout, 2014) and grassroot entrepreneurship (Hossain, 2016) are closely related concepts and can overlap. Despite their potential overlap, especially in terms of their focus on limited resources, they originate from different foundational principles and focus areas. In table 1, we have created an overview of the similar terms to show the differences between FE and the similar terms.

Unlike social entrepreneurship, which broadly focuses on social impacts across all economic groups (Abu-Saifan, 2012), frugal entrepreneurship specifically aims to create affordable, valuable products for financially constrained markets (Hossain & Sarkar, 2023). While FE shares traits of cost-effectiveness with informal entrepreneurship (Salvi, Belz & Bacq, 2023), FE operates both within formal and informal sectors, while informal entrepreneurs are defined by operating in informal markets. Unlike opportunity entrepreneurship, which thrives in resource-constrained environments by identifying market gaps (Fairlie & Fossen, 2018), FE requires innovation specifically within such limitations (Hossain & Sarkar, 2023).

Frugal entrepreneurship also overlaps with grassroots entrepreneurship (Pansera & Sarkar, 2016) in its bottom-up approach and focus on local communities. However, FE is distinguished by its specific goal of creating affordable products or services that are of good enough quality and accessible to economically disadvantaged customers. This could make FE an important model in emerging markets like townships in South Africa, where affordable innovations can enable the population to access products and identify market gaps in the community (Hossain & Sarkar, 2023).

When looking at table 1, the different types of entrepreneurships have unique characteristics and goals, somehow overlapping but still unique at one point or another. FE can overlap with other types of entrepreneurships when some of the criteria are matching. For example, an informal entrepreneur operating without formal business registration (Salvi, Belz & Bacq, 2023) can also be a frugal entrepreneur if their business model focuses on resource efficiency

Term	Definition	Objective/goal	Key traits/ characteristics	Examples
Frugal entrepreneurship:	FEs maximize value with minimal resource use and operate in resource-constrained environments to serve low-income customers (Hossain & Sarkar, 2023; Walden & Lie, 2021). They adopt financial, human, and material frugality to seize the entrepreneurial opportunity (Hossain & Sarkar, 2023; Eckhardt & Shane, 2003).	To maximize resource efficiency by creating or modifying products/services that are affordable yet valuable to the target audience, primarily in emerging markets or under-served sectors (Hossain, 2022).	Cost-effectiveness, resourcefulness, and simplicity in product/service design and delivery (Hossain, 2022).	<ul style="list-style-type: none"> <li>Mansukhbhai Prajapati (mitticool, n.y.); Mitticool, clay fridge (Hossain, 2022).</li> <li>Micromax Informatics Ltd. (MIL); produced mobile phones that do not need regular recharging for up to a month or longer, at US\$ 45 (Singh, 2013).</li> <li>The Jaipur Foot (Basu, Banerjee &amp; Sweeny, 2013).</li> </ul>
Social entrepreneurship:	<i>The social entrepreneur is a mission-driven individual who uses a set of entrepreneurial behaviours to deliver a social value to the less privileged, all through an entrepreneurially oriented entity that is financially independent, self-sufficient, or sustainable</i> ” (Abu-Saifan, 2012).	Social entrepreneurs are driven by the mission to create sustainable change by addressing systemic social issues through innovative solutions, prioritizing social impact over financial gain (Martin & Osberg, 2007).	Strong social vision, creativity, direct action, and a focus on achieving widespread social benefits (Martin & Osberg, 2007).	<ul style="list-style-type: none"> <li>TOMS shoes; giving away one pair of shoes for every pair sold, supporting larger health, education and community development programs through strategic partnerships (toms, n.d.).</li> <li>Bill Drayton; Ashoka, a global organization that identifies and supports leading social entrepreneurs (Ashoka, n. d.).</li> </ul>
Informal entrepreneurship	<i>Entrepreneurial activities that are illegal yet remain legitimate to large groups in a society</i> (Salvi, Belz & Bacq, 2023; Webb et al., 2020, p. 511). They engage in activities often unregistered or exploiting opportunities in ways that are socially accepted but legally non-compliant (Salvi, Belz & Bacq, 2023; Bygrave & Hofer, 1992; Ireland & Webb, 2007; Shane, 2003).	To earn a livelihood or supplement income, often in environments where formal job opportunities are scarce or inaccessible (Urban & Ndou, 2019).	Lack of formal business registration, non-compliance with regulatory frameworks, and often operating in cash economies (Urban & Ndou, 2019).	<ul style="list-style-type: none"> <li>A group of informal entrepreneurs in California inaugurated commercial trading in medical cannabis, which at the time was unlawful (Salvi, Belz &amp; Bacq, 2023; Klein, 2017).</li> <li>Rural poor entrepreneurs in Ghana who do not register their enterprises, do not pay taxes, and do not declare their employees (Salvi, Belz &amp; Bacq, 2023; Slade Shantz et al., 2018)</li> </ul>
Opportunity entrepreneurship	Identified as pro-cyclical and involves individuals who start businesses primarily to seize a business opportunity. These individuals are typically engaged in wage/salary work, enrolled in school or college, or not actively seeking a job before starting their businesses (Fairlie & Fossen, 2018).	Capitalize on market opportunities (Fairlie & Fossen, 2018).	Characterized by the creation of businesses when entrepreneurs perceive a chance to create value or identify market gaps, often leading to more growth-oriented businesses (Fairlie & Fossen, 2018).	<ul style="list-style-type: none"> <li>Spotting a market gap for a budgeting app; Alex, a software developer, launched a tech startup to develop and market his idea, driven by the prospect of opportunity</li> </ul>
Necessity entrepreneurship	Described as counter-cyclical and includes individuals who start businesses out of necessity, often due to the lack of other employment options. These entrepreneurs were initially unemployed before starting their businesses (Fairlie & Fossen, 2018).	Primarily to ensure livelihood. Necessity entrepreneurship is driven by a lack of other employment options (Fairlie & Fossen, 2018).	Necessity entrepreneurship arises when individuals are pushed into entrepreneurship by external circumstances, such as unemployment or underemployment, rather than the pursuit of a specific business opportunity (Fairlie & Fossen, 2018).	<ul style="list-style-type: none"> <li>After losing her job, Maria started a home-based catering business to support her family, a venture born out of necessity</li> </ul>
black entrepreneurship	Involves business ventures initiated by individuals of African descent, showcasing their active participation in entrepreneurship despite facing socio-economic challenges (Preisendoerfer, Bitz & Bezuidenhout, 2014).	Creating wealth within black communities, and offering products/services that cater to the needs and preferences of these communities (Preisendoerfer, Bitz & Bezuidenhout, 2014).	Defined by the racial identity of the entrepreneur. Diverse in nature, but can include elements of community focus, cultural relevance, and social impact (Preisendoerfer, Bitz & Bezuidenhout, 2014).	<ul style="list-style-type: none"> <li>A tech startup founded by a native young entrepreneur in Johannesburg, South Africa, focusing on developing mobile applications tailored to address local needs such as access to healthcare, education, and financial services.</li> </ul>
Townships entrepreneurs	Entrepreneurial activities and ventures initiated and run by individuals within the township areas of South Africa. These activities are aimed at providing various services and products, like car washes, property rentals, salons, tuck shops (spazashops), and taverns, addressing the needs of the local community (Matli & Jordaan, 2016).	Overcoming challenges such as funding difficulties due to low creditworthiness and navigating inequalities, lack of education, and inadequate information that hinder entrepreneurship development and sustainability in townships (Matli & Jordaan, 2016).	Deep community integration, local market focus, and navigating constraints unique to townships, such as limited access to finance and markets (Matli & Jordaan, 2016).	<ul style="list-style-type: none"> <li>Spazashops, often informal retail outlet or convenience store commonly found in townships and rural areas of South Africa. These shops are usually operated out of someone's home or a small stand (Matli &amp; Jordaan, 2016).</li> </ul>
Grassroot entrepreneurs	Are innovators at the community level who create sustainable and cost-effective solutions to meet local needs, utilizing limited resources, local materials, and knowledge. Their work, often aimed at the Bottom of the Pyramid (BOP), emphasizes social impact and environmental sustainability (Pansera & Sarkar, 2016).	The primary objective of grassroots entrepreneurship is to address community needs and challenges directly, with a strong emphasis on social impact (Pansera & Sarkar, 2016).	Their work is characterized by a deep commitment to social impact, sustainability, and the use of ingenuity to overcome limitations, embodying a significant potential for achieving broader societal and environmental goals (Pansera & Sarkar, 2016).	<ul style="list-style-type: none"> <li>Amara, in rural Kenya, created a sustainable, low-cost water filtration system from local materials, providing her community with clean drinking water and empowering them with knowledge on its maintenance.</li> </ul>

TABLE 1: OVERVIEW OVER FE AND SIMILAR TERMS

and serving low-income customers. Similarly, social entrepreneurs, driven to start a business for the greater social good (Abu-Saifan, 2012), can be frugal entrepreneurs by developing solutions that are both cost-effective and valuable to underprivileged communities.

Based on the literature research and the lack of clear definition of FE, we interpret that frugal entrepreneurs can overlap with other similar concepts of entrepreneurship. While each concept of entrepreneurship has its unique goals, they can coexist within the framework of FE, given that they adhere to its criteria. Therefore, being a frugal entrepreneur does not preclude identification with other entrepreneurial concepts.

## 2.2 FROM WHERE DOES FRUGAL ENTREPRENEURSHIP ORIGINATE?

Frugal innovations (FI) are more than just saving resources; it's about adapting to different economies and social settings (Sarkar & Mateus, 2022). FI is a flexible process that changes based on what specific groups in society need, especially those who are less privileged. It's not only about creating affordable solutions that are not only economically affordable, but also socially and culturally fitted. FI focuses on being adaptable and sustainable (Berndt et al., 2021). It encourages a way of solving problems that's both flexible and mindful of resources, which helps organizations learn and innovate. In other words, FI aids in continuously creating new solutions that are cost-effective, environmentally friendly, and culturally sensitive. Frugal innovation combines creativity with practicality. FI is about finding smart ways to do more with less and thinking outside the box to use what's available to meet the varied needs of people (Sarkar & Mateus, 2022).

Hossain et al. (2022) characterizes FI as meeting the basic needs of the customers who typically can't afford such product or services. A frugal innovation can be created from different means, first as a way of thinking or living; second, as a method; and third, as a result in products or services (Soni and Krishnan, 2014). Meagher (2018) believes frugal innovation is not just about making it affordable. It's also about helping people with low income by working together to create good quality, low-cost products and services. Weyrauch and Herstatt (2017) have three criteria for defining frugal innovation; cost reduction from

substitutes, a concentration on core functionalities, and an optimized performance of the goods and services sold.

An example of a frugal innovation is Tata Swach. In 2006, under the leadership of R. Gopalakrishnan of Tata Chemicals, a team creating a frugal yet effective water purifier, leading to the Tata Swach (Basu, Banerjee & Sweeny, 2013; Lavallee & Veach, 2010). This frugal innovation used rice husk ash and nano-silver particles for bacterial inhibition, functioning without electricity and showing frugality by being affordable and accessible to power-limited regions (Basu, Banerjee & Sweeny, 2013; Subbu, 2009). It was designed with simplicity, using local materials and high-tech for user-friendly operation. Post-launch in 2009, it quickly impacted the Indian market and planned expansions into Africa, Southeast Asia, and Latin America highlight its global relevance (Basu, Banerjee & Sweeny, 2013; Singh, 2011).

Frugal innovations, as illustrated by the Tata Swach water purifier, teach us to think creatively and innovative even with constraints to serve a product to an underserved market. By utilizing their knowledge to give customers living in power-limited regions the ability to purify water effectively, the team addressed a critical need and achieved a significant social impact. Which made it cheaper, made it safer to drink water and is better than what the customers in the underserved community previously had, fulfilling Weyrauch and Herstatt (2017) three criteria for frugal innovation.

### 2.3 PREVIOUS STUDIES ON ENTREPRENEURIAL RESOURCES

The World Economic Forum (2014) mapped out the most essential resources needed by average entrepreneurs. Their data are conducted with over a thousand entrepreneurs worldwide and case studies of 43 early-stage companies across 23 countries. This research aimed to explain the differences and similarities characterizing entrepreneurial ecosystems globally. The study's findings show the importance of three pivotal resources for company growth within these ecosystems: accessible markets, human capital/workforce, and funding & finance. Significantly, this investigation has been used as an important and major study to carefully examine the key parts of the ecosystem that frugal entrepreneurs find most important.



In a study done to investigate the key resources of the frugal entrepreneurs, Hossain (2022) examines six frugal entrepreneurs in India. As far as we have figured out, this is the only study on essential resources of frugal entrepreneurs. The criteria for the frugal entrepreneurs were (a) the founders had been widely referred to as frugal entrepreneurs, (b) they originated in rural India, (c) they were commercially successful and (d) the innovators had limited academic qualifications.

The key resources and the resource mobilization for frugal entrepreneurs are being explored through three broad categories namely human, social, and financial (Batjargal, 2007; Clough et al., 2019; Florin et al., 2003; Hossain, 2022). These categories have been established as efficacy and success of ventures operating within resource-constrained settings (Hossain, 2022; Batjargal, 2007; Clough et al., 2019; Florin et al., 2003). Hossain (2022) have used these categories as aggregate dimensions and separated his findings of the essential resources of the FE into first-level categories and second-order themes, as showed in figure 1.

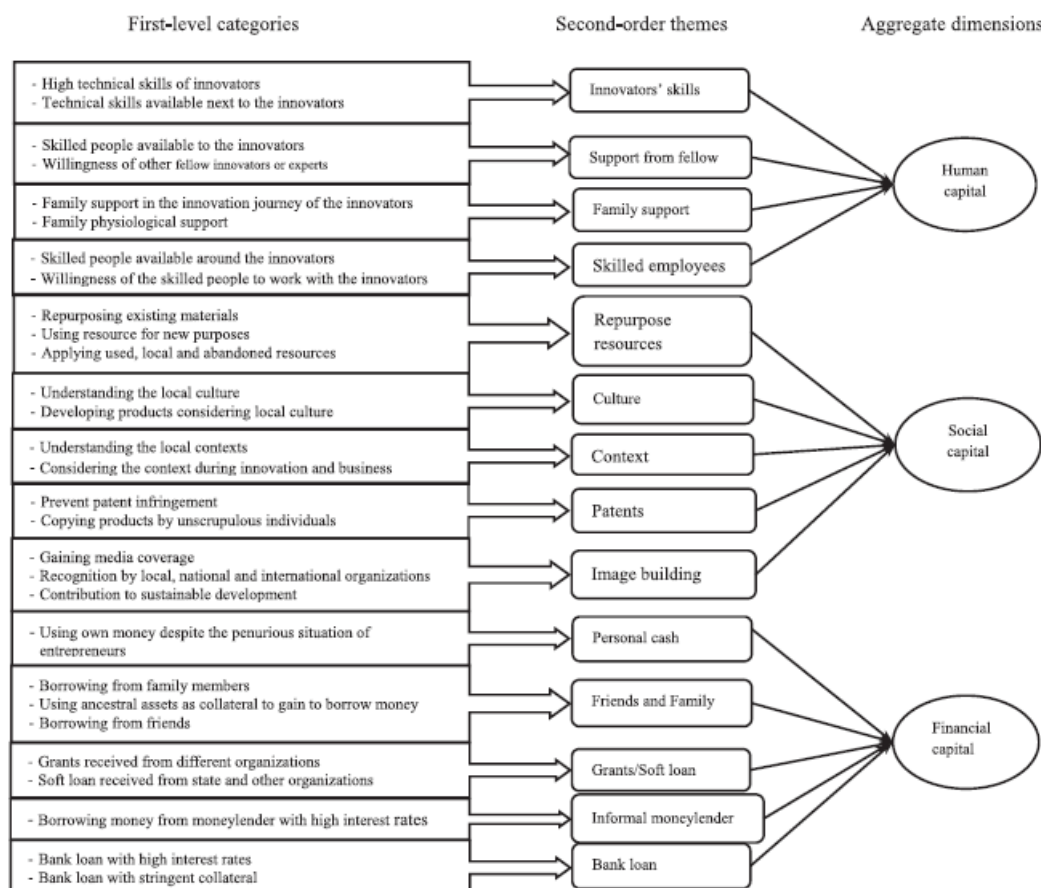
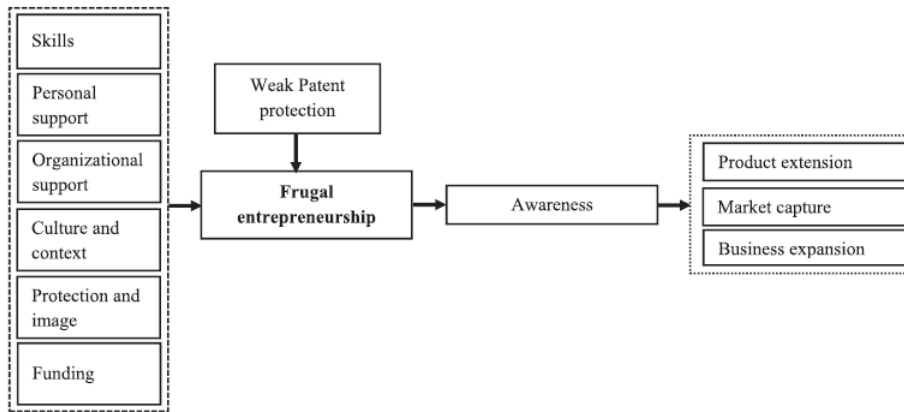


FIGURE 1: DATA STRUCTURE OF KEY RESOURCES OF FE (HOSSAIN, 2022)

Hossain's (2022) findings highlight the utilization of the frugal entrepreneurs' technical skills and the importance of closely collaborating with local networks to access and develop essential competencies, which involves leveraging manual labor and existing local knowledge. Hossain's findings indicate that these frugal entrepreneurs harness their social networks to acquire materials, financing, and support, with these networks predominantly consisting of family, friends, and other community members. Due to limited access to traditional funding sources, frugal entrepreneurs rely on alternative financing methods such as personal savings, informal lenders, and community-based contributions within an informal economy.

Hossain (2022) suggests that there is a need for improved support mechanisms from both public and private sectors to strengthen frugal entrepreneurship. This includes access to financing, training programs, and marketing support. The study reveals that frugal entrepreneurs are capable of innovating by repurposing existing materials and adapting products to local needs, which often results in cost-effective and accessible solutions for low-income markets. The products and services developed by the frugal entrepreneurs reflect a deep understanding of local culture and context, contributing to their relevance and acceptance in target markets. Hossain (2022) also highlighted the surprising use of patents as his informants patented their products, well known that the products were going to get copied.

Hossain (2022) created a typology to show frugal entrepreneurship at the grassroots level in an emerging market. Figure 2 shows the overall implication typology. Skills, personal support from family members, friends and family, culture, context, IP protection, image and funding are the main drivers of FE. We will only focus on the left side of the typology in our study.



**FIGURE 2: A TYPOLOGY OF FRUGAL ENTREPRENEURSHIP AT THE GRASSROOTS LEVEL IN EMERGING MARKETS (HOSSAIN, 2022)**

For further studies, Hossain (2022) suggest a need for studies from other geographical regions, and he also emphasize how his study only explored three broad categories of resources, so future research may seek to achieve a more granular understanding of resource mobilization by categorizing resource types differently. Hossain (2022) recommends further to determine how to develop skilled people and understand the context for frugal products.

Research on frugal entrepreneurship within South Africa is notably insufficient, and as far as we have noted, there is no research on FE in South Africa. Which makes a gap in understanding the resources necessary for innovation by frugal entrepreneurs in South Africa. This research will therefore seek to find what resources frugal entrepreneurs are using in South Africa with the support of Hossain’s (2022) findings and typology, taking his recommendations into account. This culminates the formulation of our first research question:

*What are the most essential resources for the frugal entrepreneur to innovate in South Africa?*

## 2.4 RESOURCE MOBILIZATION

Resource mobilization is defined as a process for recognizing, acquiring and integrating the resources needed for a business to take advantage of an opportunity (Hossain, 2022; Stuart & Sorenson, 2007). How entrepreneurs are mobilizing their resources are not merely random,

they are strategically planned, utilizing available resources such as money, skills and network. (Edward & Gilham, 2021). *Mobilization is the process by which group secures collective control over resources needed for collective action* (Jenkins, 1983. P. 532). There is little agreement on what types of resources that are significant (Jenkins, 1983). Most analysts have categorized the assets frequently mobilized by movements into tangible assets, such as money, facilities, and means of communication, and intangible assets such as skills and efforts that aren't physical assets (Jenkins, 1983).

*The way that frugal entrepreneurs mobilize resources to pursue their business ideas is also an interesting research direction* (Hossain, 2022, p.15). How frugal entrepreneurs mobilize their resources to navigate resource constraints remains somewhat unexplored (Hossain, 2022). There is a lack of understanding in how the frugal entrepreneurs in emerging markets, use innovation and entrepreneurial activities (Hossain et al, 2022).

In frugal entrepreneurship, the essence of resource mobilization lies in entrepreneurs adeptly harnessing whatever resources they have at their disposal to start and scale up their businesses, even in settings marked by scarcity (Hossain, 2022). In other words, it means pursuing an unexploited opportunity under resource constraint (Hossain, 2022; ma et al., 2015). In the process of producing cost-effective products, these entrepreneurs adapt and experiment, leading them to adopt various innovative approaches (Hossain et al, 2022).

Frugal entrepreneurs can use bricolage and optimize their use of certain resources to overcome resource scarcity (Hossain & Sarkar, 2023; T. Baker and R. E. Nelson, 2005). Using bricolage, a bricoleur makes do with what is at hand, rather than seeking resources that are specific for a particular project (Sunduramurthy, C., et al, 2016). The definition was first mentioned by Levi-Strauss in 1966, and further defined by Baker & Nelson (2005). Bricolage are defined as “*making do by applying combinations of the resources at hand to new problems and opportunities*” (Baker & Nelson, 2005. P. 5). Being successful using bricolage can help gain a better understanding knowing how to handle unforeseen challenges and survive despite resource constraints (Senyard, Baker & Davidsson, 2009).

## 2.5 RESOURCE ADAPTATION WITH EFFECTUATION OR CAUSATION

### 2.5.1 WHAT IS EFFECTUATION AND CAUSATION

Research about entrepreneurship have previously indicated that entrepreneurs are rational and goal-driven individuals when pursuing entrepreneurial opportunities (Perry, Chandler, & Markova, 2012). The dominant entrepreneurial decision model that was being taught in many business classes is a model of decision making referred to by Sarasvathy (2001) as causation. Causation (Sarasvathy, 2001) are explained as the traditional perspective on entrepreneurship, where entrepreneurs focus on predefined goals and selects between mean to achieve that goal. The process involves assuming specific outcomes as given and focusing on choosing the suitable methods or resources to achieve these outcomes. Given the dynamic, uncertain, and unclear nature of entrepreneurship, entrepreneurs often lack enough information to identify opportunities before exploiting them (Fisher, 2012). To address that the future often is unpredictable Sarasvathy (2001, 2008) created the theory of effectuation as an explanation for entrepreneurial activities (Fisher, 2012).

In contrast to causation, effectuation (Sarasvathy, 2001, 2008) are consistent with emergent (Mintzberg, 1978) or non-predictive strategies (Wiltbank, Dew, Read & Sarasvathy, 2006) (Chandler, DeTinne, & McKelvie, 2011,). *Core to effectuation is the idea that rather than discover and exploit opportunities that pre-exist in the world, the effectual entrepreneur is one who “fabricates” opportunities from the mundane realities of her life and value system* (Sarasvathy, 2009, p. 8). While causation relies on a logic of prediction, effectuation is based on the logic of control (Sarasvathy, 2001).

When creating a new business, using effectuation, different sets of observations and decisions will result in new information, guiding them towards new directions in the market (Sarasvathy, 2008). Given that the future is unpredictable, using effectuation allows the entrepreneur to make different sets of approaches in the marketplace before settling on a business model (Chandler et al., 2011). The causation model starts with a goal, while in effectuation, the entrepreneur starts with a decision.

### 2.5.2 CAUSAL VS EFFECTUAL REASONING

An often-used analogy from Sarasvathy (2008) to describe the difference between causation and effectuation is that effectuation can be explained as a chef who starts a restaurant by first assessing accessible ingredients. Using these ingredients, the chef creates a unique and evolving menu. This approach allows the chef to adapt and create dishes to the customers' preferences and to handle unexpected situations better. Causation on the other hand can be described as a chef who choose a set menu in advance. The chef needs to list the ingredients, shop them and then cook the meals. Causation logics are best employed in situations with little uncertainty, where the chef knows the customer's preferences in advance.

Effectuation is where the entrepreneur begins with a set of given means, uses these means, and rely on the possible effects that can be created with them. (Chandler et al., 2011).

Sarasvathy (2001) defines their means as “who am I”, “What I know and “Who I know” and describes effectuation as a process that begins with available resources and aim to identify various outcomes that can be achieved using those resources. The means teaches us these questions about the entrepreneurs and not only enable entrepreneurs to effectuate, but also to know what resources they have at hand to bricolage (Chinyoka, 2020).

Effectuation improves the understanding about how entrepreneurs think and address economic opportunities. The approaches or actions taken within this framework, called effectual logic, do not begin with a clear goal in mind. It illustrates a creation of entrepreneurial ends through a process that got constructed (Sarasvathy, 2001). Causal reasoning, on the other hand, is the dominant entrepreneurial way of thinking where you begin with a clear goal in mind and use your means to achieve your end goals.

## CAUSAL vs. EFFECTUAL REASONING



FIGURE 3: CAUSAL VS. EFFECTUAL REASONING (EFFECTUATION, N.D.)

The causal and effectual approach are illustrated in figure 3, effectuation emphasize the approach where a set of given means can create endlessly imaginable ends and outcomes (Sarasvathy, 2008). Entrepreneurs can build a business or startup and achieve success that were not anticipated when they first started, the path of variety of alternative outcomes along the way can turn into their business. Effectuation represents unforeseen success and can unlock innovation and ideas by creatively employing existing resources, rather than focusing on predefined goals (Duening, Shepherd & Czaplewski, 2012; Sarasvathy, S.D., 2012)

### 2.5.3 THE EFFECTUAL CYCLE

Effectual reasoning starts with a set of means that can create endless outcomes, but how to use effectuation in practice. To explain how effectuation works in action, the figure 4 down below from effectuation.org illustrates the steps and illustrates the different process of entrepreneurs developing their business. Sarasvathy's (2008) effectual cycle shows how the practice is being approached by expert entrepreneurs. *Expert entrepreneurs follow the process to gain early customers and committed partners who then create new means and new goals as resources and viewpoints are added to the mix* (Effectuation, n.d.). Instead of having clear goals and means to reach them, entrepreneurs are using new means to create an imagined end.

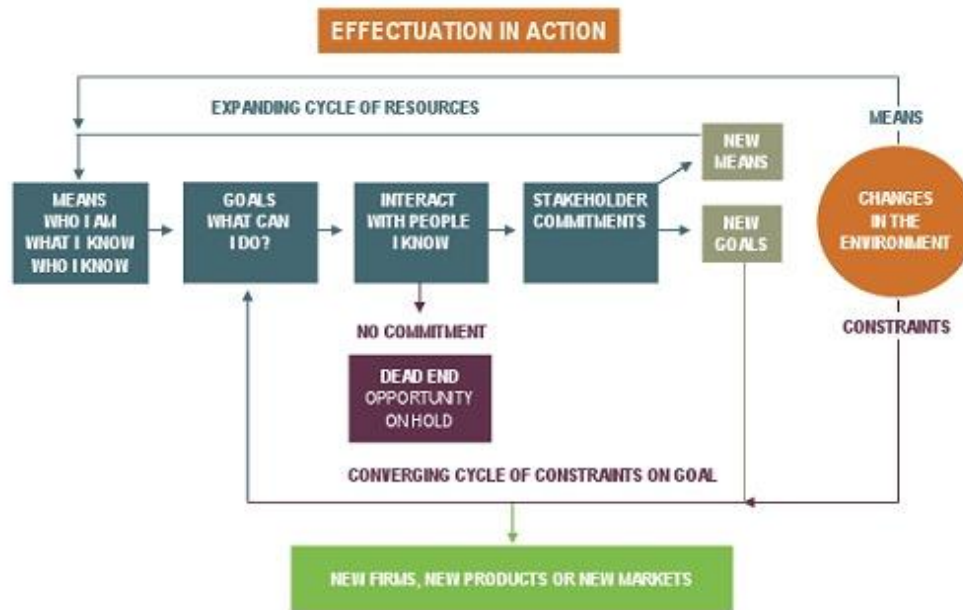


FIGURE 4: THE EFFECTUAL CYCLE (EFFECTUATION, N.D.)

Sarasvathy (2008) developed five principles of effectuation and use these to explain how the effectual cycle can be used by entrepreneurs. The effectual cycle can be used to define and locate the development of an entrepreneur's business that eventually can lead into new firms, products or markets by using these principles (Sarasvathy, 2008).

#### 2.5.4 FIVE PRINCIPLES OF EFFECTUATION

The five principles are being presented by how the entrepreneurs act, think and make decisions. Effectual strategies are principles for cocreating futures (Sarasvathy 2023). The five principles are presented below (Sarasvathy (2008);

##### **The bird-in-hand-principle:**

*Starting with one's means:* Take action with what you already have. Look at your skills, who you know, and resources you can use right away. Create solutions with resources you have available.



### **The affordable loss principle**

*Setting affordable loss:* Start by estimating the downsides and examine what he/she is willing to lose. One should never invest more than they can lose. The estimate of affordable loss does not depend on the venture but varies from entrepreneur to entrepreneur. One is only willing to invest up to the point of acceptable loss, rather than investing on expected return (Klapper, Upham & Kurronen, 2018).

### **The crazy quilt principles**

*Forming partnerships:* Alliance and precommitments from stakeholders can reduce and/or eliminate uncertainty and erect entry barrier. Creating a partnership can bring new funds and directions. The entrepreneur builds the business with the help of others. Instead of working alone, partner up with people who can support you, like friends, other businesses, or customers.

### **The lemonade principle**

*Leverage contingencies:* Turn surprises into opportunities. Mistakes and unexpected events are inevitable and can be used to seek new opportunities. The principle recommends that you should recognize and address challenges. When unexpected things happen, don't get discouraged. Instead, look for ways to use these surprises to your advantage, possibly taking your business in new and exciting directions.

### **The pilot-in-the-plane principle**

*Non-predictive control:* The future can be controlled. Try to control an unpredictable future instead of predicting it. When uncertainty becomes visible, the future can be controlled through planning and agile actions according to the circumstances. Having a mindset for the future is important for co-creating and shaping future uncertainties.

By interpreting the theories mentioned above and how a resource-conserving mindset can be linked to FE and effectuation, we have developed a hypothesis that we aim to test. We want to see whether the informants utilize the five principles formulated by Sarasvathy (2008) during their resource mobilization, implying that the frugal entrepreneur are using effectuation as

strategy, rather than causation, based on how we interpret those as two separate approaches. We will use these five principles as a foundation and employ effectuation and causation as lenses to examine whether the frugal entrepreneurs use one approach or the other, none or both, forming research question two:

*How do effectuation and causation come to play in the frugal entrepreneur's resource mobilization process?*

### 3. METHOD

In this chapter, we outline the methodology used to investigate frugal entrepreneurship in South Africa, a relatively unexplored area in academic research. Given the complexity of this subject and the lack of prior studies in the South African context, we employed a qualitative research approach, utilizing both inductive and deductive methods to capture the nuanced realities of how frugal entrepreneurs mobilize resources under constraints. This approach allows for a deeper understanding of the frugal entrepreneurs' experiences and the strategic frameworks they employ. A phenomenological design was chosen to provide rich, contextual insights into the lived experiences of the participants, supported by rigorous data collection through in-depth interviews and field observations. This chapter details our methodological choices, data collection processes, and analysis techniques, providing a foundation for the insights discussed in subsequent chapters.

#### 3.1 THE STUDY CONTEXT

To understand South African frugal entrepreneurs, comprehending the entrepreneurial ecosystem (EE) within the context of South Africa is crucial. An EE involves complex interactions among individuals or groups in socio-economic, institutional, and informational contexts (Audretsch and Belitski, 2016). South Africa has the strongest economy in Sub-Saharan Africa (Bate 2021; The World Bank in South Africa, 2019). Despite this, structural and institutional factors constrain business growth and development. We will discuss the key influences on South Africa's EE.

##### 3.1.1 SOUTH AFRICA'S ECONOMIC CONTEXT

South Africa has the world's highest unemployment rate at 32.1% as of the fourth quarter of 2023 (Williams, 2023; Statistics South Africa, 2024). During this period, unemployment rose by 46,000, and those not economically active increased by 111,000. Employment fell in social services, construction, agriculture, and trade, but rose in finance, transport, mining, and private households. Youth unemployment (ages 15-24) was particularly high at 44.3%, despite youths making up over 41% of the population and less than 6% engaging in entrepreneurship (Matli & Jordaan, 2016; DTI, 2013). Entrepreneurship is seen as crucial for economic growth (Urban & Ndou, 2019; Gem, 2018). However, South Africa's economy is dominated by established large companies, making up 90% of businesses, which hampers

new entrants in building customer relations and sales (Bate, 2021; McKinsey Global Institute, 2016).

South Africa ranks low in entrepreneurial attitudes, struggling with risk capital, networking, cultural support, and startup skills, as reported by the Global Entrepreneurship Index (GEI) (Bate, 2021). Despite this, it scores highly in competition and average in product and process innovation (Bate, 2021). The country ranked 43rd out of 149 for entrepreneurial ambition in 2016, but its entrepreneurial attitude and abilities placed it at 63rd and 47th, respectively (Bate, 2021). Educational levels are low, impacting entrepreneurial competency (Bate, 2021). Formal sector capital functions well, but there is an expectation for informal investors like friends and family to contribute more to startups. These startups often focus on differentiated products, resulting in less intense market competition and high scores in new technology and products (Bate, 2021).

The entrepreneurial ecosystem (EE) in South Africa is predominantly influenced by the informal sector, described as dynamic and in need of innovation (Bate, 2021). However, the informal sector faces challenges due to increased urbanization, slow economic growth, rising unemployment, and fewer formal job opportunities. High costs and regulatory hurdles for entering the formal economy, along with limited educational and training options, exacerbate these issues (Urban & Ndou, 2019; Malefane, 2013; Peterson and Charman, 2018; Rogerson, 2004).

Additionally, infrastructure challenges, particularly electricity shortages, have hindered economic growth. Since starting in 2007, daily power cuts have worsened, reaching up to nine hours in 2022, significantly increasing operational costs as businesses often resort to expensive diesel generators. These power issues are especially severe in townships due to heightened security and resource limitations (World Bank, 2024).

### 3.1.2 UNDERPRIVILEGED URBAN AREAS

Approximately eleven million South Africans is living in townships (Blakeley, 2023). Townships are described or defined as areas that were historically created to racially segregate South African cities and to create labor pools for the broader colonial and apartheid

economies. They served as a source of cheap workforce during the apartheid era (Urban & Ndou, 2019; SACN, 2015). Entrepreneurial activities are important both for the people living in the townships and for the government who wants to change townships from “*spatial discrimination of apartheid policies to economic hubs that benefit the poor and previous disadvantaged South Africans*” (Urban & Ndou, 2019; GSDF, 2011). According to Matli & Jordaan (2016), the lack of support from the government is causing frustration and a lack of motivation among township entrepreneurs.

There is entrepreneurship in emerging and underdeveloped economies that are created and survive despite the lack of institutional support (Desa, 2012; Bornstein, 2004; Desa & Kotha, 2005; Mair & Marti, 2009; Sarasvathy, 2006). They have a special talent to push conventions aside and find new opportunities in business or society. They often gather what they need in creative ways, much like someone making do with what's available at their hand, like the concept bricolage, mentioned earlier (Desa, 2012).

There are challenges within townships that prevent young people from becoming entrepreneurs. Education and training suffer from inequalities in educational institutions, as well as poor quality and a lack of resources in township schools (Matli & Jordaan, 2016; Ngcaweni & Moleke, 2007). From a study of 321 small, medium, and micro enterprises (SMMEs) in KwaZulu-Natal, South Africa, it was revealed that most business owners rely on bootstrapping for operations. Their growth potential is limited by restricted access to debt and equity financing (Msomi & Olarewaju, 2021; Fatoki, O., 2021). This suggests a broader systemic issue, as many entrepreneurs are also unaware of available government financial support, restricting their business expansion (Fatoki, O., 2021).

## 3.2 METHODOLOGY

The following chapter will present the methodology and research design we have used for our thesis. Further, we will explain how we have conducted the data collection. We will explain how the validity and reliability of the thesis are preserved, and at the end of the chapter we will consider the ethical aspects we have made. Lastly we will highlight the limitations in our research.

### 3.2.1 METHODOLOGICAL APPROACH AND RESEARCH DESIGN

The purpose of this study is examining the concept of frugal entrepreneurship and investigate the following problem statement;

*How do frugal entrepreneurs mobilize their available resources to overcome resource constraints in South Africa?*

We have chosen a qualitative approach to better answer the "what" and "how" within a relatively unexplored area. We emphasize that our research subject, frugal entrepreneurs in South Africa, has not been studied before, highlighting the need for detailed and comprehensive information with the flexibility to delve deeply (Johannessen et al., 2020). Employing a qualitative research design allows us to “gain a deep, holistic view of the research problem” (Baškarada, 2014). This approach is advantageous for understanding complex and content-specific phenomena. By using a qualitative method, we can explore resources, strategies, and experiences by having informants share their thoughts and experiences through in-depth interviews (Baškarada, 2014). The approach allowed us to change our research questions as we understood the need for changing the questions came along the process. We changed some of the focus in the thesis from having more questions on barriers, to rather focus on the resources. The change was based on feedback from an expert panel of South African professors in the UTFORSK project in Pretoria when we were presenting our research. As the feedback came during our process of interviewing the candidates, the qualitative approach allowed us to change some of the questions.

We believe that the qualitative method is the best approach for us due to the flexibility and openness it offers. Treating and analyzing the data manually provides us with a closer

connection to it, unlike quantitative methods (Johannessen et al., 2020). However, we acknowledge the complexity of the information we are handling, which can be a limitation as it is subject to human interpretation rather than automatic processing. Additionally, it is important to underscore the generalizability of our conclusions, which can only be based on our interpretation of a small sample of informants (Johannessen et al., 2020).

We have chosen to adopt phenomenology as our research design. As a qualitative approach, phenomenology involves exploring and describing individuals and their experiences of a phenomenon, allowing us to understand the world through their perspectives (Johannessen et al., 2020). Our goal is to gain insight into how frugal entrepreneurs in South Africa operate under resource constraints, which we believe aligns well with a phenomenological research design. This approach provides us with a deeper understanding of how each participant thinks and perceives the phenomenon we are investigating. We believe that we enhance the understanding of the phenomenon as we went to SA and experienced the environment, both during the internship and when we conducted the interviews. One of the informants invited us to come and see his garage where he produced his products as well, which contribute to better understanding of their environment and experiences.

We have adopted a hybrid approach of both deductive and inductive methods in our study. The first research question, which addresses the resources possessed by the frugal entrepreneur, employs an inductive approach. An inductive method involves observing specific instances and using them to formulate broader generalizations or theories (Goel, B., Kapur, S., & Houle, S., 1997). In simpler terms, inductive reasoning can be described as moving from empirical evidence to theory (Johannessen et al., 2020).

We justify this approach by the lack of existing research on the resources used by frugal entrepreneurs in South Africa, allowing us to be more flexible when navigating through a previously unknown field. Previous studies have focused on the resources available limited to frugal entrepreneurs in India, while there is no research on frugal entrepreneurship in SA. The scarce research on FE in SA provides a foundation for an inductive approach to help develop a theory. However, we have also considered the research by Hossain (2022) in our discussion, using his findings and framework to enhance the credibility of our conclusions regarding the resources utilized by the frugal entrepreneur in South Africa.

In our second research question, we employed a deductive approach. Here, we aim to use existing theories to test whether they align with the behavior patterns of our informants. A deductive approach begins with a theory or principle and applies it to specific instances to draw conclusions (Goel et al., 1997). Unlike the inductive approach, which moves from empirical evidence to theory, the deductive method seeks to go from theory to empirical evidence (Johannessen et al., 2020). We aim to examine whether our informants utilize effectual principles (Sarasvathy, 2008) in their resource mobilization and whether their behavior patterns fit within this theoretical framework. We are using the theory to test the hypothesis of effectual reasoning in the frugal entrepreneurs' ways of thinking and acting. We also utilize the concepts of causation and effectuation (Sarasvathy, 2008) to explore whether a frugal entrepreneur employs one of these approaches, both, or neither during the resource mobilization process. We argue that a deductive approach is most suitable for this part of the thesis, as it allows us to test existing theories in practice.

We have utilized ChatGPT to construct sentences in English, as our native language is Norwegian and our academic English vocabulary is limited. Nevertheless, we have been very careful to ensure that the original meanings were not lost in translation. The use of an AI tool to enhance our language might be considered a potential weakness, but we viewed it as a crucial tool for improving the academic language quality of our thesis. Additionally, we believe that using AI has contributed to enhancing our English vocabulary throughout this process.

### 3.2.2 DATA COLLECTION

The data collection process consisted of extensive in-depth interviews, aligned with the purpose of the phenomenological approach (Johannessen et al., 2020). We conducted individual interviews with each informant, believing this method best captures personal perceptions and experiences, as opposed to group interviews. Most of these interviews were conducted face-to-face; however, some were carried out via video due to circumstances that made in-person meetings difficult. We believe that face-to-face interviews offer the best opportunity to interpret the informant's statements through body language, which is harder to achieve over video. We encountered various challenges during video interviews, such as



background noise and poor internet connectivity, which disrupted the flow of conversation. This is a weakness in our data collection method, which we have closely evaluated. Despite these obstacles, we believe we have gathered essential information for our study.

As mentioned, did we also visit one of the informants garage where the products were produced. This visit allowed us to get deeper insight into the context of the informant. Besides all the interviews, we also wrote notes.

We developed a semi-structured interview guide, focusing on open-ended questions that allowed informants to freely discuss their experiences related to the topic. This approach led us to modify some questions along the way and revise the wording of our research questions. While we encouraged informants to speak freely, we had guiding questions targeting specific themes. We remained flexible regarding the inductive part concerning resources during our conversations with the informants. However, we maintained specific questions about the five principles of Sarasvathy (2008), which we did not alter significantly during the interviews. These questions were designed to test our hypothesis that the informants utilized the five effectual principles in their resource mobilization.

The method we used for recruiting informants combined criterion-based selection and the snowball method (Johannessen et al., 2020). Thanks to the UTFORSK project, we already had contacts in South Africa who could help us find informants. We developed a set of criteria based on our understanding of frugal entrepreneurship and sent these criteria to our contacts: Menisha Moos from the University of Pretoria and Hanli Brink and Nadine Price from Launch Lab in Stellenbosch. We also asked each of our candidates at the end of the interview if they knew of anyone operating in the same field as themselves who might be interested in participating in our research project. We got a few names and conducted two interviews based on the snowball approach.

We recognize that most of our informants are naturally affiliated with university incubators or were identified because they studied at our contacts' universities. This could introduce a bias since we did not specify that we wanted to study frugal entrepreneurs with an academic background. Compared to previous research (Hossain, 2022), where informants did not have an academic background, this could yield different results due to the varying backgrounds and

contexts of the informants. However, we also have informants without higher academic education, so we cannot assume that our sample represents only those with an academic background.

Overall, we interviewed fourteen informants. Six interviews were conducted in Pretoria, while eight took place in Stellenbosch. However, only ten of these informants were considered to meet our criteria of frugal entrepreneurship after we analyzed the data. We removed four of the candidates from the findings and analysis.

We used "Diktafon," a voice recording app developed by the University of Oslo for confidential data. The recordings remain encrypted on the phone for 90 days and are stored on a secure account at "nettskjema.com," Norway's safest and most widely used data collection tool. Within Nettskjema, the recordings are also automatically transcribed. We retrieved the transcriptions and reviewed each interview with the audio recordings to ensure accuracy. Some of the recordings had sections where the data was impossible to interpret verbatim. In these cases, we either removed the section or tried to interpret it as accurately as possible, with a note indicating the difficulty in understanding the wording. We avoided using these unclear sections in our analysis.

### 3.2.3 CRITERIA FOR SELECTION OF THE FRUGAL ENTREPRENEURS

Hossain & Sarkar (2023) describes a frugal entrepreneur as *entrepreneurs developing low-cost products, services, processes, or business models, using limited resources and operating in resource-constrained environments*. But still there is no clear definition of who the frugal entrepreneur is. Hossain & Sarkar (2023) also indicate limitations with their study since there isn't a clear indication on precisely who the protagonist of frugal entrepreneurship is. We have therefore made our criteria for the frugal entrepreneur in line with Hossain & Sarkars definition and tried to place it in a South African context, as well as interpret the definitions closely based on the limited research on the FE field. We consider the vague definition as a weakness in the field of research, which have made it difficult for us to make clear criteria of who the frugal entrepreneur is. However, we have made a criteria selection based on how we interpret the frugal entrepreneur term.

We have chosen to make our criteria a bit different from the criteria (mentioned in 2.3) used in previous studies on mapping out essential resources of FE (Hossain, 2022). The adaptation is due to the terms of what would be more suitable for the SA context and taken into consideration that most likely did all or most of the informant have educational background. Our list of criteria for the candidates are shown in table 2. Given that our recruitment of informants involved using university and incubator contacts, we anticipated that our informants would predominantly be individuals with educational background or someone who is currently studying. However, we also saw the opportunity of using the snowball

Criteria for inclusion	Theoretical justification
The entrepreneur is serving customers in low-income markets, such as townships.	These entrepreneurs focus on creating solutions for low-income customers, addressing the needs of those who are typically ignored or underserved by conventional firms (Hossain & Sarkar, 2023).
The entrepreneur is closely connected to locally embedded and available resources (By resources we mean; materials, human capital, financial capital etc.)	At the initial stage, entrepreneurs typically lack the capital, materials and expertise to exploit the entrepreneurial opportunity (Shane, 2003). Frugal entrepreneurs integrate local culture and context into their innovation process. (Hossain & Sarkar, 2023).
The entrepreneur's product or service offers a cost-effective alternative or introduces a new solution to the market.	The offering is significantly cheaper than the competitive substitutes (if there is any) and good enough to meet the needs of the who would otherwise remain unserved (Hossain, 2022).
Maximize value with the use of limited resources, such as use of bootstrapping or bricolage	Making do by with the resources he/her has at hand (Welter et al., 2016). These entrepreneurs maximize value creation with minimal resource use, demonstrating exceptional creativity and efficiency in their operations (Hossain & Sarkar, 2023; Walden & Lie, 2021).
The entrepreneur is operating alone or in a team of under 10 (gender and ethnicity is not of significance).	

TABLE 2: CRITERIA FOR SELECTION

method of asking the informants if they knew of anyone of interest, which led us to not put the academic background as a criterion. Consequently, we did not establish education as a criterion for participation. Considering that many of our informants were likely students in the early startup phase, we also did not require commercial success as a criterion.

### 3.2.4 Data Analysis

To analyze the data, we used thematic analysis. This approach allows us to extract, analyze, and report patterns in our descriptive data, providing an in-depth understanding of our findings from the interviews (Castleberry & Nolen, 2018). For efficient data organization and management, we used Atlas.ti, a tool that helps us code the information we collected. Atlas.ti enabled us to create a structured framework of codes, simplifying the analysis by categorizing and linking different pieces of data according to their thematic relevance.

Following Braun and Clarke's (2006) six-step approach for thematic analysis, we reviewed the transcriptions to understand the meaning of the data. We identified interesting and recurring themes, coding them into first-level categories that evolved into sub-categories. These themes were reviewed and refined to ensure coherence and accuracy in representing the data. We encountered challenges in creating suitable categories based on essential resources, given that our informants come from vastly different industries and utilize various resources according to their needs. Despite this, we attempted to create general categories and code them accordingly, including what we believe to be representative of their cases. However, we acknowledge this as a limitation due to the broad range of industries represented, making it challenging to categorize resources accurately for each specific industry.

We have chosen to present the findings in one chapter, while the analysis is combined with the discussion. We believe this approach better represents our data by providing a more contextual understanding of the analysis and discussion. We decided to present each candidate individually to highlight their unique approaches and processes within their specific contexts. This decision was based on the diverse backgrounds and industries of our informants. In this section, we included data relevant to our second research question, examining how effectuation and causation manifest in their resource mobilization.

In the first part of the findings, we present the unique aspects of each informant. The findings of part one will be mostly analyzed and discussed in part two of the discussion, as we are looking into how the frugal entrepreneur are using effectuation and causation (Sarasvathy, 2001) in their resource mobilization process. In the second part of the analysis and discussion, we have reviewed each informant to determine if they align with the five effectual principles outlined by Sarasvathy (2008). We have created a table (table 3) to gain a better overview, based on the part one in the findings. Text in black indicates our assessment of their fit within the various principles, while text in red highlights considerations that suggest they do not fit within a particular category. This dual-color coding helps in quickly visualizing which aspects of effectuation each frugal entrepreneur embodies and where discrepancies or deviations occur, providing a clear and structured analysis of how these principles are applied in practice

by our informants. Table 3 help to gain an understanding of the different candidates and the different factors supporting the effectuation and causation approaches (Sarasvathy, 2001).

In the second part of findings, we outline the various resources we identified, mapping out the recurring themes regarding the resources they have and how they use them. We also include specific cases, such as Torin's family investors, due to their unique aspects and the broad spectrum of our sample, which may indicate similar occurrences in other cases. For instance, Torin is one of the few frugal entrepreneurs in our study without a higher academic education at the bachelor's level. This does not imply that frugal entrepreneurs without higher education typically invest family money in their businesses, but it is a factor we argue could be of interest for future research. Therefore, we included such unique cases as potential factors of interest, even though they are not deemed essential for defining the frugal entrepreneur based on our data.

### 3.3 VALIDITY AND RELIABILITY

In this part of the chapter, we are going to evaluate the quality of our data regarding validity and reliability. These criteria rest on the assumption that it is possible to uncover an absolute truth about the social reality we live in (Johannessen et al, 2020; Guba & Lincoln, 1994), and can be used as a tool typically for qualitative data. Validity in qualitative research is determined by how well the researchers' methodology and results accurately represent the study's objectives (Johannessen et al, 2020), while reliability is linked to the extent to which the results can be reproduced when the research is repeated under the same conditions (Johannessen, 2020).

#### 3.3.1 INTERNAL VALIDITY

Internal validity, also called credibility, determines the trustworthiness and dependability of the findings, ensuring that the research accurately reflects the reality and experiences of the participants involved (Anney, 2014).

Two techniques can produce credible results: continuous observation or triangulation (Johannessen et al., 2020; Lincoln & Guba, 1985). We implemented triangulation,

incorporating both observation and interviews in our approach. Spending a semester in South Africa allowed us to directly observe the entrepreneurial environment through internships. We conducted in-person interviews using a semi-structured guide to facilitate a natural flow of conversation, enabling informants to discuss topics important to them and enhancing the study's credibility.

When we were in Pretoria, we presented our research question, thesis proposal, and methodology to an expert panel composed of professors from the University of Pretoria. During this session, we received feedback and critical questions from experts in the field. Based on their input, we made several adjustments to our approach. We have also maintained contact with some of these experts afterward, which we believe has strengthened the internal validity of our study.

We strengthened our study's internal validity through rigorous pre- and post-interview evaluations to ensure our informants fit the criteria of frugal entrepreneurship. Throughout the process, we meticulously defined what constitutes a frugal entrepreneur, excluding those who did not meet our criteria before and after the interviews, based on how we interpreted the term. The interpretation might also be a weakness, since it's based on our interpretation of the term explained in previous research, emphasizing the lack of clear definition of FE.

To recruit suitable informants, we conducted fourteen interviews in South Africa but ultimately used data from only ten. Before the interviews, we established specific criteria for selecting frugal entrepreneurs to ensure relevance within this study's context. However, before arriving in South Africa, we faced challenges in accessing comprehensive information about some participants due to their lack of online presence. Initially, our screening suggested that all participants were frugal entrepreneurs, but later findings revealed otherwise. Consequently, we discarded four interviews to maintain the study's credibility, ensuring all informants aligned with our established criteria.

We also aimed to strengthen internal validity by looking at our findings with previous research in the field, though previous studies are from different geographic areas (Hossain,

2022). We tried to identify which findings might be universal, regardless of context and geographic limitations and discuss the reason why they might differ.

Credibility in qualitative research can be enhanced by returning the results to the informants for validation or by having other qualified individuals analyze the same data to verify if similar interpretations are reached (Johannessen et al., 2020). After the interviews, we emailed some informants follow-up questions to resolve any ambiguities or clarify statements made during the sessions, confirming the accuracy of the data collected. Our former advisor, Elin Kubberød, assisted us in understanding and interpreting the data and forming the questions. After some interviews, which some she participated in, she discussed the findings with us, providing perspectives that enhanced our analysis and understanding of the data.

Language barriers were one barrier which we considered closely as well. Since the study was conducted in a country that has eleven official languages, language and potential cultural differences could impact the internal validity. Consequently, we needed to anticipate and prepare for the potential challenges these factors might introduce to the interview process. Both of us, the authors of this research, lived in South Africa for a semester and worked closely with local cultures in SA for whom English is a second language. During the internship we learned a lot about the cultural behavior, which allowed us to better understand slang and local terms or face expressions when someone used body language during the interviews.

We also utilized AI tools to translate some of the text both during the transcription and during the writing, which was particularly helpful for accurately interpreting complex sentences that we could not understand and expressing ourselves the way we tried to. However, we acknowledge that it is a weakness that the study is conducted in second languages, as important messages or meanings might get lost in translation.

### 3.3.3 EXTERNAL VALIDITY

*Can the results from a research project be transferred to similar phenomena?* (Johannessen et al., 2020, p. 251). External validity, also called transferability, checks if study results are useful in other situations and are considered an external form of validity (Johannessen et al.,

2020). Detailed description of the study's method and settings can help researchers or interested people to find out if the study might apply to their work or interest. (Anney, V.N., 2014).

Our study is based on a very limited sample of what we have interpreted as frugal entrepreneurs in South Africa. The sample of informants represents a wide range of industries and varied backgrounds in terms of work experience and education. Consequently, it is challenging to generalize our results to similar phenomena, given the diversity of the population and the lack of similar research in SA. Nevertheless, we believe our findings provide a solid foundation for further research that can delve deeper into the topic.

The purpose of our study is not to state which resources frugal entrepreneurs use or how they utilize them within their environmental context. Instead, we aim to contribute with our findings to a relatively new field of research, as there are limited studies on frugal entrepreneurs, especially within a South African context. Our research enhances the understanding of frugal entrepreneurship in the contextual setting we have been looking into and offers insights that could benefit future research. Conducting similar studies among frugal entrepreneurs in comparable contexts will further enrich the understanding of this study and contribute to its transferability.

Currently, there is no existing research on frugal entrepreneurs in South Africa, and our study attempts to provide a general overview of resources and how these entrepreneurs use effectuation and causation in their resource mobilization. Our findings can serve as a starting point for more in-depth research on the subject.

### 3.3.2 RELIABILITY

*The extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable (Golafshani, 2003; Joppe, 2000. P. 598).*



Since the concept of frugal entrepreneurship in SA is relatively new, the reliability are considered more challenging to prove. The study's reliability concerns the trustworthiness of the results it produces (Johannessen et al, 2020). We consider the process which we have described in 3.2 to be a factor to strengthen the reliability of our research. To ensure trust in our results, we first needed to identify the right candidates for our research. Selecting the right participants for the research was challenging, particularly because we consider the term FE to be somehow weak defined in previous research. We established criteria for defining frugal entrepreneurs from interpreting how FE was defined in previous research. The interpretation of the FE term is a weak factor when it comes to retesting, as others might interpret it different.

However, we have added the criteria, the description of the process, interview guide and sufficient with information about the candidates, which allows future research to retest our findings and compare the results against our findings. By following the same process as we have done, it's possible to measure the degree of agreement between different studies observing or assessing the same thing, strengthening the reliability in our study.

### 3.4 ETHICS CONSIDERATIONS

As part of the Utforsk project, it was essential to inform participants about our research activities. We distributed consent letters to the interviewees in accordance with the guidelines provided by "SIKT," a Norwegian administrative agency that serves as a knowledge sector service provider. The consent letter informed participants about the storage and use of data collected from the interviews. The data will be shared with our project partners, including HVL, NMBU, and the University of Pretoria. The project is set to conclude in June 2026, at which point all data will be securely deleted. All data handling will be carried out confidentially and in compliance with data protection legislation, including the General Data Protection Regulation (GDPR) and the Personal Data Act.

Prior to the interviews, we asked for consent from the participants to record. The candidates were informed about the study's purpose and their rights, including the option to withdraw

from the project at any time. This was formally documented through a SIKT consent letter that we sent out before the interviews. All participants gave their approval before the interviews were conducted. Consent for recording was obtained from all informants, ensuring they were comfortable with the interview being recorded. The recording app, “Diktafon,” follows strict protection rules to safely capture sensitive information, meeting the standards required for academic research. All audio recordings were stored in nettskjema.no, where sensitive personal information is secured by services for sensitive data (TSD). We used Atlas.ti, which is also GDPR-compliant, to transcribe and analyze the collected data.

All interviewed informants are anonymized to protect their identity and ensure their privacy. We have also emailed the candidates with direct quotes used in our study to check if they agree with the citations.

### 3.5 LIMITATIONS

The research has certain limitations that need to be addressed. There is a lack of research on frugal entrepreneurship and how it is distinctly defined compared to similar concepts such as social entrepreneurship. The limited research made it challenging to define the term clearly, which affected the understanding of the frugal entrepreneur as a concept. Thus, making it harder to find participants to interview, as we were insecure whether or not they fitted into the frugal entrepreneurial field. We acknowledge that our criteria could have been narrower, but due to circumstances explained earlier in the chapter, we chose to broaden the selection criteria in order to enhance the chances of getting more candidates. Nonetheless, our broad criteria leading to a broad sample of industries which the frugal entrepreneur is operating in, which have resulted in a large amount of data to analyze and discuss, and we acknowledge that the focus should have been more narrow.

Our sample size is limited in sense of candidates but covers a broad industry field. We had to exclude four interviews, leaving us with data from only ten informants. Our sample may not be representative of all frugal entrepreneurs, as they operate across various sectors in different markets and with different means. However we have concluded that all of them do fit the frugal entrepreneur term in one way or another. Of those ten we used, we did not include

female entrepreneurs, which is a weakness in our sample. Our contacts in South-Africa, who assisted us in data collection, faced challenges in locating female entrepreneurs. We had several female entrepreneurs invited to participate in the interviews, but due to personal reasons they had to cancel. We did interview two female entrepreneurs, but they did not meet our criteria for frugal entrepreneurs, leading us to exclude them from our study.

We acknowledge that our limited involvement and familiarity with the cultural context and integration can pose limitations. As previously mentioned, language is a potential constraint in our study. Since English is not our first language and many of our informants also consider English their second language, there may have been information lost in translation or a lack of full expression due to language preferences. Additionally, writing this thesis in English, rather than our native Norwegian, presents another limitation. However, as mentioned, we have utilized various tools such as ChatGPT and translation programs to mitigate this limitation as effectively as possible.

## 4. FINDINGS

In this chapter, we will present the findings and analysis from our study. Six interviews were conducted in Pretoria, while four interviews took place in Stellenbosch. In the first part of the chapter, we will review these ten informants and map out the resources they are using and how these frugal entrepreneurs are using them. In the second part of the chapter, we will categorize the most essential resources for our informants and examine how they are using the resources available to them.

### 4.1 The entrepreneurial story of each candidate

In this sub chapter, we present findings about our informants and explore how these frugal entrepreneurs identify and seize opportunities in a resource-constrained environment. We will provide an overview of the informants' businesses, resources they use and explore the methods they have used to operate and develop their businesses from the start to where they are now

#### 4.1.1 MARLON: PLATFORM FOR TRADING GOODS IN INFORMAL MARKETS

Marlon studied economics at Stellenbosch University and was introduced to LaunchLab by an advisor from the school. Driven by the passion for the social problems he experienced in his local community, he decided to act upon the opportunity. Launchlab gave him with support and mentoring to kickstart his entrepreneurial idea and expand his network. His business started out with ideas around leveraging technology to address challenges faced by informal merchants and small-scale farmers in Africa. He explains that small farmers and informal merchants can't compete in the market due to limited access to distribution networks and due to being unbanked.

*And the beauty of what's happening is that the continent we live in, there's a lot of social problems, economic problems and as I mentioned that for me, that's just opportunity, opportunity, opportunity to solve both, solve both because if there's a handful of group of individuals wanting change and development. -Marlon*

Initially, adapting to local context by allowing the customers to pay in cash, Marlon's business became popular in his local township. The business focused on aiding small-scale farmers by connecting them with informal retail markets. Eventually, Marlon had to

reconsider his business idea due to operational and financial constraints as it became too difficult for him to navigate with transactions in cash and generate income.

*You see, the problem is that it was like that, it was cash. And I'm not going to be lying in any of it. It was literally cash. And 90% of the volumes were in cash, which you saw that it was a problem. -Marlon*

Marlon had to pivot due to several challenges, including limited resources and funding available to sustain operations at the needed scale. The pivot led to a focus on informal merchants in townships, shifting from helping farmers directly to assisting local retailers and merchants by providing them with easier access to consumable products and an efficient supply chain.

*Because of limited resources and funding from our side, there's certain measures to an extent that we could go to in helping these farmers. -Marlon*

Currently, the business is focusing on integrating financial technology to facilitate better access to capital for these informal merchants. Marlon is leveraging AI and data collection to predict product needs, manage inventory, and improve the procurement process. His goal for the future of his business is to develop a platform for these merchants where they can earn credibility to secure working capital and getting accepted as unbanked customers. Marlon are also emphasizing digital payments to reduce reliance on cash, aiming to make the financial operations of these small merchants more formal and integrated into the broader economic system.

*So, with us, what we're trying to do now is create an inclusive financial system that allows individuals now to be able to open up an account to start transacting in less than 5 minutes. -Marlon*

Marlon employs locals, otherwise unemployed individuals as workforce in his business. He aims to address social issues such as youth unemployment in South Africa and seeks to leverage the strengths of local youth as an advantage for his company. These strengths include their language skills and familiarity with the local community. By doing so, Marlon not only contributes to solving a significant societal problem but also enhances his business's connection and relevance within the community.

#### 4.1.2 ETHAN: MEDICAL WASTE COLLECTION

Ethan was initially inspired to start his medical waste business through his experiences as a financial advisor, where he observed doctors mishandling medical waste by improperly transporting it in their personal vehicles. This observation highlighted a regulatory gap and a potential business opportunity. A friend, who he knew through university, suggested the idea to make a business out of the observation, which further piqued his interest in the field.

*So, when I was working as a financial advisor, I would see doctors taking waste and putting it in their cars. But obviously at the time I didn't understand the regulatory rules. But I think logic will tell you that you can't just take that stuff and put it in your car. I mean, you know, like, it really raised a question for me. And then a friend of mine came to me and was like, hey, maybe you can start a medical waste business or what not. -Ethan*

Driven by his background and the passion and realization of the need for proper disposal methods, Ethan saw an opportunity to create a business that not only handled waste responsibly in order to prevent kids getting sick, but also contributed positively to the community by creating jobs in local townships. He used his personal savings and started his business idea from what he had. This blend of social entrepreneurship and practical business solution spurred him to establish his own medical waste disposal company.

*I think the seriousness of the hazard that comes from not having waste disposed correctly, you can see it, you know, kids getting sick and all that stuff. So that's also my passion that came in. In sort of understanding and wanting to spread out, you know, just the impact in the townships. -Ethan*

Pricing strategy was crucial for Ethan's business development. Ethan started out with lower pricing than his competitors, allowing him to gain access to the market and gain customers. Initially unaware of the nuance of the market, he conducted market research, gathering quotes from different companies. He discovered that these companies were paying him lower rates, looking at him as a third-party collector compared to direct client engagement rates. He explain this discovery as particularly striking as he noted a significant discrepancy in the rates clients were paying in Johannesburg and Victoria, often four times higher than his charges. Upon realizing the extent to which he was underpaid, Ethan established a policy of gradual

price increases for his service every six months. This adjustment was designed to account for factors such as inflation and rising petrol costs, aiming to ensure his business's financial viability while gradually aligning his charges closer to prevailing market rates. This pricing strategy also took into account for geographical variations in pricing, which reflect differing levels of demand and client density across locations, he explains.

*So I think for about a year or so, then I realized, we're under-quoting here, like big time. Because the clients in Joburg, in Victoria, they were paying four times the amount of money we were pricing here in Cape Town. Like that's a lot, yeah. I was like "what?!". -Ethan*

Ethan is outsourcing labor as a part of his business model. He developed an app through which individuals in townships with their own vehicles can undertake assignments to collect medical waste. This allows him to avoid long-distance travel and reduce costs by having local residents handle pickups that are nearer to the waste's destination. Instead of using money on trucks, he is using the local community which otherwise might remain unemployed. Finding local residents to employ, he uses residents within a five-kilometre radius of waste sources. He is telling that it is a positive use of local human resources and is reducing his own costs.

*So, but then now I realized for me to cut cost of me having to do all those things.. if I get an app and then I get a lot of people in South Africa, townships, they have like vehicles, but they are unemployed. They normally rent out their vehicles. However, I get those people and say, Hey, you come get the app. We train you just how to collect waste. -Ethan*

Ethan explains that the industry he operates in is so small that the waste companies within it function more as partners rather than competitors.

*You know, it's quite a small niche industry. So everybody works together. So it's not something that like if I take a client from them, they won't... yeah. That's quite a big industry. there'll always be waste. There'll always be people getting sick. -Ethan*

#### 4.1.3 JOVAN: PHOTOGRAPHY AND VIDEO PRODUCTION

Jovan is the co-founder of the production company named Tower. The company specializes in working with local brands, events, and online entertainment. They produce content primarily for medium-sized businesses and have also collaborated with notable clients like Spotify, Bacardi, and Puma for event-specific campaigns rather than large-scale media campaigns.

Tower focuses on capturing and creating high-quality content that is aimed to be universally appealing, not just locally in South Africa. Their vision includes addressing what they perceive as a quality gap in African-produced content, aiming to produce work that stands on par with international standards and can be enjoyed universally, not just within Africa.

*The content that's being produced here, the way they market is that it's like great African content. And I can see that you mean well with that. But what's implicit is that it's good for Africans and only for Africans. And that's what we need to break out of. Create content that's great, universally great. So that's what we want to do. It's going to take a very long time, 10, 15, 20 years. I don't really care how long it takes, but that's what we want to do. -Jovan*

In the beginning they were bootstrapping their resources, and his strategy was to offer free photography sessions, using the material to promote his work through social channels of local influencers and other celebrities. They used social media platforms such as Instagram and Facebook, along with classmates and connections, to marketize themselves and build traction. Eventually, some influencers gave them a chance to do a free shoot, which contributed to others reaching out to Jovan and his business partners.

*They were giving him a chance, just testing out. So, he had enough skill, you know, to do something because he's very talented. And then I had my experience in sales. - Jovan*

Regarding the financial, Jovan and his team started with a camera and a light and rented additional equipment when it was needed. He explains they rent about 40% of the equipment needed. Jovan is using a contractual model for his staff, where they are being paid on a per-project basis rather than receiving a fixed salary. This payment structure rewards employees



for the tasks they complete ensuring that payment cost towards staff align closely with income from projects, minimizing financial risk.

The team struggles with loadshedding that disrupts the operation of their electrically powered equipment. Studios used for shooting photos and videos must be booked two weeks in advance, while the loadshedding schedules are typically announced one week ahead and can change on the day itself. He recalls an incident during a photoshoot where they had booked a studio for two hours, but load shedding stole 30 minutes of the time in the studio. The incident forced the team to be creative and use the time to shoot photos without plugged in - resources.

*So in those 30 minutes, we used that time to capture photos so that the client and his guest don't feel anxious or whatever. You have to make them comfortable. You have to keep them cool headed. Don't stress. Relax. -Jovan*

#### 4.1.4 TORIN: WEB APP FOR TRANSPORTATION SERVICES

Torin shares cultural experiences from his childhood where his mother negotiated over tomatoes, a practice he later incorporated into his own business model. His mom was flexible on the price of the tomatoes if the customer didn't have enough money. So, they bargained and came to an agreement where both were happy with the price and amount. In his startup, customers and suppliers can negotiate prices for deliveries, mirroring his mother's negotiation. He saw the existing offers on delivery (which did not operate in the rural areas of South Africa) and saw the opportunity of integrating more cultural aspect into a solution to make it more suitable for South African context, specifically in the rural areas and townships. His business model allows the service to be cheaper than other potential substitutes, since the customer and the driver are agreeing on the price.

*One of the features that I spoke about, which is allowing for customers to negotiate for a price, is that the customer themselves, you know, in South Africa we have this culture of having to speak with one another and come to a point where we agree on the prices. And I spoke earlier on about the entrepreneurial journey and spirit that comes from my mother and my grandmother. -Torin*

He addresses that his children and grandchildren are the primary investors in his company. He explains that the monthly state payments he receives for his children are used to cover company expenses, attempting to maximize value of the minimal amount he and his family receive. Torin notes that his family has invested more in the company than any external investor, highlighting the integral role his family plays in supporting his entrepreneurial career. Despite the fact that using these funds for business development means less money for family necessities such as food, he views this reallocation as essential. The funds are invested in critical business activities, such as attending networking events or workshops, where he can acquire resources and assistance in writing grant applications or meet potential business partners or investors.

*So I have three kids. If it is 500 per child, so that means you have 1500. And it's myself, my three kids and my wife. And we need to survive out of 1500. It's impossible. And I take a bit of that and then invest into a business. -Torin*

#### 4.1.5 ARLO: WEB, MOBILE APP AND MARKETING DEVELOPMENT

Arlo is the CEO and co-founder of a tech company that specializes in web development, mobile app development, and social media marketing. The business primarily offers these technological and marketing services on a retainer basis for its clients, assisting them in establishing an online presence, designing user-friendly websites, and developing mobile apps with effective UX/UI design. They aim to solve client problems and enhance their digital interfaces, which, in turn, can help the clients reach a broader audience and improve their market engagement. When Arlo and his team first started out, their first launch failed. The failure gave Arlo what he called “*the best lesson*”.

As the team launched their new product, their strategy was to bootstrap and find ways to pay the bills as they came due. Him and his team used their technical skills to establish the business and to earn income so that they could pay for the start-up costs. They had some knowledge and experience in the tech field, but their biggest issue starting their business was limited funding and financial capital to grow.

*Because we're not funded, because we're bootstrapping the whole thing, we decided that by utilizing our skills to service people, we're able to both learn and actually get the product. -Arlo*

Arlo emphasizes how they were bootstrapping in the beginning of their business, relying on income as the costs appeared. Revenue from customer payments or projects they undertook covered their expenses. Over time, as they received income on their business, they were able to reinvest in the business, allowing them to serve more customers and increase earnings.

*We knew that we needed to raise money, but we didn't know specifically how much. So we were like, okay, let's just do, let's just work on the next step. And then when the cost comes, the cost getting cut and all that stuff, we'll work around it and we'll find a way forward. And that's what we've been kind of moving on with. -Arlo*

Arlo explain how he once had to push back a release date of a project, because of high expenses of expanding their platform. Rather than paying the price of the expansion, the team chose to rather focus on earning enough money to expand and focus on their existing clientele.

*I remember we actually had to push back our release date actually because we had like, there was like some service that we couldn't make, some services that we couldn't afford for the amount of users that we wanted to have on board. -Arlo*

#### 4.1.6 NOLAN: EL-CARGO BIKE

Nolan holds a master's degree in industrial engineering and boasts 19 years of experience as a senior development financier. He also possesses expertise in welding and showcased several bicycles that he had personally built and designed during our visit to the factory. He enjoys discovering new solutions and thinking innovatively, which led him to developing Stroom, an electrical cargo bike targeting small businesses in townships and rural areas, making it easier for the business owner to deliver their goods. Nolan found his co-workers and team through personal connections and by recognizing the potential in individuals who fit in his business.

To offer a cheaper and better substitute than the competitors, Nolan explains that he utilizes local materials to reduce production and transportation costs to build the electrical cargo bikes. He actively searches for less expensive materials that can perform the same function from local producers. He also explains they receive the materials directly from the mill. He extensively uses the internet to acquire knowledge on how to optimize and source more affordable materials of the necessary quality from local suppliers. This strategic approach not only lowers production costs but also supports local businesses and reduce transportation costs and time.

*Ok, I can do injection moulding but it will cost me 20,000 euros for the mould.. cancel it. I don't have 20,000 euros so you don't even think about it. Ok, what's the next material. So you continue and then you get to the point, you go like, yes this is interesting material but how am I going to work it. -Nolan*

Nolan elaborates that he negotiates the price of materials by weight, enabling him to pay precisely for what is required per product. He calculates the amount of material needed to avoid material waste in the production, thereby also minimizing manufacturing costs. Furthermore, he expresses a comprehensive understanding of material pricing, which allows him to negotiate effectively and avoid paying for overpriced goods. If a producer is claiming too high price, he moves on to the next offer.

Nolan employs leasing as a strategic approach to optimize long-term profitability and accessibility of their electric cargo bikes, rather than focusing solely on sales. By offering bikes on a lease basis, he transform a potential one-time sale into a continuous revenue stream, spreading the income over the lifespan of each bike, he explains. This model not only ensures a steady flow of revenue but also enhances the lifetime value of each bike, shifting the business focus from immediate gains to sustainable, long-term profitability. His strategy allows him to maintain a strong relationship with the clients through ongoing service and support, aligning with his business model of sustainable growth and customer engagement.

*Say for instance, I make the bike for a thousand euros and I sell for two thousand euros, I have a thousand euros as profit. Now I can say, okay, I am gonna not sell the bike for a thousand euros. I know it is worth two thousand. I'm gonna rent it out for a hundred euros a month, because I know if I maintain it over a period of time, I can*

*actually extend the life of my bike over a seven-year period. Now seven years at a thousand euros a year, gives me seven thousand euros. So rather than taking a thousand profit, I extend it by a year, but every year I take a thousand. -Nolan*

#### 4.1.7 DAMON: AQUAPONICS IN EDUCATION

Damon's business utilizes aquaponic farming as an educational tool for schools, aiming to integrate practical, sustainable agriculture into the curriculum. His journey into this business stems from his background in civil engineering and his early entrepreneurial venture in breeding aquarium fish. Observing the substandard living conditions in government-provided housing and recognizing the potential of aquaponics to address food security and waste management holistically, Damon was inspired to develop solutions that could have a broader social impact. His enterprise now focuses on educating students and communities about sustainable practices while fostering entrepreneurship and job creation, targeting social issues like youth unemployment and crime in low-income areas.

*But also in this time, we're looking at the food security aspect, I came across aquaponics farming and I was like, this is really cool because it involves fish, farming fish and your vegetable produce at the same time. This is really cool, this is something that I would like to do. -Damon*

Damon's approach to implement his business into the curriculum, involves a hands-on, experiential learning model that aims to deeply engage teachers to take ownership of the idea. His implementation of the aquaponics at school starts with practical workshops where teachers physically interact with the aquaponic systems, setting them up and performing routine maintenance like water quality tests and observing plant and fish health. This initial hands-on experience is crucial for teachers to understand the concept of aquaponics and its application in an educational setting. Damon explains he only accepts teaching those who really are interested in learning. Following the practical introduction, Damon incorporates a theoretical component, providing educators with guidebooks that cover the basics of aquaponics farming.

*Because it's about taking ownership. Only once there's a sense of ownership that this is mine, then there will be the effect of buying. And the product will be sustainable. So we try to create a culture, a new culture at the school. -Damon*

He utilizes readily available and recyclable materials, such as 20-liter water bottles, to construct his aquaponics systems. He got sponsors, sponsoring him some equipment and money. Due to the extensive infrastructure required for larger systems of aquaponics, he has developed a compact aquaponics model crafted from water bottles, cable ties, and tie straps, which are small enough to fit on a desk or in a classroom.

*I asked the company to sponsor some damaged, broken ones. So, they either had a hole in the bottom or a hole in the top. And I cut the bottom off, which I could use. And then, another one, I cut more of the top off and I use that for the fish tank. Because it's food grade, so it should be safe for the fish. -Damon*

Damon's plan of changing the curriculum includes government involvement primarily through the Department of Education and the Department of Agriculture, which provide infrastructural support for his aquaponic projects in schools. Although these government bodies are on board with his initiatives, the support mainly covers the infrastructure needed to set up the aquaponic systems, rather than funding the operational aspects of the programs.

*I mean I've been to the Department of Education, the Department of Agriculture, they all come on board, but they would give me infrastructure. And only get it a certain amount. So that's the type of stuff that they would provide. So I'm looking for corporate sponsorship because I've got a lot of development still to do. -Damon*

To fund his ongoing work and be able to do his research in aquaponics, Damon relies on financial support from philanthropic investors. This income covers his salary and enables him to focus on refining his aquaponics models and educational programs without the immediate pressure of commercial profitability. Damon explained that he rather wants to work with someone with the same intentions and goals, than receiving funds from investors with conflicting values.

*I'm also very happy to turn down that investment opportunity, if you're not aligned with my vision and my purpose. For me, it's also about having the right people on*

*board. I don't just want anybody. I want the right people who are willing to walk this long road with me. -Damon*

#### 4.1.8 SOREN: COMPUTER REPAIR AND IT SERVICES

From an early age, Soren began experimenting by dismantling electronics to reassemble them and see what they looked like inside. He pursued studies in computer programming, he received his first laptop from his father. It was when he accidentally broke the screen that the idea of starting his own business emerged. He discovered that the repair services available were too expensive, so he decided to fix it himself. After successfully replacing the screen, fellow students began bringing their broken laptops to him for help, marking the start of Soren's entrepreneurial career and his enterprise within screen repairing and IT services.

*They told me that it's around 2.3 thousand (rand), which is really too much for someone who is just a student. So, I then realized that, let me do some research and check around if I can actually get places where they're selling laptop parts and I can try and do it myself. So, I checked around for places that were selling screens and had a very cheap price. Like, they were going for 700, 800(rand). -Soren*

Soren used local companies to enhance his growing repair service by approaching established local repair shops and experienced technicians to ask for help. He openly shared his journey as a student and an emerging entrepreneur, explaining his mission to provide affordable repair services to fellow students. The local partners not only assisted Soren with complex repairs that were beyond his initial capabilities but also provided valuable technical advice. In return, Soren brought them consistent business flow from the university community, creating a mutually beneficial arrangement. This collaboration was important in expanding his service offerings and enhancing his technical skills.

*But I just looked around to find people who can assist with the problems that I couldn't fix. And I actually told them that I'm a student, I'm a technician, I'll be bringing back some customers and stuff. So, those people actually helped out in terms of fixing those. -Soren*

By sourcing affordable parts directly, Soren was able to offer repair services at lower costs than competitors. He solved many fellow students' problems with broken screens, and his primary market of financially constrained students grew. By researching and finding suppliers who sold laptop screens and other parts at reduced prices, he was able to provide repairs at a fraction of the cost quoted by established repair shops. He aims towards being differentiating in the future from his competitors by offer pickup and delivery service at the customers home, or getting the screen fixed at home.

*Something we're looking into is expanding across the country and actually expanding to the different universities around the country. And actually to help fight the unemployment that's currently happening, we'd like to onboard student technicians into our company so that they can be able to assist other students at their universities and they too can gain the skill and gain the experience that we will be offering to them. -Soren*

Soren utilizes tech students as essential workforce within his company by upskilling them, addressing the dual needs for affordable tech repairs and practical experience within his target market. He includes students from local universities and involve them in the repair process, training them to handle various technical issues independently. Soren have been planning to expand his business, which focus on delivering his services all over the country. This idea includes offering tech students relevant work experience, fixing screens in their local community for cheaper cost than the competitors.

#### 4.1.9 LANDO: HEALTHCARE SOLUTIONS AND SUPPORT TOOLS

Lando, a medical doctor turned entrepreneur, manages three distinct ventures, each addressing unique challenges within the healthcare sector. His work experience as a doctor in under-resourced public health system exposed him to the inequality of the country, motivating him to make a change. He taught himself to program and began developing mobile applications to offer cheaper and more accessible products and services to the low-income market he was operating in, leading him into his entrepreneurial path.



*So South Africa forces you to become frugal, even though, you know what's happening in the rest of the world. You have these amazing things like drones delivering blood in Uganda. All these cool things happening out there, but you have to always come back home to think, OK, how are we going to do something? So that's how that started. - Lando*

His first company focuses on developing low-cost, accessible medical technologies specifically designed to meet the needs of underserved populations in South Africa. Lando is focusing on developing affordable solutions such as specialized wheelchair attachments and a smartphone-based hearing aid application. These innovations not only significantly reduce costs but also improve accessibility to essential medical devices for those in resource-limited settings. By leveraging simple, effective technology, his business addresses critical healthcare gaps, making a substantial impact on the quality of life for individuals who might otherwise be left without necessary medical support. Lando self-financed the initial development through his savings, leveraging his background in medicine and self-taught coding skills to create valuable tools without the need for extensive external funding.

*One is a wheelchair modification that cuts the cost of specialised wheelchairs by 45%. And then we also developed hearing aid technology that cuts the cost from the cheapest hearing aid on the market with 36% of the cost of the hearing aid. -Lando*

In physical products, such as wheelchairs, he looks for cost-effective local materials and collaborates with local suppliers to find low-cost alternatives that fit his design requirements. Lando describes a strategy where he examines competing products to identify those that have not been patented. This approach enables him to copy the product using more cost-effective materials to recreate the competitor's product but with lower production costs.

*So you look at, first of all, you look at what hasn't been patented yet. Because with the wheelchair, the company that makes a lot of money at the moment from the specialized wheelchair, they have a patent on it. But I mean, there are other mechanisms that haven't been patented yet that work just as well if you build it, print it out and test it. And we look at what cheap materials can we use, but with different ways of putting it together, different designs that haven't been patented yet. So we don't need to license a patent to distribute it. -Lando*

Lando's second venture is a non-profit organization aimed at addressing the staffing shortages in South Africa's hospitals. This entity works under a novel business model where it employs unemployed doctors to work in underfunded hospitals. This initiative is funded primarily through corporate donations and tax rebates. Companies are incentivized to contribute as part of their corporate social responsibility programs, benefiting from tax breaks and fulfilling their mandates for social investment. This non-profit not only helps to alleviate the staffing crisis in public healthcare but also provides employment opportunities for skilled professionals who are unable to find work.

*I don't know if you guys know this, is the understaffing of our hospitals and the unemployed doctors. So about 600 to 800 doctors are unemployed at the moment. People that studied with me, they messaged me twice a day when I said I need work. And at the same time, we've got underfunded hospitals. -Lando*

Lastly, Lando is involved in a consulting firm that specializes in medical technology. This business provides strategic advice and consulting services to other companies in the biomed industry, allowing Lando to reinvest into his other companies. Unlike his other ventures, this firm operates on a traditional profit-based model, charging clients for consulting services.

#### 4.1.10 KYRAN: EDTECH TO ENHANCE LEARNING

Kyran's business is motivated by a passion for solving a problem he observed during his younger years in school. Despite having access to laboratories and resources, he noticed that practical experiments were seldom conducted, particularly in schools within townships and rural areas. Kyran and his team build an educational platform, designed to enhance the learning experience for students, especially in subjects like mathematics and science. The platform leverages gamification and interactive content to make learning more engaging and relevant. It integrates various elements such as animations, sounds, and real-life applications of theoretical concepts to help students understand the practical importance of their studies. The platform is used by parents, students in grade nine to twelve and teachers. Scala aims to

bridge the gap in educational quality and resources, particularly targeting students in townships and rural areas across Africa.

*So what we thought we could do or what we did rather is we have now created parents access, login access to the platform itself. So that they can also see the participation of their kids. Does my kids really understand what math is? The teacher connection is just understanding the same thing, right? If the learner is struggling with solve for X, in exam time, solve for X is literally nine minutes. So if a student or a learner would spend 15 minutes or solve for X, that's a red flag of maybe I'm not understanding the question. -Kyran*

The platform also includes safety features to monitor communications between students and teachers, ensuring a secure and supportive learning environment. He addresses a common problem in South Africa of teen pregnancy, and inappropriate relationships between the teacher and the learner.

*And also, it was a bigger problem because of teenage pregnancy that we see in schools, you know, that the teachers have a relationship with learners, which is one of the biggest concerns for parents, right? So what we did, we, it's an algorithm that is able to detect certain words that are being used in a conversation between the teacher and the learner itself, right? Words like sex, meet up, and other words, it's a long list. -Kyran*

Affordability is a concern for the platform. He therefore offers flexible payment options, splitting the bill in installments. He wants his customers to be able to afford his products without taking a loan or breaking the bank. The flexible payment solutions are made to allow customers to choose the option that best suits their needs so that more people can afford education for their children.

*Because what COVID-19 did, people are unemployed, their salary decreased, so their spending is a barrier. -Kyran*

Kyran engages with the South African Education Department and other regulatory bodies to ensure compliance with national educational standards and safety regulations, trying to make

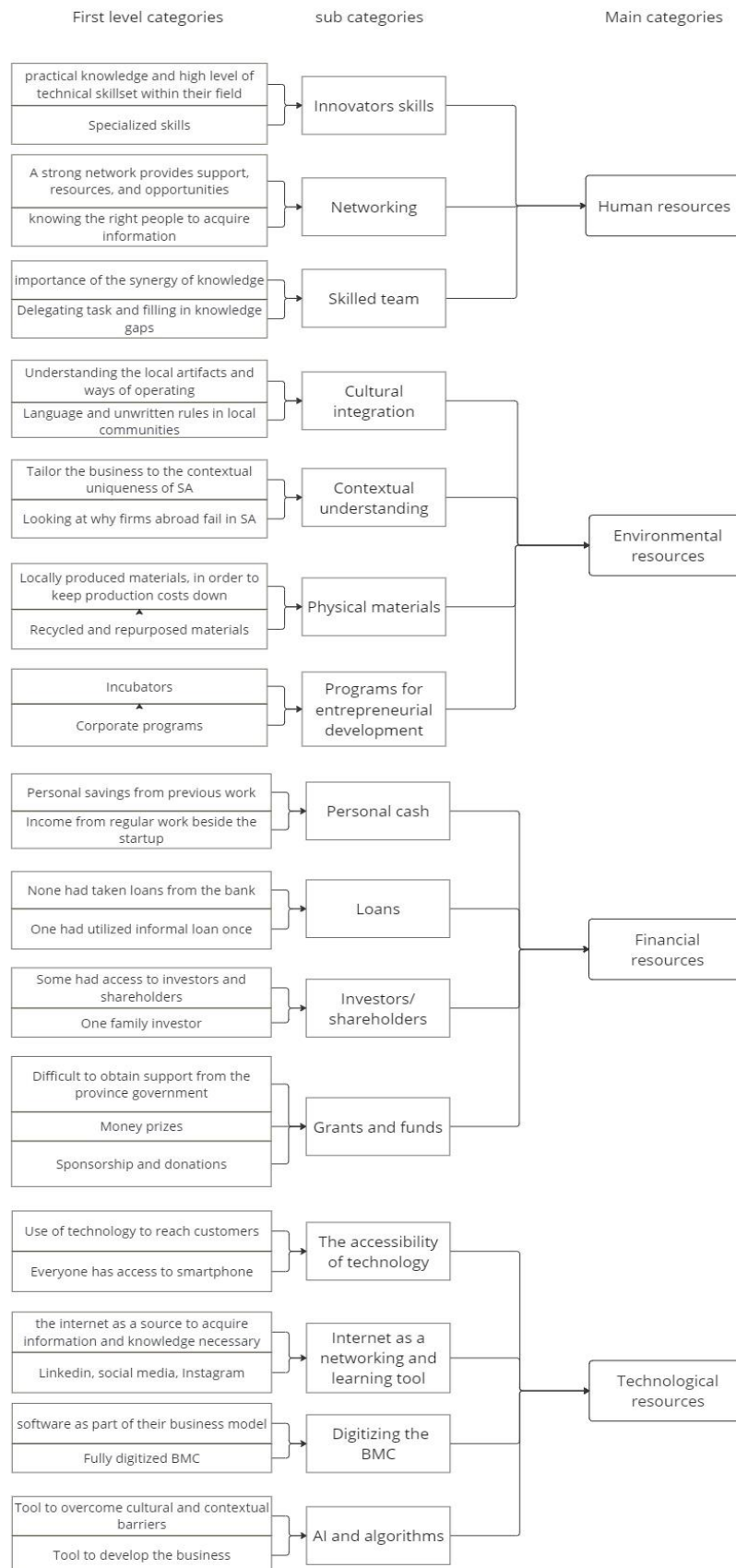
changes. Although he faces challenges in securing government endorsement and integration into the established educational system, which is often resistant to change, government support is crucial for broader acceptance and implementation of his educational platform, Scala, in public schools. By demonstrating the effectiveness and safety of Scala, Kyran aims to influence educational policies and encourage the adoption of modern, tech-driven teaching tools within the national curriculum, navigating through governmental and regulatory landscapes to transform educational practices. He emphasizes the barriers of an over fifty-year-old system.

*I think the barrier for the platform is what I would like to talk about because we have an educational system that is almost 50 years old or even more than that, I'm not sure. That is not willing to change, that is not willing to take on innovation. -Kyran*

## 4.2 THE MOST ESSENTIAL RESOURCES OF FE

In this chapter, we present resources leveraged by frugal entrepreneurs in South Africa. We have created an overview of the most frequently mentioned resources and those that stand out as unique in their context. We have also included individual cases due to the broad range of industries represented. Hossain (2022) categorized his findings into three groups: human, social, and financial, but emphasized the need for future studies to explore new categories. With this in mind, we decided to split our findings into four new categories based on our data: human, cultural, financial, and technological resources. Each section provides an in-depth look at how entrepreneurs utilize these resources to overcome challenges and seize opportunities within their unique contexts.

In the figures 5, we present the different categories of resources we have mapped out in our findings. However, we will discuss the importance of them in the discussion and whether if the resource is essential in the next chapter.



**FIGURE 5: OVERVIEW OVER THE CATEGORIES OF RESOURCES**

#### 4.2.1 HUMAN RESOURCES

In this section, we collected insights on the human resources utilized by frugal entrepreneurs, focusing on the skills, networks, and teams that drive their businesses. Our data indicated that all our informants possess practical knowledge and a high level of technical expertise within their respective fields, from IT and software development to niche areas like aquaponics and medical services. Additionally, the importance of networking and how strong connections support their entrepreneurial endeavors are of importance in our data. We also highlight the role of specialized skills, educational backgrounds, and the critical value of having a skilled team to share the workload and expand their business capabilities.

##### **Innovators skills**

Our data indicated that all our informants have some sort of practical knowledge and high level of technical skillset within their field. Important skills that were frequently mentioned by our informants was the practical knowledge. All the entrepreneurs we talked with, had a high level of specific skills and expertise in their field ranging from technical knowledge in IT and software development to specialized knowledge in niche fields like aquaponics and medical services.

Specialized skills, like how to make the materials cheaper and the quality remains the same, is type of skills we found at entrepreneurs with educational background and long work experience. Several informants opt for more affordable, locally sourced materials to reduce production costs. Nolan emphasizes the importance of utilizing local materials from South Africa. He swapped some expensive and less accessible materials with similar, more easily accessible materials for the production, such as using 6063 T6 aluminium instead of the less accessible 6061 T6 aluminium. The informant also pays the price in weight of the materials, which allows minimal material waste. He spends a lot of time researching pricing of materials.

*So, our bike, the cost of our bike is equivalent to the weight of the material plus wastage. So that's how we, we price our bikes, is we don't go for all fancy. We're saying we want to buy aluminium. What's the going right commodity price for aluminium? And that is what we buy. And so suddenly a tube that would have cost us 80 euros, costs us 12 euros. -Nolan*

The data indicate that formal education plays a crucial role in enhancing the skills of our informants, forming the foundation for their business innovations. Most of our informants had educational background from university which also provided them with the needed knowledge within their field, or access to the skillset they needed. Some informants also possessed educational backgrounds that were completely unrelated to their business ventures.

*I'm so grateful that I started working in sales. Because obviously, when you're operating a business, especially at a young age, you need to be able to persuade people. You need to be able to talk to people. So you're dealing with people. And that's what sales forces you to do. And then it also helps you to accept rejection and not take it personally. Because as a sales rep, you try and sell. -Jovan*

Some of the participants were self-taught within their field of innovation. Several had started working within the industry of their studies, and then after gaining some work experience, they decided to start their own business. Torin highlighted his work experience and the importance of networking and attending local events in order to gain new knowledge. The ones who did not attend university, explained they are self-taught through their experiences and through their fellow entrepreneurs through networking.

## **Networks**

Our findings emphasize networking as an important tool. A strong network provides support, resources, and opportunities, several explains. From our interviews, it's clear that networking serves as more than just a mean to build contacts, it facilitates connections with potential customers and investors, helping to secure funding and partnership. Soren explain how networking was something he didn't knew about before the entrepreneurial program he joined, and how it has been important for acquiring knowledge and understanding how to transform an idea into reality. Marlon talks about how networking has allowed him to interact with people he describes as smarter than him, and how he can learn from them.

*So I get a part of my knowledge from there of meeting individuals and engaging with individuals that are much more smarter than me and are much more wise than me and*

*much more experienced than me because I feel like if I do that and open up that bridge I'm able to learn a lot, which I have done for myself -Marlon*

Findings show that many of them use existing networks, known for a long time before starting their business. Damon have been involved in fish rearing since childhood, resulting in a network of long-known relationships with suppliers and partners who are now integral to his aquaponic projects. For instance, he mentions collaborating with a supplier who has known him since he was twelve. Additionally, Damon taps into academic networks, such as his connections at Stellenbosch University, to enhance the educational components of his programs.

*For example, my supplier who supplies me with fish, he's known me since I was 12. - Damon*

Lando highlight the importance of knowing the right people to acquire information rather than spending time and financial resources on further education. This way, he can rather invest money and time into his business.

*The question is, do I go do an MBA for a few thousand euros? Or do I, you know, surround myself with people who have that knowledge, who have done that training and use them as a resource to also. -Lando*

### **Skilled team**

Our findings show that almost all of our informants are operating in team, except one. The nine entrepreneurs operating in team are all emphasizing the importance of their team and their knowledge. Several explains that their team members often possess expertise themselves don't have. One of our tech entrepreneurs, Kyran, emphasizes the importance of having a team with diverse skills necessary for the development of the business. Although he lacks a technical background, his partners bring in expertise in information systems and technical development, crucial for building and maintaining their digital educational platform.



*I think that's the beauty of building a team and having a team of different skills, knowledge, you know, than you have, because the, our CEO, Tzipi Somalema is knowledgeable and experienced when it comes to information systems, right, which is what he studied. And our lead engineer, our CTO, Litavo, our names are almost similar. So he is the technical guy. -Kyran*

Most of the entrepreneurs we interviewed had met their team through university or networking events. However, some also met their business team through connections and through family or friends, and direct approach to ask for jobs. Social media, such as LinkedIn, are also mentioned several times as a resource to find candidates.

Our findings indicate the value of having a team to share the workflow with, so the entrepreneur could focus on tasks related to managerial responsibility. Some hired staff to learn away their work, so they save time on the process of developing their business further with outsourcing the basic tasks to their coworkers. One of our informants had hired several students to do the tasks, which was to repair computers, so he could focus on developing an app to expand his business to other areas.

*And it's quite difficult when it's you on your own. And, I mean, even getting somebody on board, a volunteer on board, is going to require time from me to upscale that person and to get that person on board. I can't even afford that right now, you know. Because there's projects that also require a lot of attention. -Damon*

Although almost all informants worked in teams, one worked solo. The findings we analyse regarding the solo entrepreneur, emphasizes the findings regarding time. Damon operates primarily on his own, which significantly constrains his time and resources. This solo operation involves managing multiple facets of his business, from on-ground implementations and workshops to handling administrative tasks and seeking funding. The intense workload results in long hours, often extending into late nights, to meet various project deadlines and commitments, he explains. This high-pressure environment, compounded by his responsibilities as an expectant father of twins, highlights the acute need for additional support and the challenges of balancing a demanding social enterprise with personal life. His

situation underscores the critical need for a scalable team to sustain and expand his impact, reflecting the broader challenges faced by solo entrepreneurs in the social impact sector.

#### 4.2.2 ENVIRONMENTAL RESOURCES

In this section we collected insights that support environmental resources that frugal entrepreneurs leverage, including cultural integration, contextual understanding, and the use of physical materials. Our findings highlight how entrepreneurs identify local problems and turn them into business opportunities, often hiring local workforce to gain access to communities and ensure cultural alignment. Findings also show how entrepreneurs adapt their products and services to fit the South African context, utilizing local materials and understanding environmental conditions to enhance their business success.

##### **Cultural integration**

Several of our informants identified a problem in their local community and then developed a solution, turning gaps in the local community into a business opportunity. Marlon, recognized a market gap where the informal economy in his township excluded many businesses and customers who preferred cash transactions. Marlon used his understanding of the informal township markets and the specific challenges they face, such as limited banking services and logistical issues, to develop his services.

A recurring theme is that the informants themselves have personally experienced problems and sought to address them to create better offerings, which is how their business were established. Other approaches that we see recurring are that the entrepreneur sees how a problem affects the local community they live in, and they see the opportunity to create a solution and generate revenue from this. This insight has been crucial for understanding and identifying the market gap, so that the solution could be tailored specifically for this local community or this group of customers.

Several of our informants hired local workforce from townships to localize their supply chain and to gain access to communities with cultural barriers. For instance, unemployed township residents with access to vehicles, has been used as an opportunity to both employ these

individuals and integrate a cost-effective workforce into their supply chain. For example, Ethan employs local drivers from the townships he operates in, who have access to a vehicle, to transport medical waste within 5 km radius. This arrangement prevents him or other team members from having to travel long distances, and access to local information. He also tells us that there are unwritten cultural laws in townships, where there is a mutual protection of each other's property and sources of income from criminal activity. In other words, locals are less likely to harm each other's property or livelihood if they know it belongs to someone from their community. By hiring locals, entrepreneurs can enhance the security of the operation in other local communities than their own.

*So now one of the reasons also was that when you employ people that live there, then they will try and protect the stuff there. No one will just come and break this because now we live here. This is our doctor that live here. This is not someone that comes in and takes stuff from us, but this is the guy who feeds our family. This is the guys that feeds the people, hence drug dealers and so forth. These people, they come buy food for the community. If you come and say that guy is a drug dealer, they'll say you're lying. The community will gang up on you because this guy feeds them. -Ethan*

Language is a resource that several of our informant's mention. The diversity of languages in South Africa serves both as a barrier and an opportunity for those able to find the solution. Marlon saw the language barrier as an opportunity to integrate AI into his business to address and solve the problem. Kyran elaborates that including more languages into their platform, allows them to reach new communities and new markets, as languages varies broadly from province to province.

*Me trusting you, because let's say if I came and I spoke the language that you guys speak, it would have been much more easy to understand and become related to me. So that was the thing that why we utilized the youth within the community was the language. Because really there was a language barrier, so when they met one of the store owners, they could communicate in Xhosa, which is a native language. Yeah, they could communicate in Zulu, which is a native language. -Marlon*

employing locals in townships who speak various languages, can enable them to reach markets that would otherwise be inaccessible due to language barriers. This allows them to access markets that competitors may overlook due to a lack of inclusion of rural language.

### **Contextual understanding**

Several of our informants have based their businesses on contextual accommodations, where competitors or previous businesses did not take the South African context into consideration. Nolan looked into competing companies and discovered that the design was not suitable for South African context, resulting in failed entry of market. He drew inspiration from competitors but tailored his products to suit the South African environment. For instance, the batteries in the electric bikes were integrated in a way that made them theft-proof.

*I looked at the models being used and it was all overseas models and overseas companies designing for South African context, you know. But that doesn't work because we are from different poles, you know. We have different climates, we have different seasons so what works there doesn't work here. - Damon*

Damon shares that aquaponics was an unpopular industry in South Africa when he started his business in this field. He realized that the companies that had previously engaged in aquaponics in South Africa failed because they were foreign businesses using the same models as in their home countries. These models did not take into account the local climate, seasons, and biodiversity of South Africa. This led to failure and bad reputation as money was consistently lost. He saw an opportunity to adapt to the South African contexts, such as climate, seasons, and biodiversity, which has allowed him to succeed in his ventures.

*And then for me with the rapid growth of technology, I see it that if technology can be outbought in the North and it works that side it can also be essentially adopted and redesigned within the context that we're in essentially in Africa. -Damon*

## **Physical materials**

Throughout the interviews, the topic of accessing cheap and good enough materials emerges in all our cases where physical materials are being used. We emphasize that most of our informants have a company in tech and IT, where there is less need for such resources. However, those informants who do have physical products have emphasized the use of more affordable materials in the form of recycled materials repurposed for new uses or local materials that do not have to travel far.

We observe that Nolan saves a significant amount of money on local materials by negotiating prices based on weight. He also mentions that he sourced materials locally to keep production costs down, using what was readily available in South Africa, and based the materials he chose on what was needed to fit the context, like temperature and climate.

Some of our informants utilized recycled materials and materials donated by sponsors. Damon employed used water drums as part of the aquarium for the fish, instead of more expensive and fragile glass aquariums. This enabled him to produce more aquaponic systems at a lower cost, which were also more robust. This not only reduced the production expenses but also increased the durability and sustainability of the systems, aligning with environmental conservation principles.

*So, I've developed a mini aquaponics system that stands on the tiles. I've got videos about it. And, yeah, that I've bought all the materials and tried to use what is readily available. I use recyclable materials when I can. So, those, you know, the water dispensers, those bottles with 20 liters, I use that. I've made a very cool system. -  
Damon*

## **Programs for entrepreneurial development**

The findings show that several of our informants was included in programs such as incubators. Several of our informants reported that they were happy with the help they had received through the incubator, which several got the opportunity to join through university. The findings show different motivations and expectations of joining the incubator.

Torin highlights one of the main motives he had towards the incubator programs, which are providing him with interns that are paid by the incubators itself. Being part of the program, the first motive was to find out how to utilize the interns and grow the business.

*In fact, what was the motive around that was that one of the incubation programs, one of the support that they are providing us is interns. So they can give us interns that we can utilize in the business. And then the interns are then being paid by the incubation itself. -Torin*

Kyran are a part of several incubators where big companies within tech are partners, which he explains as amazing opportunities for learning. Through participation in various incubation programs, Kyran and his team gained access to technical expertise, business mentorship, and financial advice which helped them navigate the early stages of their startup. These incubators facilitated connections with potential investors, other tech entrepreneurs, and partners, expanding their network and enhancing their visibility within the tech community.

*So the incubation I would mention with this one for APSA, it's called Knowledge Unleashed. And so the program is really amazing. You know, Microsoft is also part of it. AWS. So these are the guys that really, you know, we look into them and say, if we can be part of this incubation, then, you know, there's a skill transfer. -Kyran*

However, the feedback regarding incubators was varying regarding how satisfied each entrepreneur was. Some are expressing their dissatisfaction over the expectations of the incubator. Jovan talked about how the incubator didn't do what he refers to as their part, such as finding him a mentor.

*So we have the incubator and we're at the, honestly, the incubator just didn't do the work that they didn't do their part. -Jovan*

Some of the informants highlight the challenge that joining incubators involves costs. The two informants who mention this are not students. While Lando emphasizes the priority of the amount of the incubator, which he would rather invest into his business, Torin emphasize that it is almost impossible for an entrepreneur without financial capital to join an incubator. He explains that it is impossible to have a family to take care of, and at the same time save enough money to join the incubator.

*When I started my business, one of the challenges I had was capital. And I want to emphasize capital because there is no movement without capital. Even the skills themselves that are being provided to us as entrepreneurs or as incubators, they are being provided to us by an institution or incubators generating or procuring funding. - Skibela*

Torin further highlights another frustration, which is the access of the incubators resources, which are meant to help the entrepreneur out. He expresses frustration over the accessibility of necessary resources that the incubator offers, which are geographically far from entrepreneurs living in rural areas. He explains he can't afford to travel that far, and it takes too much time for him.

*Now as an institution that is providing these entrepreneurs with these resources that are only available at the premises, you require these entrepreneurs to come to those places, travel to those areas, but they do not have money. -Torin*

Several of our informants talks about entrepreneurial programs other than incubators, such from private institutions and bigger corporate companies. These programs are allowing them to network, talk to investors, get mentors and access to pitching decks. Soren explained that he got access to competitions through social media. He explained that MTN (a multinational corporation and mobile telecommunications provider) were looking for South Africa's most promising entrepreneur, and he applied to their pitching competition. He was selected as one of South Africa's top 50 most promising entrepreneur in 2022, which allowed him into an entrepreneurial program, which turned out to be one of many programs. Soren further explains that the program he was a part of, gave him some insight which he never knew he had to consider as an entrepreneur before the mentors in the program taught him so, such as the concept of networking. Several also mentions networking event as a platform for meeting others. These are typically organized by incubators or corporate institutions.

*I prepared like a presentation and stuff. I actually pitched to Action Coach SA, I think the companies that were involved were Action Coach, EBL, it's an institute for business, EBL Institute and MTN South Africa. -Soren*

#### 4.2.3 FINANCIAL RESOURCES

Here, we emphasize the financial resources and strategies employed by our candidates. The findings reveals that personal cash and bootstrapping are predominant methods for financing their ventures. We also explore the challenges associated with obtaining loans, the role of investors and shareholders, and the use of grants and funds. Despite the difficulties in securing external funding, our informants demonstrate resilience and creativity in managing their financial resources, often relying on personal savings and informal support networks to sustain their businesses.

##### **Personal cash**

Analysing the financial strategies of our informants, it is evident that personal cash remains the predominant method for financing their entrepreneurial development and startup costs. The data reveal that numerous informants faced significant challenges in funding their product development, often due to the absence of a steady revenue stream.

To reduce financial risks, many maintained regular employment while funnelling earnings into their business, a strategy that, while financially prudent, typically results in a slower growth trajectory for their businesses. This approach allows them to finance their newly established businesses or ideas. Lando explains that he's involved in a consulting firm alongside two other start-ups, enabling him to reinvest his earnings back into the two other companies. This approach ensures a stable income to support personal needs and provides a financial buffer for the business.

Bootstrapping in the sense of using personal savings is a recurring theme. Arlo shares that he and his team undertook projects to cover the company's expenses as they came, before it began generating revenue. Additionally, some informants utilized savings from previous employment to afford them the necessary fundings to develop their businesses, though not all had access to such resources. Kyran emphasized how the personal savings have been the main financial resource. The team have applied for funding without success, but the lack of external financial support hasn't hindered their progress, as Kyran used his personal savings from previous employment to finance their operations.



Several also mentioned that the money was originally intended for other purposes, but they changed their plans when they decided to launch their own businesses. Lando explained that he saved up his money, planning for an early retirement, but then changed his plans as he got into the idea of starting his own business. Ethan explained that he saved up his income in case of emergencies, but quickly that savings went into his new business. He further explains he only used his own savings, which he generated from previous work, on his business.

*So when I was still working as a doctor, I put a lot of money inside. So I was able to save up quite a lot of money for that. But again, the plan was never to, to use it to start a business. The idea was to use that money to retire early. – Lando*

## **Loans**

Our findings show that the entrepreneurs were steering away from informal loans. None of the entrepreneurs had any experience with taking formal loans. Some said they were avoiding institutional credit and would rather ask someone they knew.

*I had to source out sometimes just, hey, man, borrow me 8000 rand, I'll give you next month or that or that. You know, so, but I've run away from institutionalizing credit, getting credit. -Ethan*

Ethan mentions that he sometimes have to borrow informal loans from others because he prefers not to take out bank loans. He explains this by noting that he must pay upfront for containers to dispose of trash, and sometimes he runs out of money. Lando talks about an incident where he witnessed a guy lending money to finance his business but failed to succeed with his business idea, leaving Lando upset over the waste of money. He reflected on the way the guy was using someone else's money;

*And quite frankly, this guy was lending money. He was borrowing money, sorry, he was borrowing money with which he was failing. So what I told him was immediately stop this, stop failing, because it's not your money that you're failing with. You have to pay every cent of this back to your investor. They gave you an interest-free loan, not a grant. Like, stop this. -Lando*

## **Investors/shareholder**

Our findings show some of the entrepreneurs have access to investors. It's only Damon, Kyran and Nolan who have investors from outside. Damon receive support from a philanthropist, which is important for Damon to maintain a flexible business. He explains he prefers not to seek traditional funding because it comes with obligations and criteria that could restrict his business flexibility.

Nolan has a shareholder which allowed him to buy the expensive machines he needed to produce the products in his garage. The machines he showed us on our visit to the garage costs 5000 euros. He explained he met the shareholder through network connections;

*I approached another relatively wealthy individual in town which I was working on another project, and he said he will introduce me... and he introduced me and it was two meetings later. So it takes entrepreneurs to also see entrepreneurs. -Nolan*

Torin considers his family to be the first and most important investors in his business. He and his wife invest parts of the child support they receive from the government into their business. In challenging times, it is his family that motivates him to continue, as he cannot bear the thought of what would happen to his family if he were to give up. It was partly his family and the financial independence which motivated him to begin his entrepreneurial journey.

*No, honestly, I couldn't have done anything by myself. To start a business, you need different types of help. One of the help, in fact, is of my family. My wife is helping me a lot. We, in fact, sometimes take our, our grandkids invest in the business or in the chips that are related to the development of the business. -Torin*

## **Grants and funds**

Our findings indicate that several of our informants have applied for various types of grants and funds, but our data show only a few have received any kind of funds or grants. Due to many informants receiving rejections or not receiving any response at all, we have limited

data on the actual usefulness of these support mechanisms. Many express that it is extremely difficult to obtain support from the province government.

*And to get funding and to be supported is also very difficult wherever you are in South Africa. -Jovan*

Some informants also mention that the requirement for receiving funds and grants are difficult to fit into. Torin mention that to secure fundings, one must meet certain milestones, and it's difficult to receive funding without meeting the criteria. He explains that the new start ups have lower chances of getting financial support, than those who have been in the game for a year or longer. Ethan emphasizes the challenge of the government only focusing on young entrepreneurs, excluding those over the age of 35.

*So, there's funding in South Africa that gives funding to business, to people with businesses under 35. So, they call them youth. So, in South Africa, if you're, I think 18, and under 35, you're youth. Over there, you know, you have to just go source out something somewhere. -Ethan*

Our findings show that some experience a lack of support towards their industry, regarding funds and grants from institutional support. Specifically, those in the tech and IT industry. Kyran emphasizes that he doesn't think the government are ready for the digital solutions, and that the criteria of the fundings they have applied for is not suitable for his innovation. Kyran also emphasizes how the government are sticking with a 50-year-old curriculum, and how difficult it is to change it into something modern.

*I'm not sure, but I would say that the criteria of the funding that we applied for, it's not for EdTech. And I think one of the reasons again is not being ready to the solutions that we have. And it's social economic problems also affected by the political preventions as well. But it's not something that we think about. We have to make it happen. So whether we get funding or not, it doesn't really matter to us. -Kyran*

Several explains they get declined and have to focus on bootstrapping instead. Ethan admits he has not received any funding and he is focusing on bootstrapping the income. Arlo explains that he bootstraps everything out of necessity rather than choice. The lack of external funding has forced many like him to rely on personal finances, rather than funds or grants.

Lando points out that starting with nothing can lead to creating a cost-effective product. Without funding, every investment comes out of your own pocket, making you more careful with expenditures.

*Because we're not funded, because we're bootstrapping the whole thing, we decided that by utilizing our skills to service people, we're able to both learn and actually get the product. -Arlo*

Lando hasn't received any grants, however his non-profit organisation focusing on employing doctors are receiving tax incentives from larger bigger companies in SA, a regulated corporate social investment encouragement. Lando explains that the bigger companies because of the impact they have on the environment or the communities, they are expected to give money from a legal point as tax rebates. Further he explains that since no one trusts the government, they rather give the taxes to the non-profit organizations, which are transparent and contribute to value in the community.

*So, no one would give money to the government if the government asked for it. And we realised that, and we realised, okay, but who would they give money to? They would give money to a non-profit, which is completely transparent. Publicise our return, everything. Everything is open, government cant do that. But we can do that, and we can encourage trust and broker trust between the government facilities and private companies. -Lando*

Some of the informants have also won money prizes through competitions aimed at promoting entrepreneurs and startups. Most of those who received this type of support did so during their studies. Many report that this has been a crucial source of income and business development. Soren won funds in a competition that enabled him to purchase additional monitors and resources, while marlon talks about money prize contests that allowed him to pay his employees and further develop his business. He explains this was the main pathway for building capital in the beginning, but as the business is expanding, he need a more stable and bigger income.

*So, yeah, while I was actually in university, I was fortunate enough to compete in a number of price money giving like price giving competition so it could be anything*

*that would be like \$5,000 to \$10,000 so we competed a lot in those competitions so that became our basically a pathway of building capital. -Marlon*

Some informants mention sponsorship and donations as a source of income and essential resources. Ethan notes that for older entrepreneurs, who are often excluded from support programs, seeking sponsorship is a viable option. However, he did not receive any sponsor himself. Damon have received donations from several organizations, as both cash and material donations. This has been a helpful resource for him. No other informants have received donations or sponsors with cash or material.

*So, Tumbasety sponsored us with wood. I got a 5,000 rand cash donation for the plumbing equipment. I got the pond liner donated. I got a pump donated. I got a fish tank donated. So, yeah, it helped, you know. -Damon*

#### 4.2.4 TECHNOLOGICAL RESOURCES

In this section, we highlight the technological resources that frugal entrepreneurs use to advance their businesses based on the data. Our findings show that access to technology, such as smartphones and internet platforms, plays a crucial role in reaching customers and acquiring knowledge. We also show how the candidates use software and digital tools to enhance their business models, engage in online learning, and leverage AI and algorithms for business development. These technological resources enable them to innovate, streamline operations, and expand their market reach, despite limited financial resources.

##### **The accessibility of technology**

Our findings show that several informants use software to reach their customers, through existing applications or platforms. Lando emphasize the access everyone has to smartphones these days, considering it once was a luxury item. The access everyone has to a smartphone or laptop makes it easier for a tech entrepreneur to reach a bigger market. Lando's innovation are relying on the existing technology of his customers, as he observes all his customers have a smartphone. His hearing aid is a software application that utilizes the microphone of a smartphone and a headset for hearing.

*So when I looked at the patients of mine, they already had smartphones. So a smartphone is a luxury item. But people use it for almost everything. So it's one of the things people would prioritize. So it's actually becoming less of a luxury item and more of a basic thing for people. -Lando*

Some informants also emphasize the value of using the existing channels to make sure customers easily access the offerings. Marlon uses existing applications like WhatsApp to simplify the process for customers. He explains that although everyone has a smartphone, the quality varies, and some phones might not handle downloading a new app. WhatsApp, however, is already installed on most people's phones, making it an ideal platform for receiving orders and facilitating communication between drivers and customers.

*So, essentially, when we went in, we thought of building an app. But again, we saw that it could be a problem because already many of our customers, they have smart cell phones, by the way. But it has limitations around space. So, you want to tell someone to download an app, it's not going to work. So, we moved around launching a chatbot. -Marlon*

### **Internet as a learning and networking tool**

Many of our informant's mention using the internet as a source to acquire information and knowledge necessary for advancing as entrepreneurs within their fields. Torin explains that he appreciates the access to free learning online, and that he uses google a lot to upskill himself. Lando shares that he acquired technical skills by watching YouTube videos and searching online for programming and coding tutorials. In this way, he was able to apply his medical expertise more broadly, offering patients, who otherwise could not afford hearing aids or had to wait several months to receive a physical product, a more affordable and accessible alternative.

*You have to learn things by yourself. And I'm happy that we are in the time in life where there are things such as internet and Google. Because most of these things that I use and skills that I use in developing a business, I learn them also from Google. And I utilize that. -Torin*

Some informants explain that they use the internet to upskill their employees. Jovan emphasize that it is the employees' own responsibility to search for relevant courses and workshops online. In return, he covers the costs of these courses. He views this as an investment in the company's expertise and believes that it is up to the employees themselves to identify which skills they want to improve.

*So I use the internet to learn myself a lot about programming and coding. So I leverage that, like a lot of free resources on YouTube and stuff to learn how to code the software that I need. -Lando*

Several respondents use the internet to find programs and competitions relevant to their entrepreneurial development. They also state that social media is a crucial platform where such events are advertised. On these platforms, they receive updates on relevant topics directly, or they can follow organizers who post information. This includes everything from programs, incubators, and workshops to networking events and competitions.

*Where do you find your partners? How do you partner with them? I just search on Google. I just look for opportunities. The one that I find to be fit, I apply. -Torin*

Several informants use the internet and social media to identify potential partners and investors. Jovan explains that he actively uses LinkedIn to find relevant partners, sending them messages and proposing meetings. He also mentions that social media has been effective in attracting customers during the startup phase of his business. On platforms like Instagram, he discovered well-known influencers to whom he offered his services through direct messages.

*I reached out to him on LinkedIn and he was like yeah come to the office let's have coffee. -Jovan*

## **Fully or partly digitizing the BMC**

Our findings show that several of the informants are using some sort of software as part of their business model. Some of the informants have their value offer digital and have developed MVPs. Some are about to launch their own platforms where services can be ordered. Soren discusses an app he plans to release that will make it easy for customers to order services and for him to hire students nationwide to provide these services. Torin mentions that he is about to launch a platform where customers can request deliveries, and nearby drivers will receive instant requests through their app.

*Let's use technology to our advantage and let's gamify. Because whether we like it or not, these kids like gaming. They understand gaming. So, if we have to make sure that the content that they're studying is gamified, is interesting enough, it has animation going up and down, it has sounds, you know, the UX and the UI, you know, the system is faster, it's better. -Kyran*

Several of our informants have fully digitized their business models. Kyran shares that his platform, designed to digitalize school curricula, operates entirely online. His target audience consists of students in grades 10 to 12. Kyran notes that these students are tech-savvy and fond of gaming. Observing a decline in school performance, he recognized an opportunity to leverage technology and gaming to address this issue, aiming to enhance learning outcomes through an engaging, digital format.

*But before we came, everything was pen and paper. But now, we move all that systems onto a technology where now you don't have to do your bookkeeping with a pen and paper. -Marlon*

Our findings suggest most of the informants use social media as marketing channels. Soren shares that he previously used LinkedIn and Facebook for marketing but has since switched to TikTok because it better reaches his target audience. He posts videos showing the process of screen replacements, which have attracted many viewers and gradually led to more people contacting him for his services. This is due to the algorithms of the app.



*We're exposed to things like TikTok, which is what's really helping my business grow right now. Like my business is blowing up. I'm even afraid of advertising now on TikTok because a lot of people want the service. -Soren*

## **AI and algorithms**

Several of our informants utilize algorithms as a tool for business development. Kyran shares that inappropriate relationships between teachers and students, along with teenage pregnancy, are significant issues in South Africa. His platform has integrated a feature that detects inappropriate words in chats among users. This function not only makes the platform more attractive for government investment but also addresses a societal problem concerning parents who would want to support the product.

*So what we did, we, it's an algorithm that is able to detect certain words that are being used in a conversation between the teacher and the learner itself, right? Words like sex, meet up, and other words, it's a long list. So the algorithm will pick up those words while the conversation between the teacher and the learner is going through. - Kyran*

External algorithms can also benefit entrepreneurs. Soren discusses how algorithms enable him to reach his target audience on TikTok with minimal marketing effort beyond posting content. He explains that TikTok's algorithm exposes him to his target audience and also introduces him to other entrepreneurs from whom he can draw inspiration. This strategic use of algorithms enhances his visibility and influence without the need for extensive marketing campaigns.

Several informants reveal that they use AI to develop their business ideas and models. Marlon explains that AI acts as a data collector tool, providing an overview of the flow of goods and money. This has enabled him to create a database with valuable information on product flow and customer purchasing behaviour. He notes that this data is crucial for predicting product demand and revenue. Consequently, this allows them to anticipate which items should be reordered from suppliers, he explains.

*The back end is that we actually want to go around data, how we can use the AI to make sure that AI allows our customers to essentially tell them and alert them on the depletion of products, what products are moving, at what speed, and also, what are the transaction volumes a month. -Marlon*

Several informants have highlighted AI as a valuable tool for translating their products or services into multiple languages. Marlon mentions that he adopted AI early on to offer his service in three of South Africa's official languages. This enabled customers to interact with the chatbot in their native language, receiving responses in the same language thanks to automatic translation. He emphasizes the importance of language accessibility, describing it as a bridge between communities.

*We saw that many of our customers are... I'll put it... Africa-centric in the sense of how they do business. So, in order, we had to cater them as much as providing the language preference. So, which was something that we did when we started. We didn't roll up all 11 official languages in South Africa. We had the three dominant ones where they could now do business in their own mother language. -Marlon*

Kyran also emphasizes the importance of offering their service and product in multiple languages, highlighting AI as a crucial tool. This approach allows him and his team to expand their product beyond South Africa and explore other countries facing similar issues with children falling through the cracks in the education system;

*I think it has to be the language. Because it gives us an opportunity to engage with different customers at the same time. Being versatile and being flexible. To have Swahili, for example, in the platform itself. That means now we can be able to get clients or customers in Kigali in Kenya. And that's what I think innovation is. -Kyran*

## 5. ANALYSIS AND DISCUSSION

In this chapter, we delve into the findings from our study on frugal entrepreneurship in South Africa, analyzing and discussing the resources that are most essential for the frugal entrepreneur in SA. We explore the essential resources categorized into human, environmental, financial, and technological segments, as these have emerged as critical through our research. This analysis is grounded in the real-world application of these resources across diverse industries, reflecting the multifaceted nature of frugal entrepreneurship. By examining how these resources interplay and contribute to the frugal entrepreneur, we aim to propose a comprehensive framework that outlines the core resources utilized by frugal entrepreneurs in South Africa.

In the second part of the chapter, we explore the interplay between effectuation and causation in the resource mobilization processes of frugal entrepreneurs in South Africa, guided by Sarasvathy's (2008) principles. We hypothesize that while frugal entrepreneurs primarily utilize effectual strategies, they also incorporate causational tactics as dictated by their specific circumstances and stages of business development. Our analysis, structured around Sarasvathy's five principles, examines how these frugal entrepreneurs adapt their strategies to navigate economic constraints, leveraging networks and capitalizing on unforeseen opportunities. This investigation challenges the traditional separation of effectuation and causation, revealing a dynamic interaction between these approaches in the practical setting of frugal entrepreneurship.

### 5.1 RESEARCH QUESTION 1: WHAT ARE THE MOST ESSENTIAL RESOURCES FOR THE FRUGAL ENTREPRENEUR TO INNOVATE IN SOUTH AFRICA?

In the light of discussing RQ 1, we have considered that our candidates operate in diverse industries with varying needs and use of resources. With this in mind, we evaluate the resources that are most essential for the frugal entrepreneur on a general to innovate in South Africa.

We have discussed the different resources based on the four categories outlined in our findings: human-, environmental-, financial- and technological resources. We will discuss and analyse our findings and suggest a framework for the most essential resources of the frugal entrepreneur in SA.

#### 5.1.1 HUMAN RESOURCES

To achieve affordable innovations that emphasize maximizing value from minimal resources, we highlight practical and technical knowledge as an essential resource. Despite having frugal entrepreneurs across various industries, the knowledge of "how" is crucial. This includes understanding which materials can be substituted to save the most money (Nolan), determining the minimum necessary resources (Damon), and in tech entrepreneurs' case; knowing how to build a tech platform (Kyran). In order to effectively utilize available resources in line with the concept of bricolage, frugal entrepreneurs must first possess the requisite knowledge on how to do so. This expertise enables them to craft solutions that are not only cost-effective but also resource-efficient, further underlining the significance of skilled knowledge in facilitating innovation within constraints.

We see that combinations of expertise can create unique innovations that combines two fields of knowledge that is often possessed from two different entrepreneurs such as Lando, who is both a doctor and self-taught in programming and coding. Thus, we argue the unique combination of knowledge gives him an advantage of driving innovation independently.

Looking into previous studies on key resources of frugal entrepreneurs, we see similarities regarding the importance of skills. Unlike Hossain's (2022) study, which had some different criteria highlighting the informants not having educational qualifications, our informants have diverse backgrounds and most of them have higher education. Despite the differences in criteria, we argue the findings are indicating the importance regarding the technical skills. In our study, we see a strong indication of education and practical experience to be the foundation of achieving the skillset. We consider the more experience the frugal entrepreneur has within his industry, the more specific and high level of knowledge they seem to have, such as Nolan.

As our data indicates, the importance of a skilled team is another a recurring theme. Kyran's multi-talented team is an example of interdisciplinary competence that can contribute to the

success of a frugal innovation. We argue that the knowledge synergy created in a multidisciplinary team can promote innovation and knowledge sharing, but also allow the frugal entrepreneur to enter cultural closed markets. The findings support having a team of skilled employees often compensates for the knowledge the frugal entrepreneur lacks, such as cultural knowledge as demonstrated by Ethan or Marlon. This allows them to operate in a market they otherwise would not enter due to lack of local knowledge. By hiring local workforce who speak the local language and have local relations, the frugal entrepreneur is overcoming a cultural barrier. We will discuss this further in environmental resources.

It is also crucial to emphasize the value of having a team that possesses an equivalent level of knowledge for effective task distribution, so that the frugal entrepreneur can delegate tasks. Soren and Nolan note that every member of their team is capable of performing the same technical tasks as they are. This capability allows the frugal entrepreneur to allocate time to other tasks, such as focusing on expanding their business. Damon explains that one of his biggest challenges is time management. Operating alone, he lacks the time or trust to train anyone new, which contributes to his heavy workload. Therefore, it is essential to consider the context and type of industry when deciding whether to prioritize hiring individuals with similar skills in order to delegate tasks to gain more time to do other necessities, or to hire someone to fill knowledge gaps.

We suggest that networking is crucial for our informants to acquire knowledge and establish strategically important relationships with like-minded entrepreneurs and partners. We argue that sharing both failures and success stories, enabling frugal entrepreneurs to learn from others experiences. For example, Marlon shares that he meets entrepreneurs he looks up to, who are much smarter and more experienced than him. In this quote, we are emphasizing the value of meeting role models and learn from them. Looking at previous studies, Hossain's (2022) framework regarding the significance of networking and support from fellow frugal entrepreneurs are aligning with our findings.

We evaluate how networking might be a substitute for business management education in an informal community where access to university is less available or in those situations where one cannot afford education. Arguably, the suggestion has to be taken into context and evaluated if suitable and what the consequences might be if misinformation is being shared.

Lando mentions that he prefers acquiring knowledge from others rather than spending money he cannot afford on further education. We argue that the informal source of information should be used carefully, given the potential consequences of misinformation. For instance, receiving incorrect information about the dress code from another entrepreneur at a networking event may only result in some discomfort and perhaps a few lingering stares. However, using misinformation from informal sources, such as inaccurately handling your accounting, can have more significant consequences.

#### 5.1.2 ENVIRONMENTAL RESOURCES

We argue that the candidate's cultural understanding and integration are factors contributing to their success as frugal entrepreneurs in their local communities. Due to the informal ways of operating in townships, modern companies might face some cultural challenges trying to navigate, especially in the sense of digitalization meeting an unbanked society. This allows small businesses like Marlon's to operate in untraditional ways, adjusting to the needs of the local community. However, it is necessary to consider how much accommodation of cultural preferences can be made before it becomes unprofitable for the frugal entrepreneur. Marlon accepted cash payments in the first phase of his business so that cultural preferences and operational methods could be preserved. This may work in a small community, but if the frugal entrepreneur wants to expand, for instance into larger townships like Khayelitsha with over two million residents, it will likely lead to unmanageable chaos with the same business model.

By cultural integration, we do not necessarily mean that the frugal entrepreneur must be from or located in the township or local community in which they operate. We suggest they can utilize local human resources within these communities to overcome the cultural challenges, such as language barriers and protection from criminal activities which might sabotage business activities in local communities. We observe that many of our informants hire locals for various reasons, but all employ individuals who are familiar with the community, language, and unwritten rules. Ethan hires local drivers in the different townships to collect medical waste from their own community, thus minimizing travel distances and ensuring that employees have both knowledge of and protection from the community they serve. In this

way, Ethan utilizes local cultural and human resources at the same time. Therefore, it is crucial to consider these two resources together when operating in informal local communities where unwritten rules exist.

Looking at previous research, Hossain (2022) suggests that cultural context is a critical prerequisite for the frugal entrepreneur's innovation in local communities, which aligns with our findings. We emphasize that a deeper understanding of the necessary adjustments can provide a competitive advantage. For instance, Hossain's study on success factors among frugal entrepreneurs highlights the importance of carefully producing products out of the cultural context and need. We observe this pattern of accommodation among several of our informants, which we consider unsurprising, given our criteria for local embeddedness in frugal entrepreneurship, which might result in adapting the service or product to the local need.

Previous research on essential resources, highlight the value of recycled materials (Hossain, 2022). It is difficult to evaluate the importance of local or recycled materials, based on such a diverse stock of businesses and entrepreneurial industries, where only one are using recycled materials. However, based on the few businesses which deliver a physical product, we can indicate the importance of using local manufacturers or using repurposed materials, emphasizing the concept of bricolage (Baker & Nelson, 2005). A common factor between Nolan and Lando is their use of cheaper, local materials that may not be of the highest quality but are sufficient for their purposes. Thus, we argue that depending on the needs and usage, recycled material can be an important and valuable resource for its intended purpose. For instance, a 20-liter water can serve well as a fish tank for educational purposes, while recycled materials may not function as effectively for more physically demanding applications, such as wheelchairs or bicycles. We consider it might also be a bigger expense to recycle specific type of materials such as aluminium, based on the complexity of reshaping to gain sufficient quality. However, it is important to emphasize that we do not possess sufficient expertise to draw conclusions or make assessments regarding materials. It is also important to consider that Hossain's (2022) frugal entrepreneurs only delivered physical products, while about half of our frugal entrepreneurs are tech entrepreneurs delivering services or products digitally. The difference between the industries the candidates operate in, most likely reflect different need for resources.

When it comes to entrepreneurial programs and incubators, we find significant variation among our informants. However, it seems like all of our informants are included in some sort of partnership or involvement in a program. It's difficult to draw a conclusion on what sort of program is most used, but our findings show it's often by incubators by the university or corporate organizations. The variation likely stems from their diverse provincial backgrounds, industries, and starting points. Hossain (2022) emphasizes the significant role of the government in facilitating the development of frugal entrepreneurs in India. Considering Hossain's (2022) study is based on frugal entrepreneurs operating in India, we find two different governments and infrastructures, which makes it difficult to compare with. Student entrepreneurs have access to guiding and support through their university incubator, but frugal entrepreneurs not affiliated with a university face challenges in securing support from the government.

As some of our informants indicate, public support schemes are not well-suited for tech entrepreneurs, resulting in a disadvantage against other entrepreneurial industries during the application process. We might consider whether it is private institutions and large corporate enterprises that are more instrumental in promoting tech entrepreneurs in South Africa. We emphasize corporate programs such as finding the next top 50 tech entrepreneur of SA from private companies are initiatives contributing to the innovation. Our data suggests that there is considerable contribution from private companies contributing to the entrepreneurial growth, especially in the tech sector. It can also be discussed how it affect the entrepreneurial growth all over SA, regardless of the industry.

### 5.1.3 FINANCIAL RESOURCES

Our candidates are relying mostly on personal savings and cash, rather than other sources of financial support. However, some have received financial support through various corporate initiatives. The requirements of the term frugal entrepreneur focusses on maximizing the value they can generate from minimal inputs, rather than relying heavily on external funding or extensive infrastructure, which emphasize the findings we are presenting in this category.

We argue the importance of personal cash and savings, as our data indicates most of our informants use their own savings to bootstrap their startup. Several of the candidates worked



part time while generating money into their startup, emphasizing the bootstrapping strategy while building the startup step by step as income are regenerated. The reasons for this could be debated—whether it could stem from difficulties in securing loans or a lack of trust in the government resulting in avoiding financial interaction with the government. The importance of personal cash in our findings are in line with previous research, as Hossain (2022) are highlighting personal savings and cash as main financial resource.

Rather than utilizing personal savings or having side jobs to finance their business, the informants could consider borrowing money from formal or informal institutions to initiate their operations. However, the majority of the frugal entrepreneurs did not take loans from formal banks nor informal institutions. Only one informant had borrowed money from an informal lender while others didn't see this as a viable option. We consider if this is due to high interest rates and unstable loan conditions from the informal lenders, combined with the high rates of unbanked individuals and unemployment, which make it difficult for frugal entrepreneurs to secure loans. Consistent with previous research, obtaining loans from banks seems to remain the less used method to secure financial resources. Hossain's (2022) informants relied on informal loans from family and friends, yet very few of our informants utilize this method. This discrepancy could be attributed to varying cultural artifacts, or because Hossain's informants were further along in their business development than most we interviewed.

We consider investors and shareholders to be a valuable resource, yet difficult for the average frugal entrepreneur to access. Therefore, it would be incorrect to label this as an essential resource, given lack of its availability. If a frugal entrepreneur can secure this type of financing, it would be extremely valuable. We also assess that it is unlikely for frugal entrepreneurs to obtain such resources at the start of their entrepreneurial careers, unless they have personal connections. Both Damon and Kyran aim to have their ideas implemented in the curriculum of South African schools, a goal that would require government endorsement. In such cases, investors can be a valuable resource if one has access to someone who believes in their idea, such as Nolan or Damon. However, we also have one informant with informal investors.

We emphasize Torin's financial resource of family investors, where he redirected child support payments into his business and entrepreneurial activities, considering these funds as investments from his children. Torin's approach to using child support may be categorized under informal investors, but since this is an isolated instance, we have opted not to categorize it separately, nor label it as essential resource. However, we believe the method might represent a way of solving the financial challenge which some frugal entrepreneurs might use. However, since we don't have enough data on this theme, we emphasize the value of investigating this strategy of family investment for future research. Hossain (2022) have family support under human resources, which we argue to be not transferable in our suggestion of essential resources, due to almost none of our informants mentions this topic.

We observe the challenges of securing financial support through grants and funds, and only a couple of our informants have received such financial support. We argue grants and funds to be valuable for the frugal entrepreneur in SA if they receive it, however we consider it to be difficult to receive, and therefore not essential. Previous research (2022) emphasize grants and funds more than we would do. Considering our frugal entrepreneurs are not necessarily commercially successful yet and most of them are in the startup-phase where they have not generated income yet, this might be amongst the reasons why it varies from Hossain's (2022) findings. This may also stem from cultural and contextual differences, varying industries, or because the frugal entrepreneurs are at different stages in their business journey.

Our data indicates a dissatisfaction over the governmental financial support regarding frugal entrepreneurial development, but also in connection to their responsibilities in the industry in which the informants of ours is operating. It is also relevant to discuss if private institutions and larger corporations will become the main sources of financial support for the entrepreneurial growth in the country. This is evident in Lando's case, where he seeks tax rebates from larger corporations for non-profits rather than governmental support. He established the non-profit to address failures in the public health sector, where the government cannot afford to pay doctors resulting in understaffed hospitals and unemployment of doctors. We emphasizes the importance of entrepreneurial activity in SA, which might operate as a substitute for governmental failure in the society, such as we see in Lando's case.

It is worth considering whether the rapid pace of digital advancement in society and tech entrepreneurship overtake the development of the governmental support requirements, which we note are more suitable for other industries not involving tech. Especially as many tech entrepreneurs indicate that state support criteria are not aligned with the tech industry's innovation needs. Furthermore, some informants received support through corporate companies within their industry through different programs and competitions. We can discuss if the intention of the initiative is on promoting innovation in their field, investing in future businesses or recruiting workforce. There has been debate over whether the dominance of larger corporations has stifled smaller businesses and frugal entrepreneurs out of the market (Bate, 2021; McKinsey Global Institute, 2016), but from our data we suggest that it is corporate larger entities that might be a contribution to financial support and entrepreneurial growth.

While obtaining sponsorships and donations also proves challenging, we consider this source of financial resource to be valuable, but not essential. However, it is important to consider the specific industry and business type the frugal entrepreneur is operating within regarding access to sponsorship and donations. Most of our informants are frugal entrepreneurs within the IT and tech sectors, which may require goods of a certain quality or money contributions rather than materials. For instance, Damon received a donation of materials which allowed him to swap out more expensive glass tanks with recycled 20 litres of water bottles, whereas Arlo's IT services would not have use of recycled water bottles. However, money donations would have benefitted his service online.

#### 5.1.4 TECHNOLOGICAL RESOURCES

Technological resources are a theme almost all our informants mentioned when talking about their resources, despite the lack of attention to this category in previous research on essential resources for frugal entrepreneurs (Hossain, 2022). The question of whether technology should be involved as an essential resource also brings the concept of frugal entrepreneurship into focus for evaluation. We can discuss whether technology qualifies as a "minimal and accessible" resource. In our context, we have spoken with candidates who might have been better positioned in terms of education and possibly technology, compared to what previous

research has accessed (Hossain, 2022). Therefore, it raises the question of whether a frugal entrepreneur is someone who has access to resources like education and technology, or if the concept is limited to innovation occurring in extremely resource-restricted areas, where access to the internet and smartphones is not taken for granted, as we observe in our case. We emphasize the impression that everyone in SA have access to internet and smartphone these days, making it more of a necessity item, rather than a luxury item.

We emphasize the concept of making do by applying combinations of available resources to address new problems and opportunities (Baker & Nelson, 2005), and aim to introduce how bricolage can be viewed in a modern light, particularly in the context of technology. The interpretation of bricolage does not seem to embrace technological factors, which we would evaluate to be necessary. Several of our informants have used available technology to innovate or acquire new skills, which in turn has led to solutions for various problems. The access everyone has to internet, makes it easier to gain knowledge within a specific field. We note that the use of available technology can offer numerous opportunities for innovative solutions, as demonstrated in Lando's case. He employs technological bricolage to innovate, and we can extend this concept to his customer delivery proposals as well, considering that he has created a product that utilizes technology readily available to most people. We suggest that the modern perspective of bricolage which we discussed above should get more attention in future research, as we believe it is highly relevant today given the widespread availability of technology and the internet.

Nonetheless, it requires knowing where to search for accurate information and learning to be critical of sources in order to gain knowledge. For example, technical skills like those Lando learned on his own can be acquired by watching free videos on YouTube. We argue that this is one of the benefits of digitalization over recent decades and can contribute to technological entrepreneurial growth in countries experiencing a scarcity of other resources. Becoming a tech entrepreneur does not require many physical resources to get started, as you often already have what is needed to develop a product or service online. The need for less materialistic resources could be considered the reason we have seen a predominance of young tech entrepreneurs in our study. Additionally, the current generation is more accustomed to technology and using data and the internet, consistent with what Kyran explains about his

target group interested in gaming. This arguably makes it easier and less resource-intensive to become a frugal entrepreneur in tech and IT.

Our findings show that many of our informants have integrated existing applications into their business models, showing not only the importance of technology as a resource, but also cultural and contextual understanding. For instance, Marlon has opted to use WhatsApp as a distribution channel rather than developing a new app because of the limitations of the phones in the community, reflecting an understanding of both the cultural and technological contexts. However, several of our informants are creating new platforms and applications for their products or services, which may target other markets than Marlon. Or they might not have considered the limitations of the phone of the targeted market. We argue that the technological approach necessitates a contextual evaluation of the target audience and their access to the technology, in order to avoid exclusion of those who don't use technology of various reasons, such as elders.

Among the tech entrepreneurs, AI and algorithms are tools that provide significant value. As our findings illustrate, AI can be used for translations into multiple languages, making products or services more accessible to various target groups. Kyran's gamification platform can be expanded beyond the provinces where the eleven official languages are spoken, thanks to AI. Marlon's service accommodates multiple South African languages as his chatbot employs AI for language translation. This is an invaluable resource in a diverse country like South Africa, with its eleven languages. As Marlon mentions, language is a bridge that builds trust between people. Use of AI to translate language is arguably offering a frugal entrepreneur a valuable solution to a cultural barrier, and we mention whether it might replace the need for human resource to an extent. It's worth discussing whether human and cultural resources could be supplanted by technological tools. For example, the need for human translators could be reduced through AI. Algorithms can also assist in areas traditionally managed by humans and might even exceed human abilities, as demonstrated by Kyran's example where algorithms detect inappropriate language between teacher and student on a gaming platform, a scenario not easily monitored in a private conversation between two individuals.

### 5.1.5 MOST ESSENTIAL RESOURCES OF THE FE IN SA

We suggest a new typology for the key resources for frugal entrepreneurs in South Africa, based on our diverse context of industries and backgrounds. We have categorized the most essential resources based on our analysis and have outlined what we consider the most critical resources in Table X, derived from our findings. We acknowledge that some resources may be difficult to categorize individually, and thus we have grouped them contextually with a dotted line underneath. The table indicates the complexity of how the resources are correlating with each other.

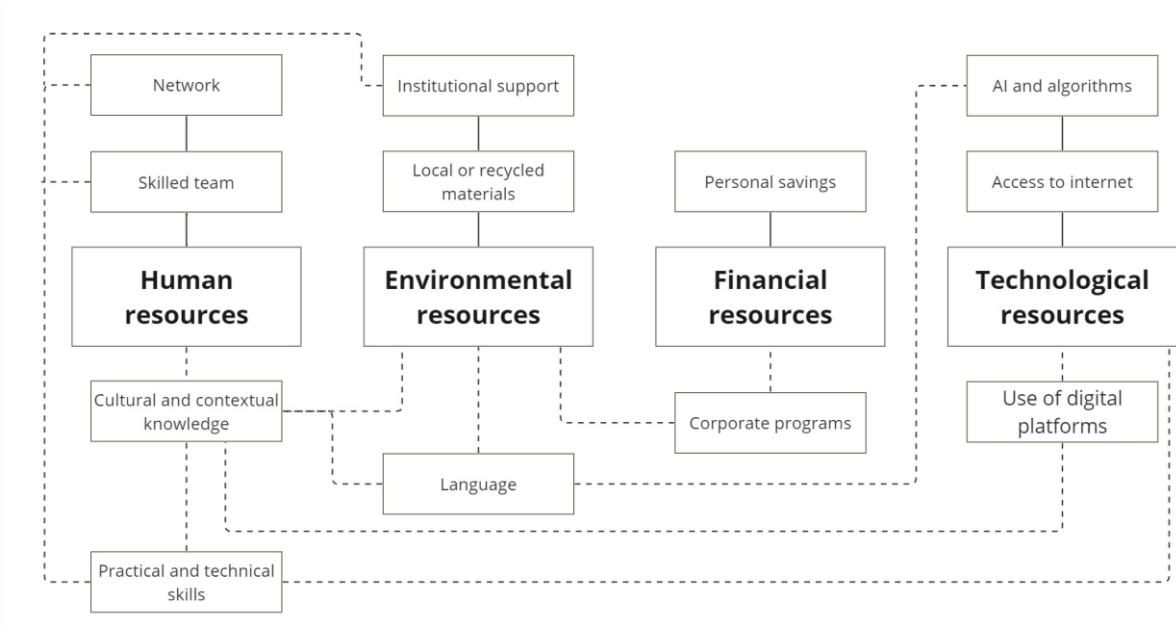
Human resources involve access to a network and a skilled team that can assist the frugal entrepreneur in various ways, including knowledge acquisition through others, bridging knowledge gaps, and delegating tasks. Practical and technical knowledge forms the essence of frugal entrepreneurial innovation, often gained through education, work experience, networks, and various forms of institutional support. However, we also observe a significant number of participants in our sample using technology to acquire this knowledge. Furthermore, cultural and contextual knowledge, linked with environmental resources, is deemed essential for the frugal entrepreneur to operate within local communities with unspoken rules and artifacts, making it impossible to separate these into two distinct silos. Additionally, language emerges from cultural and contextual knowledge, and is intricately linked. Language is a critical factor in South Africa, where emphasis is placed on the eleven different languages, which can be managed with human resources or technology such as AI.

Environmental resources include local and recycled materials, but this needs to be contextualized. Not all frugal entrepreneurs require these. However, the importance of using bricolage to utilize available resources creatively, thus saving money on more affordable materials, is evident. Institutional support in various forms is considered essential, although it is important to note that this is based solely on our data, where almost all frugal entrepreneurs are students or have studied, and our access to informants through university contacts may influence the sample's starting point.

Regarding financial resources, it is clear that the most crucial resource is personal savings or income from another job, which frugal entrepreneurs bootstrap into their startup. However, our findings on other financial resources vary, making it difficult to conclude what might be

essential beyond personal funds. Nevertheless, corporate programs contribute to the financial resources of many of our candidates through various support schemes.

We also wish to introduce technology as a new focus within the theme of frugal entrepreneurship, considering that the aforementioned aspects have been evaluated and discussed by Hossain (2022). Here, we highlight the potential of the internet for frugal entrepreneurs to acquire new knowledge and find necessary networks. The frugal entrepreneur can use digital platforms as a way to communicate and as a part of their business model. However, this has to be evaluated regarding culture and context of the market. Furthermore, we emphasize the ability of the frugal entrepreneur to use the internet and AI for language translation, considering the internet as a useful tool to overcome cultural barriers such as language. However, it is crucial to emphasize that our framework is based on our data and interpretations and must be viewed in context.



**FIGURE 6: SUGGESTION TO TYPOLOGY OF MOST ESSENTIAL RESOURCES OF THE FE IN SA**

## 5.2 RESEARCH QUESTION 2: HOW DO EFFECTUATION AND CAUSATION COME TO PLAY IN THE FRUGAL ENTREPRENEUR'S RESOURCE MOBILIZATION PROCESS?

In this part of the analysis and discussion we are looking into the hypothesis whether the informants utilize the five principles formulated by Sarasvathy (2008) during their resource mobilization, evaluating if the frugal entrepreneur are using effectuation as strategy, rather than causation.

We are looking at the resource mobilization process in context of Sarasvathy's (2008) five principles, while examining if effectuation or causation, both or none are present. Sarasvathy (2001) portrays causation and effectuation as two distinct logics, which would then imply that the candidates would not show causal traits if fitted into the five principles. We are going to evaluate if the assumption is positive, or if causation and effectuation can be seen as two correlative approaches in the frugal entrepreneurs resource mobilization process, with use of the effectual cycle to describe the process.

As presented in the first part of our findings, we have gathered comprehensive information about each of our candidates, their mindsets, and their processes. We have analyzed the various findings and organized them into a table (table 4) to assess whether the informants align with the five principles. We used black text to indicate alignment with the principles, supporting an effectual approach. Conversely, we used red text to highlight aspects where the informants do not fit the principles, indicating a causal approach.



Candidate	Bird in hand	Affordable loss	Crazy quilt	Lemonade	Pilot on the plane
<b>Marlon</b>	<ul style="list-style-type: none"> <li>Started out with professional network and what he knew from university</li> </ul>	Forced to pivot due to insufficient financial resources	<ul style="list-style-type: none"> <li>Collaboration with LaunchLab to launch is product</li> </ul>	<ul style="list-style-type: none"> <li>Making business out of what others perceive as barrier</li> </ul>	<ul style="list-style-type: none"> <li>Wants to change the way informal economy operate</li> </ul>
	<ul style="list-style-type: none"> <li>Who I am (wants to contribute to change in the community he grew up in)</li> </ul>		<ul style="list-style-type: none"> <li>Focusing on local workforce</li> </ul>	<ul style="list-style-type: none"> <li>Pivoting due to financial and structural constraints</li> </ul>	<ul style="list-style-type: none"> <li>Tries to predict the future of sales by using AI</li> </ul>
<b>Ethan</b>	<ul style="list-style-type: none"> <li>Friends' advice led him to</li> </ul>	Used personal savings	<ul style="list-style-type: none"> <li>Describing competing companies as partners</li> </ul>	A flexible mindset, supporting the lemonade principle	Rather adapt than control
	<ul style="list-style-type: none"> <li>Start his business.</li> </ul>		<ul style="list-style-type: none"> <li>Use of pricing strategy to compete with other companies in the medical waste market</li> </ul>		
	<ul style="list-style-type: none"> <li>Who I am (Wants to make a change out of passion for health)</li> </ul>		<ul style="list-style-type: none"> <li>Using locals with vehicles. Outsourcing work to locals</li> </ul>		
	<ul style="list-style-type: none"> <li>Use of existing knowledge from work experience</li> </ul>				
<b>Jovan</b>	<ul style="list-style-type: none"> <li>Calling his friend's cousin</li> </ul>	<ul style="list-style-type: none"> <li>Rental equipment</li> </ul>	<ul style="list-style-type: none"> <li>A few local partners</li> </ul>	<ul style="list-style-type: none"> <li>Embracing the unexpected (loadshedding)</li> </ul>	Wants to control the future
	<ul style="list-style-type: none"> <li>Use of existing knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Contracted employees</li> </ul>	<ul style="list-style-type: none"> <li>Focusing on competition</li> </ul>	<ul style="list-style-type: none"> <li>Stick to a set goal</li> </ul>	
	<ul style="list-style-type: none"> <li>Who I am (what is my passion and how can I use it)</li> </ul>				
	<ul style="list-style-type: none"> <li>Seek necessary contacts</li> </ul>				
<b>Torin</b>	<ul style="list-style-type: none"> <li>Started out with existing knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Invest the kids money into the business</li> </ul>	<ul style="list-style-type: none"> <li>Have a few partners Use of incubation</li> </ul>	-	Want to control the future
	<ul style="list-style-type: none"> <li>Who I am (using informal cultural way of bargaining in his business)</li> </ul>	<ul style="list-style-type: none"> <li>Focus on expected returns</li> </ul>	<ul style="list-style-type: none"> <li>Focusing on differentiation from competitors</li> </ul>		
<b>Arlo</b>	<ul style="list-style-type: none"> <li>Use of knowledge and network from university</li> </ul>	<ul style="list-style-type: none"> <li>Pushed back release date due to high expenses</li> </ul>	<ul style="list-style-type: none"> <li>Partnering with local partners</li> </ul>	<ul style="list-style-type: none"> <li>Learned from a failed launched product</li> </ul>	Control the controllable with digital tools (Monday.com, notion, clickup)
	<ul style="list-style-type: none"> <li>Who I am (interest and knowledge)</li> </ul>	<ul style="list-style-type: none"> <li>Dealing with costs after appearing</li> </ul>	<ul style="list-style-type: none"> <li>Use of incubation</li> </ul>	<ul style="list-style-type: none"> <li>Flexible to changes</li> </ul>	

TABLE 3: THE CANDIDATES EVALUATED AGAINST THE FIVE PRICIPLES

Candidate	Bird in hand	Affordable loss	crazy quilt	Lemonade	Pilot on the plane
<b>Damon</b>	<ul style="list-style-type: none"> <li>• Use of existing knowledge and network (supplier known since age of 12)</li> <li>• Who I am (passion for changing the community he grew up in)</li> <li>• Use of recycled materials</li> </ul>	<ul style="list-style-type: none"> <li>• Investing what he can afford to lose</li> <li>• Focusing on the potential upside</li> </ul>	Partnering up with sponsors, schools, investors and the government	Stick to the plan no matter what	Wants to change the future, step by step
<b>Soren</b>	<ul style="list-style-type: none"> <li>• Started out with existing knowledge and network from university</li> <li>• Who I am (wants to help the other students with limited money)</li> <li>• Seeking out to more experienced, but unknown people</li> </ul>	<ul style="list-style-type: none"> <li>• Started out with investing only what he could afford (cheap screens)</li> <li>• Focusing on how to expand to earn more</li> </ul>	<ul style="list-style-type: none"> <li>• Partnering up with local manufacturers and people in the industry</li> <li>• Focusing on pricing strategy to beat competitors</li> </ul>	Learn from failures Flexible to changes	Wants to control (making sure the employees have good enough training, wants to make an app for the future)
<b>Lando</b>	<ul style="list-style-type: none"> <li>• Started out with existing knowledge and network from university</li> <li>• Who I am (wants to change the community he grew up in and experienced through work)</li> <li>• Learned to code for own purpose, brother told him to use it as business</li> </ul>	<ul style="list-style-type: none"> <li>• Focusing on how to make products cheaper to produce, how to make the delivery of the hearing aid more accessible.</li> <li>• Investing his personal savings</li> </ul>	Partnering up with business partners, local partners.	<ul style="list-style-type: none"> <li>• Flexible towards changes and unexpected events</li> <li>• Pivoted from becoming a psychiatrist to getting into entrepreneurship to make changes in society</li> </ul>	Wants to control the controllable
<b>Kyran</b>	<ul style="list-style-type: none"> <li>• Started out with existing network and knowledge from university</li> <li>• Who I am (wants to change the community he grew up in)</li> </ul>	<ul style="list-style-type: none"> <li>• Using only personal savings</li> <li>• Focusing on the expected upside</li> </ul>	Focusing on partnership and innovation rather than competitors	Turns the barrier and unexpected into opportunities (using AI to develop across languages)	Wants to change the future and the educational system

TABLE 4: THE CANDIDATES EVALUATED AGAINST THE FIVE PRICIPLES

### 5.2.1 BIRD IN HAND

Demonstrating the importance of bricolage, many of the informants began their entrepreneurial journeys by leveraging the resources readily available to them, often motivated by a passion for the subject or connections within their network. Nearly all of our informants started with their existing knowledge and evolved based on what was accessible. For example, consider Jovan, who used his existing network and tapped into his friend's cousin to start his business. Arlo, who began with some classmates, utilizing the knowledge they had gained through university and became entrepreneurs based on what they knew. We argue that almost all of our informants fit the effectual "bird in hand" requirements, in that they used whatever knowledge and network that were available at the beginning of the effectual cycle, which represents the beginning of their entrepreneurial journey.

Some of our informants also align with the causal approach. For instance, Nolan and Soren began their entrepreneurial journey by strategically reaching out to individuals and local organizations outside their existing networks, who possessed expertise within their field. Nolan, who trained as a mechanical engineer, didn't decide to start his own business until nineteen years later. He laid out a plan for what he wanted to create, then acquired the additional knowledge he needed by contacting local workshops. However, he already had much of the necessary knowledge due to his experiences. In Nolan's case, we can argue for a combination of causation (contacting people with more knowledge) and effectuation (what he knew). Ultimately, it is debatable whether Nolan and Soren truly fit the "bird in hand" principle, as they approached the unknown rather than what they knew. They utilized the knowledge they initially possessed, but to further expand what they knew, they actively sought out people and places with greater expertise in the field. This approach enabled them to gain additional knowledge, laying a crucial foundation for the early stages of their business development, and establish strategic partnerships in the longer run. We would argue that they partially align with the "bird in hand" principle, but with a distinct causal approach. The strategy employed by Nolan and Soren also underscores the "crazy quilt" principle.

We understand the effectual cycle as an agile and dynamic process that is described as looping back to the beginning. As the "bird in hand" principle comes into play in the beginning and when the process is looped back to start, we can argue that this principle changes throughout the process, regarding effectual and causal approach. We observe that

many of our informants use the internet and networking events to meet essential players as they evolve as frugal entrepreneurs and as their businesses move through various phases. The practice can also be discussed to change from start with means, to involve having set goals, which emphasize causal approach. Consequently, we also see that causation plays an increasingly significant role in the effectual cycle as frugal entrepreneurs eventually set goals and require knowledge or networks beyond what is already known to be able to expand and grow as a business.

Moreover, the availability of the internet has arguably made it easier for frugal entrepreneurs to access desired knowledge and networks. We explore whether acquiring necessary resources was more challenging before the internet became as prevalent as it is today, thereby creating a clearer distinction between effectual and causal reasoning. Consequently, it might be necessary considering whether Sarasvathy's (2008) theoretical framework is suitable to reflect the significant digital changes that have occurred over the last decade. The digital development might encourage causal entrepreneurial activities and contribute to easier access of reaching out to unknown networks or accessing required knowledge, allowing them to choose rather than forcing them to use what they have available. For instance, it can be debated whether an frugal entrepreneur who uses the internet to acquire new knowledge is practicing effectuation or causation. They are using their available resources (effectuation)—a laptop and the internet—but are also deliberately targeting the specific knowledge needed to get to their goal (causation). Thus, in many of our cases, it becomes impossible to distinctly separate these two logics when acquiring resources, instead describing it as a balanced strategy facilitated by the internet.

### 5.2.2 AFFORDABLE LOSS

Our findings show varying degrees of the affordable loss principle concerning investments in their businesses. Most of the informants invest only what they can afford to lose, but at the same time look at expected returns and use the best possible outcome as motivation. It could be considered whether this correlates with the fact that almost none of the informants have taken out loans or received fundings to finance their businesses or entrepreneurial activities, not giving them much choice than to use their own savings to bootstrap.

However, we see the example of a frugal entrepreneur who sacrifices money intended for their children in favour of their business, which could be debated whether it is an affordable loss or not, since the family manages on less money. We argue that the phrasing of the principle is challenging to interpret, and we question what qualifies as 'affordable'. For example, would money that should have been allocated for children's expenses be considered affordable to lose? Torin states that he is driven by the motivation for financial independence, which is an expected result of predicted upside. On the other hand, he does not invest more than what he can afford to lose, considering that the family still survives on the money allocation. Resulting in an ambiguity in the interpretation of the theory.

We can discuss whether affordable loss is evident in cases where the informants pay for resources only when needed. This form of bootstrapping allows them to only pay for resources when they need it, including both materials and humans. Jovan opts to rent materials and equipment rather than investing money in them and are using project-based contracts on his employees. Strategic choices like these indicate a focus on saving money and risk, rather than potential gains, as it allows them to rent only what is necessary based on the customer's desires and situation. This approach may be connected to the need for different equipment and the financial limitations they face, particularly since photography equipment is expensive in Jovan's context. At the same time, we argue that they focus on expected returns when investing in the resources they rent, which align with the concept of causation. In Jovan's case, both of causation and effectuation are present.

Effectuation are present in many of the cases in the sense of bootstrapping and bricolage, if we were to interpret the theoretical framework of effectuation (Sarasvathy, 2001). However, we would emphasize the possibility of using bricolage and bootstrapping while at the same time have set goals which support causal reasoning. As Damon has a set goal of how to change the curriculum in South Africa and while trying to gain support from the government, he continues with bootstrapping and frugal investments indicative of effectual strategies. So here, we see a causation approach to the goal, while he employs principles of effectuation to get there. For instance, Damon uses recycled materials for a fish tank, instead of spending more on a glass tank. This way, it's cheaper and less risky than the fragile glass. It costs him nothing if the tank is damaged. He is giving new purposes to used materials, utilizing the concept of bricolage. At the same time he has a given goal and knows what he needs to

achieve it, however he doesn't have a set strategy to get there. This would emphasize both or none of the approaches, however impossible to separate.

Arlo employs some sort of reverse bootstrapping by taking on costs as they arise and then finding a way to pay for them. It could be debated whether this approach is neither causation nor effectuation, since he does not have a predetermined plan and does not utilize resources he already possesses but navigates forward nonetheless. However, a conflicting factor shows Arlo's use of the affordable loss principle is evident in the incident where he had to postpone the release date of a new platform due to the costs of expanding user accessibility. He considered the cost too high, decided to retract the plan, and focused on accommodating the users he could manage on the platform, planning to expand when more financially feasible. This also exemplifies the 'pilot in the plane' principle, where Arlo controls what he can for the best possible outcome.

Nolan is an example of a candidate where the simultaneous use of causation and effectuation can be discussed. He carefully calculates the material weight per product, finds the most affordable supplier, and pays exactly what is necessary to produce a bicycle. In other words, he lays out a planned strategy to minimize production costs. However, he focuses on making the product of high quality and adapted to the context. Nolan also mentions that he plans on leasing his bicycles, as this will generate higher profit over time compared to selling them directly, based on the expected lifespan of the product. In this way, he does not invest more resources than he can afford to lose, but he also focuses and plans based on the attractiveness of the predicted upside. We consider this to be a causal approach to the effectual strategy. This is also an example of pilot on the plane, which we will discuss later in the chapter.

### 5.2.3 CRAZY QUILT

As mentioned in part one in the discussion, networking and partnership with the right people are essential for gaining access to knowledge and establishing competitive advantages. We highlight the case of Torin, who entered a partnership with an incubator, allowing him access to interns funded by the incubator. For Torin, this represents a strategic partnership advantage. It should also be noted that Torin faces few competitors in the market, raising the question of whether it makes sense to focus on competitive analysis over partnerships.

In both Nolan and Damon's cases, we see a causal approach, with both frugal entrepreneurs having predefined goals early in the effectual cycle rather than goals that evolve over time with given means. Damon's partnerships with various businesses gives him access to materials he receives for free, allowing him to operate with minimal financial income while he focuses on a set goal. However, we see in Damon's case, that he needs to be creative to find the given means to achieve his goals.

We believe that the crazy quilt principle can be used as a competitive strategy to outperform competitors, emphasizing the ambiguity of meaning behind the principle. Such as Nolan, where he's able to produce cheaper products due to partnership with local mills, allowing him to outcompete competitors on price. We assess the importance of such partnerships and networks as invaluable for enabling the frugal entrepreneurs to offer affordable innovations. This strategic use of partnerships not only reduces costs but also enhances the frugal entrepreneur's ability to compete effectively in their market. We note that this strategy aligns more with causal approach in our interpretation of Sarasvathy's (2008) theory of causation and effectuation.

The level of competition varies among the cases we have studied. For many, adopting a competition-focused strategy does not make sense due to the low level of market competition. Some frugal entrepreneurs are pioneers or operate in a near-monopolistic manner, like Damon, for instance. Additionally, the motivation and purpose behind each business vary, which also influences their strategic focus. Many frugal entrepreneurs prioritize making a social impact over dominating the market, naturally leading them to focus more on partnerships than competitive advantages. At the same time it seems like some of our informants changes towards a more causal approach as the frugal entrepreneur evolves through the effectual cycle.

#### 5.2.4 LEMONADE

Our informants did not mention unexpected events that have forced them to pivot, but many of them capitalize on market barriers to create business opportunities, which we consider to be within the scope of the lemonade principle. We question the concept of lemonade, whether if it is a single unexpected event or if it includes turning the unexpected into opportunities. This principle, which suggests turning apparent setbacks into advantages, seems to play a

significant role in how these frugal entrepreneurs navigate their business landscapes. They not only adapt to challenges but also actively transform them into strategic opportunities, indicating a proactive and opportunistic approach to entrepreneurship. We emphasize the importance of contextual understanding, which we discussed in part one of the discussion.

We argue that being an frugal entrepreneur in a country like South Africa necessitates flexibility due to their societal challenges. This could also be the key to success, especially if you can turn what others see as barriers into opportunities, just as the lemonade principle highlight. An example of this is Lando or Marlon, who saw a business opportunity in what others saw as problematic. Marlon created a business out of a marked gap, where formal businesses didn't operate. He utilize the human resources the local community have, and create an opportunity from what others would consider a challenge. He is using the lemonade principle by turning the unexpected into the profitable. However, as mentioned, we can evaluate whether or not this actually is matching the purpose of the lemonade principle as it rather is making business out of difficult existing challenges, rather than turning unexpected events into something valuable.

Other factors that force frugal entrepreneurs to be flexible are contextual factors and barriers, such as loadshedding. Common to all our informants is that they deal with loadshedding as part of their daily routine to varying extents and must adapt to power outages at short notice weekly. An example is Jovan, who experienced loadshedding during a shoot with a client. Here, they used the timing on taking photos instead of waiting for the electricity to come back. Jovan learned to better prepare for situations like this in the future and embraced the learnings from the situation. The contextual factor of loadshedding, can arguably form frugal entrepreneurs in South Africa to be flexible and to manage their way somehow, considering the challenges of losing the electricity for hours several times a week. In a way, they all learn to navigate their way through the contextual barriers, which also emphasizes the relevance of the lemonade principle and how every frugal entrepreneur in South Africa somehow learn to deal with unplanned and unexpected events.



### 5.2.5 PILOT ON THE PLANE

We observe varying degrees of the 'pilot on the plane' principle among our informants and argue that causation and effectuation is almost impossible to separate in this principle. Several informants express a desire for controlling the outcome of their business, to achieve a determined goal. Like Jovan, who had a dissatisfied customer when he outsourced his work and subsequently chose not to outsource again to better control future deliveries. He and his team strive to lift South Africa's streaming service to the level of the American streaming services. We argue that this is an example of effectuation, as Jovan attempts to control the future rather than predict it. However, Jovan's goal to become the best in the industry, which supports a causal approach towards a set goal while using creative methods to get there, thereby supporting an effectual approach.

We consider Damon to use a combined causal and effectual approach, clearly utilizing the "pilot on the plane" concept. We note Damon's use of a causal approach in his aquaponics initiative. He has a distinct goal to change the curriculum in South Africa and contribute to children's education, clearly specifying whom he wishes to collaborate with along the way. Nevertheless, we observe elements of bricolage in his creative use of recycled materials, and bootstrapping, enabling him to focus on refining his product and service with limited resources. Damon is selective in choosing partners, declining those who do not support his values and business objectives. He prefers to work alone, which we speculate is to maintain better control over the quality and delivery of his service and product, as he mentions a lack of time to train new people. Additionally, he invests significant effort in training teachers and partners who will use his product to ensure high-quality execution. In this way, we argue he controls that those who use and implement his product do so with high standards. This is justified by his clear goal to introduce his product into South African schools, using available resources for value creation, and being meticulous about his collaborations. Here, we also see an effectual approach regarding the "crazy quilt" principle, as he leverages networks he has known for many years before starting his business.

We evaluate our informants to use effectuation in the beginning by controlling the controllable. For example, Soren developed his services in response to a direct demand, developing his business step by step. This emphasize effectual approach. As demand increased, he started to hire staff to serve more customers. By ensuring the services were

performed correctly by training his staff and that his business achieved customer satisfaction, he perceived control over the quality. This reflects an effectual approach, particularly aligning with the "pilot on the plane" principle, where adjustments are made as needed while progressing with the given means, developing to a value offering. Over time, as the path unfolded, Soren conceived the idea of expanding his business nationwide and developed a plan for how to achieve this and what resources would be necessary. We argue this approach to be more causal, as the focus is shifting to achieving a desired goal through a specific set of given means. This transition to a causal approach demonstrates a shift from an effectual to a causal methodology as his business evolved through the "effectual cycle."

## 6. CONCLUSION

The aim of the study was to identify the essential resources for frugal entrepreneurs within their specific contexts. Based on our analysis of collected data, we propose four main categories for resource classification: human, environmental, financial, and technological resources. However, these categories are highly interwoven, and some subcategories cannot be confined as a single category. Central to our findings is the pivotal role of human resources, particularly the specialized knowledge and networks that frugal entrepreneurs utilize. The synergy from interdisciplinary teamwork facilitates innovation, compensating for individual knowledge gaps. Additionally, the internet emerges as a vital resource, offering access to free knowledge that supports skill acquisition, which traditionally is acquired through formal education.

Cultural integration and contextual understanding are equally critical for the frugal entrepreneur to navigate in the local communities. Frugal entrepreneurs not native to a local community often adapt by employing local labor or deploying technology to bridge cultural gaps. However, a nuanced understanding of local contexts and unwritten norms is essential, often requiring more human-centered approaches than technological solutions.

Financial resources are primarily derived from personal savings and we emphasize how cash flow are used as predominant strategies for securing funding. It is common for frugal entrepreneurs to supplement their income with part-time jobs to support and bootstrap their businesses. The frugal entrepreneur often encounters challenges in securing loans, and we note they have a mistrust towards formal financial institutions, underscoring the critical role of personal finances. Some informants are leading us to believe that the supportive roles towards frugal entrepreneurs have shifted towards larger companies and private schemes which appear to be more effective in supporting, rather than formal financial institutions.

Technology is an essential resource for the frugal entrepreneur, depending on the market and industry. However, we conclude that the internet is a powerful tool used in order to learn and to gain entrepreneurial growth. The study advocates for a more in-depth academic exploration of modern bricolage, where accessible technology facilitates innovation and learning. AI and algorithms are highlighted as tools that can replicate some human and cultural functions,

helping entrepreneurs expand their reach across South Africa's linguistically diverse landscape.

In examining how frugal entrepreneurs in South Africa mobilize resources, our research has delved into the interplay between effectuation and causation within entrepreneurial resource mobilization processes. Guided by Sarasvathy's (2008) five principles, we found that the entrepreneurial strategies often reflect a hybrid approach where both causation and effectuation are dynamically integrated into their strategy for mobilizing resources, depending on the phase of business development and specific challenges encountered.

The frugal entrepreneurs' approach and ways of managing their resources align with effectuation in the startup phase where frugal entrepreneurs utilize the knowledge they possess and the networks they are familiar with when starting. Later in the cycle, frugal entrepreneurs increasingly adopt a causal approach by setting goals and seeking networks or partners who possess resources they desire access to. We conclude that we see a combination of both effectuation and causation in the practices of knowledge and network utilization, but with a predominance of effectuation in the initial phase, which gradually evolves to include more causation.

Financially, the effectual principle is prevalent, particularly in the cautious management of personal savings and the strategic use of bootstrapping. This reflects a blend of effectuation in the initial stages, moving towards causation as the business stabilizes and begins generating revenue. While partnerships are favored over competitive strategies, reflecting a possible effectual dominance, the mix of approaches varies across different competitive environments.

In dealing with unforeseen challenges, such as regular load shedding, entrepreneurs demonstrate adaptability, turning these obstacles into opportunities—an effectual hallmark. Throughout the entrepreneurial journey, the effectual approach to be flexible is prominent, where control over the venture shifts from an effectual approach in the startup phase to a more causal approach as the business matures.

Overall, our findings suggest a convergence correlation between effectuation and causation (Sarasvathy, 2001), emphasizing how the frugal entrepreneur might utilize both approaches while mobilizing their resources. This progression from effectuation to causation is

considered based on our findings as a natural evolution as entrepreneurs evolve from the startup phase through the effectual cycle.

## 6.1 THEORETICAL IMPLICATIONS

Previous research on frugal entrepreneurs has been limited, especially concerning the identification of key resources. This study proposes a typology of key resources for frugal entrepreneurs in South Africa, and further contributes to Hossain's (2022) typology, adding on technology as an essential category of resources.

The findings from the informants in this study indicate significant use of technology, an area not explored by Hossain (2022) in his research. The study can contribute to a substantial knowledge gap, and for future research on resource utilization among frugal entrepreneurs in South Africa.

## 6.2 PRACTICAL IMPLICATION

The study research frugal entrepreneurship within South Africa's resource-constrained informal sectors. Our findings show how frugal entrepreneurs strategically mobilize with limited resources. This research can enhance the understanding of critical resources and strategies among frugal entrepreneurs and providing inspiration for stakeholders looking to learn from these entrepreneurial practices in similar environments.

The study emphasizes the need for better tailored public support schemes. Some of the frugal entrepreneurs called for support in the form of guidance and financial resources. Many of the informants highlight the need for better loan conditions and the challenges of opportunities for individuals living in informal environments to take out loans as they are unbanked. There must be a greater focus on how to include informal settlements into the formal sector.

Several of the informants highlight good networks and partnerships as important for success. A good network is crucial for exchanging knowledge and gaining access to markets. Platforms for collaboration and network building are important for developing and scaling small businesses in informal environments into larger and formal companies.

We have seen that technology plays an important and decisive role for frugal entrepreneurs. Encouraging the use of new technological means can play an important role in scaling their business. Technological developments of mobile applications and platforms that provide access to market information, financial services, and social media have enabled frugal entrepreneurs to reach a larger market and improve more efficiently."

### 6.3 STUDY LIMITATIONS

We conducted individual in-depth interviews for data collection but encountered challenges using the relatively new and undefined concept of frugal entrepreneurship. The concept lacks clear definitions and frameworks for identifying who these entrepreneurs are and what their core resources consist of. The unclear definition resulted in a sample of ten frugal entrepreneurs from a wide range of industries.

Given the diversity in our sample of frugal entrepreneurs and our qualitative research method, it is difficult to draw generalizing conclusions from this study. Instead, we can offer insights based on our sample that help illuminate specific issues and solutions for frugal entrepreneurs in South Africa. Our findings highlight contextual challenges and solutions, even though they do not necessarily provide a precise understanding of what is most important for frugal entrepreneurs in varied markets.

The five principles of effectuation have been challenging to interpret because the phrasing of the principles is open to interpretations. This might have influenced our understanding of the principles, potentially shaping our discussion in ways that differ from other studies on effectuation and causation.

### 6.4 RECOMMENDATIONS FOR FUTURE RESEARCH

This study has several limitations that provide opportunities for further research. The findings from this study, along with its weaknesses and limitations, form a solid foundation for recommending further research in this field. We have analyzed ten frugal entrepreneurs in South Africa to enhance the understanding of how frugal entrepreneurs can use their resources to achieve success by implementing effectuation and causation in practice. The resources are

categorized into four groups, and future research might investigate whether this categorization is appropriate or if new categories are needed for a better understanding. Further research should also be conducted on which universal resources are important for frugal entrepreneurs. Considering the diversity of our sample of frugal entrepreneurs and the broad range of markets they operate in; future research should focus on frugal entrepreneurs within similar contextual environments to enhance the understanding of our findings. The typology in figure 7 can be tested and compared to Hossain's (2022) typology of frugal entrepreneurship to validate its veracity. We also suggest conducting a comparative study between different regions within South Africa or between South Africa and other countries with similar economic conditions to develop a universal framework for resource categories.

We recommend future studies to conduct longitudinal studies to track the process over time to understand how specific factors influence resource mobilization strategies and how they use effectuation and causation to mobilize their resources. This would provide a better understanding of how their strategies evolve, and their long-term impacts on their business.

In addition to previous research, the thesis aligns with Hossain's (2022) emphasis on the importance of knowledge, networks, cultural understanding, and financial strategies but also points to significant gaps in the current research, particularly the lack of attention to technology's role. This highlights a landscape where the correct application of technology are not only context-specific but also critical for entrepreneurial success in varying industries.

## 7. REFERENCES

- Abu-Saifan, S. (2012). Social entrepreneurship: definition and boundaries. *Technology innovation management review*, 2(2).
- Alzaim, K. (2022). 7 things we learned about frugal entrepreneurship. *United Nations Development Programme*. Retrieved May 14, 2024, from: <https://www.undp.org/arab-states/blog/7-things-we-learned-about-frugal-entrepreneurship>
- Anney, V. N. (2014). Ensuring the quality of the findings of qualitative research: Looking at trustworthiness criteria. *Journal of Emerging Trends in Educational Research and Policy Studies*, 5(2), 272-281.
- Ashoka. (n.d.). Ashoka's history. Ashoka. Retrieved May 13, 2024, from <https://www.ashoka.org/en-aaw/story/ashokas-history>
- Audretsch, D. B., & Belitski, M. (2016). Entrepreneurial ecosystems in cities: Establishing the framework conditions. *Journal of Technology Transfer*, 42(5), 1030–1051. <https://doi.org/10.1007/s10961-016-9473-8>(<https://doi.org/10.1007/s10961-016-9473-8>)
- Baker, T., & Nelson, R. E. (2005). Creating something from nothing: Resource construction through entrepreneurial bricolage. *Administrative Science Quarterly*, 50(3), 329-366. <https://doi.org/10.2189/asqu.2005.50.3.329>
- Bate, A. F. (2021). A comparative analysis on the entrepreneurial ecosystem of BRICS club countries: Practical emphasis on South Africa. *SN Business & Economics*, 1 (121). <https://doi.org/10.1007/s43546-021-00120-2>
- Baškarada, S. (2014). Qualitative Case Study Guidelines. *The Qualitative Report*, 19(24), 1-25.



- Basu, R. R., Banerjee, P. M., & Sweeny, E. G. (2013). Frugal innovation: core competencies to address global sustainability. *Journal of Management for Global Sustainability*, 1(2), 5.  
[https://archium.ateneo.edu/jmgs/vol1/iss2/5?utm\\_source=archium.ateneo.edu%2Fjmgs%2Fvol1%2Fiss2%2F5&utm\\_medium=PDF&utm\\_campaign=PDFCoverPages](https://archium.ateneo.edu/jmgs/vol1/iss2/5?utm_source=archium.ateneo.edu%2Fjmgs%2Fvol1%2Fiss2%2F5&utm_medium=PDF&utm_campaign=PDFCoverPages)
- Batjargal, B. (2007). Internet entrepreneurship: Social capital, human capital, and performance of Internet ventures in China. *Research Policy*, 36(5), 605-618.  
<https://doi.org/10.1016/j.respol.2006.09.029>
- Blakeley, S. (2023). Townships of South Africa | History, location & tourism. Study.com. Retrieved May 14, 2024, from: <https://study.com/academy/lesson/south-african-townships-overview-history-locations.html>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.
- Castleberry, A., & Nolen, A. (2018). Thematic analysis of qualitative research data: Is it as easy as it sounds? *Currents in Pharmacy Teaching and Learning*, 10(6), 807-815.  
<https://doi.org/10.1016/j.cptl.2018.03.019>
- Chandler, G. N., DeTienne, D. R., & McKelvie, A. (2011). Causation and effectuation processes: A validation study. *Journal of Business Venturing*, 26(3), 375-390.  
<https://doi.org/10.1016/j.jbusvent.2009.10.006>
- Chinyoka, S. (2020). Understanding the Roles of Effectuation and Bricolage in the Opportunity Creation Framework. *Asian Business Research*, 5(1).  
<https://doi.org/10.20849/abr.v5i1.707>
- Clough, D. R., Fang, T. P., Vissa, B., & Wu, A. (2019). Turning lead into gold: How do

- entrepreneurs mobilize resources to exploit opportunities? *Academy of Management Annals*, 13(1), 240-271. <https://doi.org/10.5465/annals.2016.0132>
- Desa, G. (2012). Resource mobilization in international social entrepreneurship: Bricolage as a mechanism of institutional transformation. *Entrepreneurship Theory and Practice*, 36(4), 727-751. <https://doi.org/10.1111/j.1540-6520.2010.00430.x>
- Duening, T. N., Shepherd, M. M., & Czaplewski, A. J. (2012). How entrepreneurs think: Why effectuation and effectual logic may be the key to successful enterprise entrepreneurship. *International Journal of Innovation Science*, 4(4), 205. <https://doi.org/10.1260/1757-2223.4.4.205>
- Effectuation. (n.d.). *What is effectuation?* retrieved 14. may 2024 from <https://effectuation.org/effectuation-101>
- Fairlie, R. W., & Fossen, F. M. (2018). Opportunity versus necessity entrepreneurship: *Two components of business creation*. <https://dx.doi.org/10.2139/ssrn.3140340>
- Fisher, G. (2012). Effectuation, causation, and bricolage: A behavioral comparison of emerging theories in entrepreneurship research. *Entrepreneurship Theory and Practice*, 36(5), 1019-1051. <https://doi.org/10.1111/j.1540-6520.2012.00537.x>
- Goel, V., Gold, B., Kapur, S., & Houle, S. (1997). The seats of reason? An imaging study of deductive and inductive reasoning. *NeuroReport*, 8(5), 1305-1310. [https://journals.lww.com/neuroreport/fulltext/1997/03240/The\\_seats\\_of\\_reason\\_An\\_imaging\\_study\\_of\\_deductive.49.aspx?casa\\_token=KJl6-IWzHkcAAAAA:GZ84DWkoRj8\\_jiG1zd1td4IbXtyblh97gDGKDNQgGv5RiJcnDJuCEJkkCVMckIfRaM5cVkyCCQiW1rmLih4KYPfr1RYkoIvO-IM](https://journals.lww.com/neuroreport/fulltext/1997/03240/The_seats_of_reason_An_imaging_study_of_deductive.49.aspx?casa_token=KJl6-IWzHkcAAAAA:GZ84DWkoRj8_jiG1zd1td4IbXtyblh97gDGKDNQgGv5RiJcnDJuCEJkkCVMckIfRaM5cVkyCCQiW1rmLih4KYPfr1RYkoIvO-IM)
- Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The Qualitative Report*, 8(4), 597-606.

- Hossain, M., Agarwal, N., Bhatti, Y., & Levänen, J. (2022). Frugal innovation: Antecedents, mediators, and consequences. *Creativity and Innovation Management*, 31(5), 521-540. <https://doi.org/10.1111/caim.12511>
- Hossain, M. (2022). Frugal entrepreneurship: Resource mobilization in resource-constrained environments. *Creativity and Innovation Management*, 31(3), 509-520. <https://doi.org/10.1111/caim.12502>
- Hossain, M., & Sarkar, S. (2023). Frugal entrepreneurship: Profiting with inclusive growth. *IEEE Transactions on Engineering Management*, 70(11), 3812-3825. <https://doi.org/10.1109/TEM.2021.3088589>
- Hossain, M., Simula, H., & Halme, M. (2016). Can frugal go global? Diffusion patterns of frugal innovation. *Technology in society*, 46, 132-139. <https://doi.org/10.1016/j.techsoc.2016.04.005>
- Jenkins, J. C. (1983). Resource mobilization theory and the study of social movements. *Annual Review of Sociology*, 9, 527-553. <https://doi.org/10.1146/annurev.so.09.080183.002523>
- Johannessen, A., Christoffersen, L. & Tufte, P. A. (2020). *Forskningsmetode for økonomisk-administrative fag* (4 utg.). Abstrakt forlag.
- Klapper, R., Upham, P., & Kurronen, K. (2018). Social capital, resource constraints, and low-growth communities: Lifestyle entrepreneurs in Nicaragua. *Sustainability*, 10(Article 3813). <https://doi.org/10.3390/su10103813>
- Ma, R., Chai, K. H., & Hang, C. C. (2015). Disruptive innovation and latecomers' catching-up dilemma: Toward a demand-side perspective of frugal entrepreneurship. In *Proceedings of the Management of the Technology Age (PICMET '15)*. IEEE. <https://doi.org/10.1109/PICMET.2015.72731933>

- Martin, R. L., & Osberg, S. (2007). Social entrepreneurship: The case for definition. *Stanford Social Innovation Review*, 5(2), 28-39
- Matli, W., & Jordaan, A. (2016). Growing capacities of sustainable entrepreneurship in townships: A theoretical perspective. *Review of Contemporary Business Research*, 5(1), 126-135. <https://doi.org/10.15640/rcbr.v5n1a10>
- Meagher, K. (2018). Cannibalizing the informal economy: Frugal innovation and economic inclusion in Africa. *The European Journal of Development Research*, 30(1), 17-33. <https://doi.org/10.1057/s41287-017-0113-4>
- Mintzberg, H., 1978. Patterns in strategy formation. *Manag. Sci.* 24 (9), 934-948. <https://doi.org/10.1287/mnsc.24.9.934>
- Mitticool. (n.d.). Mansukhbhai Prajapati. Mitticool. Retrieved May 13, 2024, from <https://mitticool.com/mansukhbhai-prajapati/>
- Msomi, T., & Olarewaju, O. (2021). Evaluation of access to finance, market and viability of small and medium-sized enterprises in South Africa. *Problems and Perspectives in Management*, 19(1), 281-289. [https://doi.org/10.21511/ppm.19\(1\).2021.24](https://doi.org/10.21511/ppm.19(1).2021.24)
- Pansera, M., & Sarkar, S. (2016). Crafting sustainable development solutions: Frugal innovations of grassroots entrepreneurs. *Sustainability*, 8(1), 51. <https://doi.org/10.3390/su8010051>
- Perry, J. T., Chandler, G. N., & Markova, G. (2012). Entrepreneurial Effectuation: A Review and Suggestions for Future Research. *Entrepreneurship Theory and Practice*, 36(4), 837-861. <https://doi.org/10.1111/j.1540-6520.2010.00435.x>
- Preisendoerfer, P., Bitz, A., & J. Bezuidenhout, F. (2014). Black entrepreneurship: A case

- study on entrepreneurial activities and ambitions in a South African township. *Journal of Enterprising Communities: People and places in the global economy*, 8(3), 162-179. <https://doi.org/10.1108/JEC-02-2012-0020>
- Salvi, E., Belz, F. M., & Bacq, S. (2023). Informal entrepreneurship: An integrative review and future research agenda. *Entrepreneurship Theory and Practice*, 47(2), 265-303. <https://doi.org/10.1177/10422587221115365>
- Sarasvathy, S. D. (2001). Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review*, 26(2), 243–263. <http://doi.org/10.5465/AMR.2001.4378020>
- Sarasvathy, S. D. (2008). *Effectuation: Elements of entrepreneurial expertise*. Edward Elgar Publishing.
- Sarasvathy, S. (2023). Questions worth asking for futures worth making: An effectual approach. *Small Business Economics*, 61(1), 11-21. <https://doi.org/10.1007/s11187-023-00747-5>
- Sarkar, S., & Mateus, S. (2022). Value creation using minimal resources – A meta-synthesis of frugal innovation. *Technological Forecasting & Social Change*, 179(1), 121612. <https://doi.org/10.1016/j.techfore.2022.121612>
- Senyard, J., Baker, T., & Davidsson, P. (2009). Entrepreneurial bricolage: Towards systematic empirical testing. *Frontiers of Entrepreneurship Research*, 29(5), Article 5.
- Shahid, M. S., Hossain, M., Karami, M., & Anwar, T. (2023). Frugal entrepreneurship: A way to seize business opportunities for low-income customers. *Asia Pacific Journal of Management*, 1-31. <https://doi.org/10.1007/s10490-023-09899-0>
- Singh, A. K. (2013). Innovative products and global sourcing: A case study of Micromax Informatics Ltd. *Delhi Business Review*, 14(2), 119-120.

- Soni, P.T., Krishnan, R., 2014. Frugal innovation: aligning theory, practice and public policy. *J. Indian Bus. Res* 6 (1), 29-47. <https://doi.org/10.1016/j.jclepro.2018.02.091>
- Statistics South Africa. (2024). *Quarterly Labour Force Survey: Quarter 4 2023* (Media release).  
<https://www.statssa.gov.za/publications/P0211/Media%20release%20QLFS%20Q4%202023.pdf>
- Sunduramurthy, C., Zheng, C., Musteen, M., Francis, J., & Rhyne, L. (2016). Doing more with less, systematically? Bricolage and ingenieuring in successful social ventures. *Journal of World Business*, 51(6), 855-870. <https://doi.org/10.1016/j.jwb.2016.06.005>
- TOMS. (n.d.). About TOMS. TOMS. Retrieved May 13, 2024, from:  
<https://www.toms.com/us/about-toms.html>
- Urban, B., & Ndou, B. (2019). Informal entrepreneurship: A focus on South African township entrepreneurs. *Journal of Developmental Entrepreneurship*, 24(04), 1950021.  
<https://doi.org/10.1142/S1084946719500213>
- Weyrauch, T., & Herstatt, C. (2016). What is frugal innovation? Three defining criteria. *Journal of Frugal Innovation*, 2(1), Article 5. <https://doi.org/10.1186/s40669-016-0005-y>
- World Bank. (2024). South Africa overview. Retrieved May 14, 2024, from:  
<https://www.worldbank.org/en/country/southafrica/overview>
- World Bank. (2023, October 25). South Africa: AFE - World Bank backs reforms to advance energy security and low-carbon transition. Retrieved May 14, 2024, from:  
<https://www.worldbank.org/en/news/press-release/2023/10/25/south-africa-afe-world-bank-backs-reforms-to-advance-energy-security-and-low-carbon-transition>
- World Economic Forum. (2014). *Entrepreneurial ecosystems around the globe and early-*

*stage company growth dynamics*. Retrieved May 14, 2024, from:

[https://www3.weforum.org/docs/WEF\\_II\\_EntrepreneurialEcosystemsEarlyStageCompany\\_Report\\_2014.pdf](https://www3.weforum.org/docs/WEF_II_EntrepreneurialEcosystemsEarlyStageCompany_Report_2014.pdf)

Williams, W. (2023). Unemployment rates: The highest and lowest worldwide. Investopedia.

Retrieved May 14, 2024, from: <https://www.investopedia.com/articles/personal-finance/062315/unemployment-rates-country.asp>

Wiltbank, R., Dew, N., Read, S., & Sarasvathy, S. D. (2006). What to do next? The case for

non-predictive strategy. *Strategic Management Journal*, 27 (10), 981–998.

<https://doi.org/10.1002/smj.555>

Zeschky, M., Widenmayer, B., & Gassmann, O. (2011). Frugal innovation in emerging

markets. *Research-Technology Management*, 54 (4), 38-45.

<https://doi.org/10.5437/08956308X5404007>

## 8. APPENDIX

### 8.1 INTERVIEW GUIDE

## Interview guide

### Introduction

Thank you for having the opportunity to participate in this interview. We want to get to know more about your strategies for creating your products or services. By participating in our study, you will contribute to a broader understanding of how businesses can overcome challenges and help us understand innovation in environments where resources are often scarce.

Any questions before we start recording?

1. So first, could you short tell us who you are, and your story of how you got into entrepreneurship?
2. where are you from and where do you currently live?
3. What is your background (training, education, and previous work experience)?
4. What is your business idea?
5. tell us about the products/services you are offering.
6. where are you operating/selling?
7. where/who is the market?
8. What motivated you to start your own business?

### Resources, constraints, and barriers

Research question: *What are the most essential resources making the frugal entrepreneur innovative in his/her context?*

1. How do you create your business?
  - How do you make your product/ service, please describe the production process?
  - What do you do that is different from others?



- What makes your business innovative?
2. What do you consider the most innovative aspect of your business?
    - Can you tell us about the most important resources behind your business?
    - What resources did you start with, and were they enough? Resources could include family support, financial access or community support.
    - How did you acquire the resources to develop your business when you started?
      - ➔ has anything changed?
  3. How about financial resources, how do you access financial resources?
    - ➔ Has anything changed from when you first started?
  4. Can you tell us about your team/employees/partners in your business?
    - How do you recruit and select your staff?
    - how do you train/educate your employees?
  5. How did you personally learn the skills and gain the knowledge for managing your business?
  6. What key factors have contributed most to your success?
    - What challenges did you face in the early stages of your business?
    - What kind of resource constraints have you experienced as an entrepreneur in your market?
  7. Are there any other challenges you experience as an entrepreneur, which you haven't mentioned?

## Strategies

Research question two: *How do frugal entrepreneurs mobilize their available resources to overcome resource constraints and challenges, and what role does effectual strategies play in the process?*

Now we are going to talk about how you overcome these barriers.

1. How do you approach these barriers? What practices do you employ to overcome these barriers? Can you please exemplify...
  - Importance of your background and how you are as person. What's your purpose, personal intention (bird in hand)
  - Your network, family, friends and community (bird in hand)
  - Your skills (bird in hand)
  - Do you sometimes receive help? If so, from who? (Bird in hand)
  - How do you look upon failures and unexpected events? How do you deal with them? Can you give us an example? (lemonade principle, as resources)
  - How do you build partnership and collaborate to grow your business (Crazy kilt).
  - How do you cope with competitors? Do you collaborate with any partners? (crazy kilt?)
  - Institutional support. Do you have any formal connections to a university, incubator etc?
  - Do you perceive that you have control of your business, and what do you do to stay on track (The pilot in the plane principle)
  - How adaptable are you to the changes? Do you stick to the plan or how do you go along? Can you please exemplify?
  - What role does creativity play in your business?

## **The ending**

1. Are there any questions you believe we should have included which we have not covered? Is there anything more you want to add, which we have not tapped into?
2. Thank you for taking your time to meet us and to help us gain important insight in this uncovered research field. You will be anonymised, and the data will be stored at a secure data storage. We will send you the transcription of the interview and the quotes we will use from the interview if you wish.

3. Do you know of any entrepreneurs or colleagues of yours which could be interested in participating in our research project?

## 8.2 SIKT CONSENT LETTER

### **Are you interested in taking part in the research project?**

#### ***Utforsk-projekt: Resource mobilization by frugal entrepreneurs in South Africa***

This is an inquiry about participation in a research project where the main purpose is to explore resource mobilization by frugal entrepreneurs in South Africa. In this letter we will give you information about the purpose of the project and what your participation will involve.

#### **Purpose of the project**

In this research project we will investigate how entrepreneurs navigate and innovate within resource- constrained environments, particularly in townships and rural areas in South Africa. The aim of our study is to contribute to a broader understanding of entrepreneurship in emerging markets. We believe that your experience and insights could provide invaluable contributions to our research and help inform policies and practices that support sustainable entrepreneurship in similar contexts.

The data collected in the research interviews, will be used for publication purposes.

#### **Who is responsible for the research project?**

NMBU Norwegian University of Life Sciences, HVL and UP, University of Pretoria.

#### **Why are you being asked to participate?**

For this research, we will recruit knowledgeable respondents who satisfy our sample criteria: The entrepreneur respondent is operating in a low-income market, in a highly constrained environment, such as a township or a rural environment offering an affordable innovation in a market with limited resources. The entrepreneur is serving customers in townships or rural poorer areas. The entrepreneur is closely connected to locally embedded and available resources (not always the most optimal), for example recycled materials (By resources we mean; materials, human capital, financial capital etc.). The product has been launched in the market and has had its first sales to customers.

The entrepreneur is operating alone or in a team of under 10 (gender and ethnicity is not of significance).

## **What does participation involve for you?**

If you chose to take part in the project, this will involve that you participate in a research interview, to answer, discuss relevant themes related to the research questions. It will take approx. 60 minutes. The questions will relate to the respondent's entrepreneurial endeavours, challenges and barriers relating to the respondent's entrepreneurial journey, their experiences relating to resource mobilization involved in starting a business, involving access and process of mobilizing your skills, network and the learning from it. The interview will be recorded (audio) and transcribed.

## **Participation is voluntary**

Participation in the project is voluntary. If you chose to participate, you can withdraw your consent at any time without giving a reason. All information about you will then be made anonymous and audio recordings will be deleted. There will be no negative consequences for you if you chose not to participate or later decide to withdraw.

## **Your personal privacy – how we will store and use your personal data**

We will only use your personal data for the purpose(s) specified in this information letter. We will process your personal data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act).

- The research group working on the research theme and master/PhD students who work with similar research themes in the Utforsk project will have access to the data.
- When using data from research interviews in analysis and in writing up papers, we will replace your name and contact details with a code. The list of names, contact details and respective codes will be stored separately from the rest of the collected data.
- We will store the data on a secure research server during the period of Utforsk.
- All collected information will be kept strictly confidential and will only be accessible to members of the research team. The data collected during the interview (recordings, the notes made by the researcher and all other material collected) will be used exclusively for the research project, they will be stored and analyzed under a code and you will be assigned a pseudonym. Any other information that can identify you will also be removed, and places and organizations you mention may also be assigned a pseudonym.
- Data is shared with our cooperation partner University of Pretoria, and all processing will be according to GDPR. An agreement on shared processing will be set-up between the parties (NMBU, HVL and University of Pretoria). Only anonymized data will be shared.
- The transcription service "totaltekst" will be used to transcribe interviews. A data processing agreement has been set up to ensure that data is processed confidentially and in accordance with the EU data protection legislation.

We will use fictive names to anonymize all respondents, as well as only using general descriptions of technologies, and companies.

### **What will happen to your personal data at the end of the research project?**

The project is scheduled to end 06/2026. The files with personal data will be safely stored on this server until the end of the project. After the conclusion of the project, all personal data will be anonymised and audiorecordings (including notes made by the researcher and all other material collected) will be deleted.

### **Your rights**

So long as you can be identified in the collected data, you have the right to:

- access the personal data that is being processed about you
- request that your personal data is deleted
- request that incorrect personal data about you is corrected/rectified
- receive a copy of your personal data (data portability), and
- send a complaint to the Data Protection Officer or The Norwegian Data Protection Authority regarding the processing of your personal data

### **What gives us the right to process your personal data?**

We will process your personal data based on your consent.

Based on an agreement with HVL, Data Protection Services has assessed that the processing of personal data in this project is in accordance with data protection legislation.

### **Where can I find out more?**

If you have questions about the project, or want to exercise your rights, contact:

- NMBU, Norwegian University of Life Sciences, via Elin Kubberød, e-mail: [elin.kubberod@nmbu.no](mailto:elin.kubberod@nmbu.no)
- Western Norway University of Applied Sciences (HVL) via Inger Beate Pettersen, email: [Inger.Beate.Pettersen@hvl.no](mailto:Inger.Beate.Pettersen@hvl.no).
- The contact person at University of Pretoria, Elma van der Lingen, [elma.vanderlingen@up.ac.za](mailto:elma.vanderlingen@up.ac.za)
- Data Protection Officer at HVL: Trine Anikken Larsen, email: [Trine.Anikken.Larsen@hvl.no](mailto:Trine.Anikken.Larsen@hvl.no)
- Data Protection Services, email: [personverntjenester@sikt.no](mailto:personverntjenester@sikt.no) or by telephone: +47 53 21 1500.

Yours sincerely,

Project leader: Elin Kubberød

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**Consent form**

I \_\_\_\_\_ have received and understood information about the project "Resourcemobilization by frugal entrepreneurs in South Africa" and have been given the opportunity to ask questions. I give consent:

- to participate in an interview
- for my personal data to be transferred outside of South Africa to EU area, in line

with GDPR I give consent for my personal data to be processed until the end date of the project approx. 06/2026.

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(Signed by participant, date)

### 8.3 THE INTERVIEWED CANDIDATES:

#### **Candidate 1, (Marlon):**

Marlon founded his business, an agritech software app that focusing on digitizing and innovate the supply chain and platform of trading between smallholding farmers and informal traders. He describes himself as curious, optimistic and open to learn. His team consist of three core members and occasionally others who help with small marketing and customer engagement. Marlon grew up in a township where he witnessed firsthand needs for better solutions. Marlon, a native of Cape Town's townships, used his economics education from Stellenbosch University to address socio-economic challenges through entrepreneurship. He founded a business aimed at empowering small-scale farmers and informal merchants in South Africa by easing trade and providing technological solutions. His venture is trying to help farmers with distribution and market access, he later also pivoted to support merchants with digital payment solutions and data-driven insights to enhance their business operations. Candidate 1 is trying to solve struggles with distribution and gaining access to a larger market. The business is connecting farmers with local informal merchants, also giving the merchants business insights and increasing their efficiency and market reach. The business has three cofounders and has also hired 17 part-time field tech agents needed to interact with customers daily.

**Candidate 2, (Ethan):** Ethan, raised in Johannesburg by a single mother, turned his early exposure to financial disparities into a drive for entrepreneurship. He founded a medical waste management company during COVID-19, targeting underserved South African townships. His business tries to improve local healthcare services but also boosts the economy by employing locals and using innovative technology, including a mobile app to streamline operations. Despite starting with minimal funds and facing significant industry challenges, Ethan's commitment to bridging economic and health gaps shines through his company's focus on community engagement and sustainable growth.

**Candidate 3, (Jovan):** Jovan grew in a family from the Zulu province. Despite attending a good school, his education was disrupted due to financial instability caused by his mother's ethical stance against corruption in her government-related business. This experience made him want to work hard to be able to secure financial stability through entrepreneurship. In 2021, Jovan co-founded his business, a production company that specializes in providing media content for local brands, events and online entertainment. Motivated by his past, he is focusing on building a stable and sustainable business to prevent the financial hardship he once faced.

**Candidate 4, (Torin):** Torin grew up in a township community where his family's entrepreneurial inspiration started by his mother selling tomatoes. With a background in film and television production, the candidate has had roles at broadcasting companies, where he developed an interest in integrating complex systems. This inspired him into entrepreneurship, focusing on technological solutions to local problems. His startup is a mobile and web-based application that connects consumers with delivery transportation providers in real-time. The platform is innovative for allowing customers and service providers to negotiate prices directly, enhancing affordability and engagement. He is currently facing challenges with securing capital as the top priority.

**Candidate 5, (Arlo):** Arlo is the CEO and co-founder. He started his entrepreneurial journey during his first year of studies. The business he operates in is a web and mobile app development company, which also offers marketing solutions, providing digital services to its clients. First involved in a business that failed, Arlo learned lessons in user engagement and product development. This experience guided him to establish his business, which now thrives by creating authentic content and fostering a community of like-minded creators and entrepreneurs through collaborative events and platforms like CoLab.

**Candidate 6, (Nolan):** Nolan, an industrial engineer from the University of Stellenbosch, using his 19 years of finance and engineering experience to innovate in the South African cargo bike industry. His company, born from a need for durable and economical transportation solutions, crafts unique electric cargo bikes using locally sourced materials. With a focus on frugal engineering and community impact, Nolan's business supports local economies and promotes sustainable practices. Despite starting with minimal resources, his resilient and creative approach has allowed him to overcome industry challenges, positioning his enterprise for future expansion and continued social impact.

**Candidate 7, (Damon):** Damon started with entrepreneurship at the age of 12 through his hobby of breeding Malawi cichlids. He later started a career in civil engineering before getting an interest for sustainable development and aquaponics farming. His venture integrates aquaponic systems into educational settings, aiming to provide learning and practical skills among students. His models, used for learning, is teaching the symbiotic relationship between fish and plants in aquaponics to create a hand-on learning environment where students can engage directly with agricultural practices. His enterprise represents a pioneering effort in combining agriculture, education, and sustainability to foster long-term community benefits.

**Candidate 8, (Soren):** Soren is coming from a small town in Limpopo, a province just north of Pretoria. He was fascinated with technology and IT early in his childhood. At university, it was expensive to repair laptops when there was something wrong. This made him see the opportunity to start his company. He then began to offer affordable tech solutions to fellow students. His business has since expanded to include a wide range of ICT services, such as web development and graphic design. Facing challenges like limited resources and the COVID-19 pandemic, Soren's adaptability has been key. Today, his company not only supports students but also serves local businesses and individuals, prioritizing customer service and community impact. Soren want to continue to expand his business across South Africa and is driven by a vision to empower and connect his community through technology.

**Candidate 9, (Lando):** Lando is initially a medical doctor frustrated with inefficiencies in Sub-Saharan Africa's healthcare system. He founded a MEDtech business, creating mobile applications to enhance clinical decisions, and established a nonprofit to employ doctors in underfunded hospitals. Driven by a philosophy of frugal innovation, Lando develops technology that maximizes impact while minimizing costs. His ventures address significant healthcare accessibility challenges by leveraging



technology and strategic partnerships. Looking ahead, he aims to expand his solutions across East Africa, continuously adapting to meet the healthcare needs of underserved populations through innovative, sustainable approaches that people can afford.

**Candidate 10, (Kyran):** Kyran's entrepreneurial journey began after observing educational gaps during his high school years, despite access to physical labs, practical experiments were rarely conducted. This insight, combined with his academic background in internal auditing and finance, drove him to innovate educational experiences. Alongside his business partner, they established a tech company focused on enhancing understanding and engagement in math and science among students through a digital platform. This platform aims to provide contextual, real-life applications of theoretical knowledge, particularly targeting schools in townships and rural areas. Kyran's company uses gamification and interactive content to make learning more appealing and effective, thereby addressing broader educational and social challenges within South Africa.