Characterising the Baobab Industry: Informality and Innovation Capacity

Dissertation

to attain the doctoral degree (Dr. forest.)

of the Faculty of Forest Sciences and Forest Ecology

Georg-August-Universität Göttingen

Submitted by

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Göttingen, November 2023

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Date of oral examination: 11 March 2024

Acknowledgements

The completion of this thesis would not have been possible without the support of others.

First and foremost, I would like thank my supervisors:

- Prof. Dr. Dietrich Darr – your insightful comments and guidance in the development and completion of this thesis is greatly appreciated. I particularly, cherish the freedom, confidence and trust I enjoyed from you in the pursuit of this work. You were more than an academic supervisor.
- Prof. Dr. Carola Paul – thank you for taken me on as a PhD student. Your critical comments were instructive and provided different perspectives that led to refining the research ideas and the papers.
- Dr. Victor Kasulo and Prof. Dr. Katharina Scheidgen – I deeply appreciate the discussion, feedback, and contributions to the drafting of the third and fourth papers respectively.

Next, I am thankful to Mr. Gift Mbwele, the field assistants, and the owners/managers of the enterprises who participated in the research. Your commitment and willing participation facilitated the collection of valuable data for the research. To my colleagues at the Faculty of Life Sciences, Rhine-Waal University of Applied Sciences, I say thank you for your professional and private support. I highly acknowledge CSIR-Forestry Research Institute of Ghana for the support given me.

To the Federal Ministry of Food and Agriculture (BMEL) and the Federal Office for Agriculture and Food (BLE), I say 'Vielen Dank' for the financial support through the BAOQUALITY project (grant number 2816PROC17).

Finally, my heartfelt gratitude goes to Charlotte N. Dumenu, Sedinam K. Dumenu, Elikem K. Dumenu, Agnes Addae, Juliet A. Dumenu, Yvonne C. Dumenu, and Justice Okyere for standing by my side during this journey

Kurzfassung
Die Verarbeitung und Vermarktung von Baobab (Adansonia digitata L.) ist ein vielversprechender Industriezweig für Nichtholzprodukte aus Wäldern (NTFP) mit einem immensen sozioökonomischen Wert und einem nachweislichen Potenzial für eine kreislauforientierte Bioökonomie. Die kontinuierliche Verwirklichung dieser Funktionen, die Leistung und das Wachstum werden jedoch durch ein hohes Maß an Informalität und eine geringe Produktivität und Innovationsleistung der Kleinst-, Klein- und Mittelbetriebe (KKMU), die an der Vermarktung beteiligt sind, beeinträchtigt. Die Bewältigung dieser Herausforderungen erfordert eine kontextspezifische Untersuchung, da KKMU, die auf NTFP basieren, heterogen sind und daher ein differenziertes Verständnis der Herausforderungen und die Entwicklung kontextbezogener Lösungen erfordern. Die kontextspezifischen Untersuchungen dieser Herausforderungen haben sich jedoch zu sehr auf die Holzindustrie konzentriert, während diejenigen, die sich mit NTFPs befassen, sich auf die Governance, den sozioökonomischen Beitrag und die Erkundung von Innovationsfällen konzentrierten, ohne dass eine Studie die Informalität und die ihr zugrunde liegenden Ursachen und Lösungen sowie die leistungssteigernden Faktoren von NTFPs-basierten Unternehmen untersucht hätte.

Die vorliegende Arbeit schließt diese Lücke, indem sie die Informalität und die leistungssteigernden Faktoren von Baobab-KMU charakterisiert. Insbesondere wird (i) die Informalität im Baobab-Verarbeitungs- und -Vermarktungssektor charakterisiert, (ii) die zugrundeliegenden Ursachen für die (Un-)Formalität in diesem Sektor und politische Maßnahmen zu deren Bekämpfung ermittelt, (iii) die Auswirkungen der unternehmerischen Motivation und der Übernahme von Geschäftspraktiken auf die Leistung informeller Baobab-Unternehmen bestimmt und (iv) die Innovationskapazität und ihre Rolle für die Innovationsleistung von Baobab-Unternehmen bewertet. Die Arbeit stützt sich auf eine Erhebung bei 305 informellen Baobab-Unternehmen und auf qualitative Interviews mit 22 Baobab-Unternehmen in vier miteinander verbundenen Studien, um die Frage zu beantworten: Welches sind die Merkmale der Informalität und die leistungsfördernden Faktoren von Baobab-Unternehmen?

In der ersten Studie (Kapitel 2) haben die Ergebnisse gezeigt, dass der Baobab-Sektor durch drei Klassen informeller Unternehmen gekennzeichnet ist: Unternehmen mit hoher Leistung in der Überlebensphase (Typ 1), Unternehmen mit mäßiger Leistung in der Überlebensphase (Typ 2) und Unternehmen mit geringer Leistung in der Anlaufphase (Typ 3). Die drei Typologien der informellen Unternehmen weisen ein duales Segment auf, das aus einer oberen und einer unteren Schicht informeller Unternehmen besteht. Die informellen Unternehmen der oberen Schicht (Typ 1 und 2) weisen eine höhere finanzielle Leistungsfähigkeit auf, sind stärker von Opportunitätsmotivation getrieben und wenden im Vergleich zu den Unternehmen der unteren Schicht (Typ 3) gute Geschäftspraktiken an. Bei der Untersuchung der Ursachen für die (Un-)Formalität und möglicher politischer Maßnahmen dagegen in der zweiten Studie (Kapitel 3) wurden die hohen Kosten der Formalität, die Ungewissheit über die Vorteile der Formalisierung, das niedrige Niveau der wirtschaftlichen Entwicklung und die laxe Durchsetzung der Rechtsvorschriften für Unternehmen als Ursachen der Informalität ermittelt. Die Senkung der Formalitätskosten, die Verbesserung des Humankapitals und die Verknüpfung von Informationskampagnen mit einer "anreizorientierten" Registrierung sind Maßnahmen, die die (Un-)Formalität in der Branche bekämpfen können. Im Gegensatz zur Literatur wurde die "Verschärfung der Strafen" als unwirksame Maßnahme zur Bekämpfung der Informalität angesehen. Hinsichtlich der Faktoren, die die Unternehmensleistung verbessern, zeigte die dritte Studie (Kapitel 4), dass die Motivation durch gute Geschäftspraktiken wie Finanzplanung, Marketing, Kostenrechnung und Buchführung die

finanzielle Leistung positiv beeinflusst, während die vierte Studie (Kapitel 5) eine Konfiguration von zehn Ressourcen und Fähigkeiten (zusammengefasst im Rahmen der Innovationskapazität) identifizierte, die die Innovationsleistung von Baobab-Unternehmen fördern.

Insgesamt leistet diese Arbeit einen Beitrag zur Literatur über informelles Unternehmertum und die Innovationsleistung von KMU, indem sie zeigt, dass ein Segment informeller KKMU, das durch die Motivation zur Nutzung von Gelegenheiten und die Anwendung guter Geschäftspraktiken angetrieben wird, das Potenzial für gute Leistung und Wachstum hat, und dass die Steigerung des Nutzens der Formalität anstelle der Kosten der Informalität die (Un-) Formalität von Unternehmen in der Baobab-Industrie beheben kann. Der entwickelte Rahmen für die Innovationskapazität bietet einen Rahmen für die Förderung der Innovationsleistung von NTFP-basierten KMU. Die Erkenntnisse über potenzielle Maßnahmen, die die (Un-) Formalität von Unternehmen und die Unternehmensleistung (Finanzen und Innovation) verbessern können, zeigen spezifische Wege auf, in die politische Entscheidungsträger und Unternehmer investieren könnten, um die Wettbewerbsfähigkeit nicht nur des Baobab-Sektors, sondern auch anderer forstbasierter Branchen in Entwicklungs- und Schwellenländern zu verbessern.

Abstract
Baobab (*Adansonia digitata* L.) processing and marketing is a promising non-timber forest product (NTFP)-based industry with immense socioeconomic value, and a demonstrable circular bioeconomy potential. However, the continuous realisation of these roles, performance and growth is beleaguered by high level of informality, and low productivity and innovation performance of the micro, small and medium enterprises (MSMEs) engaged in its commercialisation. Addressing these challenges calls for context-specific investigation recognising that NTFPs-based MSMEs are heterogenous and thus require a nuanced understanding of the challenges and devising of contextually relevant solutions. Yet, context-specific investigations of these challenges have overly focused on the timber industry while, those involving NTFPs have centred on governance, socioeconomic contribution, and exploration of innovation cases with no study investigating informality and its underlying causes and solutions, and business performance-enhancing factors of NTFPs-based enterprises.

This thesis addresses this gap by characterising informality and performance-enhancing factors of baobab MSMEs in Malawi. Specifically, it (i) characterises informality in the baobab processing and marketing sector, (ii) identifies the underlying causes of, and policy measures to addressing (in)formality in the sector, (iii) determines the effect of entrepreneurial motivation and adoption of business practices on the performance of informal baobab enterprises, and (iv) assesses innovation capacity and its role in the innovation performance of baobab enterprises. The thesis draws on a survey of 305 informal baobab enterprises, and qualitative interviews of 22 baobab enterprises in four interrelated studies to address the question: what are the characteristics of informality and performance-enhancing factors of baobab enterprises?

In the first study (Chapter 2), the results revealed that the baobab sector is characterised by three classes of informal enterprises: *high performance-survival phase enterprises (type 1), moderate performance-survival phase enterprises (type 2), and low performance-start-up phase enterprises (type 3*). The three typologies of informal enterprises exhibit a dual segment consisting of an upper- and lower-tier informal enterprises. The upper-tier informal enterprises (types 1 and 2) demonstrate higher financial performance, driven more by opportunity motivation, and implement good business practices compare to the lower-tier enterprises (type 3). Exploring the underlying causes of, and potential policy measures for (in)formality in the second study (Chapter 3), high cost of formality, uncertainty about formalisation benefits, low level of economic development, and lax enforcement of business regulatory laws were identified as causes of informality. Reducing the cost of formality, improving human capital, and coupling information campaigns with 'incentivised' registration are measures found to address (in)formality in the industry. Contrary to literature, 'increasing punishment' was deemed an less effective in address informality. On business performance-enhancing factors, the third study (Chapter 4) showed that opportunity motivation mediated by the adoption of good business practices such as financial planning, marketing, and costing and record keeping positively influence financial performance while, the fourth study (Chapter 5) identified configuration of ten resources and capabilities (synthesised into innovation capacity framework) that foster innovation performance of baobab enterprises.

Overall, this thesis contributes to literature on informal entrepreneurship, and SMEs' innovation performance by showing that a segment of informal MSMEs driven by opportunity motivation and adoption of good business practices demonstrates the potential for good performance and growth; and that increasing the benefit of formality rather than the cost of informality can address firm (in)formality in the baobab industry. The innovation capacity

framework developed provides a framework for fostering innovation performance of NTFPs-based SMEs. The findings about potential measures that can address firm (in)formality, and business performance (financial and innovation)-enhancing factors demonstrate specific avenues that policymakers and entrepreneurs could invest in to enhance the competitiveness of not only the baobab sector but also other forest product-based industries in developing and emerging economies.

Table of Contents

List of publications and contribution

The cumulative thesis comprises of four papers:

1. Dumenu, W.K., Gyekye, L.A., Paul, C., Darr, D., 2023. Should forest enterprises formalize? Insight from a multi-dimensional characterisation of informal baobab enterprises. Forest Policy and Economics, 150: 102935. https://doi.org/10.1016/j.forpol.2023.102935

   William Kwadwo Dumenu's contributions:
   Led the conceptualisation of the topic, development of the study design, performed data curation and statistical analysis; drafted all versions of the manuscript (initial drafts, and final draft following comments and contributions of co-authors); and led the publication process.

2. Dumenu, W.K., Mbwele, G.G., Darr, D. Addressing (in)formality: The perspective of baobab entrepreneurs. Journal of Small Business and Enterprise Development. *Under review*.

   William Kwadwo Dumenu's contributions:
   Led the conceptualisation of the topic, development of the study design; performed data curation, factor analysis, content analysis and synthesis of the interview transcripts, and interpretation of the results; drafted all versions of the manuscript (initial drafts, and final draft following comments and contributions of co-authors); and led the publication process.

3. Dumenu, W.K., Gyekye, L.A., Kasulo, V., Paul, C., Darr, D. Effect of entrepreneurial motivation and business practices on informal microenterprises' performance. Journal of the Knowledge Economy. *Submitted.*

   William Kwadwo Dumenu's contributions:
   Led the conceptualisation of the topic, development of the study design; performed data curation and statistical analysis; drafted all versions of the manuscript (initial drafts, and final draft following comments and contributions of co-authors); and led the publication process.

4. Dumenu, W.K., Meinhold, K., Scheidgen, K., Darr, D. Foresting innovation performance: An empirical exploration of baobab enterprises' innovation capacity. Journal of Innovation and Entrepreneurship. *Under review.*

   William Kwadwo Dumenu's contributions:
   Led the conceptualisation of the topic, development of the study design; conducted the qualitative interviews, performed data curation, coding, analysis and interpretation of the results; drafted all versions of the manuscript (initial drafts, and final draft following comments and contributions of co-authors); and led the publication process.

Abbreviations

CA	Cluster analysis
EFI	European Forest Institute
EIB	European Investment bank
FAO	Food and Agricultural Organization
GoM	Government of Malawi
MSME	Micro, small and medium scale enterprises
NTFPs	Non-timber forest products
OECD	The Organization for Economic Co-operation and Development
PCA	Principal component analysis
SEM	Structural equation modelling
SME	Small and medium scale enterprises
UN	United Nations
UNDP	United Nations Development Programme

Chapter 1

General Introduction

1.1 Background

Non-timber forest products (NTFPs) are increasingly recognised for their role in income and livelihood generation (Ghanbari et al., 2022; Kalauni and Joshi, 2018), and transition to circular bioeconomy due to their qualities as renewable biobased products with abundant innovation opportunities (EIB, 2022; Wolfslehner et al., 2016). For instance, an estimated 3.5-5.8 billion people depend on NTFPs for livelihood (Shackleton and Vos, 2022) while its commercial production provides employment for 148 million people globally (Lippe et al., 2021), an annual income of USD 2.7 billion in India (Pandey et al., 2016), and economic value of USD 365 million in Brazil (Afonso, 2022). The cascading use of baobab fruits for example (from food through cosmetics to energy products) highlights the circular bioeconomy potential of NTFPs (Darr et al., 2022).

The continuous fulfilment and realisation of these roles are dependent on the performance (financial, innovation) of micro, small and medium enterprises (MSMEs) engaged in NTFPs commercialisation; and conducive institutional environment governing NTFPs value chains (Meinhold and Darr, 2019; Afonso, 2022). In spite of that, the sector's MSMEs are beleaguered with regulatory, institutional, financial, and technological challenges that undermine their performance, growth, competitiveness, and contribution to sustainable economic development. Prominent challenges confronting them include high level of informality (Cui et al., 2022), limited access to finance (Tieguhong et al., 2012), low productivity and growth (Meinhold and Darr, et al., 2019), and low innovation performance due to lack of national level support for innovation (Weiss et al., 2017). Informality hinders productivity and growth by limiting access to credit, formal markets and business development services; and deprives government of tax revenue for economic development (de Vries et al., 2020; Ulyssea, 2020; Khamis, 2014). The lack of innovation hampers product differentiation, value-addition, productising, production of high quality products, and access to high-end markets (Afonso, 2022; Tikkanen et al., 2020).

Addressing these challenges calls for context-specific approaches (Meinhold and Darr et al., 2019) cognisant of the fact the NTFPs industry and its associated MSMEs are heterogenous in scale (e.g., micro, small), diverse in product orientation, and varied in the level of technological or innovation capacity. Context-specific approaches allow for a nuanced understanding of the challenges and devising of contextually-relevant solutions. Yet, to date, context-specific investigations of these challenges have overly focused on the timber industry with very limited attention to the NTFPs subsector (FAO and EFI, 2021). That said, studies involving NTFPs have centred on quantification of the resource base, governance, certification, socioeconomic contribution, value chain, and exploration of innovation cases (Ticktin and Shackleton, 2011; Tieguhong et al., 2015; Lovrić et al., 2012; Cunningham, 2011; Quaedvlieg et al., 2014; Živojinović et al., 2017) with few or no study investigating informality, its underlying causes and effect on the performance, and understanding of interacting factors that foster innovation performance of NTFPs-based enterprises. The knowledge gap undermines the performance, growth, and competitiveness of NTFPs-based enterprises; and their potential to support circular bioeconomy transition.

This thesis addresses this gap by characterising informality, its underlying causes (including remedial measures) and business performance (financial and innovation)-enhancing factors of

MSMEs involved in the processing and marketing of baobab (*Adansonia digitata* L.).The focus on baobab processing and marketing is motivated by the fact that it is a promising NTFP-based industry with significant socioeconomic contribution estimated to generate an annual income of USD 1 billion, employment for 2.5 million households (Wynberg et al., 2012), has a thriving local and expanding export markets, and a demonstrable circular bioeconomy potential (Darr et al., 2022; Meinhold et al., 2022). However, it is highly dominated by heterogenous informal micro and small enterprises (Gangata, 2020) with consequences for performance and competitiveness. These qualities provide a fitting case for the characterisation of informality, and performance-enhancing factors of NTFPs-based MSMEs. The knowledge generated does not only extend literature on entrepreneurship, innovation development, and formalisation of enterprises in the forest sector but also provide recommendations for entrepreneurs and policymakers desiring to invest in the growth of NTFPs-based MSMEs.

1.2 Research objectives

The overall research objective is to characterise informality, and business performance (financial and innovation)-enhancing factors of baobab MSMEs. Specifically, this thesis investigates four sub-research objectives, namely,

- characterise informality in the baobab processing and marketing sector *(Paper 1)*
- identify the underlying causes of, and policy measures to addressing (in)formality in the sector *(Paper 2)*
- determine the effect of entrepreneurial motivation and business practices on the performance of informal baobab enterprises *(Paper 3)*
- assess innovation capacity and its role in the innovation performance of baobab enterprises *(Paper 4)*

1.3 Research questions

The thesis strives to address the following research questions:

Overall research question:
What are the characteristics of informality and performance-enhancing factors of baobab enterprises?

Sub-research questions:

- What attributes characterise informal baobab enterprises?
- What are the underlying causes of, and measures to address (in)formality in the baobab sector?
- What factors influence the financial performance of informal baobab enterprises?
- What capabilities and resources (innovation capacity) foster innovation performance of baobab enterprises?

1.4 Theoretical framework: informality and innovation capacity

This thesis addresses two topics namely, (in)formality and innovation capacity of micro, small and medium enterprises. The theories and concepts that frame these topics are elaborated below:

1.4.1 Firm informality

Informality refers to market-based legal production of goods and services conducted out of sight of public authorities for monetary, regulatory and institutional reasons (Schneider et al., 2010). Informal firms thus encompass businesses or economic units that are not or partially

registered with governmental authorities, do not or partially comply with tax registration/payment, and other labour laws and business regulations (e.g., payment of social security). Informal firms are perceived to be unproductive, subsistence in their orientation, micro or small in scale, and operated by less educated and qualified persons (La Porta and Shleifer, 2016). Four schools of thought advance the causal theories of informality namely, the legalist, dualist, structuralist, and voluntarist (Fig. 1). Each of these schools provides a distinct viewpoint on the causes and motivations that instigate firm informality. The legalist school focuses on regulatory barriers, the dualist school highlights underdevelopment, the structuralist school emphasises economic exploitation, and the voluntarist school stresses the deliberate choice of informality for economic advantage.

	Legalists	Dualists	Structuralists	Voluntarists
Central viewpoint	Complex, overbearing, and costly legal and regulatory framework instigate informality	Informality is driven by underdevelopment, low employment opportunities, and quest for survival	Informality is a product of subcontracting and outsourcing practices of modern capitalist production in de-regulated open economy	Informality results from the deliberate choice to gain unfair advantage after weighing the costs and benefits of (in)formality
Determinants	Cumbersome, overbearing and costly regulatory processes (registration, taxation)	Low human capital, high rate of unemployment, poor infrastructural development, poverty and inequalities	Weak institutional environment, lack of rule of law, weak monitoring capacity, lax enforcement, corruption	Lack of enforcement, weak detection capacity, limited benefits of formality
Entrepreneurs' characteristics	Self-employed, micro and small scale, low level of technology application and innovation, less efficient	Self-employed, micro scale, survivalist, less-educated and low-skilled	Micro and small scale, low level of technology application and innovation, less efficient	Self-employed, micro scale, low productivity and efficiency
Entrepreneurs' motivation	Necessity-driven	Necessity-driven	Necessity-driven	Opportunity-driven
Policy measures	Reduce cost of formality (e.g., reduced registration cost, simplified business and tax registration), increase the benefit of formality (e.g., reduced tax burden, access to credit credit)	Improve human capital through training and education; create and increase formal job opportunities	Enforce business regulation laws, and increase monitoring, support promising informal firms to improve their businesses and access benefits of formality	Improve and increase law enforcement, increase benefits of formality (e.g., reduced tax burden, access to credit

Figure 1. Conceptual framework of informality (author's own construct)

The *Legalists* argue that complex and overbearing legal institutions and regulations (e.g., business registration and tax compliance) governing businesses lead to informality (de Soto, 1989, 2000). Inefficient and burdensome legal frameworks result in high transaction costs such as expensive registration fees and time-consuming processes, which disincentivise

formalisation (Gultom, 2014; Ostas, 2009). Reducing the cost of formality by simplifying the registration process and taxation including reducing the cost of registration and tax burden (Fajnzylber et al., 2011, Ulyssea, 2020) are measures argued to induce formalisation.

The *Dualists* contend that informality is a result of underdevelopment rather than regulatory barriers. Informal businesses are seen as survivalist enterprises in the absence of sufficient formal employment opportunities (Chen, 2012; La Porta and Shleifer, 2008). They operate on a smaller scale and are often managed by less-educated and low-skilled individuals, and driven by necessity motivations (Dell'Anno, 2021; La Porta and Shleifer, 2016). The informal sector provides employment and basic goods and services to lower-income urban populations. Improving human capital through training and education; supporting formal job creation by facilitating access to credit, technology, and business development services; and increasing job opportunities are recommended policy measures that can potentially address (in)formality (Deléchat and Medina, 2021).

The *Structuralists* posit that informality is a consequence of the economic environment created by capitalism. It considers the informal economy as secondary and micro-sized, with its workforce often exploited for cheap labour to benefit large formal firms (Portes and Schauffler, 1993; Chen et al, 2004). Structuralists argue that informal and formal economies are interconnected, with the informal sector serving as a source of cheap goods and services for larger capitalist enterprises. The thriving of informal enterprises and informal labour relations result from under-regulation of work, and lack of social protection and social transfers (Williams, 2014). In addition, lax enforcement of business laws and regulations regarding contracts, property rights, etc., and weak legal environment instigate informal business activities (Friedman et al. 2000; Antunes and Cavalcanti, 2007). Enforcing business regulation laws and increasing monitoring, providing support to promising informal businesses to access capital and technologies to improve productivity and efficiency are recommended measures to address informality (Chen, 2012; Perry et al., 2007).

The *Voluntarists* advances the view that informal entrepreneurs deliberately choose informality to evade regulations and taxes after assessing the costs and benefits (Chen, 2012). They seek a competitive advantage by avoiding taxes and regulatory compliance, and creating unfair competition for more efficient formal enterprises (Dell'Anno, 2021). Improving and increasing law enforcement capacity, and increasing the benefits of formality such as reduced tax burden, access to affordable credit are mechanisms that can address informality.

1.4.2 Innovation capacity of SMEs

Innovation involves the implementation of a new or significantly improved product, process, marketing method and/or organizational method in business practices or workplace organization (OECD, 2005). Four innovation types namely, product, process, organizational, and marketing, *inter alia*, are implemented by SMEs (Weiss et al., 2010; OECD, 2005). Innovation performance is critical for a firm's survival, growth, and competitiveness. Crucial for a firm's innovation performance is its innovation capacity.

Innovation capacity describes a set of resources and capabilities that interact at the firm level in pursuit of innovations. The resources are the firm's productive assets that may be tangible (e.g., financial, equipment), intangible (e.g., knowledge) or human (e.g., skilled employees). They are derived from within the firm and/or drawn from its external environment. The capabilities characterise the ability to access and deploy the productive resources to support processes and activities essential for innovations development (Amit and Shoemaker, 1993).

Innovation is not an event but a process that involves constant adaptation and reconfiguration of resources and capabilities, hence the need for dynamic capabilities should firms succeed in their pursuit of innovations (Lawson and Samson, 2001). Dynamic capabilities describe a firm's ability to sense, seize and shape opportunities, and reconfigure the firm's resources to maintain its competitiveness (Boly et al., 2014; Teece, 2007). Pierre and Fernandez (2018) thus define innovation capacity as a firm's set of resources and dynamic capabilities dedicated to innovation process. Depending on the context (e.g., industry type, firm or product levels), different combination of resources and capabilities are required to develop innovations (Tidd, 2001). For instance, at the product level, targeted innovation type influences the specific set of resources and capabilities needed to attain such innovation (O'connor, 2008; Garcia and Calantone, 2002; Tidd, 2001). Likewise, at the firm level, firm's characteristics influence the combination of resources and capabilities essential for innovations (Damanpour, 1991; Persaud, 2005). Consequently, varying dimensions (resources and capabilities) characterise the innovation capacity of micro, small and medium enterprises. Fourteen innovation dimensions (resources and capabilities) are theorised to characterise innovation capacity of SMEs (Pierre and Fernandez, 2018; Forsman, 2011; Keizer et al., 2001). The innovation capacity dimensions and the mechanisms through which they foster innovation performance are depicted in Fig. 2 and subsequently elaborated:

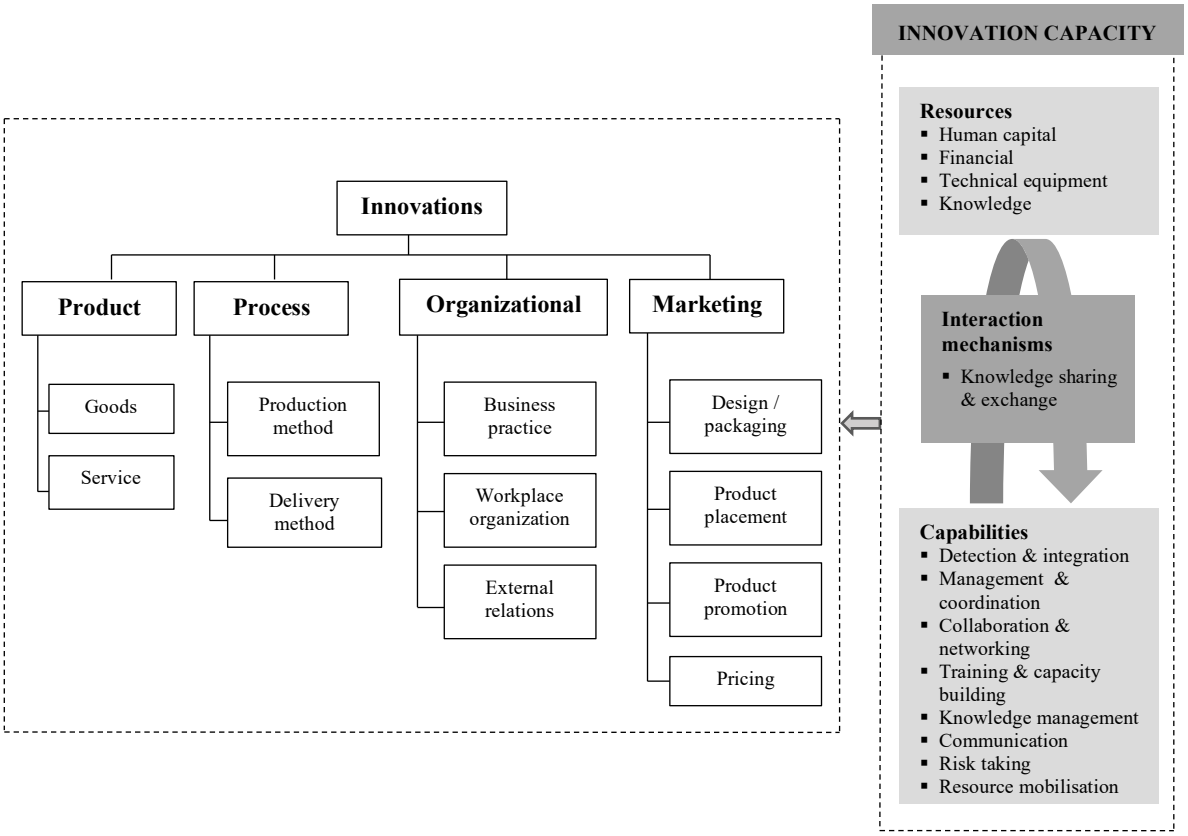

Figure 2. Conceptual framework of innovation capacity and its role in innovations (author's own construct)

Owner/manager's characteristics: SMEs owners/managers are known as initiators of innovations (Teirlinck and Spithoven, 2013). Owners/managers with professional capacity, experience, training and technical education in leadership, project management, product development, and marketing are able to spot market opportunities, organise, mobilise

resources, and efficiently manage processes/activities to develop innovations (Forsman, 2011; Romijn and Albaladejo 2002).

Network integration: SMEs face scarcity of resources (e.g., finance, equipment, technical knowhow, etc.) essential for innovation development. Resources can be leveraged through networking with relevant actors such as research and academic institutions, investors, and business and advisory support organizations (Thongsri and Chang, 2019). The capability to identify, create, utilise, and maintain beneficial networks is essential for network integration (Gronum et al., 2012; O'Regan et al., 2005); much of which relies on the owner/manager and/or employees' knowledge of their environment, absorptive capacities, and the ability to develop relationships through collaboration, contract, etc.

Users/customers integration: users/customers are a valuable source of knowledge, insight, and feedback in the process of innovation development. Integrating them into the innovation process helps firms identify market needs to inform product designs, assess the potentials of proposed innovations and receive feedback to guide modifications and enhancement, and avoid losses (Gronum et al., 2012; Von Hippel, 2005). The capability to establish channels to access users/customers' knowledge and feedback to inform the innovation process characterises a firm's innovation capacity.

Institutional support: public institutions and other organisations provide technical, financial, and capacity building support to SMEs for innovation development (Liu and Laperche, 2015). To assess institutional support, firms must possess the capability to identify, access and utilise the support to facilitate their innovation endeavours.

Innovation strategy and planning: developing an innovation strategy and action plan that align with the firm's resources, competencies, and business strategy enhances innovation performance (Terziovcki, 2010; Rothwell and Dodgson, 1991). It requires the capability to mobilise and coordinate the firm's human resources to design a strategy, a corresponding plan and an evaluation framework dedicated to innovations development.

Conditions for innovation: this refers to flexible organizational structure and operational policy that promote creativity, knowledge sharing, and collaboration to support innovation. Firms require the capability to organisationally and operationally structure their internal environment to enhance innovation process and support innovation activities (Teece, 2007). Implementing recruitment policy that support the hiring of qualified human resources, and establishing an organisational culture that promote individual creativity and communication of creative ideas amongst employees (Pierre and Fernandez, 2018) are avenues to creating condition for innovation development.

Innovation process management: innovation process comprises of a series of iterative steps or actions that are taken to achieve innovations using the capabilities and resources within the firm including resources in the firm's environment (Salerno, 2014; Tidd et al., 2013). Managing the iterative steps of innovation, from conceptualisation to implementation, and drawing on various capabilities and competencies within and outside the firm requires the capability to mobilise and coordinate internal resources, and integrate beneficial network, and institutional support.

Learning process: knowledge management is essential throughout the innovation process (Adams et al., 2006). Firms acquire knowledge internally through communication and

externally through collaboration, cooperation, and training, etc. Generating and utilising relevant knowledge rely on the capability to establish platforms to access, and share knowledge internally; develop channels to access external knowledge from users/customers, suppliers, competitors, etc. (Ferreira et al., 2015); adopt tools to manage knowledge generated; and capacity to assimilate and apply the knowledge to support innovation development.

Resource dedicated to innovation: some innovations require specialised resources such as human resources with certain specific expertise, and specialised equipment. Firms should have within their ranks diversified human resources with special skills and knowledge; and high quality specialised equipment beneficial to the innovation process (Pierre and Fernandez, 2018; Boly, 2014).

Strategy and process revaluation: business environment and market needs are dynamic. Hence, firms need to re-evaluate and adapt their innovation strategies and processes to changing business environments and market needs by the adopting new tools, knowledge and skills, etc. to remain innovative (Tierlinck and Spithoven, 2013). This requires the capability of the firm to detect, analyse the evolution of the environment, and determine the corresponding changes required and to align the improved resources and capabilities to meet the changes.

Generating cash flow: generating revenue from commercial activities and previous innovations allows firms to fund new innovation activities and attract investors to support the development of more innovations (Pierre and Fernandez, 2018). It requires the capability to proficiently evaluate and gauge potential market opportunities to ensuring that proposed innovations have the commercial viability needed for success. Correspondingly, it calls for the capability to incorporate users and customers into the innovation process to help assess the potential performance of the proposed innovations. It also requires the capability to develop sound business model that can guide the generation of revenue from the innovations and use internal financial resources to fund future innovation endeavours (Souitaris, 2001).

Access to private funding: accessing private investment, especially in the early stages of innovation development is critical. The capabilities to identify potential investors and create commercially viable projects that can attract private investment (Pierre and Fernandez, 2018) is highly essential for innovation development. Recruiting staff with knowledge of private investors and their requirements, and experienced in developing viable convincing projects can facilitate access to private investment.

Strategic management of intellectual property: developed innovations constitute a firm's intellectual property. Managing and securing intellectual property assets, such as patents and trademarks, can attract investors, capital, and new knowledge. The ability to manage, secure, and generate a firm's intellectual assets through patenting, trademark or brand positioning indicates its competence in innovation development. This serves to attract investors, capital, and new knowledge to the firm to support more innovation activities (Pierre and Fernandez, 2018).

Standards and regulations integration: innovative products or processes must meet standards and regulations. Firms must possess the capability to identify, interpret and incorporate them into their innovation processes and activities (Pierre and Fernandez, 2018). The human capital of the firms are key to the integration of standards and regulations.

1.5 Methodology

This dissertation uses multiple data sets and methods of analysis in addressing the research objectives. For the first research objective, cross-sectional data was drawn from 305 informal baobab enterprises surveyed in Malawi. Data on sociodemographic characteristics of owners/managers of the enterprises, business management capacity, registration status, reasons for not registering business, motivation for starting the business, business practices, and financial performance (sales and profit) was obtained. Principal component analysis (PCA) and cluster analyses (CA) were employed in a two-step approach to characterise and classify the enterprises. For the third research objective, the same data was used but, a structural equation modelling was applied to assess the relationship between performance, and entrepreneurial motivation and business practices.

In the case of the second research objective, Q methodology (mixed method) was employed to assess the underlying causes of informality in the baobab sector and potential measures to addressing (in)formality. Data was drawn from 17 owners/managers of formal and informal baobab MSMEs in Malawi. For the fourth research objective, a multiple case study involving five innovative baobab processing and marketing enterprises was employed. Owners/managers of the enterprises were interviewed (semi-structured interview) to gather information on innovations implemented, the process leading to the conceptualisation, development and implementation of the innovations, and factors (resources and capabilities) that influenced the development of the innovations.

1.6 Thesis structure and overview of chapters

The cumulative thesis is organised into six chapters including four research chapters (Chapters 2-5) which address the four research objectives. The research chapters comprise of four interrelated empirical studies, the results of which are published in four papers. They also address the topics of firm informality (Topic I), and firm performance (financial and innovation) (Topic II) of NTFPs-based enterprises in the forest sector. Chapters 2 and 3 are connected via Topic I by looking at the structure, underlying causes and potential solutions to informality among baobab MSMEs. Chapters 4 and 5 are linked through Topic II by exploring factors that enhance the financial and innovation performance of baobab MSMEs critical for firms' competitiveness (Fig. 3). All the four research chapters are empirical in their approach. The main contributions of the chapter are subsequently elaborated:

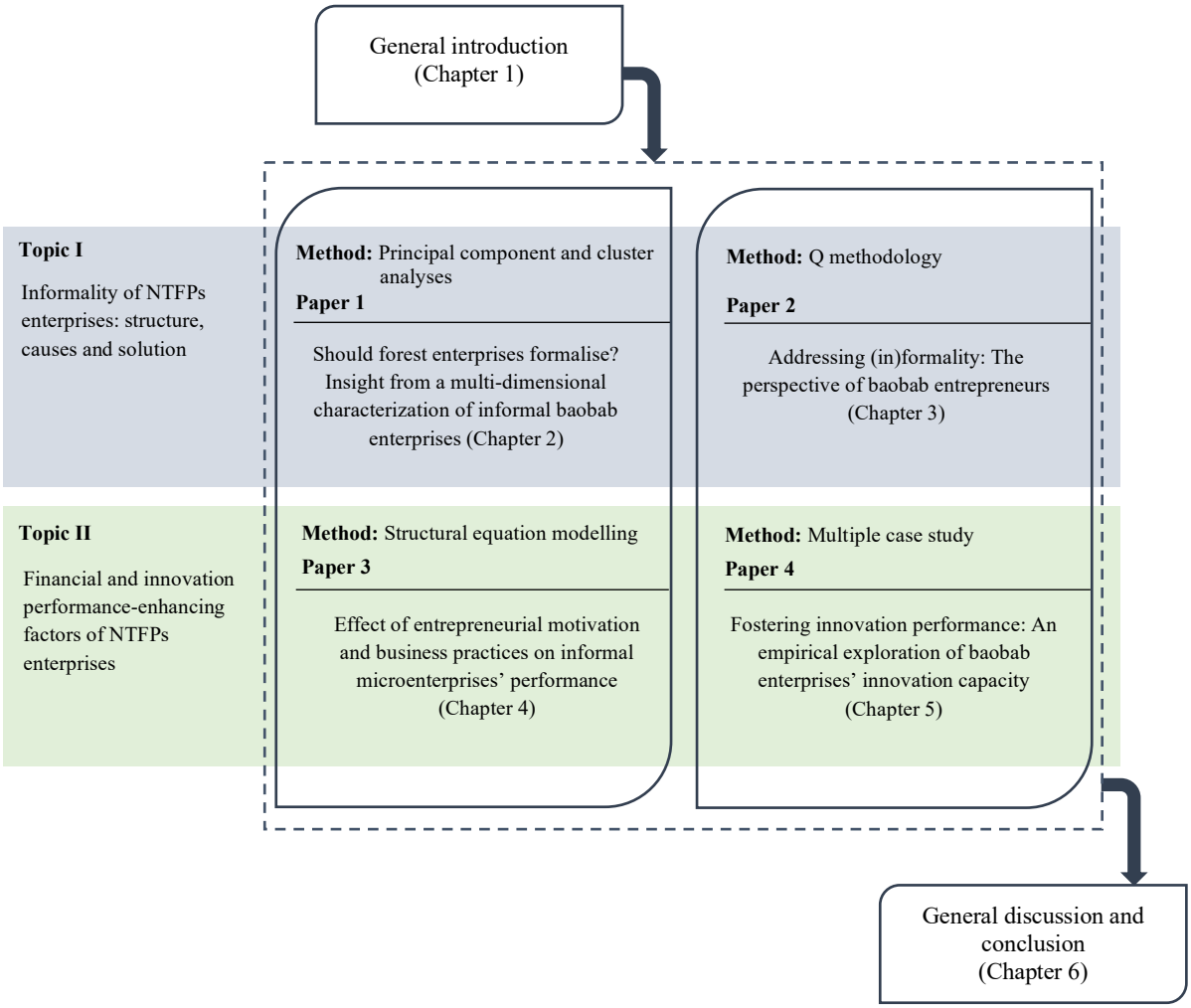

Figure 3. Structure of the thesis

Chapter 2 addresses the first research objective and focuses on the multidimensional characterisation of informal baobab MSMEs. It develops a typology to classify the enterprises based on owners/managers and firms' characteristics, business practices, and performance (financial). It also relates the preliminary reasons motivating informality of the enterprises. Three types of informal baobab enterprises exhibiting a dual segment consisting of an upper- and lower-tier enterprises were identified. The upper-tier informal enterprises (types 1 and 2) exhibited high level of financial performance, opportunity motivation and business practices adoption scores. The lower-tier enterprises (type 3) had lower performance and business practices adoption score, and higher necessity motivation score. Upper- and lower-tier informal enterprises were driven by both opportunity and necessity motivation (though to a varying degree), thus highlighting the co-presence of the two contrasting kinds of entrepreneurial motivation.

The findings raised further questions as to whether entrepreneurial motivation (necessity- or opportunity-driven motivation), and adoption of business practices influence performance (financial) and potential for growth. Also, of interest were capabilities related to owners/managers' characteristics (e.g., education, managerial competence) and other firm level characteristics (e.g., business practices) or resources that influence innovation performance of the enterprises? Furthermore, the preliminary reasons motivating informality needed further exploration, knowledge of which is critical for the development of measures that can address

them and also facilitate formalisation for improved performance, growth and competitiveness. These findings and the ensuing questions closely related to the research objectives laid the basis for further exploration in chapters 3, 4 and 5.

Chapter 3 further extended the exploration of the determinants of informality by assessing the underlying reasons motivating firm informality, and potential measures to address (in)formality, thus addressing the second research objective. The Chapter shows that high cost of formality, uncertainty about formalisation benefits, low level of economic development, and lax enforcement of business regulatory laws influence informality. Reducing cost of formality, improving human capital, and coupling information campaigns with 'incentivised' registration are measures found to address (in)formality in the baobab sector. However, increasing punishment' was deemed less effective in addressing informality.

Chapter 4 explores the performance-enhancing factors by determining the effect of entrepreneurial motivation and adoption of business practices on performance (financial) of informal baobab enterprises. This addresses the third research objective. Opportunity motivation mediated by the adoption of business practices such as financial planning, marketing, and costing and record keeping is found to positively influence performance. The findings sheds light on the productivity potential of informal microenterprises and factors that influence it.

Chapter 5 addresses the second strand of performance-enhancing factors by focusing on innovation performance. Here, the fourth research objective is tackled by assessing firm level configuration of resources and capabilities (innovation capacity dimensions) that interact to drive innovation performance of baobab MSMEs. Ten innovation capacity dimensions are identified and subsequently synthesised into an innovation capacity framework to provide a consistent frame to assess the factors, and how the factors interact to drive innovation development among NTFPs-based enterprises.

Chapter 6 synthesises the findings of the research chapters (2-5), reflect on the methodological and conceptual frameworks applied, and discusses the managerial, policy, and research implications.

1.7 Original contributions

This dissertation makes novel contributions to informality and innovation literature in four ways:

- We developed a *multidimensional typology to classify informal microenterprises* (see Paper 1), a predominant and highly heterogenous segment of the informal economy that has received little attention in development economics. The multidimensional characterisation provides a framework that allows for multivariate description of informal firms thus, improving upon the univariate-based characterisation concentrated on either owners/managers characteristics or firm characteristics. The multidimensional characterisation combines three dimensions (owners/managers characteristics, firm characteristics, and business practices) that shape informal enterprises. This helps researchers gain a comprehensive and nuanced understanding of the factors influencing firm informality.

- The findings that opportunity motivation mediated by the adoption of good business practices influences the performance of informal microenterprises contribute to the

extension of the nascent literature on factors that influence the performance and growth potential of informal enterprises (see Paper 3). It also contributes to emerging literature that addresses the widely-held assertion that informal microenterprises is a preserve of underperformance by showing that investment in good business practices by opportunity-driven microenterprises can improve their performance.

- The *development of an innovation capacity framework* (see Paper 4) is an important contribution to literature on innovation development in the forest sector (particularly, the NTFPs subsector) where there is a lack of defined construct of innovation capacity of forest products-based enterprises. The innovation capacity framework provides conceptual and analytical bases for investigating, analysing, and developing innovation-enhancing resources and capabilities of SMEs in the forest sector.

- The *mixed method approach* used in investigating the underlying causes of, and potential policy measures to address (in)formality offers a robust methodological approach that can be employed to assess the qualitative perspectives of entrepreneurs (see Paper 2). Fewer mixed method approaches have been employed in investigating (in)formality compare to quantitative or qualitative approaches.

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Chapter 2

Should forest enterprises formalize? Insight from a multi-dimensional characterisation of informal baobab enterprises

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This chapter is published in Journal of Forest Policy and Economics

Date of publication: March, 2023

DOI: https://doi.org/10.1016/j.forpol.2023.102935

Abstract

Knowledge of the structure and characteristics of informal forest enterprises is critical to determining the most appropriate course of action for their development and formalisation. This study characterises and develops a typology of informal microenterprises in the Malawian baobab processing sector; and assesses factors influencing their entry into the informal sector. Drawing on the analysis of firm-level data from 305 informal baobab processors, cost and complexity of registration, smallness (scale) of the business, and necessity-driven motivations were identified as key factors influencing informality. Coupling principal component and cluster analyses, three typologies of informal microenterprises were identified and characterised namely; *high performance-survival phase enterprises (type 1), moderate performance-survival phase enterprises (type 2), and low performance-start-up phase enterprises (type 3).* Annual net profit (earnings), firm age, and the extent of adoption of formal systems and controls explained the inherent segmentation. The segmentation suggests a dualism compromising of an upper- and lower-tier enterprises characterised by strong involuntary entry into the informal forest sector. For policy implications, we argue that the upper-tier enterprises (types 1 and 2) be targeted with business development programmes to promote their growth while, the lower-tier (type 3) targeted with skills development and social support.

Keywords

Informality, involuntary exclusion, dualism, developing economies, baobab, NTFPs

1. Introduction

The forest sector is an important source of livelihoods, employment and income generation for more than 5.76 billion people worldwide (Stoner et al., 2021). It contributes more than USD 1.52 trillion to world's gross domestic product, and employs about 33 million people (FAO, 2022), and 148 million people[1] when informal commercial production of non-timber forest products (NTFPs) is included (FAO, 2014; Lippe et al., 2021). The sector is characterized by a high degree of informality and a substantial presence of microenterprises (Arce, 2019). The informal forest sector which is highly dominated by micro, small and medium forest enterprises (SMFEs) accounts for 75% (41 million people) of forest-related jobs. The share is as high as 80% in Asia and Oceania, and 90% in Africa (Lippe et al., 2021). The socioeconomic importance of the informal forest sector (globally and in Africa) is similar to the share of informal economies in total employment (89.2%) and non-agricultural employment (76.8%) in sub-Saharan Africa (ILO, 2018).

The high level of informality is perceived as an obstacle to the growth and development of SMFEs. Why, informality restricts enterprises from accessing formal credits, business development supports, markets, legal protection, and deprives government of tax revenues for economic development (Khamis, 2014; Garcia-Bolivar, 2006). Formalization is thus seen as a key intervention to addressing the widespread informality in the forest sector because of the benefits it offers enterprises and government (Benhassine et al., 2018; De Soto, 1989). Consequently, several forested countries such as Viet Nam, Indonesia, Myanmar, Peru and Ghana have developed policies, programmes and initiatives in pursuit of SMFEs formalization (FAO/EFI, 2021). That notwithstanding, formalization have had mixed outcomes on informal firms (Aga et al., 2021; Bruhn and McKenzie 2014; Lince, 2011; Mullainathan and Schnabl 2010). Small wonder that informality is still persistent and pervasive in developing and developed countries in spite of several formalization programmes/initiatives and economic development (Chen et al., 2004). The key factor underlying the ambivalent outcomes of formalization is the considerable heterogeneity of the informal sector (Cui et al., 2022) and the limited information on comprehensive characterization of the heterogeneity. And for the forest sector, there is a dearth of information on informality particularly, the non-timber forest products (NTFPs) subsector (FAO, 2022; Cui et al., 2022) as to what characterizes this segment of informal SMFEs. Knowledge of which is critical to informing a nuanced approach to formalization. The Food and Agriculture Organization (FAO) and the European Forest Institute (EFI) alluded to this by pointing out that the "lack of data on informality in the forest sector represents a fundamental barrier to better facilitating widespread formalization";… while, stressing that "the collection of disaggregated data specific to the forestry sector" (FAO/EFI, 2021 p.5) is the first step to addressing informality and formalization.

This study addresses this gap by characterizing informal NTFPs microenterprises involved in baobab processing in Malawi, and develops a typology that reflects its heterogeneity. Specifically, it assesses entrepreneurs' reasons for informality; and characterizes informal microenterprises in relation to the owners/enterprises' characteristics, motivation, business practices and performance. The paper addresses the questions: what segmentation or typology exists among informal baobab processing enterprises; what characteristics and business practices define the segments?; and what is the implication of the segments' key attributes for formalization? We focus on the baobab processing sector because it is highly dominated by heterogenous informal microenterprises (Munthali, 2012, Gangata, 2020), and offers information on varying characteristics of the firms and entrepreneurs. The heterogeneity of the

[1] 148 million is estimated in full-time equivalent (FTE), and 33 million in headcount units.

sector begets the possibility of a segmentation, and lends itself to investigating factors underlying the segmentation, and the generation of a typology. It is also an emerging industry that holds the promise to catalyse the development of rural economies and reduce poverty in producer countries should the informal firms formalize or supported to grow (Wynberg et al., 2012; Munthali, 2012). As an emerging industry, the results of this study provides a baseline for further investigation of factors that influence the development and formalisation of the enterprises as the sector matures. It also contributes to the entrepreneurship and informality literature by extending knowledge on the characterization of microenterprises (a predominant segment of the informal economy that is less-studied), and filling data needs in the informal forest sector. Furthermore, it contributes to empirical evaluation of informal sector dualism, and its characterization. It argues practical policy considerations for the growth and development, and formalization of informal NTFPs microenterprises.

2. Informal enterprises: theories, characteristics, determinants, motivations

Informal enterprises refer to economic units that are in law or practice not or insufficiently covered by formal arrangements (ILO, 2002). This implies that informality can be viewed both as a phenomenon that is dichotomous (registered/licensed or unregistered/unlicensed) or a continuum (registered/licensed, partially registered/licensed, and unregistered/unlicensed). Informal enterprises are conceived as "units that typically operate at a low level of organization, with little or no division between labour and capital as factors of production and on a small scale" (ILO, 1993, par. 5). Informality is explained by four schools of thought: the legalist, dualist, structuralist, and voluntarist. The different schools of thought advance different causal theories and what gives rise to informal enterprises.

The *Legalist* school posits that complex, overbearing, and complicated institutions (legal system) regulating business establishment and operations lead firms to operating informally. Poorly-designed, overbearing and weak institutions creates inefficient institutional framework (Gultom, 2014) that results in high transaction costs (e.g., expensive registration fees, lost manhours due to lengthy and complex registration process, etc.). Accordingly, if compliance with laws and regulations such as tax and business registration, acquisition of formal property rights, business permit, maintenance of legal accounting records, etc. are costly (high transaction cost) and negatively impact businesses' profit margin (Kuchta-Helbling, 2000; Ostas, 2009), it disincentivizes formalization. As a result, the informal sector comprises of 'plucky' micro-entrepreneurs and self-employed individuals who choose to operate informally in order to avoid the costs, time and effort of formal registration (de Soto 1989, 2000). Also, weak institutional environment and poorly-designed institutions breed the perception of lack of rule of law, inequitable and weak enforcement of laws and regulations and encourage informality (Kuchta-Helbling, 2000; North, 1994; Elgin and Oztunali, 2013). The legalists argue that simplifying and streamlining regulatory frameworks, and strengthening and improving institutions will encourage firms to formalize, and subsequently facilitate access to formal finance and markets to unleash their growth and productive potential. This school views informal entrepreneurship as opportunity-driven and not as marginalized.

The *Structuralist* school perceives informality as the result of the suppressing economic environment created by capitalism rather than the prohibitive legal environment. They see the informal economy as a secondary (importance) economic units (micro firms), with its workforce exploited for cheap labour to maintain or enhance the competitiveness of large formal firms (Moser 1978; Castells and Portes 1989; Porter and Schauffler, 1993, Chen et al., 2004). Structuralists argue that the informal and formal economies are intrinsically linked; with the former in a subordinate position. As such, the informal economy serves a channel for

capitalist firms to produce cheap goods and services, and also pursue a new mode of production (e.g., subcontracting) albeit in an exploitative relationship. Subcontracting has enabled the expansion of informal waged work and self-employment which is carried out by the marginalized shut out of the formal economy (Davis, 2006; Gallin, 2001). Therefore, the prevalence of the informal sector is at the instance of "the nature of capitalist development (rather than a lack of growth)" (Chen et al., 2004, 17). Owing to the suppressing economic environment, informal small enterprises are characterized as unproductive, less efficient due to low cost of input (materials, labour, marketing), low operating costs, and limited technology application and innovation in their operations.

The *Dualist* school contends that informality is a manifestation of underdevelopment and not a consequence of regulatory barriers (La Porta and Shleifer, 2008). Enterprises operating in the informal space are just survivalists seeking to earn income in an environment of limited job opportunities (Benhassine et al., 2018). Tokman (2007, p.3) referred to small informal firms as the "working poor," surviving on basic trade in the absence of employment opportunities while, La Porta and Shleifer (2014) described them as survivalist firms in need of basic social services from the state so they avoid falling deeper into poverty. Thus, informality is a choice made in the absence of viable gainful employment. Consequently, informal enterprises operate on a smaller and less productive scale and driven by uneducated and less savvy managers (La Porta and Shleifer, 2016). They provide employment, goods and services for the lower income group of urban population. The school subscribes to the notion that the informal workforce are largely self-employed, and pay relatively little attention to government regulations because informal and formal activities operate "as a distinct separate sectors of the economy" (Chen, 2012, 5). The causal root of informal enterprises particularly in developing countries is the asymmetry in population growth rates and modern industrial employment, and modern economic opportunities-skills mismatch (Chen, 2012).

The *Voluntarist* school espouses the view that, informal entrepreneurs deliberately seek to avoid regulations and taxation after weighing the costs-benefits of informality relative to formality (Chen, 2012). Their choice is not motivated by the demands of burdensome regulatory framework as argued by the legalists but, they are motivated by the desire to gain a price advantage through evasion of taxes and noncompliance with regulations. They create unfair competition for more efficient formal enterprises by this behaviour (Dell'Anno, 2021). Microenterprises in urban areas of developed countries are identified to operate on the notions of the voluntarist (Maloney, 2004). The phenomenon may also be observed in developing countries (e.g., chainsaw milling sector in Cameroon).

In addition to the explication of the four schools of thought on informality, motivations of entrepreneurs (necessity- or opportunity-driven) may also explain firms' decisions to choose or remain informal. Some elements of *necessity-driven* motivations include supplementing inadequate family income, frustration with a formal job, joblessness, quest for work schedule flexibility. Independence, self-fulfilment, desire for wealth and social status are elements of *opportunity-driven* motivations (Adom, 2014; Duchenaut, 1997). Persons who enter into entrepreneurship due to the lack of alternatives are necessity-driven whilst, those doing so out of will and the desire to own a business are opportunity-driven (Adom, 2014; Aidis et al, 2006; Harding et al, 2005; Minniti et al, 2006; Reynolds et al, 2002; Smallbone and Welter, 2003). Hence, drawing on the dualist and structuralist schools of thought, informal entrepreneurs are perceived to be necessity-driven because they are portrayed as survivalists desperate to secure livelihood having been marginalized or excluded from the formal economy owing to the nature of the economic environment (capitalism) or underdevelopment. The legalist motivated

informal enterprises are necessity- and opportunity driven while, the voluntarists are opportunity-driven. That said, recent findings have challenged the perception that informal entrepreneurs are universally necessity-driven (Adom, 2014). After studying fifty informal entrepreneurs in New York City, Snyder (2004) found that informal entrepreneurs can be opportunity-driven. Lozano (1989) also found that informal entrepreneurs can be both necessity- and opportunity-driven. These results point to the fact that informal entrepreneurs can both be driven by necessity- and opportunity-related factors (Snyder, 2004; Williams and Round, 2007). The foregoing underscores the need to consider motivations when characterizing informal enterprises and the determinants of informality.

Finally, the key concepts of informality and its determinants are synthesized into a conceptual/analytical framework to guide the analysis of the reasons for informality and characterization of micro baobab processing enterprises (Table 1) in Malawi.

Table 1. Conceptual/analytical framework of determinants and characteristics of informal enterprises

	Structuralist	**Legalist**	**Dualist**	**Voluntarist**
View	Informal enterprises are direct product of a contemporary capitalism. Large firms engage marginalized firms excluded from the formal economy to reduce cost and increase competitiveness.	Informal enterprises are a response to complex and overbearing legal and regulatory framework governing business establishment and operations that is costly to fulfil.	Informal enterprises are manifestations of underdevelopment, low employment opportunities, and quest to earn livelihood.	Informal enterprises result from deliberate avoidance of tax and regulation after weighing the costs-benefits of informality relative to formality.
Key determinants	Deregulated open economy and capital accumulation by large companies. Limited state intervention in the social protection of small businesses, workers and citizens.	Cumbersome, overbearing and costly entry processes and regulations. Weak institutional environment (lack of rule of law, inequitable and weak enforcement of laws and regulations).	Asymmetry in population growth rates and modern industrial employment. Modern economic opportunities-skills mismatch.	Lack or laxity of enforcement of tax and other business regulations, and benefits of deliberate avoidance higher than the cost of penalties and other sanctions.
Enterprise's characteristics	Self-employed, micro, small, low level technology application and innovation, less efficient	'Plucky' micro and small enterprises; and are similar to formal ones in characteristics and production level	Self-employed, micro, small, survivalist	Microenterprises, low productivity, less efficient
Entrepreneur's motivation	Necessity-driven	Opportunity-driven	Necessity-driven	Opportunity-driven
Region of prevalence	Developed countries	Developing countries	Developing countries	Developed and developing countries

Authors' own construct

2.1 Stages of small business growth

Businesses go through stages of development or growth. The stage of a business is determined by the level, intensity and interplay of characteristics such as goals, management style, organizational structure, adoption of formal systems and controls, sources of finance, product line, distribution channel and market, and to some extent the number of years the business has been operating (firm age). Businesses can stay at one stage for a long time before progressing to another stage or just fizzle out. There is no explicitly defined time period for the progression into another stage. It dependents on internal factors (e.g., aspirations of the owner or management) and external factors (e.g., business environment) at play. That said, some researchers have found an 'ideal' time period that businesses should spend at a stage given a smooth running of factors. Following the works of Churchill and Lewis (1983), Scott and Bruce (1987), and Towers (2020), we highlight five stages of development of small businesses adopted for this study:

Stage 1 – Inception (start-up): in this stage the goal of the business is to establish and deliver enough products or a services to customers in order to stay viable. There is usually a single product line in a single market with limited distribution channel (Scott and Bruce, 1987). The main sources of finance is the owner, relative and friends. In terms of management, the business is the owner and performs all important tasks without delegation. Formal systems and controls such as bookkeeping, financial planning, etc. are minimal to non-existent (Churchill and Lewis, 1983). This phase spans 0-3 years of the firm's existence (Towers, 2020).

Stage 2 – Survival: in this stage, the business has demonstrated viability, and has an established product(s) or services with enough customers to serve. The goal is to increase sales and profit. The organization is still simple with the owner synonymous with the business as well as the main decision maker. The business may hire a sales manager who works under the supervision of the owner. (Churchill and Lewis, 1983). Formal systems and control are still minimal while, the main source of finance remain largely personal and private (owner, relative and friends) supplemented by formal credit financing (e.g., bank overdrafts or short-term loans). The product line is still single or limited but with expanded distribution channels (Churchill and Lewis, 1983; Scott and Bruce, 1987). This phase may span 4-6 years of the firm's existence (Towers, 2020).

Stage 3 – *Growth:* businesses in this stage have a successful product or service that generate average or above average profits. The businesses have grown in size to require functional managers perform some of the duties of the owner thus affording him or her the room to perform supervisory role (Churchill and Lewis, 1983). The business begins to separate from the owner because of the presence of other managers or owner's focus on other things. It invests its financial resources in expanding its product range (through new product development) and into new markets (multiple channels). Formal systems and controls such as financial planning, marketing, accounting, budgeting are adopted. The major sources of finance include retained earnings, banks, and new partners (Scott and Bruce, 1987). This phase may span 7-10 years of the firm's existence (Towers, 2020).

Stage 4 – *Expansion (Take-off):* in this stage, the business has established its products or services in the marketplace, experiences steep growth and increased profit (Churchill and Lewis, 1983). Its business environment is growing and becoming complex. To keep up with the increasing growth and complex business environment, it introduces professional managers, decentralizes and divisionalizes its organization structure leading to the owner being reasonably separate from the business yet, maintaining control and presence as to the future

direction of the business (Scott and Bruce, 1987; Churchill and Lewis, 1983). Formal systems and controls are fully implemented and are fundamental to its operations. Financing is through retained earnings, equity partners and long-term debt secured through its assets (Scott and Bruce, 1987). This phase may span 10-15 years of the firm's existence (Towers, 2020).

Stage 5 – *Maturity:* businesses in this phase are on the verge of becoming large firms. They are financially resourced, formal systems and controls are extensive and well-developed. The sources of finance are retained earnings and long-term debt or bridging finance (Scott and Bruce, 1987). The owners are quite separate both financially and operationally (Churchill and Lewis, 1983). The focus of the business shifts to marketing, and expansion and upgrading of the plant (Scott and Bruce, 1987). This phase may span 15+ years of the firm's existence (Towers, 2020).

3. Methodology

3.1 Sampling and data collection

A purposive multistage sampling was used to collect cross-sectional data from 305 informal baobab processing enterprises distributed across five districts in Malawi (Fig. 1). The districts (Chikwawa, Karonga, Lilongwe, Mangochi and Salima) are hotspots for baobab processing and trade. Sanchez (2011); Munthali (2012); and Darr eta al. (2020) showed that the study areas have large population of baobab trees, and are involved in the commercial production and marketing of baobab products.

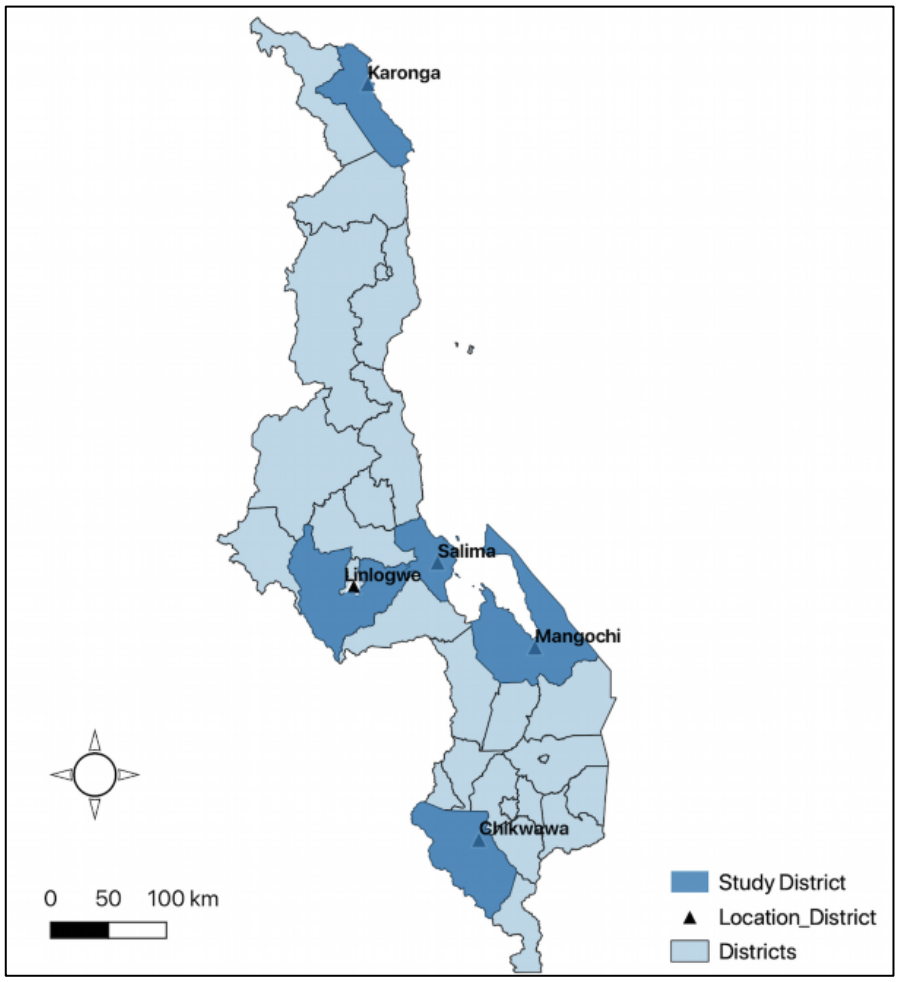

Figure 1. Map of study area

A structured questionnaire was employed to collect information on sociodemographic characteristics of owners/managers of the enterprises, business management capacity, registration status, reasons for not registering business, and motivation for starting the business. Information on business practices, and financial performance was also obtained (Table 2). The interview protocol was approved by the Mzuzu Research Ethics Committee (Ref. No. MZUNIREC/DOR/21/25). Respondents' consent was obtained before conducting the interview. The interviews were conducted between June and August 2021. The information on costs, sales and profit refer to the 2021 production season.

Informality was defined as nonpossession of a Business Registration Certificate (BRC), Tax Payer Identification Number (TPIN), and Business License (BL) from local City Council. Financial performance was operationalized using annual sales and net profit. Annual sales was measured as total revenue for products sold in a given year. Annual net profit was measured as the gross profit minus operating expenses (including all other expenses such as taxes and interest paid on debt). The relevant information was obtained through the interviews. We acknowledge that there may be instances of over- and underestimation by the interviewees, we tried to minimize this by for instance obtaining the unit cost/value of products and comparing them with the average unit cost/value of such products on the market at the district level.

Three categories of business practices were assessed namely; costing and record keeping, marketing, and financial planning. A total of nine specific business practices reflecting the aforementioned categories were measured; three practices for each category. These business practices are universally-accepted best practices used in the running of small businesses for good performance (Taylor, 1911; Borgenvall et al., 1999). The practices were measured by posing nine set of questions (three for each category of practice) to the respondents. The questions (yes/no) represent proxy indicators of the business practices (see Appendix B). A score of '1' is assigned when a respondent answers 'yes' to a question indicating adoption of an aspect of the business practice, and '0' indicating lack of or 'no' adoption. This was repeated for all the three categories of business practice. To ensure a quantitative measure of the practices, a business practice score (index) for each of the three categories, and a composite index involving all the categories were developed. The index for each category of business practice was developed by aggregating the score of the proxy indictors of a category of interest and dividing it by the total number of proxy indictors for that category. This was repeated for the three categories of business practices. A similar approach was followed in calculating the composite index for business practices where, the total number of observed business practices for all categories was aggregated and divided by the total number of proxy indicators (9) for all categories. See Appendix B for an illustration. Our approach is consistent with Mckenzie and Woodruff (2016).

Two categories of motivation for starting business were assessed namely; opportunity-driven and necessity-driven motivations. Five set of questions (yes/no) representing indicators were used in measuring the two categories of motivation. Opportunity-driven motivation had two indicators while, necessity-driven motivation had three indicators. A score of '1' is assigned when a respondent answers 'yes' to a question indicating presence of motivation, and '0' indicating no motivation. An index was then constructed to obtain a quantitative measure of each category of motivation by aggregating the score of the indictors of a category of interest and dividing it by the total number of indictors for that category (see Appendix B).

Table 2. Variables and operational definitions

Variables	Description	Variable type
Informality		
Unregistered	Do not possess BRC, TPIN, BLC	Categorical
Entrepreneur's characteristics		
Gender	Male or female	Categorical
Age	Age of the owner/manager	Continuous
Formal education	Years of schooling	Continuous
Source of finance		Categorical
Private (1)	Personal savings, family, friends	
Debt providers (2)	Bank, microfinance institution, VSLA	
Retained profit (3)	Cumulative net earnings	
Mixed (4)	Private, debt providers, and retained profit	
Distribution channel		Categorical
Single channel (1)	One distribution option	
Multiple channels (2)	Two or more distribution options	
Business management capacity (index)	Training in business management Experience in business management	Interval
Owner's motivation (index)		Interval
Necessity-driven motivation	Support for main livelihood Main means of livelihood Only viable means of employment	
Opportunity-driven motivation	Opportunity to create job Means to create wealth	
Firms characteristics		
Firm age	Number of years business has been operating	Continuous
Firm size	Number people working in the business	Continuous
Business practices		
Financial planning (index)	Financial performance review Sales target Prepare financial statement	Interval
Marketing (index)	Conduct advertisement Customer relations Competitor intelligence	Interval
Costing and record keeping (index)	Costing Written budget Keep record of business activities	Interval
Performance		
Annual sales	Total sales in USD*	Continuous
Annual net profit	Annual net in USD	Continuous

*USD1 = MWK791.23 VSLA = Village Savings and Loans Association

3.2 Assessing entrepreneurs' reasons for informality, and motivation

Descriptive statistics was used to assess entrepreneurs' reasons for informality, and motivation for starting and operating business. The descriptive information helped provide insight as to which school(s) of thought on informality explain(s) baobab processing entrepreneurs' decision of being informal. This information was also drawn upon in relation to other measured characteristics of the enterprises, and the respective entrepreneurs in identifying relevant elements that characterize the segments or typologies (clusters) of informal baobab enterprises.

3.3 Characterizing informal baobab processing enterprises

Principal component and cluster analyses were used to characterize the informal baobab enterprises and identify the underlying factors that explain their characteristics. Principal component analysis (PCA) is a statistical technique that reduces data to a smaller set of variables (principal components) and determines the variables that most influence the variation of an observed phenomenon. Cluster analysis (CA) is a set of techniques used to classify sample of subjects or objects into groups (categories) based on the similarities among the entities (Hair et al., 2019). These econometric techniques have been used to determine the compositions (segmentation) in a population of interest. For example, they have been used to categorize microenterprises in Mexico (Cunningham and Maloney, 2001); describe consumers' attitude to baobab pulp (Kiprotich et al., 2019); classify cocoa farmers in relation to their level of satisfaction with the performance of cooperatives (Higuchi et al., 2020); and classify urban park systems in the United States of America (Ibes, 2015).

In this study, PCA and CA were applied in a two-step approach to characterize informal baobab processors. In the first step, PCA was performed on the polychoric correlation matrix of the variables with orthogonal varimax rotation to identify the set of variables that explain most of the heterogeneity of the informal baobab processing enterprises. Varimax rotation was chosen after the initial oblique promax rotation did not show a significant correlation between the components. Eleven measured variables (Table 2) were included in the analysis having satisfied the assumptions for PCA: data independence, normality, matrix factorability, and sampling adequacy. The Kaiser-Meyer-Oklin Measure of Sampling Adequacy produced a KMO value of 0.704, and a Bartlett Test of Sphericity Chi-square of 389.95 with a p-value of <0.0000. Based on parallel analysis (Patil et al., 2007), all components with eigenvalue above the percentile eigenvalue of 1.140689 were retained and explained yielding four principal components. Variables (component items) with factor loadings 0.4 and below were excluded from further analysis. Those included in the analysis were saved as factor scores used in the regression method. In the second step, the results of the PCA were used as input variables in a cluster analysis. The objective was to classify the enterprises by analysing their heterogeneity and homogeneity between and within the groups (clusters). During the cluster analysis, a hierarchical clustering analysis that employs the Ward's method and Squared Euclidean distance was used to help determine the appropriate numbers of clusters to be formed. Subsequently, K-means clustering was then applied to form the clusters and classify the cluster of enterprises based on the dominant characteristics. Appendix A presents the scree plot of the PCA, and dendrogram of the K-means clustering. We named the clusters using their dominant characteristics such as business performance, extent of adoption of formal business practices, firm age, and sources of finance – all of which reflect elements of stages of development of small businesses (section 2). The analysis were performed with STATA 15.0 for Mac.

3.4 Summary statistics

Informal baobab processing enterprises are predominantly own-account businesses and micro in size, with 1-2 people working in the business. They are highly dominated by women entrepreneurs (89%, n=271) with the businesses mostly in the start-up and survival stage (3-4 years) according to business lifecycle classification. Ninety-six percent of the business owners are formally educated with 36% (n=110) of them attaining secondary school education. The level of adoption and use of business practices is low-to-moderate. Marketing (0.54) is the most common business practice with financial planning (0.38) being the least practiced. There is very poor level of business management capacity among the owners/managers. Only 6-9% of the owners/managers have acquired business management training or experience prior to establishing the baobab processing business. The establishment of the businesses are driven by

a mix of necessity- and opportunity-driven motivations. Necessity-driven motivations dominate opportunity-driven motivations with a score of 0.66. Personal savings, family and friends (50%, n=153) is the most dominant source of financing with debt providers (4%, n=12) being the least. In terms of product distribution channel, single distribution option (94%, n=288) is highly predominant compare to multiple distribution channel (6%, n=17). Overall, informal baobab microenterprises make an average annual sales and net profit of USD 353 and USD 194 respectively. Table 3 presents the summary statistics of the sampled businesses.

Table 3. Summary statistics

	N=305	Mean	Median	SD
Gender				
Male	11%			
Female	89%			
Age		36	35	10
Education (Years of schooling)		7.6	8	4.5
No formal education	4%			
Primary (8 years of schooling)	60%			
Secondary (12 years of schooling)	36%			
Firm age		3.9	3	3.7
Firm size		1.6	1	1
Source of finance				
Private	50%			
Debt providers	4%			
Retained profit	28%			
Mixed	19%			
Distribution channel				
Single	94%			
Multiple	6%			
Business practice score		0.45		
Marketing score		0.54		
Costing and record keeping score		0.42		
Financial planning score		0.38		
Business management capacity score		0.11		
Training in business management	6%			
Experience in business management	9%			
Necessity-driven motivation score		0.66		
Opportunity-driven motivation score		0.43		
Annual sales (USD)#		353	243	327
Annual net profit (USD)*		194	133	184

USD1 = MWK791.23 #excludes zeros *excludes zeros and negatives

4. Results

4.1 Entrepreneurs' reasons for informality and motivation

Five reasons were adduced for the non-registration (informality) of the baobab processing enterprises (Fig. 2). The most frequently cited reasons were cost and complexity of registration (45%, n=136) and the perception that the businesses are small scale (39%, n=118). Interestingly, 5% (n=15) of the owners feel it is not beneficial to register their business. Generally, a greater number of the informal baobab microenterprise owners knows about registration. Only 2% (n=7) did not have knowledge about business registration.

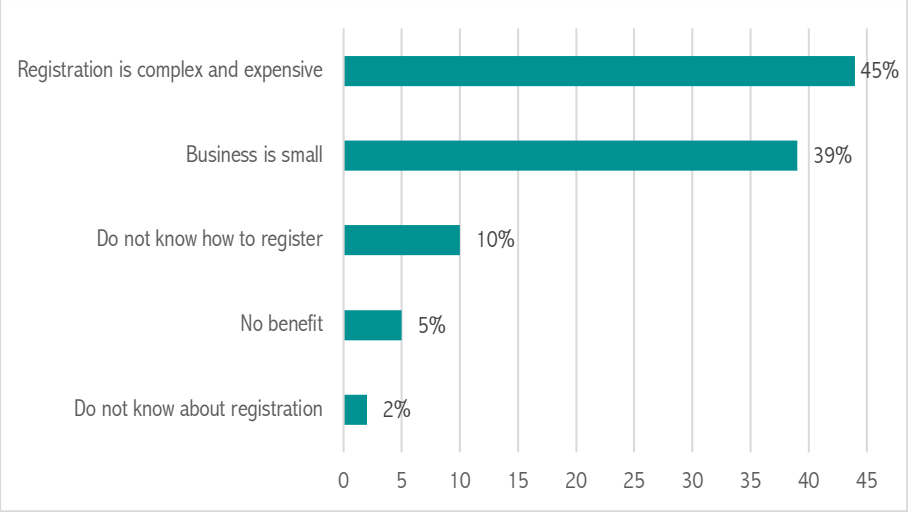

Figure 2. Reasons for not registering business

In relation to motivation for starting business, the results showed that entrepreneurs were highly driven by necessity-related considerations (68%, n=207) than opportunity-related considerations (32%, n=98). Decomposing necessity-driven motivations, 36% (n=75) of the entrepreneurs were motivated by the need to 'supplement the main source of livelihood', for others, the businesses serve as the 'main means of livelihood' (34%, n=70), and the 'only viable means of employment' (30%, n=62). For the segment that were motivated by opportunity-driven factors, more than half of them were drawn by the desire to create jobs (57%, n=38). Table 4 presents results on motivation.

Table 4. Entrepreneurs' motivation.

Motivation	N=305	
Why did you start this business		
Necessity-driven motivation	68%	
Supplement main livelihood		36%
Main means of livelihood		34%
Only viable means of employment		30%
Opportunity-driven motivation	32%	
Opportunity to create job		57%
Means to create wealth		43%

4.2 Principal component analysis and cluster analysis

The PCA produced four principal components that explained 61.77% of the total variation in the data (Table 5). Component 1 loaded four positively correlated variables namely; financial planning, costing and record keeping), and annual net profit. Component 2 loaded two positively correlated variables i.e., sources of finance and opportunity-driven motivation. Component 3 loaded profit, firm, age, and distribution channel. Component 4 heavily and moderately loaded necessity-driven motivation and years of education respectively in an inverse correlation.

Table 5. Rotated component matrix

Components and factor description	**Factor loading**	**% Variance explained**
Component 1		23.97
Costing and record keeping	0.48	
Marketing	0.47	

Financial planning	0.40	
Annual net profit	0.43	
Component 2		14.70
Sources of finance	0.71	
Opportunity-driven motivation	0.55	
Component 3		12.38
Firm age	0.69	
Distribution channel	0.66	
Component 4		10.72
Necessity-driven motivation	0.79	
Years of education	-0.51	

Using the four principal components in a two-step cluster analysis, three clusters were generated. The mean values of the clusters in their original range which indicate the set of key attributes that characterizes the informal baobab enterprises in each segment (clusters) are given in Table 6. Features that separate the three clusters are annual net profit, firm age, motivation, business practices, sources finance, distribution channel, and years of education.

Table 6. Characteristics of the clusters (typologies) based on mean score

	Cluster 1	**Cluster 2**	**Cluster 3**
Characteristics	**High performance-survival phase enterprises**	**Moderate performance-survival phase enterprises**	**Low performance-start-up phase enterprises**
Years of education	8 (5)*	8 (4)	7 (5)
Firm age (years)	5 (3)	4 (4)	3 (3)
Costing and record keeping (index)	0.59 (0.22)	0.52 (0.24)	0.33 (0.17)
Financial planning (index)	0.50 (0.21)	0.51 (0.20)	0.29 (0.19)
Marketing (index)	0.67 (0.20)	0.75 (0.17)	0.41 (0.24)
Source of finance	2 (1.19)	3 (1.21)	2 (1.20)
Distribution channel	1.1 (0.30)	1.0 (0.21)	1.1 (0.22)
opportunity-driven motivation (index)	0.54 (0.25)	0.59 (0.25)	0.33 (0.24)
Necessity-driven motivation (index)	0.68 (0.24)	0.68 (0.29)	0.66 (0.27)
Annual net profit (USD)	580 (106)	259 (67)	73 (48)
Frequency (%)	41 (13%)	87 (29%)	177 (58%)

*Standard deviation in parenthesis

Table 7 provides additional information on entrepreneurs' motivation by clusters. The results reveal that the three types of informal baobab processing enterprises largely show characteristics of involuntary entrants in the informal sector. This is indicative of the fact that a higher percent of entrepreneurs (68%, n=207) cites reasons relating to involuntary entry compare to those (32%, n=98) relating to voluntary entry.

Table 7. Motivation by cluster.

	Cluster 1	Cluster 2	Cluster 3	Total
Motivation				
Why did you start this business				
Necessity-driven motivation				
Supplement main livelihood	12%	28%	61%	24%
Main means of livelihood	15%	30%	55%	23%
Only viable means of employment	15%	30%	56%	21%
Total	9%	20%	39%	68%
Opportunity-driven motivation*				
Opportunity to create job	21%	45%	35%	18%
Means to create wealth	17%	41%	43%	14%
Total	6%	14%	13%	32%

In terms of regional distribution, Cluster 1 (17%, n=24) and cluster 2 (30%, n=43) are most predominant in the Southern region while, cluster 3 dominate the Central (63%, n=60) and Northern (61%, n=39) regions of Malawi (Fig. 3). Overlaying the clusters on Malawi subnational administrative boundaries 2020, the spatial distribution of the clusters by region are shown in Figure 4.

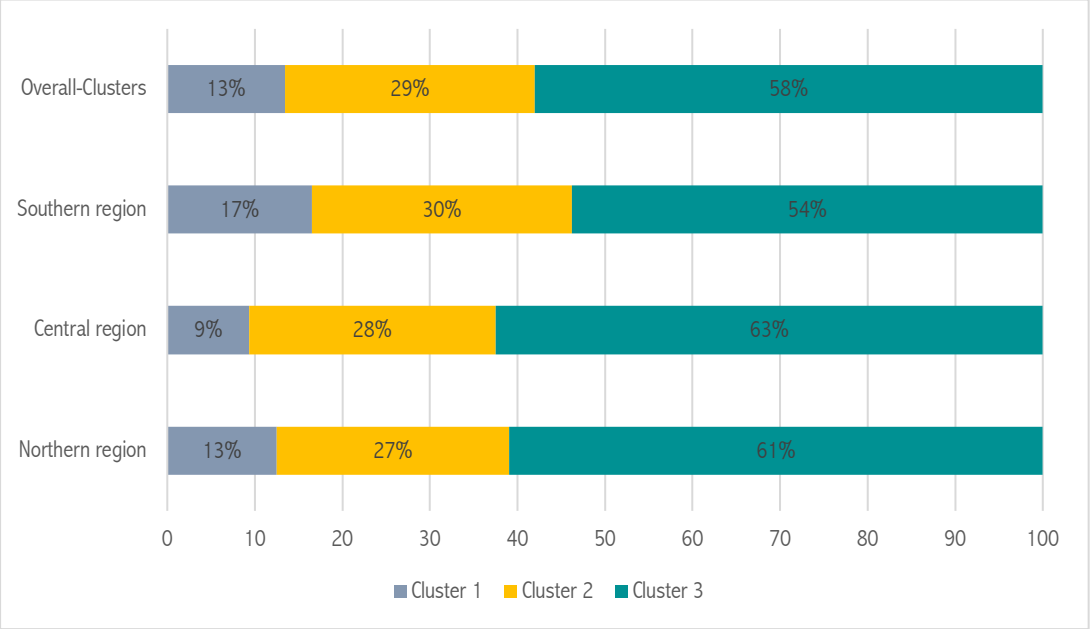

Figure 3. Percent share of clusters (informal baobab microenterprise type) by region.

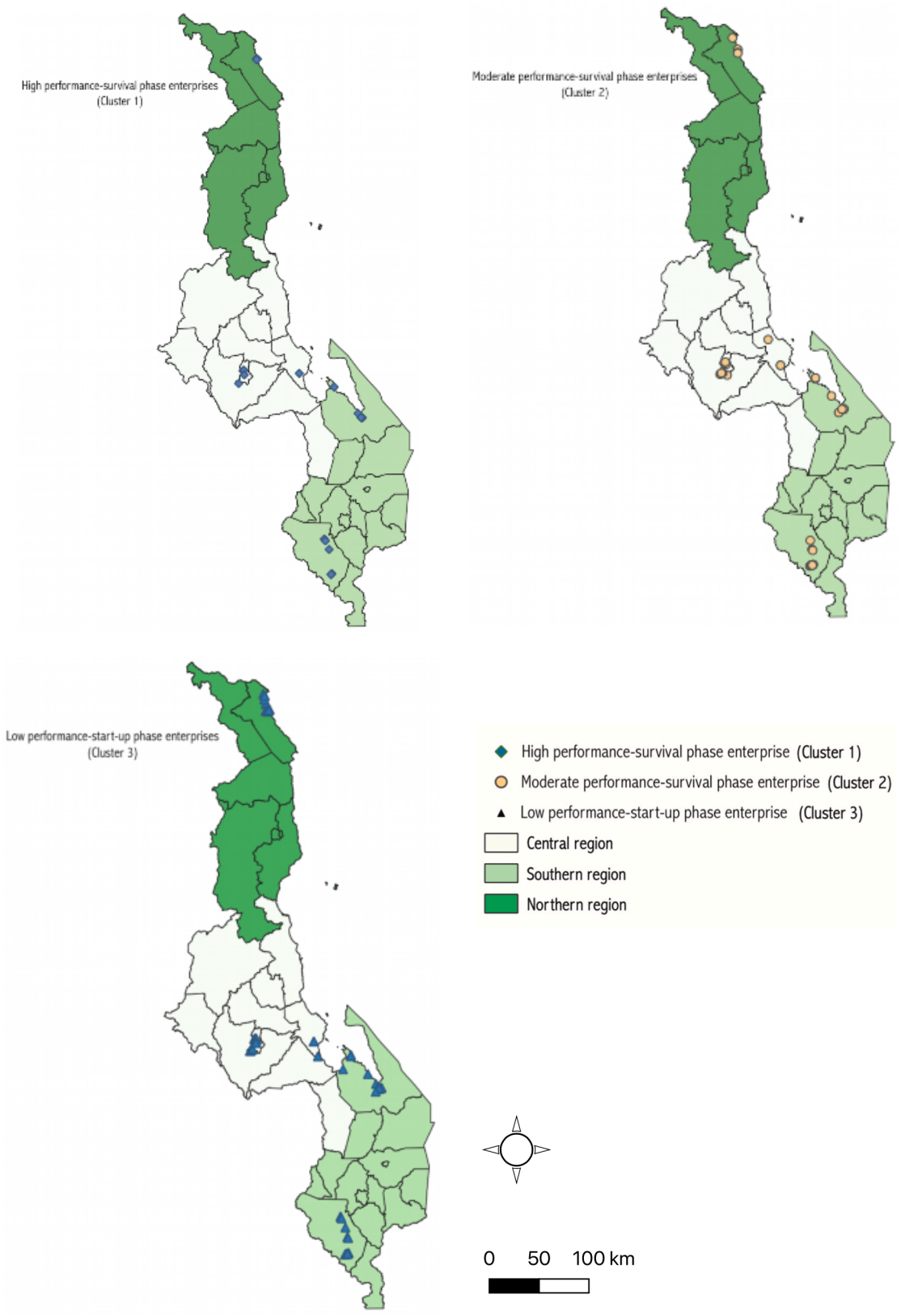

Figure 4. Spatial distribution of clusters (informal baobab microenterprise types).

4.3. Informal microenterprise classification (typology)

Based on key distinguishable features across the clusters, i.e., financial performance (annual net profit), and features of the stages of small business development (firm age, sources of

finance, product distribution channel, and the extent of adoption of formal systems and control – in this study, financial planning, costing, and recording keeping), the three clusters were classified as high performance-survival phase enterprises (Cluster 1), moderate performance-survival phase enterprises (Cluster 2), and low performance-start-up phase enterprises (Cluster 3). Cluster 3 (58%, n=177) and cluster 1 (13%, n=41) are the most and least dominant segments of informal baobab processing enterprises respectively (Table 6).

High performance-survival phase enterprises (Cluster 1) comprise of enterprises that earn high above (3 times) the mean annual net profit of the microenterprises surveyed. They are formally educated, attaining 8 years of schooling (basic level). They employ all the nine good business practices related to financial planning, marketing, costing and record keeping. With an average firm age of 5 years, this cluster of enterprises are in the survival phase of small business development cycle (Table 6). Two thirds of this cluster of enterprises demonstrate characteristics of involuntary entry (Table 7). This cluster of enterprises are most predominant in the Southern region of Malawi (Fig. 4) representing 17% (n=41) of all cluster 1 enterprises (Fig. 3).

Moderate performance-survival phase enterprises (Cluster 2) earn high net profit (1.3 times) than the mean annual net profit of all the enterprises. They have eight years of education (basic level), and apply good business practices particularly, financial planning, costing and record keeping (Table 6). Compared to the high performance-survival phase enterprises (Cluster 1), they had better mean score on adoption and use of business practices except costing and record keeping. With an average firm age of 4 years, this cluster of enterprises are in the survival phase of small business development cycle. Two thirds of this cluster of enterprises demonstrate characteristics of involuntary entry (Table 7). The group represents 29% (n=87) of the enterprises surveyed (Fig. 3), and are somewhat evenly distributed across the three regions of Malawi (Fig. 4).

Low performance-start-up phase enterprises (Cluster 3) represent the third cluster of informal baobab processing enterprises. This group of entrepreneurs earns the least profit (3 times lower than the mean annual net profit). It has the least years of education (7 years) and firm age (3 years) thus, confining them to the start-up phase of small business development stages. Two thirds of this cluster of enterprises demonstrate characteristics of involuntary entry (Table 7). The group takes the chunk of the informal enterprise types representing 58% (n=177). They are somewhat evenly distributed across the Central and Northern regions of Malawi (Fig. 4).

5. Discussion

Several reasons account for baobab processing entrepreneurs' decision for informality. Cost and complexity of registration, smallness (scale) of the business, lack of knowledge about business registration process, and the perceived lack of benefit of being registered were cited as reasons for informality (Fig. 2). Other studies in SSA have reported similar reasons. For instance, Aga et al. (2021) reported 34%, 26% and 19% of informal firms in Mozambique as adducing no benefit for registration; time, fees and paperwork; and lack of information respectively as reasons for not registering. Similarly, Benhassine et al. (2018) recorded 31% and 32% of informal firms in Benin citing costly, complicated and time consuming process, and no benefit of formalization as reasons for remaining informal respectively. Complicated and expensive registration procedure create high transaction cost and discourages formalization of firms. Foundjem-Tita et al. (2014) showed that NTFP businesses in Cameroon are unwilling to comply with formal permit requirements when compliance costs time and money, yields lower benefits, and increases the cost of doing business. In Malawi, the 2019 MSMEs survey

reported 56%, 26%, 12%, 10% and 3% of informal enterprises citing 'business is too small, don't know how, don't have money, no benefit, and it is too complicated' as reasons for not registering (FMT, 2020). The citing of 'business is small' and 'no benefit' as reasons for not registering generate two closely related interpretations. First, the owners/managers perceive their businesses as a necessity for survival or livelihood hence, no need to burden oneself with the cost of registration including subsequent demands such as annual (periodic) renewal fees, taxes, etc. that come with being registered. Second, businesses that are very small (micro in scale) or perceived as such by the owners might not benefit from formalization even if induced to do so. Baobab processing (like many other NTFPs-based enterprises) are seasonally-oriented with small revenue base thus, the need for flexible business operations that offer little cost as possible. Operating informally provides them the flexibility to avoid compliance with certain labour regulations (e.g., work contract, social security payment, work safety equipment). For such businesses, formalization offers no benefits hence, informality is more practical no matter the incentives to formalize. For example, in Viet Nam where many household businesses employ and work with relatives, these businesses are unwilling to formalize in order to avoid compliance with labour regulations such as providing contracts to family members (FAO/EFI, 2021).

In relation to motivation for starting business, our results revealed that informal baobab processing entrepreneurs are highly driven by necessity-related considerations than those related to opportunities (Table 4). The indicators for necessity-driven motivation enumerated by the entrepreneurs were that the business serves as: 'supplement to main sources of livelihood, main means of livelihood, and only viable means of employment'. These bases for entry into the informal sector suggest that informal baobab processing entrepreneurs are involuntary entrants. Cunningham and Maloney (2001) found that informal microenterprises are mostly involuntary entrants, 28% of which relates 'no other work available' and 'complement family income' as reasons for starting business. These reasons are similar to the results of our study that found 30-36% of informal baobab processing entrepreneurs citing 'supplement main sources of livelihood and only viable means of employment' as reasons for starting business (Table 4). The results further corroborate other studies which also found that some microenterprises owners are drawn by necessity to scrape out a living (McKenzie and Woodruff, 2016), or for lack of alternative (want of a wage job) or to make extra income for the household (auxiliary activity) (Cling et al., 2012). Nonetheless, a small set of the entrepreneurs (32%, Table 4) were driven by opportunity. This implies the co-presence of necessity- and opportunity-driven motivations in the informal baobab processing sector. The results agree with recent findings that necessity- and opportunity-driven factors can be co-present in the motivations of informal entrepreneurs (Williams and Bezeredi, 2018; Snyder, 2004; Williams and Round, 2007). Our results are revealing as they demonstrate that opportunity-driven motivations (exit-driven motives) for entry into the informal sector is not only dominant in developed countries (Gërxhani, 2004; Maloney, 2004) but, also present in developing countries such as Malawi. In sum, the most cited reasons for informality (cost and complexity of registration, and business is small); and motivation for starting business (necessity-driven motivations) by the baobab processing entrepreneurs resonate with the causal root of informality put forth by the legalist and dualist schools of thought. The legalists point to complex and overbearing legal and regulatory framework while, the dualist highlight low employment opportunities and quest to earn livelihood as causes of informality (Table 1). It is noteworthy that the aforementioned reasons for informality and motivations for starting business influence the potential to formalize and benefit from formalization. Aga et al. (2021) showed that, informal firms that are comparable to formal firms in terms of performance and characteristics thus, demonstrate the potential to formalize and yet, cite 'time, fees and

paperwork'(i.e., cost of registration) as the reasons for not registering are 50% less likely to formalize because they see no benefit of formalization.

The principal component analysis identified four principal factors that explain or characterize the segmentation or typologies (clusters) of informal baobab processing enterprises. The corresponding variables that significantly loaded on each components were business practices (financial planning, marketing costing and record keeping,), firm age, years of education, annual net profit, sources finance, distribution channels, and opportunity- and necessity-driven motivations (Table 5). Business practice is one of the factors that account for the heterogeneity of informal SMEs (Berkel and Tarp, 2020) though, they are of limited adoption among informal businesses compared to formal firms (Aga et al., 2021). Marketing, financial planning, costing and record keeping are elements of good business practices which were positively correlated. Good business practices play a significant role in the performance of enterprises, and the assessment of the potential for informal firms to successfully formalize. There was a positive corelation between business practices and annual net profit. This implies increased adoption of business practices such as marketing improves financial performance. Aga et al. (2021) found that the difference in business practices contributes to one quarter of the performance gap between formal and informal firms in Mozambique. They also found that business practice is a strong predictor of formalization particularly, business record keeping. This shows that informal microenterprises that adopt and use good business practices such as financial planning and record keeping are likely to increase their productivity and demonstrate the potential to successfully formalize if giving the right policy support. In fact, formalization calls for the declaration of taxes which in turn requires that firms ensure better record keeping. Necessity-driven motivation and years of education were negatively correlated, suggesting that entrepreneurs driven by necessity in starting business are relatively less educated. Informal microenterprises are known to be necessity-driven (e.g., Acs, 2006; Cling et al., 2012) while, limited level of education (Lar Porta and Shleifer, 2008; Krause et al., 2010) is identified with uncompetitive informal firms. Limited education restricts access to formal financing, information, adoption and implementation of good business practices. The situation does not limit their ability or interest to formalize but, also limit their ability to access the benefits of formalization if they even formalize (Cling et al., 2012). Distribution channel was positively correlated with firm age suggesting that expanded distribution channel is associated with maturing businesses with increased sales and product range. essential to growth as business matures increases its product range and sales. The positive correlation between opportunity-driven motivation and sources of finance suggests entrepreneurs driven by the objective to create wealth and jobs (opportunity-related motivations) require a mix of financing sources to ensure the growth of the business.

Following the results of the principal component analysis (Table 5), cluster analysis was conducted to assess the structure of the informal baobab processing sector. The results revealed three typologies namely; high performance-survival phase enterprises (Type 1), moderate performance-survival phase enterprises (Type 2), and low performance-start-up phase enterprises (Type 3). Types 1 and 2 enterprises earn considerably higher annual net profit (earnings), implement more good business practices, have slightly higher years of education, firm age, and are relatively more opportunity-driven (albeit highly driven by necessity motivation) than Type 3 enterprises (Table 6). This suggests dualism within the informal baobab processing sector consisting of the high and moderate performance-survival phase enterprises (Types 1 and 2) belonging to an 'upper-tier'; and low performance-start-up phase enterprises (Type 3) belonging to a 'lower tier'. The presence of a necessity-driven (exclusion-driven rationales) upper-tier informal baobab processing enterprises in Malawi, a developing

country shows that exclusion-driven upper-tier informal firms can also be observed in developing countries. This is contrary to traditionally-held views that developing countries are a preserve of exclusion-driven lower-tier informal workers (Fields, 1990, 2005). All the above notwithstanding, the level of education of informal baobab processing entrepreneurs is generally low (8 years of schooling = basic school level), same for business management capacity (6-9%%, n=18-27), and the adoption and use of good business practices (0.45) (Table 3). Adam and Pettenella (2013) alluded to the low level of managerial qualities in the informal forest sector that hampers the growth and development of forest product enterprises. In terms of geographical distribution, the Southern region of Malawi has the highest distribution (48%, n=146) of all enterprise types. This region has the most abundant baobab resources and hosts the most vibrant commercial city, Blantyre. Small wonder then that the region has the highest distribution of all enterprise types (Fig. 3 and 4).

The adoption of good business practices play a role in the performance of SMEs, and in the determination of informal firms that have the potential to formalize and benefit from formalization. FMT (2020) in a national survey of SMEs in Malawi revealed that successful enterprises (35% of the SMEs) were those that kept financial and business records, and are more likely to register (formalize). As such, Types 1 and 2 enterprises could be targeted for development and growth through further improvement of their business practices. Business development service (BDS) providers can offer them bespoke business development services and/or training. Training program focused on management of small businesses has large effects on business practices which in turn produce positive changes in sales and profits (McKenzie and Woodruff, 2016). The 2019 SMEs survey in Malawi recommended BDS on financial management training, business plan development, and how to register businesses for informal SMEs with potential for growth (FMT, 2020). But, the services of BDS providers in Malawi can be expensive for many of the informal baobab enterprises. Funders or grant organizations that support microenterprises can collaborate with BDS providers to subsidize training packages and offer small ticket-size deals to these enterprises. This can boost their business profile and enhance their outlook to access credit and other financial facilities on the balance of keeping proper financial records, etc. to grow their business and lead to formalization. Another option is to organize these clusters of enterprises and register them as a group business with proper business structure. As a group they can pull their resources together to access business development services, increase their output and remain competitive. On the other hand, the potential for growth and formalization is very low for the Type 3 enterprises. Berkel (2018, p.17) alluding to this category of informal enterprises stated that informal enterprise "owners' relatively low level of education… renders it difficult to run a business. It is costly and challenging to formalize and even if they manage to do so, further investments might be required to access potential benefits". Therefore, these entrepreneurs might benefit more from policies that facilitate the transition to wage employment. Aga et al. (2021) recommended skills improvement for increased employability or social support for enterprises that exhibit these characteristics.

6. Conclusion

This study characterized informal microenterprises involved in baobab processing in Malawi, and assessed the entrepreneurs' reasons for informality. The results revealed that cost and complexity of registration, smallness (scale) of the business, lack of knowledge about the business registration process, and the perceived lack of benefit of being registered were cited as reasons for informality. In addition, the study found that informal baobab processing entrepreneurs are highly driven by necessity-related than opportunity-related considerations although, the two are co-present. The necessity-driven motivations included the quest to

'supplement main source of livelihood, business serving as 'main means of livelihood', and 'only viable means of employment'. These bases for entry into the informal sector suggest that informal baobab processing entrepreneurs are involuntary entrants. Entrepreneurs' reasons for informality and motivations for starting businesses reflect the causal root of informality described by the legalist and dualist schools of thought.

The characterization of informal baobab processing firms revealed three types of microenterprises namely; *high performance-survival phase enterprises* (Type 1), *moderate performance-survival phase enterprises* (Type 2), and *low performance-start-up phase enterprises* (Type 3). Types 1 and 2 enterprises exhibit a considerably higher annual net profit (earnings), and marginally higher years of education, firm age and opportunity-driven motivations (inclusion-driven motives) compared to Type 3 enterprises. The results suggest dualism within the informal baobab processing sector with implication for the growth, development and potential for formalization. Considering the role of informal microenterprises in the economy of Malawi, the *high and moderate-survival phase enterprises* could be targeted for growth and development through business advisory supported by the government, grant organizations, and private business investment organizations. The advice may focus on improving their financial management and planning, budgeting, and marketing skills. Enterprises in the *low performance-start-up phase* category may be targeted with skills improvement for increased employability, and/or social support.

The findings of this study make a number of contributions to the entrepreneurship and informality literature by extending knowledge on the characterization of microenterprises. First, the typologies of the baobab microenterprises suggest the existence of dualism in the informal baobab processing sector including how each of the segments are characterized. This contributes to empirical evaluation of a dual informal labour market. Second, that in developing countries, not only lower-tier informal workers are driven by necessity motivations (exclusion-driven rationales), upper-tier informal firms are also driven by exclusion rationales. Third, the fact that informal baobab processing entrepreneurs in Malawi (a developing country) are driven by both necessity and opportunity rationales furthers knowledge that opportunity-driven motivations as basis for entry into the informal sector is not only dominant in developed countries but also observable in developing countries. The co-presence of necessity-driven motivations (exclusion-driven rationales) and opportunity-driven motivations (exit-driven rationales) among informal entrepreneurs provokes further conceptualization of how entrepreneurs select into the informal sector. That is, informality is not only a dichotomous choice between exclusion-driven rationales (necessity-driven motivations) for the involuntary entrants, and exit-driven rationales (opportunity-driven motivations) for the voluntary entrants but, can also involve a continuum. Fourth, the findings of this study contributes to filling data gaps in the informal forest sector particularly, NTFPs subsector. This can spur similar studies focused on other subsectors of the informal forest sector.

The complimentary use of PCA and cluster analysis provide another methodological approach to investigating the segmentation of the informal microenterprise sector (without imposing prior structure); and understanding the multidimensional features that characterize the segments. The methodological framework used in this study allowed us to draw cautious inferences about the existence of dualism within the informal baobab processing sector. The approach can be applied to other baobab processing industries in other regions, and also extended to microenterprises of other emerging or existing informal subsectors to assess segments inherent in such sectors. One utility of this approach (particularly, the use of PCA) is that it allows for the incorporation of several variables (entrepreneurs and firms'

characteristics) in the classification of enterprises. Our approach which employs the use of PCA works with variables (entrepreneurs and firms' characteristics) proven by literature to characterize the heterogeneity of informal enterprises. This highlights a limitation of the approach that it is not suitable when the focus is about assessing the latent variables or constructs that underlie the measured (observed) variables (entrepreneurs and firms' characteristics), and subsequent classification of the enterprises. For this purpose, factor analysis may be the most appropriate technique prior to conducting cluster analysis to identifying enterprise typologies. That notwithstanding, future research can look at refining or augmenting the methodological approach for instance by applying mixed method to investigate some of the characteristics that explain typologies of the informal microenterprises. Furthermore, the mixed method can also be used to explore in greater depth entrepreneurs' (informal and formal) perspectives on the causes of informality and practical interventions to inducing formalization in future studies. The resulting findings can help inform policies regarding characteristics of potential entrepreneurs and firms to target for growth and development, and pathways to formalization. Also, this paper assessed the causes of informality through the four schools of thought on informality. Considering that explanation of causes of informality has shifted over time from structural dualism to excessive government regulation (Gultom, 2014) – a development confirmed by our results where costly and cumbersome regulation ("registration is complex and expensive") is cited as the most common causes of informality (Fig. 2), institutions and transaction costs framework may be applied in future research to further explicate the causes of informality.

Acknowledgements
We express our appreciation to all the owners/managers of the baobab processing enterprises for their participation in the interviews as well the team of enumerators and the research assistant. Many thanks to the anonymous reviewers whose critical comments have greatly shaped this paper.

Funding
This research was financially supported by funds of the Federal Ministry of Food and Agriculture (BMEL) based on a decision of the Parliament of the Federal Republic of Germany via the Federal Office for Agriculture and Food (BLE), grant number 2816PROC17 (BAOQUALITY project).

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Appendix A

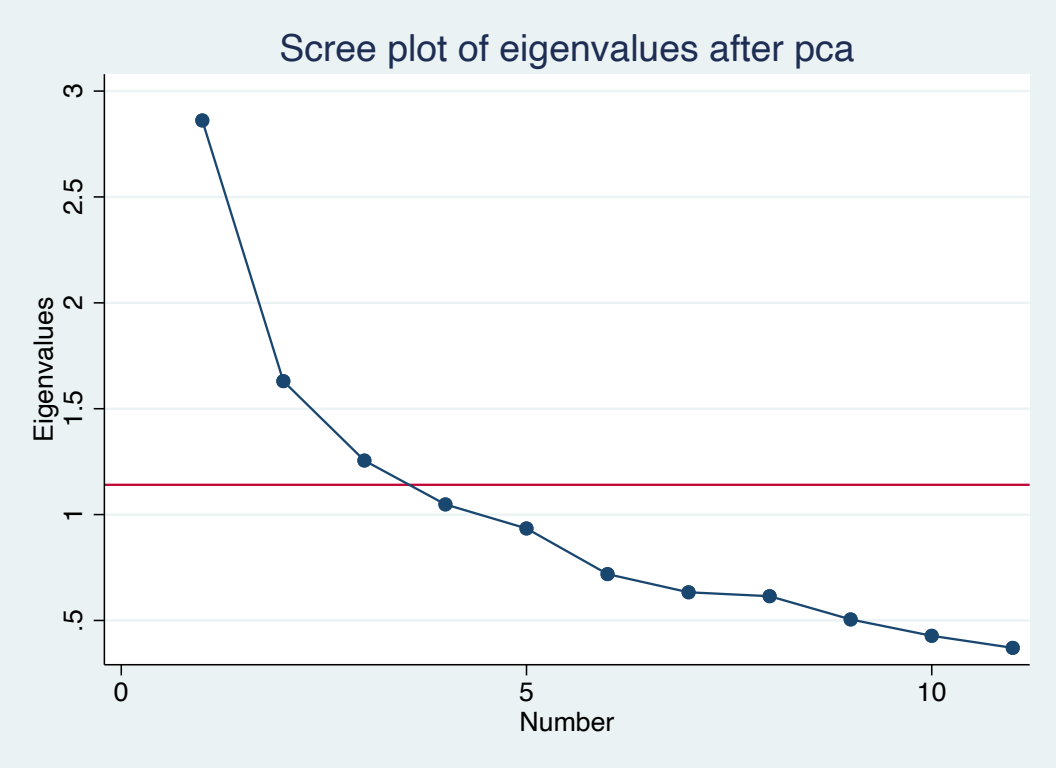

Figure A1. Scree plot for the eigenvalues

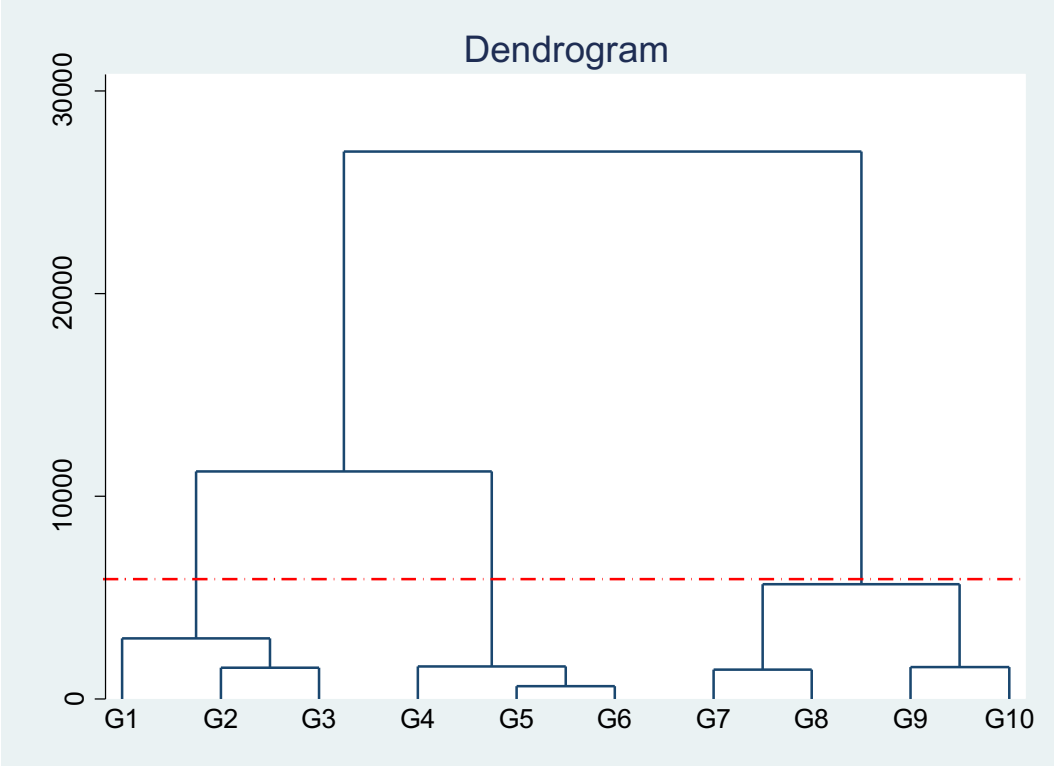

Figure A2. Dendrogram of the K-means clustering

Appendix B
Constructing indices for business practices

Table B1. Constructing costing and record keeping index

Proxy indicator	Question	Score (Yes=1, No=0)	Index
Record business activities	Do you keep business records (written or electronic e.g., inventory book, inventory software or app)?	1	
Written budget	Do you have a written budget, which tells you how much you have to pay each week or month or year for rent, electricity, maintenance, transport, advertising, and other indirect costs of the business?	0	
Costing	Have you worked out the unit cost of each main product you sell?	1	
Aggregate score		2	
Number of proxy indicators		3	
	$\frac{Score}{Number\ of\ proxy\ indicators}$	$\frac{2}{3}$	0.67

Table B2. Constructing financial planning index

Proxy indicator	Question	Score (Yes=1, No=0)	Index
Financial performance review	Do you review the financial performance of your business and analyse areas for improvement?	1	
Sales target	Do you have a target set for sales over the next year?	0	
Financial statement	Do you perform business accounting of your operation?	0	
Aggregate score		1	
Number of proxy indicators		3	
	$\frac{Score}{Number\ of\ proxy\ indicators}$	$\frac{1}{3}$	0.33

Table B3. Constructing marketing index

Proxy indicator	Question	Score (Yes=1, No=0)	Index
Advertising	Do you conduct any form of advertising	1	
Customer relations	Do you engage in any form of customer relations practices	1	
Competitor intelligence	Do you visit competitor(s) business to see what prices they are charging, products they are selling, or processes they are using?	1	
Aggregate score		3	
Number of proxy indicators		3	
	$\frac{Score}{Number\ of\ proxy\ indicators}$	$\frac{3}{3}$	1

Table B4. Constructing composite index for business practices

Indicator	Score		Index
Costing and record keeping	2		
Financial planning	1		
Marketing	3		
Aggregate score	6		
Number of proxy indicators	9		
	$\frac{Score}{Number\ of\ proxy\ indicators}$	$\frac{6}{9}$	0.67

Constructing indices for motivation

Table B5. Constructing motivation index

Proxy indicator	Question	Score (Yes=1, No=0)	Index
Necessity-driven motivation			
Support for main livelihood	I chose to establish this business as a support to my main livelihood activity	0	
Main means of livelihood	I chose to establish this business as a means of livelihood	1	
Only viable means of employment	I chose to establish this business because it is the only viable employment or livelihood activity I found	1	
Aggregate score			
Number of proxy indicators		3	
	$\frac{Score}{Number\ of\ proxy\ indicators}$	$\frac{2}{3}$	0.67
Opportunity-driven motivation			
Opportunity to create job	I chose to establish this business to create employment	0	
Means to create wealth	I chose to establish this business because it is lucrative	1	
Aggregate score		1	
Number of proxy indicators		2	
	$\frac{Score}{Number\ of\ proxy\ indicators}$	$\frac{1}{2}$	0.5

Chapter 3

Addressing (in)formality: The perspective of baobab entrepreneurs

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This chapter is under review in Journal of Small Business and Enterprise Development

Abstract

Purpose – This paper explores entrepreneurs' perspectives on the underlying causes of, and contextually relevant solutions to firm (in)formality. It addresses a knowledge gap in the study of (in)formality that has contributed to the marginal progress in reducing informality (8-10%) in emerging markets and developing economies in spite of four decades of relentless effort.

Design/methodology/approach – The study employs Q methodology to assess the in depth viewpoints of 17 informal/formal entrepreneurs on 43 determinants and policy measures of (in)formality.

Findings – High entry/ongoing costs of formality, uncertainty about formalisation benefits, low human capital, and lax enforcement of business regulations are identified as causes of informality. Improving entrepreneurial capacity and skill development through training and education, decreasing the cost of formality (reduced registration fee, favourable tax regime), and coupling information campaigns with 'incentivised' registration are measures found to address (in)formality. Increased penalty is considered less effective in addressing informality.

Research limitation/implications – The results validate most commonly theorised determinants and measures of (in)formality but, cautions against increased penalties as a policy measure.

Practical implications – Improving human capital, increasing formality benefits rather than intensifying punitive measures are effective means to address firm (in)formality.

Originality/value – It is the first study to couple the investigation of the underlying causes of, and solution to (in)formality from entrepreneurs' perspectives using mixed method.

Keywords: Formalisation, Q methodology, law enforcement, emerging economies, developing countries

1. Introduction

For the past three decades (1990-2018), there has been a decline of informality in emerging markets and developing economies (EMDEs). The share of informal output in gross domestic products (GDP) and total employment has fallen by 8% and 10% respectively (Eglin et al., 2021). However, the positive decline occasioned by improved policy environment in the EMDEs is marginal and disproportionate across regions and countries. For instance, in Sub-Saharan Africa (SSA) informal employment still accounts for more than 90% and 62% of total employment and GDP respectively (ILO, 2018). The disproportionality, pervasiveness, and prevalence of informality across regions and countries highlight the need for context-driven investigations of causes and solutions for informality. It also provokes the need to consider entrepreneurs' perspective in exploring the underlying causes of informality and measures capable of addressing (in)formality. Entrepreneurs can serve as a valuable source of practical insight for such investigations considering their years of experience in the (in)formal sector.

Incorporating the aforementioned considerations into efforts that address firm (in)formality is fundamental to success. Ohnsorge and Yu (2021, p. 9, 24) stressed this following their extensive assessment of the 30-year long shadow of informality in 160 countries by stating that "a comprehensive development strategy that is informed by the drivers and challenges posed by informality, and carefully tailored to country circumstances… offers the greatest chance of success in reducing informality". Devising contextually relevant interventions capable of addressing (in)formality requires a robustly nuanced understanding of the underlying drivers of (in)formality. This pursuit calls for approaches that incorporate quantitative assessment and the rich qualitative perspectives of entrepreneurs with sector-specific focus. By coupling a mixed method approach with sector-specific focus, interventions can be better tailored to the unique characteristics and challenges of different sectors, leading to more contextually relevant and impactful solutions.

Yet, studies investigating (in)formality have been predominantly quantitative (e.g., Campos et al., 2023; Horodnic and Williams, 2019; Jha and Bag, 2019; Benhassine et al., 2018; La Porta and Shleifer, 2014; Buehn and Schneider, 2012; Perry et al., 2007) or qualitative (e.g., Thapa Karki et al., 2021; Williams et al., 2013; Xheneti et al., 2013; Khavul et al., 2009) with a macro-level focus (cross-country, national or multisector). Few studies have attempted the investigation of causes of and solutions to informality using mixed methods, including focus on specific sectors. For example, Babbitt et al. (2015) assessed the preferences of entrepreneurs about the decision to formalize in Indonesia. Ault and Specer (2021) investigated institutional factors that influence entrepreneurs' entry into the informal sector based on multiple country cases; while Williams (2007) focussed on the relationship between entrepreneurs' motives (necessity- or opportunity-driven) and decision to operate informally in England. In relation to sector-specific studies, Kasinja and Tilley (2018) assessed drivers of informality among informal waste pickers in Malawi, with Lee and Hung (2014) examining how informal entrepreneurs transition to formal economy in China's *shan-zhai* mobile sector. While the aforementioned studies employed mixed methods and focused on specific sectors, they did not integrate both approaches to investigate the causes of informality and potential policy measures concurrently. The lack of integrated approach (mixed method and sector specificity) that draws on entrepreneurs' perspectives constrains access to practical and first-hand insight into the economic, social and institutional factors that drive entrepreneurs into (in)formality, thus far limiting the progress has been achieved (Kelmanson et al., 2021).

This study addresses this gap by drawing on the viewpoints of entrepreneurs to investigate the underlying drivers of firm informality and potential remedial measures in the Malawian baobab

sector using Q methodology. Q methodology, a mixed method allows us to objectively explore in-depth entrepreneurs' qualitative arguments underlying the causes of, and solutions to informality. The approach offers a different perspective on the subject away from the predominantly quantitative and/or qualitative investigations of determinants and solutions to (in)formality by bridging the strengths and weaknesses of qualitative and quantitative methods (Matinga et al., 2014). The results showed that high entry costs, cost of staying formal, uncertainty about formalisation benefits, low level of education and entrepreneurial skills, and lax enforcement of business regulatory laws influence firm informality in the baobab sector. Measures perceived to address (in)formality in the sector are reduction of registration fee and the tax burden, elimination of double taxation, improvement of entrepreneurial capacity and skill development through training and education, information campaigns on the benefits of formalisation coupled with registration that offers information sessions on financial services and business practices. Interestingly, increased punishment was perceived as inappropriate measure to induce formalisation. The entrepreneurs' viewpoints on (in)formality measures demonstrate a strong disposition toward comprehensive rather than piecemeal approach, and positive incentives rather than punitive measures to addressing (in)formality. Our study makes a number of contributions to research and policy. To the best our knowledge, it is the first study to assess entrepreneurs' viewpoints on a comprehensive set of informality determinants, and potential policy measures at a micro-level (i.e., specific industrial sector) using Q methodology. This constitutes a fresh perspective on evaluation of theories on causes and remedial measures following four decades of their proposition in the face of current social, institutional, political, and economic conditions. It also offers policymakers and development organisations rare insight into entrepreneurs' impressions about the recommended policies for addressing firm (in)formality.

The paper starts by defining informality as market-based legal production of goods and services conducted out of sight of public authorities for monetary, regulatory and institutional reasons (Schneider et al., 2010). Subsequently, we present a synthesised review of the causes of informality, and interventions to address (in)formality in section 2. This provides an important background for the discussion of entrepreneurs' views on the drivers of informality and potential policy measures to addressing it. Section 3 describes the research approach and the application of the Q methodology. Section 4 presents the results with section 5 discussing the results and its implications for research and policy.

2. Firm informality: causes and solutions

There is extensive literature that cover the determinants of informality including policy measures (implemented and/or proposed) that seek to address firm (in)formality. A synthesised review of the literature shows that the determinants and measures are related to business regulatory framework, financial development, taxation, institutional quality, and level of economic development. The key arguments pertaining to these factors are elaborated below.

2.1 Determinants of firm informality

Business regulatory framework describes the formal set of requirements or regulations that businesses need to fulfil in order to enter and stay in the formal sector. Complex, cumbersome, and expensive entry requirements impose high regulatory costs (Gultom, 2014) which keep potential entrepreneurs out of formality (Ulyssea, 2020). Benhassine et al. (2018) showed that in Benin, costly, complicated and time consuming formalisation process explained firms' decision to operate informally. Drawing data from 85 countries, Djankov et al. (2002) also showed a correlation between large informal sector and complex, time consuming and expensive entry regulation. Similarly, regulatory burdens related to taxes, licensing and

registration create high compliance cost and influence firm informality. Ali (2018) demonstrated in the case of 17 sub-Saharan African countries that increased compliance cost driven by regulatory burdens incite firms to operate informally.

Tax regime (tax structure and tax burden) is another important determinant of firm informality. Ihrig and Moe (2004) showed that raising tax rate from 9% to 10% led to 1.5% rise in informal output in Sri Lanka. Tax structures or models perceived as unfair or disadvantageous also influence firm informality. High tax rates coupled with weak enforcement create high tax burden, which in turn instigates the avoidance of tax registration contributing to firm informality (Hassan and Schneider, 2016). The more taxpayers believe that others work in the shadow economy, the lower their moral costs to behave dishonestly and evade taxes by transferring their own activities into the shadow economy. De Paula and Scheinkman (2010) showed in the case of Brazil that value added tax (VAT) system that uses the credit method created a mechanism for transmission of informality. In the credit-based VAT system where establishments accumulate credit and use it to offset future tax liabilities, transacting with informal suppliers prevents the generation of tax credits thus incentivising the vertical transmission of informality particularly among small firms.

Institutional and governance quality defined as traditions and institutions by which authority in a country is exercised (Kaufmann et al., 2010) is another determinant of informality. Torgler and Schneider (2007) assessed 25 indicators of governance/institutional quality and demonstrated that lack of transparency and accountability, rule of law, enforcement of contracts and protection of productive efforts, perception of widespread corruption, and misuse of tax burden increase the incentive for informality. Gajigo and Hallward-Driemeier (2012) showed in the case of five African countries that the payment of bribes motivated five percent of registered firms to become informal. Friedman et al. (2000) in a cross-country assessment of 69 countries found onerous bureaucracy, high level of corruption and weaker legal environment as factors leading businesses to operate informally. Antunes and Cavalcanti (2007) showed that weak enforcement of financial contracts accounted for the size of the informal sector in Peru. Using a cross-country panel data, Elgin (2015) demonstrated that higher political turnover (lower probability of re-election), an indicator of political instability, incentivises participation in the informal sector. Devine (2021) also showed that low level of government unaccountability increases the size of informality.

Underdeveloped financial system constitutes another critical source of informality as it increases the cost of credit, constrains access to formal credit, leads to financial exclusion and a shallow financial sector. Capasso and Jappelli (2013) and La Porta and Shleifer (2008) showed that high cost of credit lowers the opportunity cost of informality thus, facilitating a shift to underground business. Analysing a survey of firms in 41 countries Dabla-Noris et al. (2008) found that financial constraints induce informality among small firms. Similarly, Aikaeli and Mkenda (2014) demonstrated a positive relationship between capital constraints resulting from financial underdevelopment and firm informality in the Tanzanian construction industry. Limited availability of banking services and products, insurance, payment systems, etc. which characterise financial exclusion instigate informality. Financial exclusion leads to heavy reliance on cash payments, increased population of the unbanked, and limited use of banking services and insurance – all of which instigates informality (Mogaji et al., 2021). Other factors found to inhibit access to financial services and indirectly influence informality are financial illiteracy, access exclusion (remoteness to financial facilities and providers), condition exclusion (documentation barriers), and price exclusion (prohibitive prices) (Urueña-Mejía et al., 2023).

Low level of economic development characterised by limited employment opportunities, low quality of human capital, high level of poverty and income inequality, and inadequate infrastructure development is found to influence informality. Limited job opportunities in the formal sector instigate the establishment of informal firms as means of livelihood and income generation, and absorption of labour excluded from the formal sector particularly for the less educated and unskilled individuals. Schneider et al. (2010) and Dell'Anno et al. (2007) found higher unemployment rate influence the size of the informal economy. High rates of poverty and income inequality lead to the proliferation of informal economic activities as a survival strategy for individuals determined to make a living, and a source of cheap goods and services for the majority that cannot afford high-quality goods produced by the formal sector (La Porta and Shleifer, 2014, Guida-Johnson, 2022). Large informal sector is found to be associated with low level of human capital (less educated, low-skilled, low entrepreneurial and managerial skills) (Gennaioli et al., 2013; La Porta and Shleifer, 2016; Kelmanson et al., 2021).

2.2 Measures to address (in)formality

Several measures (policies and programmes) have been implemented and/or recommended to address firm (in)formality. Jessen and Kluve (2021) showed that only a narrow range of the interventions (i.e., regulatory measures) has actually been implemented and evaluated in low and middle income countries. Much of the measures to address (in)formality remains at best recommendations.

Regulatory measures encompass policy measures that seek to reduce the cost of entering and/or remaining formal as well as increase the benefits of formality and cost of informality. For the first policy option (reducing cost of entry), the main interventions that are implemented include simplifying the registration process and/or digitalising business/tax registration. The target is to reduce the indirect cost associated with complex and time-consuming processes. Other interventions include the offer of affordable registration fees or costless registration; and reduction of recurrent administrative costs incidental to formality. The second policy option focuses on increasing the benefit of formalisation, for example, opening free business bank account, increasing access to capital. The third option (increasing cost of informality) involves increasing enforcement of the business regulations and laws by for example, intensifying inspections.

Evidence from experimental and quasi-experimental studies assessing the effect of these policy measures on firm (in)formality have been mixed. Campos et al. (2023) showed that offering free registration increased registration by 75% while, combining free registration with bank information seminars and opening business bank accounts which in turn facilitate access to credit led to 85% increase in firm registration in Malawi. Benhassine et al. (2018) found that explaining the benefits of registration and providing personalised-assistance to firms for registration induced 9.6% formalisation in Benin. The rate increased to 16.3% when combined with business training (e.g., basic accounting, sales development), opening of business account, and tax mediation services. Conversely, De Mel et al. (2012) found no impact of information and free registration costs on registration with the Sri Lankan tax authority, likewise Bruhn (2011) in Mexico. These results indicate that although, reducing entry costs has positive effect on (in)formality, achieving the most effect requires offering costless registration or combining affordable or streamlined registration with benefits of formalisation. This approach increases government expenditure, and raises concern about its cost-effectivenes (Rocha et al., 2018). Simplifying and reducing business taxes in Bolivia, Brazil and Peru increased firm formalisation by 4-5% (Fajnzylber et al. 2011; Salazar-Xirinachs and Chacaltana, 2018). Tax substitution that applies tax at some stage in the production has been found to address

informality. De Paula and Scheinkman (2010) showed that when tax substitution was applied (i.e., VAT applied in a single stage of production) in Brazil, it increased formalisation among micro and small firms. Increasing enforcement of existing laws and regulations (measured by inspector visit for municipal license) produced 2-4% increase in formalisation rate in Brazil (De Andrade et al., 2016). Enforcement in the form of a threat letter for failure to register with tax authorities resulted in 17% increase in firm registration in Bangladesh (De Giorgi et al., 2018). Ulyssea (2020) in a comprehensive review of measures that address informality showed that enforcement of laws and regulations is the most effective policy measure among the three options thus far discussed.

To address institutional and governance causes of firm informality, policy measures targeting various aspects of *institutional and governance quality* have been recommended and implemented. Improving institutional quality such as bureaucratic quality, control of corruption, and law and order incentivises shift towards formality (Torgler and Schneider, 2007). For instance, improvement in government effectiveness, control of corruption, and law and order reduced the share of informal output and employment by nine percentage points of GDP in Georgia (World Bank, 2019). Improved regulatory quality through increased monitoring such as creation of firm registry (Poland), public awareness campaign on tax compliance (China, Republic of Korea) effectively reduced informality (Oviedo et al., 2009). Devine (2021) showed that improvement in government accountability and contract validity (contract enforcement) for at least five consecutive years between 1991 and 2017 in 164 EMDEs induced the shrinking of their informal economies. Friedman (2014) also demonstrated that the strong perception of political stability among 149 countries in a six-year period (2002-2007) reduced the size of the informal economy.

Development of financial services and products such as regularisation of microfinance institutions (MFIs) and promotion of digital financial solutions are policy measures for addressing financial underdevelopment. MFIs play critical role in providing credit and other financial services to informal enterprises excluded from accessing formal banking services, and also facilitate their formalisation. The Evangelical Social Action Forum Microfinance and Investments Ltd increased firm formalisation by 70% by providing business development services and credit to its customers in India (ILO, 2016). In Egypt, the provision of credit by the Alexandria Business Association MFI tripled the number of formalised clients from 6% in 2004 to 18% in 2016 (Adair et al., 2022). Regularisation of some MFIs into microfinance banks (MFBs) in Nigeria facilitated their access to funds from the Central Bank of Nigeria at low interest rates for increased on-lending to their customers. Partnerships between deposits-taking institutions with MFIs in regulated frameworks have allowed the later to offer further financial services (e.g., transactional, saving accounts) to its clients thus, ensuring financial inclusion (Prior and Mora, 2019). For example, the partnership between Banque Centrale Populaire and Attawfiq microfinance in Morocco allowed the latter's customers to access debit/credit card, electronic payment services, etc. (Prior and Mora, 2019). Mobile banking, and mobile phone-based financial service platforms also offer options for digital financial inclusion. M-Pesa, a popular mobile phone-based financial service platform that allows users to deposit, withdraw, transfer money, access credit and savings is being used in Kenya and Tanzania to offer various financial and microfinancing services, and connect financially excluded populations to the formal financial marketplace (Weissbourd and Ventures, 2002). Harnessing the opportunities fintech offers for the development of financial systems, requires that issues of interoperability, data protection, affordability, financial literacy, regulatory framework, and infrastructure are addressed.

Specific aspects of *economic development* recommended to address (in)formality in EMDEs include education and labour market reforms that target vocational/technical skills (Deléchat and Medina, 2021) and economically viable activities or industries with comparative advantage; investments in labour-intensive industries and infrastructure. Such pursuit create job opportunities, develop suitably-skilled workforce, and generally improve human capital for economic growth. Such strategy requires close collaboration between educational institutions, industry development agencies and the private sector (AfDB, 2018). Other recommendations are investment in infrastructure (e.g., electricity, telecommunication, transportation) to support the establishment of labour-intensive industries as well as industries with high payoffs, and also attract foreign investors. For instance, Mali invested in its transport infrastructure (road, rail) to increase mango production and boost job creation (McKinsey Global Institute, 2012). The establishment of economic zones and industrial parks is another economic development strategy that facilitates the attraction of multinational firms, and development of competitive private firms leading to the provision of employment opportunities for low-skilled labour and exposure to technology, new knowledge, and best managerial practices as exemplified by Morocco's establishment of free-trade zones for automotive companies (McKinsey Global Institute, 2012).

3. Methodology

To explore entrepreneurs' perspective on the determinants and solutions for firm informality, a Q methodology was employed. Q methodology is well-suited for exploring in-depth the subjective views on a topic of interest. It provides a means to identify a range of viewpoints and the reasons underlying them (Stepheson, 1953; Watts and Stenner, 2012). In Q methodology, participants (P-set) rank order a set of statements (Q-set) that characterise the full range of discourse on the topic of interest on a grid or card-sort (Excel and Graaf, 2005). The rank-ordered statements (Q-sorts) represent the individual participants' viewpoints on the topic (Stenner et al., 2015). The participants are then interviewed to explicate the basis for their Q-sorts and to provide reasons for their viewpoints. Subsequently, the Q-sorts are then intercorrelated and subjected to factor analysis to identify patterns between the participants' different Q-sorts (Watts and Stenner, 2012). The resulting factors represent clusters of Q-sorts similarly sorted by participants, and also reveal underlying constructs or distinct perspectives on the subject of interest (Stenner et al., 2015). To enhance the interpretability and clarity of the factors, the initial factors are rotated using a mathematical technique in a way to maximise the differences between them. The final factors are then labelled to provide meaningful descriptions of the identified viewpoints based on the content or perspectives contained in each factor and in conjunction with the qualitative interviews. Generally, Q-studies apply one card-sort to the selected participants. In this study, we applied two card-sorts to the same participants owing to the study's objective of assessing participants' viewpoints on the causes of firm informality and how this can be addressed. Our approach is consistent with several studies (e.g., McHugh et al., 2019; Mattson et al., 2011) that explored perspectives on health inequalities, and conservation initiatives.

3.1 Background of the case study

The study was conducted in Malawi with a particular focus on baobab micro, small and medium enterprises (MSMEs) involved in the production, processing and marketing of baobab (*Adansonia digitata* L), a superfruit with multiple uses and high nutritional profile whose ingredients are used by Coca Cola and Innocent Smoothies in their formulations. It has thriving market in Southern Africa and growing international market (GIZ et al., 2021). The baobab industry is highly dominated by informal MSMEs with 94% share (Gangata, 2020). The entrepreneurs have low level of education and managerial capacity. About 96% have primary

and secondary school education while, about 15% has entrepreneurial and managerial training acquired formally and informally (Dumenu et al., 2023). The informal baobab sector is reflective of the MSMEs landscape in Malawi, which is dominated by 89% of informal firms and contribute 40% of the GDP (FMT, 2019).

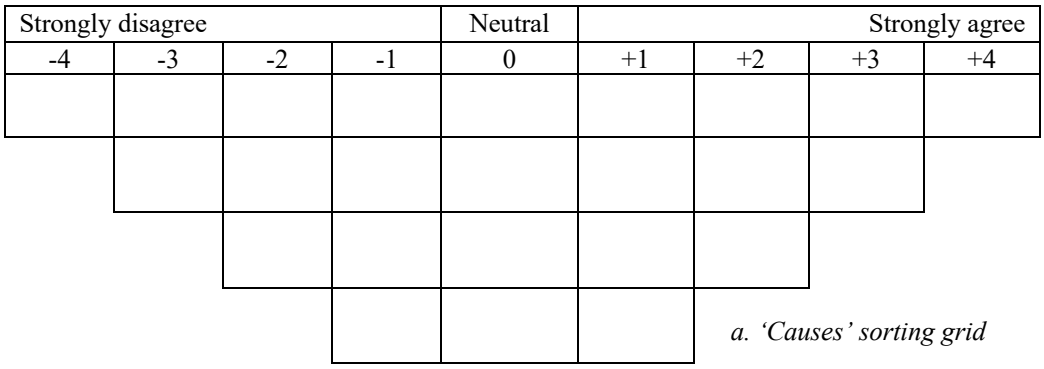
Government has implemented various programmes, interventions and policies to reduce the share of firm (in)formality. Notable are the institutional reforms implemented in 2012-2014 to streamline the delivery of support services to MSME for their development. Others include the implementation of the National Strategy for Financial Inclusion (NSFI) 2016-2020 with the objective of increasing financial inclusion and insurance penetration, providing affordable credit to MSMEs, and improving financial literacy to stimulate access to different financial products for inclusive growth. Also, the Micro, Small and Medium Enterprises (MSME) Policy 2019 was developed as a guiding framework for increasing access to finance, improving business development services, and promoting an enabling legal and regulatory environment for MSMEs growth. The World Bank's Business Environment Strengthening Technical Assistance Project (BESTAP) implemented in 2007-2011 focused on improving the ease of doing business (e.g., reducing cost of business registration). In spite of these efforts, the level of informality in the baobab sector and the Malawian MSMEs sector is still very high thus, presenting an interesting case to explore entrepreneurs' perspective on the underlying causes of informality and potential measures to addressing it.

3.2 Data collection

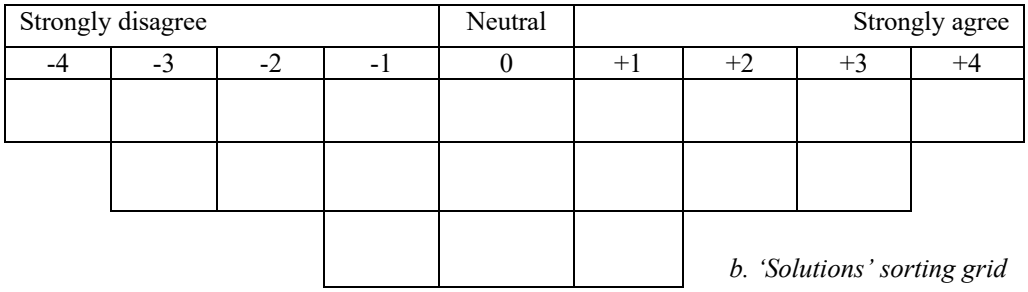
Prior to data collection, the set of statements termed concourse describing the breadth of arguments or extant opinions about a given topic is developed from multiple sources (Jeffares, 2014). In this study, the concourse encompassing the causes or determinants of firm informality, and measures to address firm (in)formality was generated from an extensive review of peer-reviewed and grey literature (see section 2), and the results of interview involving 305 informal baobab enterprises in Malawi presented in Dumenu et al. (2023). A sample of the statements (Q-set) from the concourse were selected for the study after removing duplicate, and redundant statements. The generation of the concourse and the initial Q-set were generated by the first author. Subsequently, the second author together with experts cognizant with the Malawian context reviewed the initial Q-set to check the applicability, validity, clarity, and conciseness of the statements. In the end, a list of 24 statements expressing the causes of firm informality, and 19 statements about measures to address (in)formality were finalised. The final Q-set for the causes and solutions were prefixed with 'C' and 'S'.

The participants (P-set) for the study were purposively selected in order to obtain persons with distinct, strong and different views (Baker et al., 2006). For this reason, we selected entrepreneurs (informal and formal) involved in baobab production, processing, and marketing. The mixture helped obtain perspectives of the factors that motivate entry into (in)formality. A total of 17 participants were recruited for the study comprising owner/manager of registered small enterprises ($n = 3$), registered cooperatives ($n = 4$), unregistered microenterprises ($n = 3$), unregistered small enterprises ($n = 5$), and unregistered own-account workers ($n = 2$). Each participant completed two card-sorts (causes and solution) administered by trained research assistants. The exercise was held in a workshop setting. Following a background presentation, participants were presented with a shuffled set of statement cards on causes of firm informality. After considering each of the 24 statements in turn, participants were asked to sort them into three piles of 'agree with the view', 'do not agree with the view', and 'neutral'. Next, they were asked to rank order the sorted statements onto a quasi-normal shaped grid (Fig. 1) with distribution ranging from -4 (strongly disagree) to +4 (strongly agree). Participants were also

encouraged to adjust their Q-sort until they were certain that it represented their viewpoint. After the rank ordering, the participants were interviewed to elaborate the reasons for the choice of statements placed at the extreme ends of their grids. The information gathered was useful in interpretation of the viewpoints. The same approach was repeated for the 'solutions' Q-set.



a. 'Causes' sorting grid



b. 'Solutions' sorting grid

Figure 1. Q-sort grids for 'causes' and 'solutions'

3.3 Data analysis

The Q-sorts for causes and solutions were intercorrelated and factor-analysed separately using Ken-Q Analysis v1.2.1 (Banasick, 2019). Employing Brown Centroid factor analysis followed by varimax rotation, three factors for 'causes' and for 'solutions' were respectively extracted. The factors satisfied the objective (statistical) and qualitative criteria for selecting factors. For the objective criteria, the requirements for at least two significant loadings on a factor, the cumulative variance across factors being greater than 35%, and the cross-products of the two highest loadings of a factor exceeding the standard error (Watts and Stenner, 2014) were met (Tables 1). For the qualitative criteria, we drew on the post-sort interviews of the defining sorts of participants as well as theory to inform the selection of the best factor solutions. The resultant (extracted) factors now contained the 'idealised Q-sorts' i.e., Q-sorts that would have been done if the participants had the same opinion that each factor represents (Fig. 2 and 3). Idealised sorts are based on a weighted averaging such that higher loading defining Q-sorts receive more weight (Watts and Stenner, 2012).

To aid the interpretation of the factors and characterisation of the viewpoints they represent, the idealised Q-sorts were merged to form a factor array to display the relative placement of all the statements (distinguishing and consensus) for each factor. The distinguishing statements are those positioned at the poles (-4, -3, +4, +3) of the grid that are statistically different from the same statement in other factors. They give the character of the factors. Consensus statements are those that are not statistically significant and also demonstrate a common ground held by the participants in spite of the differences in opinion. The factor array helps in the holistic interpretation and discussion of the distinct viewpoints identified in the study (Watts and Stenner, 2012). Information from the qualitative interviews were used to understand the

reasons or rationales behind their views represented by their Q-sorts. Relevant quotes from the interviews were made to illustrate the viewpoints and enrich the interpretation of the factors.

4. Results

The centroid factor analysis of the Q-sorts resulted in the extraction of three factors each for the causes of and solutions to addressing firm informality in the baobab sector. The factors for the causes of informality accounted for 41% of the total variation with 15 Q-sorts loading significantly on the factors at $p < .05$. The factors for the solution to address (in)formality accounted for 41% variation with 12 Q-sorts loading significantly on the factors at $p < .05$ (Table 1).

Table 1. Participants, and factors loadings of the causes and solutions of firm informality

		Factor loadings: causes			**Factor loadings: solutions**		
ID	**Description**	C-1	C-2	C-3	S-1	S-2	S-3
PRS1	Registered small enterprise	0.07	-0.20	0.10	**0.67**	-0.19	-0.02
PRS2	Registered small enterprise	**0.81**	-0.17	0.43	0.48	0.51	-0.23
PUO3	Unregistered own-account worker	**0.47**	-0.15	0.07	0.09	0.14	**0.80**
PUM4	Unregistered microenterprise	0.14	**0.69**	0.27	0.24	0.15	-0.07
PRS5	Unregistered small enterprise	0.17	**0.71**	-0.06	0.15	-0.14	0.14
PUM6	Unregistered microenterprise	0.54	0.25	**0.69**	0.02	0.41	0.13
PUS7	Unregistered small enterprise	0.18	0.03	**0.58**	0.36	**0.62**	-0.09
PUS8	Unregistered small enterprise	-0.32	**0.51**	0.28	**0.59**	0.27	0.37
PUS9	Unregistered small enterprise	-0.08	0.11	0.06	**0.66**	0.09	-0.08
PCO10	Registered cooperative	-0.04	**0.49**	0.42	-0.29	-0.10	**0.77**
PCO11	Registered cooperative	**0.52**	0.26	-0.23	-0.60	**0.58**	-0.01
PRS12	Registered small enterprise	-0.05	**-0.41**	-0.04	**0.68**	0.06	-0.08
PUS13	Unregistered small enterprise	**0.43**	0.06	0.17	0.29	**0.70**	0.25
PCO14	Registered cooperative	**0.73**	0.13	0.03	-0.11	**0.54**	-0.36
PCO15	Registered cooperative	0.13	**-0.56**	0.32	-0.06	-0.27	0.22
PUM16	Unregistered microenterprise	**0.52**	-0.25	-0.11	**0.47**	0.18	0.20
PUO17	Unregistered own-account worker	-0.10	-0.03	**0.64**	0.39	**0.52**	-0.04
% of explained variance		16	13	12	16	15	10
Cross-product of two highest loadings		0.59	0.49	0.44	0.46	0.44	0.62

Significant factor loadings ($p < .05$) in bold type. EV = Explained variance; Standard error = $1/\sqrt{N}$ where, N is the number of statements in the Q-set. For 'causes' = $1/\sqrt{24} = 0.20$. For 'solutions' = $2/\sqrt{19} = 0.23$

Factor arrays for the 'causes' and 'solutions' (Tables 2 and 3) were developed to describe the distinct viewpoints captured by the extracted factors.

Table 2. Factor arrays for the extracted factors of the causes of firm informality

No.	Statements	**Factors**		
	Firms are informal because…	**F1**	**F2**	**F3**
1	of lack of mechanism to access the benefits of formalisation	3	4	2
2	owners/managers have low level of formal education	3	**-1****	4
3	formal employment opportunities are limited	**0***	**-2***	**3***
4	information/awareness of business registration and its benefits is limited	2	**-4****	2
5	information on the short and long term cost of formalisation is limited	1	0	0
6	owners/managers have limited qualifications for formal jobs	**0****	3	3
7	registration process is complex and tardy	**4****	**-3***	**-1***
8	registration is expensive (costly)	**1****	-2	-3
9	*registration does not provide any benefit*	-1	-1	0
10	of avoidance of tax obligations	**-4****	0	1
11	*the business is small scale*	2	2	1
12	*the business is only established to provide additional income*	1	0	2
13	the business is mainly established to provide livelihood	1	**-1***	1

14	limited access to credit to support operation of a registered business	2	1	-1
15	the requirements to run a registered firm is onerous	-2*	2	0
16	the business is operated in a rural area	**-3***	**-2***	**-4***
17	*the business is in the agricultural and forestry sector*	-2	-1	-2
18	the tax filling process is cumbersome	-1	0	-3
19	*the tax burden is high*	0	1	-1
20	the tax structure is not equitable	**-1****	2	1
21	enforcement of business registration laws is lax	-2	1	0
22	the punishment for operating unregistered business is not deterrent	-1	**3****	-1
23	*there is more benefit from operating informally than operating formally*	-3	-3	-2
24	there is poor public service delivery and use of taxes	0	1	-2

Distinguishing statements are marked in bold (*$p < .05$; **$p < .01$); consensus statements in italics.

Table 3. Factor arrays for the extracted factors of solutions to address firm (in)formality

No.	Statements	Factors		
	To drive formalisation…	**F1**	**F2**	**F3**
1	increase awareness about the benefits of business registration	**3***	**4***	**-3****
2	support financial institutions to provide firms with credit and financial services	**1***	**3***	**-2****
3	increase formal employment opportunities	3	**0***	3
4	integrate entrepreneurship and skills development into education curriculum	**4***	0	1
5	provide tax incentives to small businesses	**2***	**-3****	**4***
6	foster interagency collaboration registration and tax authorities	-1	-1	-2
7	simplify business registration process	-1	-1	**1***
8	reduce business registration cost	**-2****	2	2
9	offer costless business registration	**-4***	**-2***	**1***
10	offer registration with seminar on business practices	0	3	0
11	offer registration with seminar on financial services business account	1	1	-1
12	improve managerial and entrepreneurial capacity of owners/managers	1*	-2	-1
13	reduce tax burden	**-3****	**1***	**2***
14	increase inspection and monitoring	0	0	-1
15	increase punishment for operating unregistered business	-3	-4	-3
16	reduce financial exclusion	**2***	-3	0
17	simplify the filling of taxes	-1	-1	0
18	implement equitable tax structure	**-2****	2	3
19	improve public service delivery and perceived good use of taxes	0	1	**-4****

Distinguishing statements are marked in bold (*$p < .05$; **$p < .01$); consensus statements

4.1 Factor description: causes of firm informality

Factor 1 (C-1): high entry cost, uncertain benefits of formality

Factor 1 recorded an eigen value of 3.00 and explained 16% of the study variance. The Q-sorts of six participants significantly ($p < .05$) loaded on this factor. The participants are a mixture of registered cooperatives (2), unregistered microenterprises (2), unregistered own-account worker (1), and registered small enterprise (1) (Table 1). This viewpoint suggests that informality arises because of high entry cost; uncertainty about the benefits of formalisation, and the limited scale of business. The decision to operate informally is not motivated by the perceived benefits of informality (C23: -3) nor is it motivated by the intention to avoid tax obligations (C10: -4). Non-registration does not completely preclude businesses from taxation. For instance, *"when making baobab juice we buy ingredients where we are taxed. When we go to sell in the markets, tax collectors come to collect taxes from us, and we pay"* (PUO3). Costly, complex and tardy business registration process rather influence firm informality (C7: +4; C8: +1): *"we registered our business but up to now we have not received any feedback"* (PCO14). The *"registration processes are too difficult, prohibitive and involving especially for us local people..."* (PUS8). Also, limited access to formalisation and benefits such as credit to support the growth of registered businesses (C14: +2) creates uncertainty about formalisation benefits as whether it is worth the effort. Comparing the cost of formality with the uncertain benefits of formality, small businesses find it non-beneficial to formalise (C11: +2): "*registering*

businesses… is not beneficial for small businesses because they gain very small benefit from formalisation compare to big businesses" (PCO11). In addition, lack of information about the short and long term cost of formalisation (C5: +1) instigates informality. The lack of information creates room for the festering of negative perception about formalisation as reflected in the words of an informal small enterprise (PCO13): *"we are afraid we may lose our capital through registration"*.

Factor 2 (C-2): high cost of formality, lax enforcement

Factor 2 had an eigen value of 2.45 and explained 13% of the study variance. The Q-sorts of six participants significantly ($p < .05$) loaded on this factor. The participants are a mixture of registered cooperatives (2), registered small enterprise (1), unregistered microenterprise (1), and unregistered small enterprises (2) (Table 1). This viewpoint highlights the cost of staying formal, and lax enforcement of business regulatory laws as factors influencing firms' decision to operate informally. Running a registered firm is onerous (C15: +2) because of the need to meet the ongoing cost of formality such as the regular payment of taxes perceived to be high (C19: +1) and *"too many for small businesses"* (PCO11) hence, the decision to operate informally. Businesses *"need to be well-equipped such as using the appropriate work suits, etc.; and inspected by the regulatory board to check if the firms have what it takes. We do not have adequate equipment and do not want to risk closure so we cannot register"* (PRS5). Also, this viewpoint espouses that less equitable tax structure (C20: +2) instigates informality particularly in a value chain where registered firms pay VAT and cannot receive *"refund or tax reduction, having bought raw materials from unregistered suppliers - the only type of suppliers available in such value chain"* (PRS1). Although, there is sufficient knowledge about the benefits of formalisation (C4: -4), lax enforcement of business regulation laws (C21: +1) coupled with less deterrent sanction for operating informally (C22: +3) induce informality. The lack of support or mechanism to access the perceived benefits of formalisation (C1: +4) further frustrate the efforts to formalise: *"… for small businesses like ours to move forward, they need significant support… government is supposed to help such businesses through giving them loans. If the businesses move forward, it will be easy to pay taxes and even to register"* (PUM4).

Factor 3 (C-3): low level of economic development and quest for survival

Factor 3 recorded an eigen value of 1.45 and explained 12% of the study variance. The Q-sorts of three participants significantly ($p < .05$) loaded on this factor. The participants are unregistered microenterprise (1), unregistered small enterprises (1), and unregistered own-account worker (1) (Table 1). The viewpoint suggests that low level of economic development (limited job opportunities, low human capital), and quest for survival influence firm informality. Limited formal employment opportunities (C3: +3) imply high competition, with the few available opportunities going to the highly qualified and skilled. The excess labour, majority of whom have little or no professional qualification (C6: +3) due to low level of education (C2: +4) tends to *"operate unregistered businesses"* (PCO13) out of necessity to provide livelihood (C13: +1) or earn income *"to pay school fees for the children, provide food for the family"* (PCO15, PUS7). Income inequality, an indicator of low economic development, motivates the pursuit of additional income (C12: +2) by establishing informal business to cover essential living expenses. The viewpoint rejects the assertion that survivalists turn to the agriculture or forestry sector (C17: -2) or rural areas (C16: -4) to establish informal businesses because it is very affordable to start off in this sector or cite business in these locations to escape attention of authorities. On the contrary, "*there are businesses that have been registered and operating in the village"* (PCO14).

4.2 Factor description: solutions to address (in)formality

Factor 1 (S-1): economic development

Factor 1 recorded an eigen value of 3.67 and explained 16% of the study variance. The Q-sorts of five participants significantly ($p < .05$) loaded on this factor. The participants are a mixture of registered small enterprises (2), unregistered microenterprise (1), and unregistered small enterprises (2) (Table 1). This factor highlights economic development with specific focus on improved job opportunities, conducive business environment, and human capital development as important measures that can address (in)formality. The factor is grounded in the participants' view that integrating entrepreneurship and skills development into the national education curriculum (C4: +4) produces masses of skilled persons with knowledge of good business practices. This *"is important because children will begin to internalize these business ideas earlier in their lives. As they grow up, they will grow with these values. If government can allow this to happen it means the practice of doing business will change in Malawi"* (PUO3). Businesses that engage in good business practices have greater probability to secure formal credit and external investment for growth, which in turn boosts their potential for formalisation: *"the educated people have access to funds which helps to pump capital into their business unlike the uneducated who do not have access to capital"* (PUM16). Improving managerial and entrepreneurial capacity of business owners/managers (C1: +1) is also critical as it helps them *"learn and apply better* [formal] *ways of doing business giving them the opportunity to participate in formal markets"* (PUO3). Reducing financial exclusion (C16: +2) by providing policy and legal framework for financial institutions to develop financial products and services (e.g., low income savings account, loans) tailored to the needs of businesses is essential for their growth and formalisation. For this viewpoint, improving human capital through education reform and capacity building of entrepreneurs are more impactful in driving formalisation than offering free business registration (C9: -4).

Factor 2 (S-2): information campaigns and 'incentivised' registration

Factor 2 recorded an eigen value of 1.63 and explained 15% of the study variance. The Q-sorts of five participants significantly ($p < .05$) loaded on this factor. The participants are a mixture of registered cooperatives (2), unregistered small enterprise (2), and own-account worker (1) (Table 1). This factor emphasizes information campaigns on the benefits of formalisation, and the offer of 'incentivised' registration (i.e., registration with information sessions) as measures that can induce formalisation. Information campaigns are a form of education that increase awareness about the benefits that formal firms can obtain (C10: +4) such as access to credit and markets: *"when a business is registered, it can sell in other countries because of the certification from Malawi Bureau of Standards"* (PCO10). It also helps address misconceptions or fears about formalisation. Educating businesses on formalisation benefits is perceived as more effective in instigating formalisation compare to the use of deterrence, for example, increasing punishment for unregistered businesses (C15: -4): *"the most important thing is to enlighten the person on the benefits of registering. If you press the person, he may end up doing the business in clandestine"* (PRS2). Participants believe that raising deterrence does more harm than good: *"making punishment stiff will only kill small businesses"* (PCO11*); if government chooses to punish the small businesses, it means such people will remain poor and in poverty over a long period"* (PUS13). Combining registration with seminars on business practices such as financial planning (C11: +3) and financial services, and opening a business account (C12: +1) incentivises business registration: *"businesses face financial challenges that prevent our growth. Government should support us with financial advice about how to manage our finances so we can make good profit and produce better products and even sell to big companies"* (PRS5). Accessing actual (long term) benefits of formalisation beyond those that firms experience during registration is critical to inducing formalisation. Government's support

to financial institutions to provide credit and other financial services to firms (C2: +3) can actualise some of the formalisation benefits. An informal microenterprise owner believes MFIs can be empowered to do this: *"government can support microfinance organisations…to give us loans"* (PUM4).

Factor 3 (S-3): decreasing cost of, and increasing the benefits of formality
Factor 3 recorded an eigen value of 1.64 and explained 10% of the study variance. The Q-sorts of two participants comprising a registered cooperative and an unregistered own-account worker significantly ($p < .05$) loaded on this factor (Table 1). This factor relates the viewpoint that reducing the costs of entry and staying formal, and increasing the benefits of formalisation contribute to addressing firm (in)formality. Decreasing the entry cost starts with reducing cost of registering business (C8: +3), which can be achieved by simplifying the registration process (C7: +1). Increasing the benefits of formality such as providing appropriate tax incentives (C5: +4) by reducing the tax burden for small businesses (C13: +3) or implementing an equitable tax structure (C18: +3) particularly, in the situation of double taxation that affects registered firms sourcing supplies from unregistered firms can influence firm formalisation. Alluding to the role of tax incentives and equitable tax structure on growth of firms thus their formalisation potential, an owner of a formal small enterprise stated: *"Like I said…, government collects VAT from us without paying us back any section of this tax because we get raw materials from suppliers who are not paying VAT themselves. But, we ask the government to relieve us a little so that we pay less VAT... It would have been better if there was an incentive to reduce the VAT. So, I think the government should come up with a law to reduce VAT"* (PRS1).

5. Discussion and conclusions

5.1 Causes of informality in the baobab sector

This study identified three viewpoints (factors 1, 2, and 3) on the causes of informality in the baobab sector. Factor 1 argues that high business registration fee, complex and tardy registration procedures, limited scale of the business, and limited access to credit instigate firm informality. In Malawi, it costs at least USD 10 to register or obtain a business registration certificate for a sole proprietorship business, and USD 69 for limited liability company (LLC). The fee for LLC excludes legal fees. Depending on the type of business and sector where the business is classified, the City Council exacts an annual business license fee. This costs on average USD 78 (for a hairdresser), and USD 798 (for a retail company) (Campos et al., 2023). Although, officially it takes 14 days by post, and 5 days in person or online to register a business in Malawi, the de facto situation is that it takes two months unless the service of a middleman is employed at 5-10 times the actual cost for a quicker delivery in just a day (Campos et al., 2023). The entry cost for formality is high for micro and small enterprises taking into account the cost of travel, and middlemen charges for faster processing against their generally low revenue (Campos et al., 2023). The bulk of baobab enterprises are a micro and small enterprises. Currently, an online service, which takes a few days is being offered in addition to the post and in-person options. Low internet accessibility and unreliable network (UNCDF, 2020) hamper its patronage.

Participants' assertion that the registration process is complex may not accurately reflect the current process. The registration process is fairly simple whether it is intended to obtain business registration certificate (BRC), taxpayer identification number (TPIN) or business license (BL). Therefore, the assertion may be borne out of frustration related to the delay, use of middlemen, and number of trips taken to the Department of Registrar General during the application process. The limited scale of business was highlighted as a cause of informality among baobab enterprises. Majority of baobab firms operate on a micro and small scale with

limited financial capital and investment. This confines them more to a subsistence outlook with limited derived benefit from formalisation. The 2019 MSMEs survey revealed that 56% of informal enterprises in Malawi cites 'business is small' as reason for not registering (FMT, 2020). Several studies (e.g., De Mel et al., 2013; Maloney, 2004) show that small firms do not find formality desirable because they perceive little benefit from formalisation upon weighing the cost and benefits.

Factor 2 is grounded in the viewpoint that high cost of remaining formal (high tax burden and inequitable tax structure), and lax enforcement of business regulatory laws instigate informality. Micro and small baobab businesses find the tax rate burdensome, and less equitable. Until the last quarter of 2021, businesses with less than USD 5,550 (MK 6 million) in annual turnover were required to pay 2% of their sales as tax. This threshold applies to about 90% of baobab informal enterprises who on the average make USD 353 (Dumenu et al., 2023). The 2% 'turnover tax' was perceived as unfair and burdensome by small firms with limited revenue. Currently, a presumptive tax regime is being implemented where businesses with turnover less than USD 3,700 (MK 4 million) are liable for zero taxes (Campos et al., 2023). Another perceived source of inequity is the invoiced-based VAT. Registered baobab firms forced to source raw materials from unregistered firms (most dominant members of the value chain) are unable to claim input VAT on such transactions thus incurring double taxation. The situation instigates their engagement in informal operations. De Paula and Scheinkman (2010) made similar observation in Brazil where credit-based VAT led to a vertical transmission of informality among transacting firms. Lax enforcement of the business registration laws influence the decision of baobab enterprises to operate informally. There is very limited enforcement of business registration in Malawi. There are generally no visits to businesses for BRC inspection while enforcement of the monthly tax declarations of business with registered TPIN is rare (Campos et al., 2023). Despite the various tax administration reforms, tax administration in Malawi is still considered weak (IMF, 2015). A notable exception is the enforcement of BL by the City Council which highly depends on it to support its budget. Lax enforcement may be explained by the inadequate capacity of the revenue authority, and high administrative cost involved in monitoring the vast and pervasive informal MSMEs (Ligomeka, 2019). Perhaps, the amount of tax revenue generated from the small informal firms do not justify the cost as experiences in countries like Ghana, Tanzania, South Africa, Uganda, Zambia, and Zimbabwe demonstrate (Moore, 2023).

Factor 3 argues that limited formal employment opportunities, low human capital, and the quest for survival motivate firm informality. Our results corroborate several studies which found higher unemployment rate (Schneider et al., 2010), low levels of education and employable/entrepreneurial skills (La Porta and Shleifer, 2016; Kelmanson et al., 2021), and high rate of poverty and income inequalities (La Porta and Shleifer, 2014, Guida-Johnson, 2022) to influence informality. Malawi has low human capital indicative of a human capital index score of 0.512 (UNDP, 2022). Only 30% of the population aged 15 years and above have any formal educational qualification (primary to tertiary) with implication for qualified skilled labour, and economic growth and development (NFO, 2020). Malawi has a shallow skilled labour market (less than 10% of the labour force are employed in the formal sector) hence, the weak business environment and constrained economic development opportunities (GoM and UN, 2017). The phenomenon is similarly observed in the baobab sector. Dumenu et al. (2023) showed that informal baobab owners/managers generally have low level of education, and managerial capacity. Out of the 305 baobab micro and small enterprises they sampled, only 36% and 60% possessed secondary and primary school education respectively with the remainder not formally educated. The level of managerial capacity was also low; only 15% had

managerial capacity (formally trained or informally acquired). The low level of human capital pushed most of them (66%) into running informal business for survival since they could not compete for the limited formal job opportunities.

In a nutshell, the causes of informality in the baobab sector identified in our study reflect largely the most commonly cited determinants of informality namely, costly registration, high tax burden, lax enforcement of business regulation laws, low human capital, limited formal job opportunities, and quest for survival. Nonetheless, we identified a less emphasized determinant of firm informality, that is inequitable tax structure relating to VAT. The commonality demonstrates that the factors that drive firms' decision to operate informally are similar across economic sectors and industries with only subtle contextual variations. This allows for the development of remedial measures that can be applied across sectors. Contrary to literature (e.g., Hassan and Schneider, 2016), our results revealed that informality of baobab firms is not motivated by tax avoidance. The results may be explained by the fact that the informal firms already pay some forms of taxes (e.g., market fees) to government whether registered or not (*see comments from PUO3 under Factor 1 in section 4.1*).

5.2 Measures to address (in)formality in the baobab sector

Three viewpoints (factors 1, 2, and 3) characterising measures to address informality and drive formalization in the baobab sector were identified. Factor 1 argues improvement of the business environment, human capital, and increased formal job opportunities as means to address informality. Owing to the generally low level of education and employable skills in Malawi (Word Bank, 2020; UNCDF, 2020) and their negative effect on the human capital base, participants were of the view that improving and refocusing the national education curriculum to target skills development and entrepreneurship, and building the capacity of MSMEs owners can foster formalisation. In their view, such kind of education and training produces individuals and entrepreneurs with strong cognitive abilities, enhances financial literacy, and improves managerial and entrepreneurial capacities. This helps develop appreciation for the benefits of formalisation, acquisition of capabilities to access formalisation benefits, and the adoption of good business practices by entrepreneurs to enhance business performance and growth. A vibrant and productive SME sector contributes to the creation of jobs that can absorb both skilled and less-skilled labour and thus help address unemployment and livelihood-motivated informality. Also, highly skilled and productive population is a source of innovative business solutions for economic development. Government of Malawi (GoM) highlights scaling up opportunities for job creation, skills and entrepreneurship development, improving business and employment environment, and building a robust technical, entrepreneurial and vocational education and training as priority areas to accelerate economic development (GoM and UN, 2017).

Factor 2 emphasizes coupling vigorous and extensive information campaign on formalisation benefits with 'incentivised' business registration as a measure to address (in)formality. 'Incentivised business registration' specifically include combining registration with seminars on financial services and business practices, and business account opening. The approach provides a means to introducing and making registrants access some tangible benefits of formalisation. This addresses the problem of non-significant impact of information campaign on registration behaviour due to uncertainty about accessing formalisation benefits. De Giorgi and Rahman (2013) showed in the case of Bangladesh that conducting information campaign on the benefits of registration only improves awareness or knowledge of the business operators but not actual registration rate because the actual or perceived benefits of formalisation were too low or uncertain for the firms. Offering the 'incentivised registration' can positively affect

registration behaviour as reported by Campos et al. (2023) in the case of Malawi where combining registration with business information session on financial management and banking information session leading to opening of business account recorded 85% increase in registration, and 20% and 15% increase in sales and profit respectively. The positive impact on firm performance was attributed to access to financial services due to ownership and use of business bank account. The viewpoint expressed by Factor 2 provides interesting policy recommendations for government in addressing firm (in)formality. However, important consideration is the cost-effectiveness of such intervention. Campos et al (2023) indicated that a return on the intervention that exceeds 0.5% of enterprises' median monthly profit (USD 133) makes financial sense for its pursuit.

Factor 3 expresses the viewpoint that decreasing the cost of formality (simplified registration, reduced registration fee, lower tax burden, equitable tax structure), and increasing the benefit of formality (tax incentives) are effective measures to address (in)formality. Klapper and Love (2016) showed that reforms that simplified registration procedures by 40% or reduced the number of days or costs by 50-60% led to a significant increase in new registrants. In Bolivia, Brazil and Peru, simplifying and reducing business taxes increased firm formalisation by 4-5% (Fajnzylber et al. 2011; Salazar-Xirinachs and Chacaltana, 2018). Malawi has established an online registration as a policy response to the call for simplified registration. However, low internet accessibility and reliability, and low level of education hamper the effectiveness of the online option. The paper-based system, and in-person registration still offer a good option except for the indirect costs of travel and middlemen engagement for quicker processing. Recent studies (Campos et al., 2023; Limestone Analytics, 2021) on informality in Malawi have recommended costless registration combined with banking information sessions that improve firms' business practices and access to financial services as the most effective intervention to address (in)formality. Campos et al. (2023) showed that an increase of 85% registration rate is associated with this intervention while, Limestone Analytics (2021) demonstrated that with a cost-benefit ratio greater than one, the intervention's net benefit outweighs its net costs. On the matter of double taxation faced by formal firms forced by circumstances to transact with unregistered producers, establishing thresholds or exemptions for certain types of transactions or instituting mechanisms to claim tax credits or deductions to offset taxes paid for unwitting transaction with unregistered firms could be ameliorating.

Thus far, the measures to addressing firm (in)formality in the baobab sector identified in this study match closely the causes identified by the entrepreneurs as well as commonly cited measures in literature. However, we found an exception with 'increasing law enforcement and punishment' as measures. While, the entrepreneurs were ambivalent about the effect of increasing law enforcement, there was strong views against increasing punishment for operating informally as a measure for addressing (in)formality. Our result is in sharp contrast with several studies (e.g., De Giorgi et al., 2018; Ulyssea, 2020) that assert that intensifying enforcement is the most effective policy to reduce informality. Participants' contrasting viewpoint is rooted in the reasoning that educating business owners on the benefits of formalisation and providing mechanisms to assist them to build their managerial and entrepreneurial capacity, and accessing credit is much more beneficial than strict and strong enforcement that will only lead to closing down of businesses and entrenchment of poverty (*see comments from PCO11 and PUO3 under Factor 2 in section 5.2*). The baobab business serve as important source of livelihood and income generation for many alienated from formal job opportunities. A highly punitive approach will disrupt welfare. Their view resonate with several studies (Charlot et al., 2015; Fernandez et al., 2017) which indicate that tolerating large

informal sector despite improved enforcement ability prevents higher unemployment, welfare loss and social evils.

5.3 Conclusion and implications

This study assessed the causes of, and potential remedial measures for informality drawing on the perspective of entrepreneurs in the baobab sector. The results revealed that high entry costs, ongoing cost of staying formal, uncertainty about access to formalisation benefits, low level of economic development, and lax enforcement of business regulatory laws instigate firm informality in the baobab sector. On the other hand, reducing costs of entering and staying formal, improving human capital and formal job opportunities, and coupling information campaigns with 'incentivised' registration are measures found to address (in)formality. The emphasis on refocusing the national education curriculum on skill development and entrepreneurship, and coupling intensive and extensive information campaign on formalisation benefits with 'incentivised' registration characterise the notion of a comprehensive approach to addressing (in)formality. Countries that implemented comprehensive rather than piecemeal reforms have the most formalised economies in the last decade (Loayza, 2018). Also, the emphasis on coupling information campaigns on formalisation benefits with 'incentivised registration' rather than increased penalisation (more 'carrots' than 'sticks') shows that making formalisation attractive is more socially desirable to addressing (in)formality.

This paper makes a number of contributions to research. Firstly, our study applied Q methodology to concurrently investigate the determinants and solutions to informality drawing on entrepreneurs' views. Our findings validate the determinants theorised to influence firm informality and policy measures identified to address (in)formality. The results demonstrate the applicability of Q methodology as a robust mixed method approach to objectively explore entrepreneurs' perspectives on the underlying causes of, and solutions to firm (in)formality in a coupled manner — a perspective so far missing in the predominantly quantitative approach to investigating the subject. Secondly, the findings that 'increasing enforcement' would not effectively address firm informality but rather adversely impact on the livelihood, income, and welfare contribute to the recent growing literature on deliberate accommodation of the informal sector as a strategic mechanism by governments in dealing with poverty and unemployment without burdening taxpayers (Marjit et al., 2006; Sarkar, 2006; Maiti and Bhattacharyya, 2020). Additionally, it reenforces the relevance of country- and sector-specific investigation of causes of, and measures to addressing (in)formality particularly in revealing certain nuances about social desirability critical for effective policy making.

The results have the following implications for policies seeking to address (in)formality in the baobab sector:

Human capital development

Build the entrepreneurial and managerial capacity of baobab SMEs owners/managers in business practices and access to financial services for improved business performance and potential for formalisation. For wholistic development of human capital, integrate skills development and entrepreneurship into the national education curriculum to produce masses of individuals with entrepreneurial and managerial competence capable of accessing resources to establish productive formal firms and increase formal employment opportunities.

Couple information campaigns with 'incentivised' registration

Conduct information campaigns on formalisation benefits, and implement business registration that offer information sessions on financial services, business practices, and opening of business account to influence formalisation.

Reduce cost of formality
Reduce registration fee (perhaps, offer costless registration), lower tax burden, and implement mechanisms to claim tax credits for formal-informal 'unwitting' transactions to offset double taxation.

Acknowledgement
We express our appreciation to all the owners/managers of the baobab processing enterprises for their participation in the interviews as well the team of enumerators and the research assistant. Many thanks to the anonymous reviewers whose critical comments have greatly shaped this paper.

Funding
This research was financially supported by funds of the Federal Ministry of Food and Agriculture (BMEL) based on a decision of the Parliament of the Federal Republic of Germany via the Federal Office for Agriculture and Food (BLE), grant number 2816PROC17 (BAOQUALITY project).

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Appendix A

-4	-3	-2	-1	0	1	2	3	4
10. Avoidance of tax obligations	23. There is more benefit from operating informally than operating formally	15. The requirements to run a registered firm is onerous	20. The tax structure is not equitable	3. Formal employment opportunities are limited	5. Information on the short and long term cost of formalisation is limited	4. Information/awareness of business registration and its benefits is limited	2. Owners/managers have low level of formal education	7. Registration process is complex and tardy
	16. The business is operated in a rural area	21. Enforcement of business registration laws is lax	18. The tax filling process is cumbersome	24. There is poor public service delivery and use of taxes	13. The business is mainly established to provide livelihood	14. Limited access to credit to support operation of a registered business	1. Lack of mechanism to access the benefits of formalisation	
		17. The business is in the agricultural and forestry sector	9. Registration does not provide any benefit	6. Owners/managers have limited qualifications for formal jobs	12. The business is only established to provide additional income	11. The business is small scale		
			22. The punishment for operating unregistered business is not deterrent	19. The tax burden is high	8. Registration is expensive (costly)			

Figure 2. Idealised Q-sorts of Factor 1 (C-1) for causes of firm informality

-4	-3	-2	-1	0	1	2	3	4
9. Offer costless business registration	13. Reduce tax burden	18. Implement equitable tax structure	6. Foster interagency collaboration registration and tax authorities	14. Increase inspection and monitoring	2. Support financial institutions to provide firms with credit and financial services	5. Provide tax incentives to small businesses	1. Increase awareness about the benefits of business registration	4. Integrate entrepreneurship and skills development into education curriculum
	15. Increase punishment for operating unregistered business	8. Reduce business registration cost	7. Simplify business registration process	19. Improve public service delivery and perceived good use of taxes	12. Improve managerial and entrepreneurial capacity of owners/managers	16. Reduce financial exclusion	3. Increase formal employment opportunities	
			17. Simplify the filling of taxes	10. Offer registration with seminar on business practices	11. Offer registration with seminar on financial services business account			

Figure 3. Idealised Q-sorts of Factor 1 (S-1) for measures to firm (in)formality

Chapter 4

Effect of entrepreneurial motivation and business practices on informal microenterprises' performance

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This chapter is submitted to Journal of the Knowledge Economy

Abstract

Contrary to the widely-held assertion that informal small enterprises underperform and lack the potential for growth, emerging studies demonstrate that some can be productive and contribute to economic development. The challenge is about how to identify these potential enterprises, and the factors driving their performance to appropriately inform policy interventions for their growth. Drawing on firm level data from 305 informal microenterprises in the Malawian baobab sector, we employed structural equation modelling to investigate whether motivation (necessity versus opportunity), and business practices influence performance of informal microenterprises. The results revealed a significant positive effect of opportunity motivation on performance (annual net profit), mediated by the adoption of business practices such as marketing, financial planning, costing and record keeping. Necessity motivation had positive nonsignificant relationship with firm performance indicating that necessity-motivated informal microenterprises are not completely detached from the prospects of good performance. The findings contribute to identifying characteristics of potential informal microenterprises that can be supported for growth. It provides insight for informal entrepreneurs regarding factors that can stimulate firm performance; and add to the nascent literature on factors influencing informal microenterprises' performance with implication for personal initiative.

Keywords: financial planning, necessity/opportunity motivation, growth, baobab, Malawi

1. Introduction

Informal microenterprises, a pervasive feature of the economies of developing countries are perceived to underperform, have no prospects for growth, and contribute marginally to economic development (Gelb et al., 2009; La Porta & Shleifer, 2014; Martiarena, 2019). This tag arises from the fact that informal microenterprise owners/managers are driven by necessity motives, and lack access to capital, technology/innovations, managerial skills and entrepreneurial acumen to influence business performance and growth (de Vries et al., 2020; Ulyssea, 2020). Consequently, policy response to dealing with these enterprises is to suppress their expansion (Calderon et al., 2016); an approach that can have dire consequences for sub-Sahara African countries where the informal sector is the largest provider of employment (72% of wage earners) (ILO, 2018).

This tag notwithstanding, recent findings (e.g., Williams & Kedir, 2016; Williams & Kedir, 2017; Aga et al., 2021) have shown that previously informal small enterprises have been able to transition into productive formal enterprises over time, performed similarly as their formal counterparts, and in some cases even better than those that started up registered (formal). These findings underscore on one hand, the need to adopt a cautionary if not a selective approach in dealing with informal entrepreneurship. On the other hand, it also points to the fact that there are informal enterprises with potential for good performance and growth if appropriately supported. In fact, Tang & Konde (2021) showed that a segment of informal enterprises in developing countries do experience growth. Interesting as these findings are, they are only a starting point as several theoretical and policy relevant questions remain unaddressed, and/or insufficiently addressed. One such crucial question is how to identify informal firms with potential for good performance and growth (Tang & Konde, 2021). Previous studies (albeit limited) that attempted these investigations have focused on entrepreneurial action, length of the period of deferred registration, firm size (number of employees), electronic wallet (mobile money), and external resource acquisition acts in understanding the factors that influence the performance and growth of informal enterprises. Specifically, Williams & Kedir (2016) found that firms with five or more employees that started up unregistered have higher annual sales, employment and productivity growth rates than firms starting up registered. Similarly, those staying longer unregistered record higher rates for the same parameters compare to firms starting up registered (Williams & Kedir, 2017). Ligthelm (2010) showed that entrepreneurial actions such as compilation and updating of business and operational plans, and regular analysis of competitors significantly influence the growth of informal businesses. Tang & Konde (2021) demonstrated that informal enterprises with wider customer base, access to online sources of information and knowledge, and business linkages with formal firms record growth in number of employees and business earnings. Hassan (2023) showed that the use of electronic wallet (mobile money) significantly improves the business performance (profit) of informal businesses.

Although, these findings are revealing, more investigations that explore additional factors relevant to the nature and characteristics of informal firms such as motivation for starting/operating a business (e.g., necessity motives), business practices (e.g., financial planning, marketing), sources of finance (e.g., personal, microfinance), business management capacity (e.g., business training and experience), etc. are of essence. These factors, apart from encompassing the range of internal and external variables that impact on firm performance (de Mel et al., 2013; Kaguri, 2013; Aga et al. 2021), they also represent the typical operating environment of informal microenterprises in developing countries. Yet, no study to the best of our knowledge has examined the causal relationship between these factors and the performance of informal firms. Three studies (McKenzie & Woodruff, 2016; Anderson et al., 2018; Aga et

al. 2021) assessed the relationship between business practices and firm performance (sales, profit, productivity) while, two others (Bourlès & Cazarenco, 2019; de Vries et al., 2020) assessed the effect of entrepreneurial motivation (necessity versus opportunity) on performance of microenterprises and self-employed workers. However, these studies did not assess entrepreneurial motivation and business practices concurrently thus, limiting our understanding of potential interacting or moderating relationship and a combined effect on performance. Moreover, they employed multiple regression analysis which is limited in its ability to accurately model the complex causal paths and effect of latent variables (i.e., variables with underlying constructs) such as entrepreneurial motivation and business practices (Nusair & Hua, 2010). Urueña-Mejía et al. (2023) addresses some of the gaps by assessing the effect of adoption of business practices on financial inclusion of microbusinesses in Colombia using structural equation modelling (SEM). They (ibid) did not determine the effect of business practices on performance of microbusinesses, while the businesses involved in their study were all formal firms. Overall, out the six studies, only Aga et al. (2021) focused on informal businesses thus, making it the closest to the current study. Nonetheless, they (ibid) failed to draw causal inference between business practices and performance of informal microenterprises thus, leaving crucial knowledge gaps. The knowledge gaps undermine the development of appropriate policy measures for informal microenterprises – a vital element for poverty reduction and job generation for young and rapidly growing labour force (de Mel, 2010; World Bank, 2013; ILO, 2018).

This paper addresses these gaps by assessing the relationship between firm performance, and entrepreneurial motivations and business practices in informal microenterprises using structural equation modelling (SEM). The study addresses the questions: does necessity or opportunity motivation affect informal microenterprises' performance?; and does the adoption of business practices influence informal microenterprises' performance? Based on analyzed information from sampled informal microenterprises in Malawi, we show that informal microenterprises driven by opportunity motivation and implementing good business practices (marketing, financial planning, costing and record keeping) positively influence business performance (annual net profit). We also found that necessity motivation does not negatively influence business performance of informal microenterprises. The findings make important contributions to literature, management and policy by: (i) identifying factors that informal entrepreneurs desiring to grow can invest in; (ii) providing insight into the identifying characteristics of potential informal microenterprises that can be supported to stimulate their growth; and (iii) contributing to nascent literature on factors characterizing informal microenterprises with performance and growth potential.

Our focus on the baobab industry is motivated by the fact that, it is dominated by informal enterprises. Some of the firms in the microenterprise segment exhibit good performance potential, are driven by necessity/opportunity motivation, and implement good business practices (Dumenu et al., 2023). It thus, represents an interesting case to investigate the factors influencing the potential performance and growth of informal microenterprises. It is also a promising industry with growth potential if appropriately supported (Wynberg et al., 2012; Munthali, 2012) hence, the findings can help inform growth oriented-policies and business management. We define informal enterprises as economic units that are not registered with the business registrar and tax authority (Tang & Konde, 2021). In Malawi (study area), it implies nonpossession of a business registration certificate from the Registrar General, tax payer identification number from the Malawi Revenue Authority, and business license from local City Council. Microenterprises in this context refer to businesses with 1-4 workers and a turnover of up to MWK 5 million (FMT, 2019).

2. Theoretical background and hypotheses development

2.1 Business practices and firm performance

Business practice refers to specific method, action or established routine implemented to satisfy the needs of customers, procure and manage stock of materials or products for production/sale, determine and manage operational costs, record and track business activities (financial), and work out how to improve the business. Business practices encompass essential elements of good management principles for running small scale businesses namely marketing, buying and stock control, costing and record keeping, and financial planning (Borgenvall et al., 1999)[1]. Adoption of better business practices in small businesses leads to gains in performance (productivity, sales, profit). For instance, McKenzie and Woodruff (2016) found a strong association between firm performance (sales and profit) and record keeping and marketing practices, and a moderate association with financial planning and stock keeping practices. Similarly, Anderson et al. (2018) also showed that small businesses that adopt financial and marketing practices positively and significantly improve their performance (profit).

Business practices influence performance of small enterprises through varying pathways, namely costs and waste minimization, efficient management of finance, competitor intelligence, etc. For example, an enterprise with good stock- and record-keeping practices ensures the availability of appropriate quantities of raw materials and spare parts to support production. This minimizes idleness and downtime, and in turn contributes to improved labour productivity. The positive effect of bookkeeping on labour productivity has been widely reported (World Bank, 2013; Schwab, 2013). Improved labour productivity leads to increased output (product or services) for the same amount of work with positive implication for competitive pricing, increased sales and profits. Financial practices involve activities such as preparation of financial statements (income, expenditure, profit and loss), setting of sales target and review of financial performance. Good financial practices influence firm performance by improving efficiency and reducing costs. Preparation of expenditure statements helps in tracking cost of supplies while, income, profit and loss statements help in analyzing sources of cash flow, and identification of expenditure that can be prudently managed to reduce costs. Reviewing financial performance relative to previous sales target aids in carefully planning how to maximize income to ensure improved performance. These practices contribute to efficient management of finances leading to more savings which can then be invested in other areas of operations such as marketing to increase sales and revenue.

Businesses that demonstrate good financial records are likely to access working capital loans or credits at lower cost because lenders are favourably disposed to lending to businesses with good financial record (Diao et al., 2018). Increased working capital may be used to scale up operations, acquire new equipment or technology, increase labour and production with consequent impact on sales, revenue and profit. Key activities involved in marketing practices are customer relations, competitor intelligence, and advertising and promotion. The goal of marketing practices is to meet the needs of customers, retain existing and attract new ones, and ultimately increase sales. Through good customer relations, one learns more about customers' needs, devises strategies to meet their needs and retain them. Other good marketing practices

[1] Business practices are similar in spirit to managerial practices engaged in medium and large firms particularly, those relating to the monitoring and target setting indicators described by Bloom and van Reenen (2010). Other authors refer to it as managerial capital (Bruhn et al., 2010; Anderson et al. 2018). Consistent with McKenzie & Woodruff (2016), we use the term business practices because of the emphasis on micro, small enterprises which are distinctly different from medium, large firms in structure and management in terms of scale and scope.

involve visiting competitors' businesses to learn of the products and prices they are offering, talking to suppliers about products or services in demand, interacting with customers for feedback, and engaging in advertising and promotional activities. Businesses that conduct these activities are more likely to increase demand for their products or services with consequent surge in sales, revenue, and profits. In line with the arguments presented, we expect good business practices to influence informal firms' performance hence, we propose the following hypothesis:

H_1: Adoption of business practices is positively related to performance of informal microenterprises.

2.2 Entrepreneurial motivation and firm performance

Entrepreneurial motivation, the psychological elements and process that drive an individual to take action to achieve entrepreneurial goals influence firms' performance (Block & Sandner, 2009; Hasan & Almubarak, 2016; Torres, 2021). Four classes of motivation have been distinguished: necessity vs. opportunity (Reynolds et al., 2005), push vs. pull (Amit & Muller, 1995); subsistence vs. transformational (Schoar, 2010); survivalist vs. growth-oriented (Berner et al., 2012). The push-pull, and necessity–opportunity dichotomies are the most prominent. This study focuses on the necessity–opportunity dichotomy.

Opportunity motivation

Business established by reason of taking advantage of new opportunities to create wealth, jobs, for self-fulfilment or independence are opportunity-driven. They are profit maximising, and focused on growth. Opportunity-driven businesses are associated with higher firm performance (profit, sales, productivity). Their performance is influenced by the adoption of better business practices such as marketing, financial planning, and book-keeping (Torres, 2021), implementation of innovation (Caliendo et al., 2022), good managerial skills developed through prior business experience, entrepreneurial learning from past business activities, and higher cognitive and non-cognitive skills acquired through past job experiences and high level of education (Banerjee & Duflo, 2011; Ligthelm, 2013; Calderon et al., 2016; Mohan, 2019). Oriented toward profit-maximisation, they draw on their business and entrepreneurial experience to make prior plans (termed *planning advantage* by Block & Wagner, 2010) and implement performance-enhancing activities such as marketing and sales practices, financial planning and bookkeeping (Torres, 2021) which influence high performance of opportunity-driven businesses. Therefore, we hypothesise as follows:

H_{2A}: Opportunity motivation positively influences the adoption of business practices.

H_{2B}: Opportunity motivation is positively related to performance of informal microenterprises.

Necessity motivation

The majority of informal firms, particularly in developing countries are known to be necessity-driven, survivalists and subsistent (Cunningham & Maloney, 2001; Cling et al., 2012). With an orientation towards securing a continuous income stream for survival and not profit-maximisation (Byiers, 2009), necessity-driven enterprises have little or no prospect for growth (van der Zwan et al., 2016; Martiarena, 2019), and thus are associated with low firm performance (Amit & Mueller, 1995; Block & Wagner, 2007; Calderon et al., 2016). The underlying mechanism mediating the linkage between necessity-motivation and low firm performance derives from the poor resource endowment of the owner/manager such as poor managerial quality and skills, and low level of education (ILO, 2014; Calderon et al., 2016);

limited or no adoption of innovation and business practices; and inability to access capital to improve business performance (Alvarez & Barney, 2007). Forced into starting and running businesses in order to survive, necessity-driven entrepreneurs usually lack job experience, prior business experience, entrepreneurial learning from past business failures and success, and prior planning – factors critical for post-start-up performance (Storey, 1982; Shane, 2001; Vivarelli, 2004). That said, some necessity-motivated businesses (albeit few) experience relatively good performance by adopting cost leadership. Cost leadership entails cutting down costs (e.g., labour, operations) to offer lower priced-products in order to sell more for higher profits. The strategy requires less planning and resources hence, it is known to be common among small businesses (Williams, 2008; Block et al., 2015). Reflecting on the arguments advanced thus far, we postulate the following hypothesis:

H_3: Necessity motivation is less likely to enhance performance of informal microenterprises.

A conceptual framework of the hypothesized relationships between business practices, entrepreneurial motivation, and performance of informal microenterprises is presented in Figure 1. The model suggests that business practices and opportunity motivation have a direct positive relationship with firm performance while, necessity motivation has a direct and negative relationship with firm performance. Also, opportunity motivation has direct positive relationship with business practices.

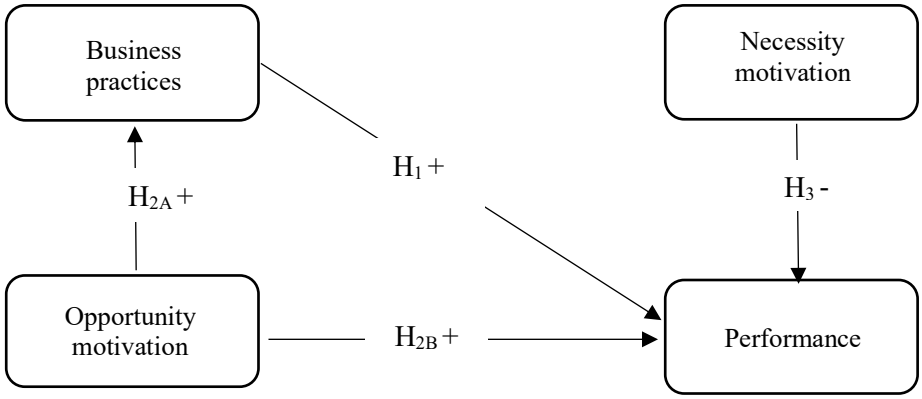

Figure 1. Conceptual research model

3. Methodology

3.1 Sampling and data collection

To investigate the relationships between business practices, entrepreneurial motivation, and performance of informal microenterprises, 305 informal microenterprises involved in baobab production and processing located across five districts (Chikwawa, Karonga, Lilongwe, Mangochi and Salima) in Malawi were surveyed. Firm level data on business practices, entrepreneurial motivation for starting the business, business performance, and other characteristics such as age and years of education of the owner/manager, firm age, and firm size were obtained through interview of the owners/managers. The interviews were carried out between June and August, 2021. The interview protocol was approved by the Mzuzu University Research Ethics Committee (Ref. No. MZUNIREC/DOR/21/25).

3.2 Measurement of constructs

We used various measures established in existing literature to operationalise the constructs (latent variables) of interest. This study assessed three latent variables: business practices, opportunity and necessity motivations. The latent variables constituted the independent

variables. Business practices were assessed with three items, namely financial planning, marketing, and costing and record keeping. Financial planning was operationalized with three sub-items: preparation of financial statement, setting of sales target, and financial performance review; same as marketing: advertisement, competitor intelligence, and customer relations. Costing and record keeping was also assessed through three sub-items: written budget, costing, and record keeping of business activities. The three items were measured as an index scaled between 0 and 1. The measurement approach draws on McKenzie and Woodruff (2016) and Dumenu et al. (2023). The index for each category of business practices was developed by assigning a score of '1' when a respondent answers 'yes' to practicing a sub-item of a category of business practices that is being assessed, and '0' if not adopted or practiced. This was repeated for all the sub-items for each of the three categories of business practices. Subsequently, the index for each category of business practices was constructed by aggregating the score of the sub-items of a category of interest and dividing it by the total number of sub-items for that category. This was repeated for the three categories of business practices.

Two items were used to assess opportunity motivation: wealth creation motive, and job creation motive; same as necessity motivation: only viable means of employment, and main means of livelihood. The four sub-items of the motivation variables were measured on a nominal scale (yes/no). A score of '1' was assigned if a motive is cited for starting the business, but '0' if not. The dependent variable, firm performance was measured as annual net profit. It was estimated as the gross profit minus operating expenses (including all other expenses such as taxes and interest paid on debt).

3.3 Data analysis: measurement and structural models

To assess the relationship between the latent variables and the indicators or items (measurement model), and the relationship between the latent variables (structural model), a confirmatory factor analysis (CFA) was conducted. The measurement and structural models were estimated using Weighted Least Square Mean Variance (WLSMV) in Mplus 7 for Windows. WLSMV was used because of its robustness in handling categorical and nonnormally-distributed data (Brown, 2006, Li, 2014).

To evaluate the fitness of the models, absolute and incremental fit indices were examined while, the hypothesized relationships were assessed through the path analysis. Examination of the absolute and incremental fit indices confirmed a reasonably good overall fit of the measurement and structural models. The Chi-square test recorded a significant value (χ^2 = 26.494 *df* = 15 *p* = .033). Considering that our sample size (N=305) is larger than 200, χ^2 is likely to be significant (Stone, 2021). However, to further assess the fitness of the model, we followed Kline's (2016) recommendations to examine the standardized and correlational residuals. Kline recommends retention of model if there are no significant (*not numerous*) standardized and correlational residuals with absolute value greater than 0.1, and also proceed to report other relevant fit indices [Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Standardised Root Mean Square Residuals (SRMR)]. The results showed no significant standardized and correlational residuals with absolute value greater than 0.1 (Table 3, Appendix A). Other relevant fit indices [CFI = 0.977, Tucker-Lewis Index (TLI) = 0.957, RMSEA = 0.050 *p* = 0.457 90%CI: 0.014 – 0.081] were also within acceptable range (Table 4, Appendix A). All the checks and indices confirmed a reasonably good fit of the models (Hu & Bentler, 1999).

3.4 Mediation analysis

Our model included a mediational relationship between opportunity motivation and business practices. To assess the mediation effect we express relevant equations of the model below:

$$FP_i = \beta_1 BP_i + \mathcal{E}_1 \quad (1)$$

$$BP_i = \beta_2 OM_i + \mathcal{E}_2 \quad (2)$$

$$FP_i = \beta_3 OM_i + \beta_4 BP_i + \mathcal{E}_3 \quad (3)$$

$$FP_i = \beta_5 NM_i + \mathcal{E}_4 \quad (4)$$

where, FP_i is the firm performance (annual net profit) of each informal enterprise i, BP_i is the business practices index, OM_i and NM_i are opportunity and necessity motivations respectively, and $\mathcal{E}$ is the error term. Equation 1 expresses the relationship between business practices and firm performance, where β_1 is the path coefficient representing the direct effect of business practices on firm performance. Equation 2 expresses the relationship between opportunity motivation and business practices (mediator), where β_2 is the path coefficient representing the direct effect of opportunity motivation on business practices (mediator). Equation 3 expresses the total effect of opportunity motivation on firm performance, where β_3 is the path coefficient representing the direct effect of opportunity motivation on firm performance, and β_4 is the path coefficient representing the indirect effect of opportunity motivation on firm performance through the mediator (business practice). Equation 4 expresses the relationship between necessity motivation and firm performance, where β_5 is the path coefficient representing the direct effect of necessity motivation on firm performance.

To analyse the mediation effect, we argue that firm performance is increased by adopting business practices (β_1 in Equation 1). The adoption of business practices increases with opportunity-driven motivation (β_2 in Equation 2). Thus, the magnitude of business practices mediation path is $\beta_1 \ . \ \beta_2$. Other mechanism increasing performance is the direct path β_3 in Equation 3. The total effect of the opportunity motivation on performance is $\beta_3 + (\beta_1 \ . \ \beta_2)$.

4. Results

4.1 Characteristics of respondents

Analysis of the data showed that informal baobab microenterprises are highly dominated by women entrepreneurs (89%). The average firm age is 4 years with an average firm size of two persons working in the enterprises. Ninety-six percent of the business owners are formally educated with 36% having attained secondary school education. The adoption of business practices is low-to-moderate with a mean score of 0.45. Marketing (0.54) is the most common business practice with financial planning (0.38) being the least practiced. The owners/managers are mostly necessity-driven (68%) compared to those driven by opportunity motivations (32%). The microenterprises make an average annual net profit of USD 194. Table 1 presents the summary statistics of the sampled businesses.

Table 1. Summary statistics

	N=305	Mean	Median	SD
Gender				
Male	11%			
Female	89%			
Age		36	35	10
Education (Years of schooling)		7.6	8	4.5
No formal education	4%			
Primary (8 years of schooling)	60%			
Secondary (12 years of schooling)	36%			
Firm age		3.9	3	3.7
Firm size		1.6	1	1
Business practice score		0.45		
Marketing score		0.54		
Costing and record keeping score		0.42		
Financial planning score		0.38		
Necessity-driven motivation	68%			
Opportunity-driven motivation	32%			
Annual net profit (USD)*		194	133	184

USD1 = MWK791.23 *excludes zeros and negatives

4.2 Fit of the models (measurement and structural), and hypotheses test

The results of the joint estimation (CFA-SEM) of the measurement model confirmed that business practices, opportunity and necessity motivations are latent variables exhibiting strong but varying relationship with their respective indicators (Fig. 2). For instance, business practices was strongly driven by the three measured indicators: marketing (0.650), financial planning (0.592), costing and record keeping (0.507). Opportunity motivation was strongly driven by the motivation to create wealth (mtvemp) indicative of a coefficient score of 0.624 while, necessity motivation was strongly driven by the considerations that the business served as the only viable means of livelihood (mtvvlvd), and means of employment (mtvmlvd) indicative of coefficient scores of 0.983 and 0.806 respectively. Furthermore, the results of the structural model demonstrate a strong relationship between opportunity motivation and business practices (0.578), and performance (0.566). The relationship between business practices and performance (0.309) was moderate while that of necessity and performance (0.013) was very weak.

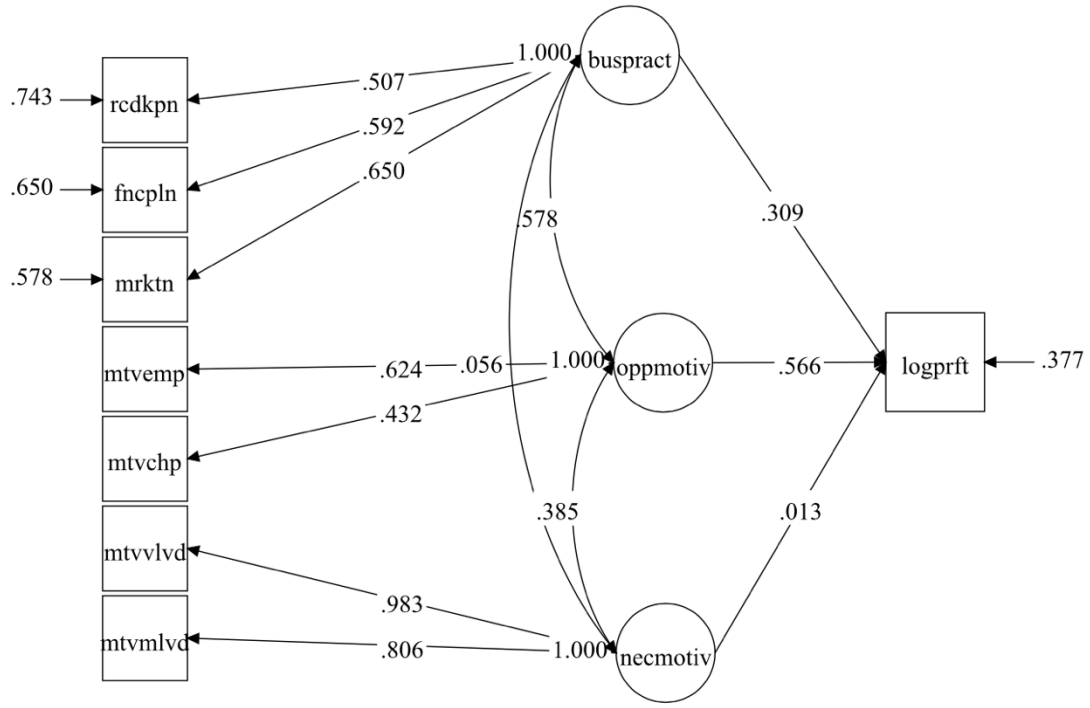

Figure 2. Path diagram showing the hypothesized relationships.
Notes. The values represent path coefficients. rcdkpn = costing and record keeping, fncpln = financial planning, mrktn = marketing, mtvemp = wealth creation, mtvchp = job creation, mtvvlvd = only viable means of employment, myvmlvd = main means of livelihood, buspract = business practices, oppmotiv = opportunity motivation, necmotiv = necessity motivation, logprft = natural log of annual net profit

The results of the hypotheses test are presented in Table 2. Analysis of the standardized path coefficients, *t*-values and significance level of the structural model confirm two out of the four hypotheses tested (Table 2). Opportunity motivation (β = 0.578 p = .001) is positive and significantly related to business practices thus, supporting H_{2A}. One standard deviation increase in opportunity motivation is associated with 58% increase in adoption of business practices. Opportunity motivation (β = 0.566 p = .015) also had a positive statistically significant relationship with firm performance thus, supporting H_{2B}. One standard deviation increase in opportunity motivation is associated with 57% increase in annual net profit. Business practices (β = 0.309 p = .101) had a positive nonsignificant relationship with firm performance thus, leading to refuting H_1. Necessity motivation (β = 0.013 p = .927) recorded a positive nonsignificant relationship with firm performance contrary to an anticipated negative significant relationship thus, rejecting H_3.

Table 2. Results of tested hypotheses and path analysis

Independent variable	Hypothesis	Standardized co-efficient	S.E.	t-value	p-value
Direct effect of business practices on performance (β_1)	H_1: Business practices → performance	0.309	0.188	1.638	.101[b]
Direct effect of opportunity motivation on business practices (β_2)	H_{2A}: Opportunity motivation → business practices	0.578	0.142	4.069	.000*[a]
Direct effect of opportunity motivation on performance (β_3)	H_{2B}: Opportunity motivation → performance	0.566	0.232	2.435	.015*[a]
Direct effect of necessity motivation on performance (β_5)	H_3: Necessity motivation → performance	0.013	0.137	0.092	.927[b]
Total effect of opportunity motivation on performance ($\beta_3 + (\beta_1 . \beta_2)$)	Opportunity motivation → business practices → performance	0.744			

Notes. $*p < .05$. [a] Hypothesis supported, [b] Hypothesis not supported

5. Discussion

5.1 Characteristics of informal microenterprises

The results of our study revealed that the informal microenterprises were dominated by women and necessity-driven owners/managers (Table 1). The profile is reflective of other baobab producing countries such as Kenya (Jäckering *et al.,* 2019), Ghana (Ghore *et al.*, 2018) and Burkina Faso (Audia *et al*., 2015). It also attests to the dominance of necessity-motivated women-operated businesses in the informal sector (Revenga & Dooley, 2020; Sarreal, 2019; Kwami, 2015). The gendered nature of the baobab industry demonstrates the important role that women-owned microenterprises play in providing income and livelihood for the high proportion of women unable to participate in paid economic activities in low-income countries. It offers baobab processing and marketing as a viable option for policymakers and development organisations seeking entrepreneurship programmes that can empower women economically, and address the gender gap in labour (Revenga and Dooley, 2020) estimated to be 87% in low-income countries (Ostry et al., 2018).

The business practice score of 0.45 of the informal microenterprises (Table 1) is within the range of microenterprises' moderate adoption level of business practices reported in other developing and emerging countries . For instance, McKenzie & Woodruff (2016) reported 0.39 while, Urueña-Mejía et al. (2023) recorded 0.63 as scores for adoption of business practices for microenterprises Bangladesh, Chile, Ghana, Kenya, Mexico, and Colombia. The results show that the owners/managers of the microenterprises appreciate the importance of business practices in business management hence, offering business skills training can help enhance their managerial capital. Urueña-Mejía et al. (2023) and Campos et al. (2017) similarly called for soft-skills training for microentrepreneurs to enhance their business practices because of its potential effect on firm performance (Mckenzie & Woodruff, 2016). Some of the business practices that can be focused on for training may include marketing, financial planning, and record keeping. In our study these dimensions demonstrated strong relationship with the composite business practices index (Fig. 2). Anderson et al. (2018) and Wirdiyanti et al. (2022) showed that marketing and financial planning skills positively influence the performance of small businesses. Aga et al. (2021) pointed to the fact that informal enterprises that adopt record keeping are likely to formalize because they possess the skills and experience to perform

paperwork such as filling of taxes which are common practices for formal firms (Dumenu et al., 2023).

5.2 Factors influencing the performance of informal microenterprises

The results of the hypotheses test revealed that opportunity motivation has positive significant influence on the adoption of business practices and performance of informal microenterprises (Table 2). This implies that owners/managers of informal microenterprises that are driven by opportunity motives are more likely to improve their business performance by adopting good business practices. Calderon et al. (2016) reported similar findings among women-operated microenterprises in Mexico where, opportunity-driven entrepreneurs recorded 2.6 times higher profit than necessity-motivated entrepreneurs. The higher performance is explained by a better composite business practices score (two times higher) compared to that of necessity-motivated enterprises. The composite business practices consisted of marketing, stock keeping, record keeping and financial planning which are very similar to those assessed by our study except for stock keeping. Torres (2021) in a study of over 21,000 microenterprises in Colombia showed that opportunity-driven microenterprises perform better than necessity-motivated enterprises. The performance difference is accounted for by the adoption of bookkeeping. The positive relationship between opportunity motivation and firm performance mediated by business practices may be explained by the fact that opportunity-driven entrepreneurs are performance-oriented with the goal of creating wealth, jobs or achieving self-fulfilment or independence. Such aspirations motivate them to implement performance-enhancing activities such as setting of sales target, reviewing of financial performance, advertisement, budgeting, costing, etc. to make them competitive and perform better. These activities describe personal initiative mindset of the opportunity-driven owners/managers of the microenterprises.

Accordingly, we argue that the adoption of business practices by the opportunity-driven enterprises is as a result of personal initiative and not because it is a formalisation requirement. We make this argument because the owners/managers of the firms we interviewed did not indicate their intention to formalise and so the adoption of business practices in their informal status is borne out of self-motivation and proactivity to fulfil their personal goals. Personal initiative play important role in adopting business practices and increase performance (sales and profits) of firms (Urueña-Mejía et al., 2023; Campos et al; 2017; Glaub et al; 2014). The implication of this results is that encouraging informal entrepreneurs to take personal initiative can lead to adoption of business practices and subsequently enhance the performance of their businesses. This is an important insight for policymakers and development organisations that the development of personal initiative skills can also be a focus area for business training programmes. Apart from its (personal initiative) superior performance to traditional business training (Campos et al; 2017), its effectiveness is no respecter of the human capital of the beneficiary (Campos et al; 2018).

Business practices had a positive but nonsignificant effect on firm performance contrary to an anticipated positive significant relationship (Table 2). This shows that the adoption of business practices by informal microenterprises can potentially influence their performance. Anderson et al. (2018) showed that microenterprises that applied marketing and financial practices after receiving training in marketing and financial skills recorded increase in profit. Nonetheless, the nonsignificant effect of business practices on performance recorded in our study suggest that the adoption of business practices by informal enterprises alone is not enough to influence firm performance. An element of self-motivation that drives the setting of goals (e.g., wealth creation, self-fulfilment) and a strive to achieving the goals is critical to provide firm owners/managers the impetus to significantly influence firm performance. Our argument

reinforces the results of the direct effect of opportunity motivation on business practices, and the mediational role of business practices in influencing performance (Table 2) and also bring to the fore the role of opportunity motivation inducing personal initiative (self-motivation).

Necessity motivation had positive nonsignificant relationship with firm performance but with a very low path coefficient (Table 2). The results was contrary to the hypothesised negative significant relationship with firm performance. The positive low path co-efficient demonstrates that necessity motivation has very limited effect on firm performance while, also indicating that necessity-motivated informal microenterprises are not completely detached from the prospects of good performance. Their unique economic situation compels them to highly focus on survival and eking out a living. Caliendo et al. (2022) alluded to this upon finding that necessity motive exerts no significantly negative influence on entrepreneurial performance of start-ups in Germany once resource endowment are controlled for. Again, our results are similar to Torres (2021) who found that necessity-motivated microenterprises consistently record lower financial outcomes (indicative of the very low path co-efficient in our study) compared to opportunity-motivated enterprises in Colombia. In addition to that, he also found a positive significant relationship between necessity motivation and performance (return on sales) for necessity-driven enterprises that are older than 5 years. Our results give important insight on the need to reconsider the necessity-poor performance narrative widely held in literature (Calderon et al., 2016; Martiarena, 2019).

6. Conclusions and implications

This study sought to address two important questions: (i) does necessity- or opportunity-driven motivation affect informal microenterprises' performance?, and (ii) does the adoption of business practices influence informal microenterprises' performance? The results of the structural equation modelling revealed a significant positive effect of opportunity motivation on performance (annual net profit) of informal microenterprises. The mechanism through which the performance is realized is the adoption of business practices such as marketing, financial planning, costing and recording keeping. Although, business practices and necessity motivation demonstrated a positive relationship with firm performance, their relationships were insignificant. These results have implications for policy, practice and research.

6.1 Managerial and policy implications

The significant positive effect of opportunity motivation on performance through the adoption of business practices highlights the fact that informal microenterprises can be profitable and contribute to economic development particularly in the case of businesses starting up with opportunity motives, and thus motivated to adopt good business practices to foster performance. Therefore, owners/managers of informal microenterprises seeking to improve their business performance may consider the adoption of business practices such as marketing, financial planning, stock and bookkeeping, etc. or invest in business skills training that leads to acquisition of these and other performance-enhancing business practices. That said, adopting a personal initiative mindset offer the most effective means to implementing good business practices that can influence the performance of informal enterprises.

For policymakers seeking to identify potential informal enterprises that can be targeted with tailored supports for their development, the findings show that informal microenterprises driven by opportunity motives and implement good business practices are prospective candidates. These firms can be targeted with small business management training programmes since such training has been found to lead to the adoption of business practices with subsequent positive impact on sales and profits (McKenzie & Woodruff, 2016). However, training

programmes focused on personal initiative offers the most benefits since apart from engendering a proactive mindset in owners/managers of informal enterprises, it also enables them to obtain the benefits of traditional business training such as improved business practices (Campos et al; 2018)

On the other hand, necessity motivation did not exert significantly negative influence on performance indicating that necessity-motivated informal microenterprises are not completely isolated from the prospects of good performance, and so with time some can transition into productive firms by pursuing existing or emerging opportunities in their field of business as some studies have shown (e.g., Williams & Kedir, 2017). Moreover, the low-performing necessity enterprises can then be the focus of policy interventions such as skills improvement that facilitate the transition to wage employment (Dumenu et al., 2023) or prepare them for the future in case they choose to pursue opportunity-driven entrepreneurship (Torres, 2021). This is vital because of the important role of informal microenterprises in providing livelihoods, and safety net for many that otherwise would have no opportunity for income generation.

6.2 Implications for research and limitations

In relation to research, this paper makes three important contributions: (i) opportunity motivation and adoption of good business practices positively influence the performance of informal microenterprises. This addresses the widely-held assertion that informal microenterprises are a preserve of underperformance; (ii) it also adds to the nascent literature on factors identified to influence the performance of informal enterprises namely opportunity motivation and business practices. This helps expand the scope of variables that can be drawn upon in exploring factors that enhance the potential performance and growth of informal enterprises; and (iii) necessity motivation does not negatively influence performance of informal microenterprises. Rather, it mainly expresses the economic situation of the owners/managers. So with improved economic situation and adoption of good business practices, some can experience good business performance. This provokes the reconsideration of the assertion that necessity motives underline the poor business performance of informal enterprises. Research seeking to investigate the 'necessity motivation–performance relationship' should strive to consider or perhaps control for resource endowment of the owners/managers of informal enterprises.

Finally, our study makes a modest contribution to the SEM methodology by adding to limited literature on SEM with categorical (binary) observed variables. Majority of work employing SEM consist of continuous components or items. However, empirical data in social, behavioral and educational sciences are frequently collected in discrete form (Raykov et al., 2010). Increasing examples of SEM with binary measures help provide examples of how to deal with certain challenges that may arise in SEM application to binary data such as determining the appropriate estimators, fit indices and validity of models as well as the interpretation of the results. Sufficient availability of such studies can engender confidence in the application of SEM to discrete data, particularly in situations where binary scale may be the most appropriate for measurement.

Our study also highlights a number of limitations that can serve as an avenue for future research. Firstly, this study assessed motivation, business practices and performance at a single point in time (cross-sectional) which limits the assessment of potential dynamic relationship between the variables of interest. Motivation may shift over time (from necessity to opportunity, and vice versa), same as adoption of business practices. Further to this is the fact that this paper is limited in making explicit causal inference because of the cross-sectional

research approach and lack of temporal precedence. A longitudinal study can capture these dynamics and enrich our understanding of how performance is affected by such phenomenon, while explicitly addressing causal relationships. Secondly, the findings of this study is based on informal microenterprises in the baobab sector hence the conclusions may apply to this sector. Future studies should test the model in other informal sectors. Thirdly, this study measured annual net profit as the performance indicator of the informal microenterprises. Other indicators such as return on assets, return on equity, sales growth, productivity as well as subjective performance measures could be considered in future research. Fourthly, this paper assessed business practices as a latent variable comprised of financial planning, marketing, costing and record keeping. Future studies can address how particular business practice (e.g., financial planning, marketing) affect business performance. Finally, these limitations notwithstanding, the methodology applied in this study allowed for investigating predictors with underlying constructs including their direct and indirect relationships with the outcome variable. This demonstrates a more robust approach to assessing performance enhancing variables with complex causal relationships that influence performance or growth of informal firms. Many of these variables are latent in nature (e.g., business management capacity, entrepreneurs' human capital, innovation capability/capacity, etc.) and therefore, require robust models capable of simultaneously modelling the complex variable relationships and explaining their influencing roles in business performance or growth.

Acknowledgement
This research was financially supported by funds of the Federal Ministry of Food and Agriculture (BMEL) based on a decision of the Parliament of the Federal Republic of Germany via the Federal Office for Agriculture and Food (BLE), grant number 2816PROC17 (BAOQUALITY project).

We express our appreciation to all the owners/managers of the baobab processing enterprises for their participation in the interviews as well the team of enumerators and the research assistant. Many thanks to the anonymous reviewers whose critical comments have greatly shaped this paper.

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Appendix A

Table 3. Standardised and residual correlations

		1	2	3	4	5	6	7	8
1	Costing and record keeping	0.000							
2	Financial planning	-0.003	0.000						
3	Marketing	0.003	0.001	0.000					
4	Job creation	0.007	0.005	-0.016					
5	Wealth creation	-0.030	0.038	-0.003	0.000				
6	Only viable means of employment	-0.016	0.003	-0.012	0.042	-0.041			
7	Main means of livelihood	0.014	0.004	0.015	0.067	-0.133	0.000		
8	Annual net profit	0.004	0.002	-0.002	-0.009	0.012	0.001	-0.002	0.000

Table 4. Fit indices of measurement and structural models

		Threshold	Remark
χ^2/df	26.494/15 p = .033*		
CFI	.977	≥.95	Good fit (Hu and Bentler, 1999)
TLI	.957	≥.95	Good fit (Hu and Bentler, 1999)
RMSEA	.050 p = .457* 90%CI: .014 – .081	≤.06	Very good fit (Hu and Bentler, 1999)

CFI = comparative fit index, TLI = Tucker Lewis index, RMSEA = Root mean square of approximation
* $p < .05$

Chapter 5

Fostering innovation performance: An empirical exploration of baobab enterprises' innovation capacity

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This chapter is under review in Journal of Innovation and Entrepreneurship

Abstract

Innovation is critical for firms' survival, growth and competitiveness. Yet, the lever (innovation capacity) that fosters innovation performance of SMEs considering context specificity still remains unclear, and unknown for forest-based enterprises that are expected to lead the charge toward bioeconomy transition. Employing an in-depth multiple case study, this paper assessed innovation capacity and its role in the innovation performance of SMEs involved in the production of baobab. The results revealed ten innovation capacity dimensions essential for fostering innovation performance. Synthesising the relational effects of the innovation capacity dimensions, we propose an innovation capacity framework relevant for assessing and characterising innovation capacity and its role in innovation performance of baobab SMEs with implications for non-timber forest products-based enterprises. The findings contribute knowledge to addressing the ambiguity about innovation capacity that foster innovation performance of SMEs considering their specificities. The implications of the findings for managers and policymakers seeking to invest in capabilities and resources that can optimise and enhance innovation performance and competitiveness of SMEs are discussed.

Keywords: Innovations, bioeconomy, conceptual framework, SME specificity, NTFPs

1. Introduction

Innovation is of crucial importance to the performance and competitiveness of firms. Central to firms' innovation performance is innovation capacity defined as the set of capabilities and assets that interact to foster its ability to develop innovations (Adams et al. 2006; Boly et al., 2014; Yam et al., 2004). As crucial as innovation capacity is to firms' innovation performance, the nature of innovation capabilities that foster innovations in different contexts such as small businesses (e.g., micro and small enterprises), industry or economic sectors (e.g., forestry-based industries) is insufficiently understood (Pierre and Fernandez, 2018). In a recent systematic review of innovation capabilities, Saunila (2020) pointed to the lack of context-specific construct of innovation capacity in small businesses compared to large firms. Context-specific constructs of innovation capacity are germane to identifying capabilities and assets that influence innovation performance (Tidd, 2001) that managers and policymakers can invest in to optimise the performance, growth and competitiveness of businesses and industries. Accordingly, Gronum et al. (2012) and Oberg et al. (2014) highlighted the need for the empirical exploration of the set of critical factors (capabilities and assets) that influence innovation development in specific contexts.

The forest sector which is expected to play a substantial role in the transition to bioeconomy constitutes one of such contexts that requires context-specific characterisation of innovation capacity. The forest sector wherein innovation has developed as a distinct research field (Weiss et al., 2020) is currently experiencing a rise in innovations due to significant contributions from the non-timber forest products (NTFPs) subsector (Poduška et al., 2020). A notable example is the highly innovative baobab processing industry currently experiencing a global patronage (Meinhold et al., 2022). Yet, knowledge of the innovation capacity that fosters innovations and undergirds the innovation management processes of small and medium enterprises (SMEs) in the baobab industry including the NTFPs subsector is lacking. There is no defined construct of innovation capacity of the baobab industry and the NTFPs subsector. Consequently, there is lack of understanding of how forest-based firms (e.g., baobab enterprises) develop innovation capabilities, and how the capabilities are applied to develop innovations. The knowledge gap does not only undermine the innovation performance and competitiveness of the baobab (including forest-based) enterprises but, also the potential of the forest sector to contribute to bioeconomy transition which relies on innovativeness (von Braun, 2020; Weiss et al., 2020).

This study addresses this gap by assessing the innovation capacity of SMEs involved in the production of baobab (*Adansonia digitata L.*), a non-timber forest commodity. Specifically, it investigates the set of capabilities and resources that interact to foster the innovation performance of baobab firms. The paper addresses the questions: what set of capabilities and resources (innovation capacity dimensions) influence the innovation performance of baobab enterprises?; and how do the innovation capacity dimensions foster the innovation performance of baobab enterprises? Based on an in-depth qualitative multiple case study involving five highly innovative baobab enterprises in sub-Saharan Africa and Europe, ten innovation capacity dimensions relating to owner/manager's human capital, networking, intellectual property management, knowledge management, institutions/institutional environment integration, and financing capabilities were identified. An innovation capacity framework relevant for assessing and characterising innovation capabilities and their role in innovation performance of baobab (including NTFPs-based) SMEs are proposed with managerial and policy implications.

Our focus on the baobab industry is motivated by the fact that it is an emerging NTFPs-based industry in the forest sector that has managed to access the global market through considerable

innovation performance (Meinhold et al., 2022; Dumenu et al., 2023). Also, it has a demonstrable circular bioeconomy potential that can support the establishment of forest-based circular bioeconomy in sub-Saharan Africa (Darr et al., 2023). Thus, the baobab industry represents an interesting case for investigating innovation capacity and its role in innovation performance of small businesses with implications for forest sector innovativeness. The results of this study make several contributions to research, policy and practice in the forest sector, and entrepreneurship and innovation. For the forest sector, it addresses a profound knowledge gap on a defined construct of innovation capacity of SMEs in the NTFPs subsector. For research, it contributes to literature on entrepreneurship and innovation by extending knowledge on the factors that characterise SMEs' innovation capacity in specific sectoral context including SME specificity. It also provides insights for managers and policymakers seeking to invest in capabilities and resources that can optimise and enhance innovation performance and competitiveness of forest-based small businesses.

1.1 Brief background of the baobab industry

Found in more than thirty African countries, baobab (*Adansonia digitata* L.) is one of the most important multi-purpose trees with a remarkable socioeconomic importance (Gebauer et al., 2016; IFAD, 2011). Classified as a non-timber forest product (NTFP), it is a source of food, fibre, medicine, and income for people involved in the trade of its products. The fruit pulp is valued for its high nutritional contents such as vitamin C, calcium, protein, potassium, and pre-biotic fibre (Stadlmayr et al., 2013; Gebauer et al., 2002, Van Wyk, 2015). It is processed into different products such as fruit juice, jam, protein powder, and confectionaries; and the seeds processed into oil for the production of cosmetics. It has a thriving domestic and export markets. Taking southern Africa alone, export of baobab powder from the region has grown to 438 tonnes per annum with 288 tonnes accounting for domestic market sales in 2020 (GIZ et al., 2021). Brands incorporating baobab in their products have also grown. Between 2013 and 2017, new food and beverage products containing baobab have experienced 53% annual growth. Europe and United States of America accounted for 52% and 35% of the launches respectively (GIZ et al., 2021). Prominent brands such as Innocent Smoothies, Coca-Cola and Pepsi use baobab in their formulations (ibid).

Baobab is one of the few NTFPs that has managed the jump from traditional and informal use to global markets (e.g., Europe, North America and Asia). This has been made possible by the "multitude of innovations across the value chain" implemented by SMEs involved in baobab production and marketing (Meinhold et al., 2022, p. 5). These innovations span product, process, organisational, marketing, and social innovations. The innovation performance of the SMEs in the baobab industry is particularly remarkable, considering that SMEs have relatively limited resources (e.g., human, financial, and capital equipment) which in turn constrain their innovation performance (Singh et al., 2008; Ates and Bititci, 2011; Laperche and Lui, 2013). Hence, the successful development of innovations by the baobab SMEs to propel the industry represents an interesting case to assess the innovation capabilities and resources that influence its innovation performance. It also illustrates how to foster global NTFP value chains through innovations in a sector that grapples with poor innovation environment (Meinhold et al., 2022).

2. Conceptualizing innovation capacity and its role in innovation performance

Innovation capacity refers to a firm's set of resources and capabilities committed to the pursuit of innovations. It comprises of two key components namely, resources and capabilities. The resources represent the firm's productive assets, and may be tangible (e.g., financial, equipment), intangible (e.g., technology, knowledge) or human (e.g., skilled employees). The capabilities refers to the ability to deploy the productive resources to support innovation

process and activities. Lawson and Samson (2001, p. 384) defined innovation capability as "the ability to continuously transform knowledge and ideas into new products, processes and systems for the benefit of the firm and its stakeholders". The ability to continuously transform knowledge toward the implementation of innovations implies a dynamic capability. Dynamic capabilities of an enterprise describe its ability to sense and shape new opportunities, seize opportunities and reconfigure the enterprise's resources to maintain its competitiveness (Teece, 2007). Pierre and Fernandez (2018) thus define innovation capacity as a firm's set of resources and dynamic capabilities dedicated to innovation process.

Owing to the different contexts under which SMEs operate compared to large firms, some advocate that the evaluation of innovation capacity of SMEs should be done in relation to their unique characteristics and behaviour (Tidd, 2001; Damanpour and Wischnevsky, 2006; Salerno et al., 2014); and not generically using a set of best practices relevant to all firms (Lawson and Samson, 2001). Consequently, several dimensions of SMEs innovation capacity have been identified (e.g., Forsman, 2011; Saunila and Ukko, 2014; Pierre and Fernandez, 2018) thus, providing theoretical insights into the role of innovation capacity in the innovation performance of SMEs elaborated below:

Owner/manager's characteristics

Business owners/managers are known as initiators of innovations (O'Regan et al., 2005; Teirlinck and Spithoven, 2013). Owners/managers with professional capacity, experience, training and technical education in leadership, project management, product development, and marketing are able to spot market opportunities, organise and efficiently manage innovation processes/activities. They possess the capability to detect, analyse and draw on their internal and external environment to design appropriate innovation strategy to guide the pursuit of innovations (Forsman, 2011; Hadjimanolis, 2000; Romijn and Albaladejo 2002). Asiaei et al. (2020) empirically demonstrated the dominant role of managers in mobilizing human and structural capital for improved innovation performance of Iranian firms. In terms of personality, owners who are risk takers (Hadjimanolis, 2000; Kickul and Gundry, 2002) and strongly dedicated to addressing market needs and opportunities through new and efficient approaches are highly disposed to the pursuit of innovations (Hadjimanolis, 2000).

Network integration

SMEs are faced with limited resources (e.g., funding, technical support); some of which are necessary to support innovations development. To leverage resources, minimise risk and costs, they integrate relevant networks such as research and academic institutions, investors, suppliers, and business and advisory support organisations, (Gronum et al., 2012; O'Regan et al., 2005; Lasagni, 2012; Pittaway et al., 2004). Thongsri and Chang (2019) asserted that the stimulus for innovation is the relationships between firms, and suppliers, customers and other stakeholders. The ability to identify potential networks, the capability to create and maintain network relationships, and the capacity to efficiently utilise the networks are essential for network integration. The ability to detect network relies on the owner/manager's or employees' knowledge of their environment while the utilisation and maintenance of the network depend on their absorptive capacities and the ability to develop relationships through mutually-beneficial collaboration.

Users/customers integration

Users/customers are important and direct source of information in gaining insights into and satisfying market needs (Apiah-Adu et al., 1998; Gronum, 2012; Von Hippel, 2005). Engaging users/customers helps firms to identify and understand their needs and preferences; knowledge

of which serves as input for innovations, assessment of the market potential of proposed innovations, and determination of the critical mass of potential users of the proposed innovations. Customers can be integrated into innovation development by involving them in product testing and trials or seeking their views or feedback on conceived innovative ideas (ideation). For example, owing to the importance of users/customers' role in innovations, health facilities in Jordan are enjoined to involve customers in innovation development (Abu-Rumman et al., 2022).

Institutional support

Public institutions including other public-interest organisations offer support (technical, financial, training, etc.) for innovation to SMEs. Specific institutional supports aiding innovativeness of SMEs include tax incentives, grants, networking and technical facilities (Liu and Laperche, 2015). SME's ability to detect and enlist these supports for its innovation activities relies on the profound knowledge base of the firm's human resources regarding the support systems (Pierre and Fernandez, 2018).

Innovation strategy and planning

Innovation strategy and planning involves the design of the innovation position of the firm, and the establishment of an action plan to guide the implementation of the strategy according to its resources, competencies, environment and business strategy. Such a document clarifies the responsibilities and resources essential for the SME's innovation development. The ability to design a strategy, a corresponding plan and an evaluation framework dedicated to innovations development demonstrates the innovation capacity of the firm. SMEs with formal innovation strategy and planning have been found to achieve better innovation outcomes (Terziovski, 2010; Rothwell and Dodgson, 1991).

Conditions for innovation

This refers to the nature of organisational and/or corporate structure of the firm in terms of the level of formalisation needed to promote innovation; and the operational policy for innovation. A flexible structure allows for adaptation of the organisational culture, liberation of creativity, and internal collaboration (Teece, 2007; Chesbrough, 2003; Damanpour, 1991). The SME's operational policy guides the recruitment of qualified human resources, promotes generation, communication (sharing) and implementation of individual creative ideas (Pierre and Fernandez, 2018). The ability of a firm to organisationally and operationally structure its internal environment to enhance innovation process and support innovation activities demonstrates its innovation capacity.

Innovation process management

This refers to a series of iterative steps or actions taken to achieve innovations using the capabilities and resources within the firm including resources in the firm's environment. Innovation process management involves three steps: conceptualisation of ideas, development and implementation of the ideas (Salerno, 2014; Tidd et al., 2013; Van de Ven 1999). Innovation management process draws on different capabilities and competencies within the firm such as project management, marketing, product development, decision making, etc. Conceptualisation, development and implementation of ideas rely on the knowledge capacity of the owner/manager and employees which may be influenced by their education background, professional competencies, capacity to integrate beneficial networks, and managerial capacity of the owner/manager in mobilizing and coordinating resources and capabilities.

Learning process
Knowledge management is very important for innovation (Adams et al., 2006; Darroch, 2005). It is critical right from the ideation to implementation stages of innovation development. Relevant knowledge for innovation may be sourced internally within the organisation through communication and interaction between the owner/manager and the employees or amongst employees. It can also be sourced externally through collaboration, cooperation, training, etc. The learning process is about the acquisition of knowledge and how it influences decisions and actions thus, implying absorption capacity. Ali et al. (2021) pointed to the positive influence of knowledge on superior entrepreneurial decision. Absorption capacity helps in the assimilation and application of new knowledge. Hence, firms that constantly train (internally and externally) their human resources, and develop external collaboration (Ferreira et al., 2015) with customers, suppliers, research institutions, industry players, etc. increase and renew their knowledge base thus, their competitiveness through innovation performance.

Resources dedicated to innovation
The pursuit of innovations sometimes requires the dedication of specialised resources. The resources may be human resources with particular expertise and specialised equipment. Firms with more diversified human resources and high quality specialised equipment increase their innovation capacity (Boly, 2014; Garcia and Calantone, 2002; Birchall et al., 1996). Highly specialised human resources possess special skills and knowledge beneficial to the innovation process; and facilitate access to networks and potential collaborations (Pierre and Fernandez, 2018). Organisations with higher and diversified human capital have higher competitive advantage (Palazzi et al., 2020; Budiarso, 2019).

Strategy and process revaluation
Business environment and market needs change with time; and that requires that firms adapt to meet these changes. Practically, it calls for firms to re-evaluate their innovation strategies towards the adoption of new tools, knowledge and skills, etc. the revaluation improves firms' resources and capabilities to meet the changes in their environment and remain innovative (Boly et al., 2014; Tierlinck and Spithoven, 2013). The ability of a firm to detect and analyse the evolution of the environment, and determine the corresponding changes required and to align the improved resources and capabilities to meet the changes constitutes its innovation capacity.

Access to cash flow
Access to cash flow refers to firm's ability to readily generate cash from its commercial activities including previous innovations to fund new innovation activities (Pierre and Fernandez, 2018). Cash flow gives evidence of the viability of the firm's commercial activities and innovations and thus attracts investors (e.g., venture capitalists), and facilitates access to more institutional supports for its innovation activities. It also allows the firm the room to take risk to invest in more innovation activities (Souitaris, 2001). To generate cash flow, SMEs must be capable of analysing and sizing potential market opportunities that can render their intended innovations commercially viable. Second, they must be capable of integrating users/customers into the innovation process to guarantee a critical mass of customers or users ready to consume or access the innovations. Third, SMEs must have the ability to develop a business model that can help them earn cash from the innovations, and use internal financial resources (e.g., cash flow from retained profits, and revenue from previous innovation) to finance innovations.

Access to private funding
Generally, SMEs tend to have scarce financial resources; and so access to private investment particularly in the early stages of innovation development where a lot of experimentations occur is very critical for sustaining SMEs' innovations pursuit. To access private funding, SMEs must have the capabilities to detect potential private investors, and build convincing commercially-viable projects that can attract private investment (Pierre and Fernandez, 2018). Recruiting human resources with knowledge of private investors and their requirements, and experienced in developing viable convincing projects can facilitate access to private investment. The possession of these capabilities demonstrates the SMEs' innovation capacity.

Strategic management of intellectual property
This refers to the strategic management of a firm's intellectual assets such as patents, trademarks, and brands to maximise returns on innovations. The ability to manage and secure the firm's intellectual property provides credibility and visibility of its competence, expertise and knowledge base. It serves to attract investors, capital, and new knowledge to the firm to support more innovation activities. It helps position the firm's products or services, access and secure markets, and generate revenues (Pierre and Fernandez, 2018). The ability to manage a firm's intellectual assets through patent/trademark management or brand positioning describes a firm's innovation capacity.

Standards and regulations integration
Markets have standards and regulations that SMEs have to meet in order to sell their innovative products or services. To integrate these standards and regulations (existing and emerging), the firm's human resources should possess the capability to identify, interpret and incorporate them into the firm's innovations. Pierre and Fernandez (2018) also pointed out that the integration of standards and regulations is an intelligence activity. Hence, SMEs should participate in interest groups and networks dealing with standards and regulations to obtain and learn about current and emerging information/discussions that impact its innovations.

3. Methodology
To investigate the innovation capacity of baobab enterprises, an in-depth qualitative multiple case study approach involving innovative baobab SMEs was employed. This allowed us to investigate the processes and factors that influence the innovation performance of the enterprises as recalled by the participants and corroborated by other sources of evidence (Yin, 2003). This approach also helped in replicating the results within the cases (Eisenhardt and Graebner, 2007).

3.1 Sampling and data collection
Prior to the selection of the cases, 23 baobab producing and marketing enterprises drawn from a database compiled by the second author were contacted to assess whether they have implemented any innovations in the past four years. Eight enterprises responded positively however, five enterprises were selected for data collection based on two factors:

- Innovation performance: the firms have implemented at least one innovation in the past 4 years of their existence. In this study, innovation was defined as the implementation of a new or significantly improved product (good or service), process, marketing and organisational methods in business practices, workplace organisation or external relations (OECD, 2005). Innovation performance was measured as the number of innovations implemented by the firms (Gunday et al., 2011).

- Information-richness (Crabtree and Miller, 1999); and literal replication logic: cases with similar characteristics (e.g., successfully implemented innovations, similar size, run by owners/managers with higher education background, etc.) were selected with the expectation to predict similar results (Yin, 2018).

The number of cases also reflects Creswell and Creswell's (2018) recommendation of not exceeding five or six cases in multiple case designs. Table 1 provides the descriptions of the cases excluding their names due to their request for confidentiality.

Table 1. Case studies description

Case	Description
Case #1	A seven-year old firm located in Central Europe. It produces organic food and beverage products for the European market. Over the years, it has produced two innovative baobab products. One of the products is completely new (a hydration drink) while the other (protein powder) is a modification of an existing product. The firm is managed by a degree holder in business administration with profound understanding of the process of innovation. He has several years of experience in a multinational electronics company as a marketing executive. The firm has a diversified core team of human resources in product development, nutrition, marketing and communication that supports its innovation activities. The firm is Bio Certified (organic food products) and a Certified B Corporation (sustainable and responsible management).
Case #2	Located in Southern Africa, the firm has been in operation for ten years. It is managed by an entrepreneur with higher education in ethnobotany and experienced in setting up businesses involving indigenous African botanical resources. The firm produces baobab-based food and beverage products (powder, funicle for infusion), and cosmetics and personal care products (baobab oil). The firm sells its products in Africa, Asia, Australasia, Europe and North America. It has developed two product innovations (a modification of existing products); and two completely new process innovations that involve the cracking of baobab fruit and separation of powder, and extraction of the funicle. It also designed and produced (in collaboration with an engineering company) the machine for executing the cracking and extraction processes. It has certifications for organic products (European Union Organics), sustainability and fair trade (Fairwild, Union of Ethical Biotrade - UEBT).
Case #3	It is a relatively young firm located in United Kingdom, managed by a young manager with higher education in business and finance with years of experience in investment banking, and large drinks and beverage companies. It sells its products in Africa and Europe. The firm has developed one innovative product (baobab functional drink), and two process innovations (a filtering process that retains baobab fibres, and a mixing process for functional drink production). It is sustainability and organically certified. It performs Life Cycle Assessment (LCA) to evaluate its environmental impacts year-on-year.
Case #4	The firm is located in Southern Africa, and has been in operation for seven years. Managed by a manager with enormous experience as director and chief executive officer of several international social development programs and organisations. The firm has implemented organisational and social innovations. The organisational innovation involves the installation of decentralised structures supported by a traceability system that allows the firm to ensure high quality control in the harvesting, milling and production of baobab powder. The social innovation involves the inclusion of baobab producers (mainly women) as partners with 20% shareholding in the firm. The objective is to improve their welfare/wellbeing, and participation in decision-making. It is organically certified (Ecocert).
Case #5	Located in Eastern Africa, the five-year old firm is managed by two co-founders with higher education in information and communications technology, and commerce and international trade. The firm has produced two innovative baobab products (baobab-based drink, and oil for personal and skin care). It sells its products in Africa and Europe. It is organically certified (Ecocert).

Primary data was gathered through semi-structured interviews conducted between September 2021 and May 2022 by the first author in English involving owners/managers of the firms. The

interview protocol was approved by the Mzuzu Research Ethics Committee (Ref. No. MZUNIREC/DOR/21/25). Respondents' consent was obtained before conducting the interview. The interviews lasted between 60-80 min. Three of the interviewees (Cases #1, #3 and #4) were interviewed twice. The audio-recorded interviews were transcribed with transcripts ranging from 10-17 pages. The interview guide sought information on the firm's profile, innovations implemented, the process leading to the conceptualisation, development and implementation of the innovations, and factors (resources and capabilities) that influenced or fostered the development of the innovations. Notes were taken during the interviews to record relevant observations. Secondary sources of data such as the firms' websites, industry association reports, and press articles were also accessed to ensure reliability and validity. Moreover, the key findings, the themes and the case analysis were sent to the interviewees for comments (Creswell and Creswell, 2018).

3.2 Data analysis

An abductive approach was adopted in coding and analysing the transcribed data using Maxqda Analytics Pro 2022 (22.2.0). The aim was to develop categories that reflected the various dimensions of SMEs' innovation capacity presented in section 3, and also allow for the development of new categories that would emerge from the data. The coding process began with an open coding by looking for words, statements, and sentences that described capabilities and resources that aided the development of innovations implemented by the firms. The codes were appropriately labelled to reflect their content and meaning. For instance, a statement such as "the training and work experience helped in addressing consumers' need through development of innovative products" was coded as '*Previous work experience'*. The codes developed for the first interview transcript were then applied to analyse subsequent transcripts, and where they did not match everything, additional codes were developed to capture the new information. The previous codes were then updated and used to reanalyse the previously-analysed transcript(s) and recode all the responses again. Through this iterative process, all the interview transcripts were reanalysed and exhaustively coded. Subsequently, codes that expressed similar meaning, characteristics or attributes were consolidated and labelled with crisp descriptors (e.g., attitude towards risk, brand building and positioning, etc.).

The codes were then sorted based on their relationship to create ten categories. Nine of the categories were deductively-generated based on the literature review of SMEs' innovation capacities (see section 3) while, one category was inductively generated. The deductively-driven categories were: owner/manager's characteristics, network integration, users/customers integration, standards and regulations integration, institutional support, access to cash flow/private funding, innovation-dedicated resources, strategic intellectual property management, and learning process. The inductively-driven category was organisational climate and culture. Code relation analysis was also performed to explore how the categories (innovation capacity dimensions) interact to influence innovation performance. Based on the aids of memos, summaries and quotes (in vivo memos), the mechanism through which innovation capacity dimensions of the firms foster innovation performance were mapped. Employing content analysis of the text underlining the relational effects of the categories (innovation capacity dimensions) and the memos, six themes characterising innovation capacity of baobab enterprises were conceptualised. The themes formed the basis for the development of an innovation capacity framework for baobab SMEs. Figures A1 and A2 (Appendix 1) illustrates the coding process and analysis in its empirical form.

4. Results

4.1 Innovation capacity dimensions of baobab enterprises

The analysis revealed ten dimensions of innovation capacities that foster innovation performance of baobab enterprises as illustrated by the code cloud in Fig. 1. The size of the codes (innovation capacity dimensions) corresponds to their frequencies.

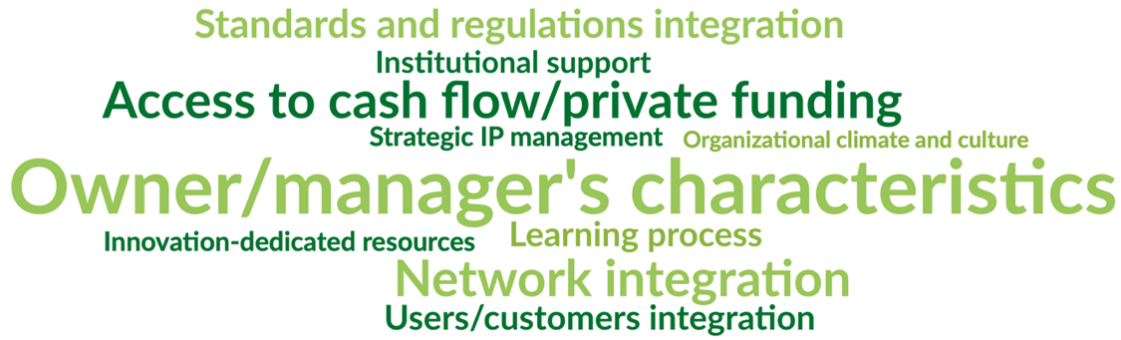

Figure 1. Code cloud of innovation capacity dimensions

The innovation capacity dimensions had varying degrees of relationship with each other in fostering innovation performance of the baobab enterprises (Fig. 2). The size of the square symbols indicates the level of the relationship. The more related the dimensions the larger the size of the squares. Owner/manager's characteristics, access to cash flow/private funding, and users/customers integration had the strongest relational effect on innovation performance indicated by a total score of 36. Innovation-dedicated resources, network integration, learning process, institutional support, and standards and regulations integration had moderate relational effect on innovation performance indicated by a total score of 29-30. The innovation capacity dimensions with the least relational effects were organisational climate and culture, and strategic IP management indicated by a total score of 22 (Fig. 2).

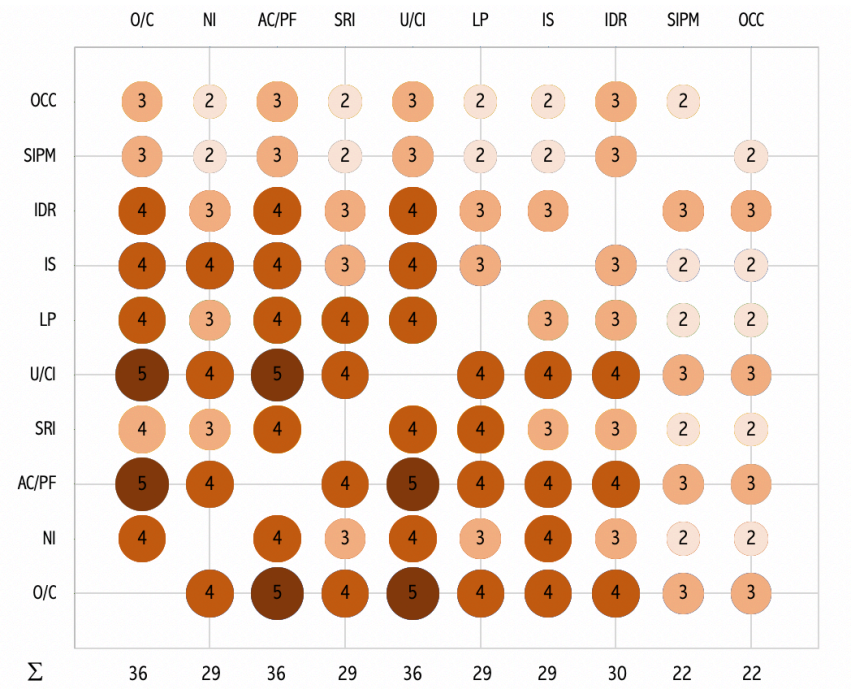

Figure 2. Relationship between innovation capacity dimensions

Note: O/C=Owner/manager's characteristics, NI=Network integration, AC/FP=Access to cash flow/private funding, SRI=Standards and regulations integration, U/CI=Users/customers integration, LP=Learning process, IS=Institutional support, IDR=Innovation-dedicated resources, SIPM=Strategic IP management, OCC=Organisational climate and culture

Owner/manager's characteristics

The cases revealed five key characteristics of owners/managers that foster innovation performance namely, innovation vision, dedication to the pursuit of innovations, positive attitude towards risk, personal competencies acquired through previous work experience and education.

The owners/managers had a clear vision for pursuing innovation. Their vision for innovation was to gain competitive advantage through the development of new products, process and marketing innovations that address market needs/demand; and also improve the welfare and wellbeing of people through social innovation (Table A1, Q1, Q2, Q3). They committed considerable resources (financial, time) to support innovation development by collaborating with researchers and other firms to leverage knowhow and technologies. This is indicative of their dedication to the pursuit of innovation. The owners/managers were risk takers, willing to try new things and were not deterred by failures or setbacks (Table A1, Q4, Q5, Q6). For instance, Case #2 committed 50% of its expenditure to innovation activities in the first two years of its operations, and borrowed money to finance its innovations. It designed and commissioned the production of an extraction machine meant to process high quality baobab powder; the machine failed to deliver. The setback resulted in financial and market losses including loss of faith with some customers. Yet, it still kept trying by seeking new knowledge and collaborations until it succeeded:

"We built or commissioned equipment which was produced according to our kind of prototype design, and then it wasn't okay. So we had to shelve it. And then we had to get more equipment. So, the whole process innovation was expensive. We also lost credibility with various of our customers during the time because, we would then have problems with the equipment, which then would affect our ability to supply either on time or to the quality specifications that we had promised the customer. So we lost, we lost some faith from our customers. So we lost some market share because of the time it took us to develop these innovations and it cost us a lot of money" (C2, Pos. 63).

In relation to previous work experience, the results revealed that prior to establishing their firms, the owners/managers had worked in large businesses at management level dealing with the production and marketing of consumer electronics, drinks, and Information and Communication Technology (ICT) products (Cases #1, 3 and 4). For Case #2 the owner/manager was an experienced entrepreneur who researches indigenous African botanical resources, and develops businesses for the most promising ones. The owner/manager of Case #4 is a former director and Chief Executive Officer (CEO) of several international social development programs and organisations in developing countries. Altogether, the owners/managers of the five cases had acquired strong competencies and practical experiences in business development, marketing, communication, funds mobilisation, community organisation, and project and team management – qualities essential for innovation process management (Table A1, Q7, Q8, Q9). The results also revealed that all the owners/managers have obtained higher education in different fields such as marketing, finance, commerce and international trade, and social development. They were emphatic that their education background coupled with their post education experience were instrumental in developing cognitive capacities and the skill set (capabilities) that engender confidence in trying new things, analysing market problems, spotting opportunities, and mobilizing resources to develop innovations to address the opportunities (Table A1, Q10, Q11).

Network integration

The cases demonstrated the capabilities to detect, access and maintain beneficial networks in order to leverage resources for innovation activities. They had good knowledge of organisations within their environment that they can collaborate with for resources to support innovations. Within their networks were engineering companies, product development specialists/companies, academic and research institutions. They worked with these entities to access technology, knowledge, financial and technical (advisory) supports in developing innovative products and processes (Table A1, Q12, Q13, Q14, Q15). Case #5 maintained a database of organisations (public, private and non-governmental) that provide various forms of supports for innovation development.

"From my experience or my interaction, people my age have really great ideas but, they don't have the finances to do it. They don't know where to go. Like I mentioned, an organization like (name withheld) can help. I'm lucky I was able to know about it. We have database of all organizations and the support they offer. But, what about the person who's deep interior who is about 500 kilometers from (name withheld)?" (C5, Pos. 23)

Trade shows, seminars and workshops, and industry association served as important avenues for networking. Beneficial relationship with the network members were maintained through contracts, partnership, collaboration, and trust (Table A1, Q16, Q17).

Users/customers integration

The cases demonstrated the firms' capabilities to access and integrate users/customers' knowledge into innovation development. In all the cases, we found instances where customers' knowledge were accessed and integrated into the innovation process:

"We constantly learn from our customers and reflect that into our approach" (C4, Pos. 45).

For instance, Case #1 has dedicated channels such as e-contact forms, emails, and social media platforms through which users/customers' knowledge (e.g., feedback and propositions) on desired changes to existing products, and desirable features of new products is accessed (Table A1, Q18). Case #2 relied on customers with whom the owner/manager has developed long term relationship to access their views on the market potential of proposed innovative products, and also involve others in product testing and trials for validation and improvement (Table A1, Q19). Case #3 employs online customer survey, and face-to-face engagement for customers' views on current products and on desired changes to existing products, and expected features of new products (Table A1, Q20).

Institutional support

The ability to detect and enlist available institutional support is an essential dimension of innovation capacity. The cases demonstrated knowledge of relevant support such as tax incentives, grants, consulting/advisory service, training, etc. for the pursuit of innovations. Case #1 accessed public funding to support the hiring of an in-house product specialist to provide technical support for the development of an innovative product (Table A1, Q21). Cases #2 and #4 accessed public grants to support the development of an innovative product, and the hiring of a consultant to conduct efficacy trials respectively (Table A1, Q22, Q23). Case #5 enlisted technical support from public institutions on the integration of industry standards into its production process, and also accessed private grant to support the acquisition of a specialised equipment to aid the production of a new product (Table A1, Q24). Case #3 accessed tax rebates to support its investments in innovations (Table A1, Q25).

Organisational climate and culture

Results from the case studies revealed instances of firms' capabilities in creating an organisational climate and culture that foster innovation. For example Case #2 gives opportunity to its key employees to attend trade shows with the goal of stimulating their creativity (Table A1, Q26):

"So I go and/or other members of my team go every year to at least one or two international trade shows… the second reason is that it, it helps to spark innovation. And it's very inspiring for us. So I would say that both of these innovations come from ideas that generated as a result of going to trade shows" (C2, Pos. 24).

Case #4 regularly communicated its goals and vision for innovation within the firm, and promotes information and knowledge exchange among the personnel so that everyone will be on the same page and imbibe the orientation of the firm (Table A1, Q27). Case #1 strategically hired persons that can create an organisational environment that promotes innovativeness through the creation, sharing, and absorption of new knowledge (Table A1, Q28).

Learning process

Knowledge is fundamental to innovations development thus, the capability to create, acquire and absorb knowledge is one of the critical dimensions of innovation capacity. The case studies revealed that the firms utilised both internal and external sources of knowledge. In their effort to internalise users/customers' knowledge, Case #1 created a platform (extranet) to access and manage customers' knowledge (Table A1, Q18). Case #5 established a database for storage and retrieval of information about institutional support for innovation activities and related requirements (Table A1, Q12). Cases #2, #4 and #5 promoted an organisational climate and culture that foster creativity by sponsoring workers to participate in trade shows, seminars and workshops to obtain new knowledge; and sharing of tacit knowledge within the firm through internal training (Table A1, Q26, Q29, Q30):

"We build it (technical capacity of the staff) of course through training and experience. Very few people or nobody we hired have ever done baobab processing before, because nobody ever did it. So, I think more important is your commitment to training them" (C4, Pos. 64).

Innovation-dedicated resources

Firms' human and technical resources particularly dedicated to innovation activities influence SMEs innovation capacity. The case studies revealed that the SMEs had diversified human resources and specialised equipment to support their innovation activities. For instance, Cases #1 and #4 carefully recruited personnel whose competencies and knowledge help support its innovation activities (Table A1, Q31, Q32).

Access to cash flow/private funding

Financial resources are crucial for innovation development. The capability to access cash to fund innovations characterises innovation capacity. Cases #4 and #5 relied on cash flow from retained profit from previous innovations and other commercial activities (Table A1, Q33, Q34). Cases #2 and #5 accessed bank loans to finance innovations (Table A1, Q4, Q35) while, Case #3 accessed private investments to finance its innovations (Table A1, Q36):

"The R&D tax credits and the EIS scheme in the UK…They're certainly both programs that have made it a lot easier for us to continue, and to have that first product, that is start the shots product. And that's because, they both give you access to money in different ways. One is a rebate from the government. The other makes it more attractive for investors to invest in

your company. And so, to innovate and to take a risk, people need money to do it" (C3, Pos. 110).

Strategic management of intellectual property

The case studies revealed brand building and positioning as the key intellectual property strategically managed by the baobab SMEs. Cases #3 and #4 made a great deal of investment in establishing their brands. They invested a lot of resources in quality and packaging of their products, and marketing the nutritional and health benefits of baobab including highlighting the social benefits that go to the local communities involved in the harvesting of baobab fruits (Table A1, Q37, Q38):

"In consumer world, I think that your biggest sort of source of protection against people stealing your IP is your brand. And so if you invest in your brand and you sort of protect your product from a brand perspective, you're likely to be okay after that. We spend a lot of time obviously sort of building our brand and investing in it… So, IP is really a brand issue and if you invest in your brand and protect your brand, most of the time you'll be fine" (C3, Pos. 61).

The solid and unique brands have benefited the enterprises by giving them credibility, visibility, attracted funding, and increased revenue to support innovation activities (Cases #5 and #1) (Table A1, Q39, Q40).

Standards and regulations integration

The enforcement of industry standards and regulations creates opportunities for innovation development particularly when firms have to modify an existing product or process or perhaps come up with new ones to meet the requirements. The ability to integrate these standards and regulations characterises firms' innovation capacity. Case #4 developed an innovative organisational mechanism that ensured quality control right from the raw materials supply stage through to processing and production of products at the factory. Also, it installed traceability systems to enable it meet organic certification standards (Table A1, Q41). Case #3 developed a process innovation that involves a filtration mechanism that retains baobab fiber. This enabled the firm to meet EU food standard regulations, and also demonstrate the health claims of its products (Table A1, Q42):

"Process innovation wise, we've actually done quite a bit of work on how to manufacture drinks and also certain food products with the baobab fruit. And so we've sort of explored many different ways of filtering the sediment without taking out the fiber… because of that, this is just one example where we were able to have four of our five shots high in fiber according to EU food standards regulations. And we were able to fulfil health claims that they are good for energy, good for your gut health, good for your overall wellness, your mind and body..." (C3, Pos. 27-44).

To acquire EU certification for its products and facilitate export to Europe, Case #5 undertook training on food safety including hazard analysis and critical control points (HACCP). It also solicited technical advice from a national bureau of standards on how to integrate the standards into its production in order to fulfil the European standards (Table A1, Q43).

5. Discussion

This study aimed at determining the innovation capacity and its related dimensions that foster innovation performance of baobab enterprises. Our results revealed 10 dimensions of innovation capacity (Fig. 1) representing more than three fourths of all dimensions identified

in literature found to characterise SMEs' innovation capacity (Pierre and Fernandez, 2018). The results thus contribute to attaining a consistent framework for the evaluation of SMEs' innovation capacity and its role in the innovation performance of SMEs. That notwithstanding, two innovation capacity dimensions (innovation process management, and strategy and process revaluation) were not explicitly identified in our study while another dimension, innovation strategy and planning was not identified at all. The former two dimensions were implicitly effectuated in other innovation capacity dimensions such as users/customers integration, and network integration. For example, developing an innovation idea through attendance of trade shows, accessing customers' feedback on protypes, engaging new collaborators to improve an innovative process, redesigning a new product following feedback from users are activities akin to innovation process management, and strategy and process revaluation. Pierre and Fernandez (2018) similarly observed that process revaluation as a dimension of SMEs innovation capacity is an inherent characteristics of SMEs that is not particularly conspicuous in its effect on innovation. In relation to the latter dimension, i.e., innovation strategy and planning, the common observation is that very few SMEs develop formal document for innovation strategy and planning. De Jong and Marsili (2006) in a survey of 1,234 micro and small enterprises in the Netherlands found that only a third of the firms had a formal plan for innovation. Factors explaining this phenomenon are resource constraints and the flexible organisational structure of SMEs (Hudson et al., 2001; Terziovski, 2010).

Our results also revealed high relational effect of eight innovation capacity dimensions on the innovation performance of baobab enterprises. Three of these dimensions (owner/manager's characteristics, access to cash flow/private funding, and users/customers integration) had the highest relational effect (Fig. 2). The findings demonstrate the centrality of these innovation capacity dimensions in fostering innovations. It also demonstrates SMEs specificities characterised by the dominant position of the owner/manager, scarcity of resources (financial and non-financial) hence, the need to generate cashflow, access external funding, and leverage beneficial networks to pursue innovations critical for the survival and competitiveness of SMEs. Oura et al. (2016) and Saunila (2017) reported the interactions between innovation capabilities and found that multiple interrelated capabilities (dimensions) such as leadership culture, and access to finance influence firm performance. These findings allow us to develop an innovation capacity framework for SMEs in the baobab industry (Fig. 3). The framework shows the mechanisms through which innovation performance of baobab SMEs is fostered, and also provides a conceptual basis to assess and characterise the innovation capacity of baobab SMEs. It also provides insights into firm level capabilities and resources that can be invested in to develop or enhance a firm's innovation capacity for innovations.

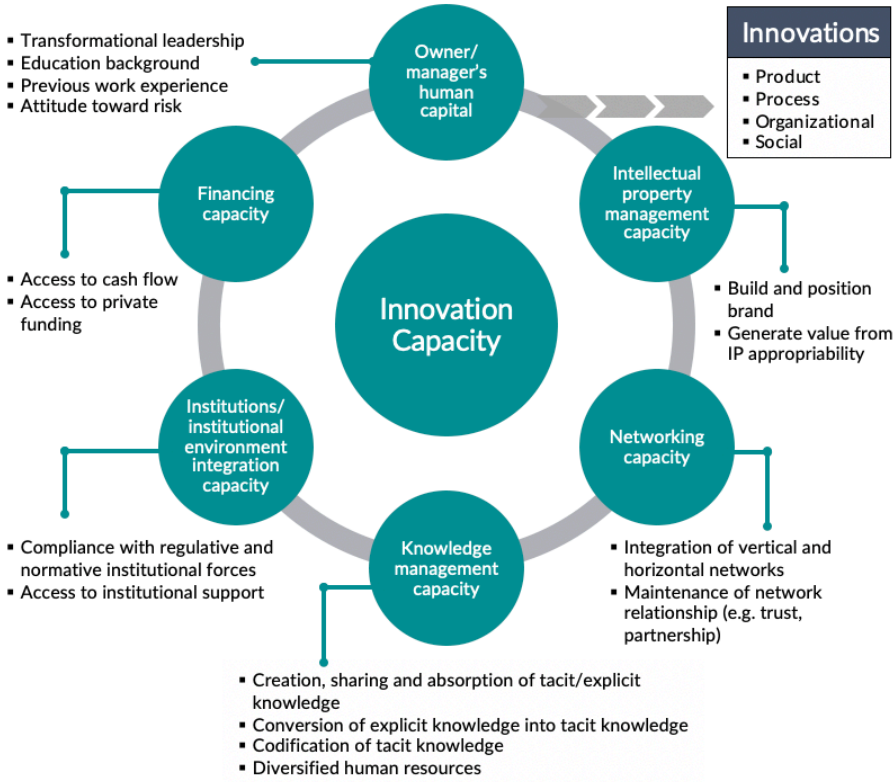

Figure 3. An innovation capacity framework

The framework derives from synthesis of the ten innovation capacity dimensions identified (Fig. 1), their properties and relational effect on innovation performance of the baobab SMEs. The six-component framework consists of owners/manager's human capital, networking, knowledge management, intellectual property management, institutions/institutional environment integration, and financing capacities. The proposed framework is subsequently elaborated with practical illustrations from the cases studied.

Owner/manager's human capital

Owner/manager's human capital is a very important dimension of innovation capacity that foster innovation performance of SMEs. It refers to the stock of knowledge, experience, skills, and other personal characteristics embedded in a person that make him or her productive (McConnell et al., 2009). Kato et al. (2015) unpacked human capital into specific and generic human capital, and subsequently showed that the two categories of human capital have direct and indirect effects on innovations respectively. Generic human capital relates to general knowledge acquired through formal education and professional experience, and work experience in other sectors. Specific human capital include technical experience, prior technology knowledge, and work experience in innovation activities.

In relation to education, several studies demonstrate that firm owners' education background, prior technology knowledge positively influence innovation (Marvel and Lumpkin, 2007; de Winne and Sels, 2010). Our study showed that the innovativeness of the baobab enterprises was influenced by the owners/managers' higher education (undergraduate and graduate degrees) in business management, marketing, finance, ICT, commerce and international trade. Higher education helped them develop cognitive capabilities and aptitudes to search (e.g., personal research), evaluate and assimilate knowledge, undertake market research to assess demands and opportunities, conceptualise solutions to fill the opportunities, and access

institutional supports for innovation activities. They had self-confidence, were good at evaluating and exploiting opportunities, assessing problems and devising innovative solutions (Table A1, Q10, Q11). These qualities are the products of higher education which includes problem-solving qualities, creativity in process design, independence, and communication skills (Jiménez et al., 2015). In addition, some of the owners/managers possess technical education in business-related field which in turn provided them with business management and transformational leadership skills essential for accessing and mobilizing resources to support innovation activities. Our findings are consistent with the results of Oluwajoba et al. (2007) who found positive significant relationship between SMEs' innovation performance and owners' tertiary level of education including their specialty.

Another aspect of human capital important for fostering innovation is professional (work) experience (Huang et al, 2012; Robson et al., 2012). Prior work experiences at management level or in large companies help nurture competencies in management, organisation, and coordination; qualities relevant for the management of the innovation process and activities. Oluwajoba et al. (2007) and Romijin and Albaladejo (2004) reported a significant relationship between SMEs' innovation performance and owners/managers' previous work experience particularly in large and multinational companies. Large companies offer a learning environment for gaining practical knowledge and skills in the management of innovation process. Available internal facilities or resources and training within the companies are avenues for acquiring these useful competencies. This study showed that the baobab SMEs owners/managers had strong professional (work) experience. Some have worked as financial analyst, marketing executive in large multinational electronics and drinks companies, director of international development programmes, and experienced entrepreneur (Table 1). Their experiences influenced the development of competencies in communication, business development, marketing, funds mobilisation, and project management. These capabilities enabled them to organise and coordinate innovation process (Table A1, Q7, Q8, Q9).

Besides the education background and professional (work) experience, the personality and leadership qualities of business owners/managers are another important aspect of human capital that influence innovation performance. Transformational leadership (Howell and Avolio, 1993; Aragón-Correa et al., 2007), and willingness to take risk are shown to influence innovation (Kickul and Gundry, 2002; Hadjimanolis, 2000). Transformational leaders envision change (e.g., innovative product or process), create a vision to guide the change, rally internal and/or external resources (human, material, knowledge, technology) to achieve the desired change. They ensure organisational learning, and provide organisational climate and culture that promote innovation development, proactivity and risk-taking (Adair, 1990; Tushman and Nadler, 1986; Manz et al., 1989; Lefebvre and Lefebvre, 1992). Our results showed that the owners/managers had clear visions of establishing competitive brands based on innovations (Table A1, Q1, Q2, Q3). They rallied financial resources from within the business and externally to support their innovation activities. They provided enabling organisational climate to promote innovations by supporting their employees to attend trade shows and seminars to acquire new knowledge. They also promoted the sharing of information and knowledge among the personnel through regular discussions and internal training in order to stimulate creativity (Table A1, Q26, Q30). Arágon-Correa et al. (2007) after surveying 408 firms across four sectors in Spain found that the firms' innovation performance was influenced by the owners' ability to develop long-term vision, seek new opportunities for their firms, and provide motivating organisational environment for internal collaboration among workers. Furthermore, the baobab SMEs owners/managers demonstrated positive attitude and capacity to take risks. They were undaunted by initial failures and its consequences such as loss of customers and

revenue. They sought new collaboration, refocused and tweaked their designs until attaining success (Table A1, Q4, Q6, C2 Pos. 63). The capacity of managers to take risks is highlighted as an influential factor for firms' innovation (Kickul and Gundry, 2002; Hadjimanolis, 2000). Arágon-Correa et al. (2007 p. 357) asserted that a "chief executive officer's willingness to accept risks is probably one of the first steps of the process of innovation". In sum, SMEs owners/managers' human capital is central to innovation performance. It is instrumental in the development of innovation vision, inspiring employees to contribute to the attainment of the vison by creating conditions for organisational learning, generating resources to support the innovation process, managing and coordinating innovation activities.

Networking capacity

Networking capacity is another important component of innovation capacity that foster innovation performance. Networking enhances opportunities for innovation by extending firms' environment for learning and social interaction, acquisition of knowledge and skills, access to finance, and knowledge (Jørgensen and Ulhøi, 2010). Two forms of networks relevant for SMEs are horizontal and vertical networks. Horizontal networks involve collaboration among firms (competitors) within the same sector or industry for information exchange, social benefits and informal relationship (Omta, 2004; Hendrikse, 2003; O'Donnell et al., 2001). Vertical networks describe collaboration with partners belonging to or associated with the same chain network (Omta, 2004) example of which include suppliers, customers, research organisations, government and financial institutions (Gellynck and Khüne, 2010).

To leverage networks for innovation, SMEs must be able to identify, build and maintain relationship with relevant networks. Several studies show that networking with customers, participation at fairs and exhibitions, and collaboration with third party network members facilitate access to information, knowledge, and technology essential for innovation development (Scozzi et al., 2005; Pittaway et al., 2004). Firms with strong institutional networks easily gain access to critical external resources (Zhang et al., 2018). This study showed that baobab enterprises had the capacity to develop both horizontal and vertical networks. Within their horizontal networks were competitors who were largely members of the African Baobab Alliance (ABA). The vertical network members were customers, academic and research institutions, industry and business/innovation development centres, engineering companies, product development specialists/companies, and NGOs. Through these networks they accessed new knowledge, technology, financial and technical support to develop innovations (Table A1, Q12, Q13, Q14, Q15). Some ideas for innovation were derived from interactions with customers, and involvement in trials and protype testing. Similarly, participation at trade fairs involving competitors contributed to innovation ideation. Furthermore, they collaborated with local researchers/research organisations and universities in furthering innovations while business and industry development agencies supported them with grants, advisory services including information on standards and regulations. Pérez et al. (2011) showed that inter-organisational cooperation increasing innovation through the sharing of knowledge and interactive learning.

Relationship and trust are crucial in integrating network members into the innovation process. Trust engenders confidence and openness in knowledge sharing and learning (Jørgensen and Ulhøi, 2010; Avermaete et al., 2003; James, 2002). Relationships may be developed and maintained through collaboration, contract, partnerships, etc. with the goal of accessing resources (knowledge, technology, finance) to support innovation activities. Our results demonstrated the existence of relationship and trust between the businesses, customers and other relevant network entities. For example, innovative ideas were bounced off customers with

long-term relationship due to the mutual relationship and trust that have developed over the years. For other beneficial network entities such as R&D companies, academic and research institutions, the enterprises maintained relationship with them through contracts, partnership, and profit-sharing (Table A1, Q16, Q17). Various studies (Cabrilo and Dahms 2020; Al-Jinini et al. 2019; Vătămănescu et al. 2019) demonstrate the effect of relational capital such as friendly and intimate relationships with customers and suppliers on innovation performance of firms.

Proximity of the network members to SMEs are also relevant for network integration. For SMEs, spatial proximity (sharing the same geographical space), social proximity (connected on the basis of trust, friendship, experience), and cognitive proximity (sharing similar knowledge bases) have been found to facilitate access to resources for innovation (Boufaden and Plunket 2007; Jaffe et al. 1993; Boschma, 2005). Our study revealed that the baobab enterprises' networks were characterised by spatial, social and cognitive proximities. Our finding is in contrast with von Proff (2016) who opined that small firms that are risk averse rely on social proximity for innovation and as such demonstrate low-medium innovativeness. The baobab firms were risk takers, demonstrated strong innovativeness and relied not only on social proximity but also on spatial and cognitive proximities.

Knowledge management capacity

Knowledge management (KM) is very critical in innovation development (Plessis, 2007; Adams et al., 2006; Apornak and Keramati, 2017); and firms' capability to manage knowledge demonstrates their innovation capacity (Massa and Testa, 2004). KM is a management process that creates or locates knowledge, manages its flow, and ensures that it is used effectively and efficiently for the long-term benefit of the organisation (Darroch and McNaughton, 2002). To effectively manage knowledge for innovations development, firms need to create tools, platforms (e.g., intranet and extranets), and processes (e.g., quarterly meetings) to generate, share and leverage tacit and explicit knowledge within and outside the firm. It also needs to provide a knowledge-driven culture within the firm to encourage creativity and learning. Al Shraah et al. (2022) indicated that businesses that develop processes, procedures, and strategies for knowledge management are likely to get a head in generating innovation and creativity.

The results of our study reflected several aspects of the roles of knowledge management in innovation. For instance, the firms used extranet as means to access customers' feedback on new products including recommendations of features they would like to have added to an existing or proposed products (Table A1, Q18). Internal training of workers facilitated the sharing of tacit knowledge within the firms (Table A1, Q30). In addition, key staff members of the firms had opportunities to attend trade fairs and training workshops in order to acquire new knowledge (Table A1, Q29). Dasgupta et al. (2009) reported the positive effect of focused training programs of employees on innovations. Also, the firms recruited in a manner that filled key positions critical for the pursuit of innovation (e.g., product development specialist) and sharing of knowledge, skills and expertise relevant for innovation development. These arrangements helped provide a knowledge-driven organisational culture that stimulated creativity. Al Shraah et al. (2022) stressed the importance of organisational culture in driving knowledge management for the delivery of innovations. Gloet and Terziovsky (2004) found a significant positive relationship between knowledge management and innovation performance particularly in creating an internal working environment that support creativity. Florén et al. (2016) stressed that a sound investment in an organisation's human capital is one that ensures prudent recruitment, continuous training and development of the skills and competencies, and promotion of an atmosphere that advocates constant learning, creativity, and innovation.

Intellectual property management capacity

Intellectual property (IP) management unlocks innovations by facilitating access to external investments or increased revenue from previous innovation (Rassenfosse, 2012; Cohen et al., 2000; Levin et al., 1987). Traditional avenues for IP management are patenting, trademark registration, trade secrets, and geographical identifications. There are cost and (dis)advantages associated with different appropriability mechanisms.

Our results showed that baobab SMEs focused particularly on the management of their brands as their strategic IP. They invested in brand building and positioning since they found it the surest way of protecting and benefiting from their innovations. This was achieved through product differentiation and strong marketing with the goal of establishing dominance through brand loyalty. They invested in attractive packaging, quality assurance, organic certification/environmental sustainability, equitable benefit sharing with suppliers or producers which were mostly local communities (Table A1, Q37, Q38). The firms' branding efforts yielded positive outcomes such as attracting funding and increasing revenue to support their innovation activities (Table A1, Q39, Q40). Tunzelmann and Acha (2004) pointed out that branding provides secure financial base with marketing helping to achieve scale and scope economies.

Baobab enterprises favoured brand building as an IP appropriability method over patenting. They were of the view that patenting does not provide perfect protection since others can easily imitate it through subtle variations, and that the cost of the process may not justify the benefits that may be derived. Their reasoning resonates with Levin et al. (1987) who pointed out that patents do not always provide expected protection and appropriability having shown that many patents are circumvented while others provide little protection due to the stringent legal requirements of proof of validity or infringement. Also, public disclosure does not always ensure ultimate diffusion for economic gains. Investments to establish a brand name are found to outlive patent (Statman, 1981). Complementary investment in marketing and customer services have been found to offer advantages over patents (Levin, et al., 1987). That notwithstanding, Cohen et al. (2000) pointed out that the most effective appropriability mechanisms used by most industries to strategically manage their IP is by combining two or more mechanisms. Only a small handful of industries report the reliance on one appropriability mechanism as very effective way of strategically managing their IPs. Nonetheless, the baobab enterprises relied on branding as the sole IP appropriability mechanism. SMEs with limited financial resources can make incremental investment in branding as an effective way to strategically manage the intellectual property associated with their innovations considering its effectiveness for the baobab SMEs.

Institutions and institutional environment integration capacity

Institutions refer to a set of norms, rules and values operating in a given environment that generate regularity of behaviour among actors affected by that environment (Lin, 2016). Conformity to the elaborate rules and requirements by individuals or organisations leads to their gaining legitimacy (Alexander, 2015). Firms achieve legitimacy through three institutional forces: regulative, normative and cognitive institutional forces (Lin, 2016). *Regulative force* (similar to coercive isomorphism) describes the behaviour of firms as a result of the pressures of current and future regulations, rules and laws. Some of the regulations may be quality assurance standards, environmental sustainability laws, etc. *Normative force* (similar to normative isomorphism) refers to the constraints related to the production standards and adoption of standards set by the profession or industry that influence the behaviour of firms. Legitimacy provides firms with access to resources, skilled workers, and stimulates firm

innovativeness and competitiveness (Boutry and Nadel, 2021; Berrone et al., 2013; Oliver, 1991).

Our results revealed that the baobab firms introduced a number of incremental innovations in their production process in response to regulative and normative institutional forces such as the European Union's regulatory standards and requirements for food safety and quality, hazard analysis and critical control points (HACCP); and Good Manufacturing Practices (GMP). Compliance with the standards helped them accessed the export markets and enhanced their business performance (Table A1, Q43). Boutry and Nadel (2021) found a strong positive effect of existing and future regulations on eco-innovation particularly product and process innovations. Furthermore, international buyers' demand for the fulfilment of regulatory requirements such as Certificate of Analysis (a quality requirement), Novel Food Certification, and Organic Certification led the baobab industry association (PhytoTrade now, ABA) to apply for various regulatory standards. For instance, baobab powder was registered as Novel Food in the European Union, Food and Drug Administration (FDA) Generally Recognised As Safe (GRAS) in the United Stated America (USA), and in other countries such as Canada, Australia, Japan, South Korea, India, Singapore and Thailand (GIZ et al., 2021). This illustrates normative institutional force. The industry-wide standards led the firms to integrate these standards into their production leading to the implementation of new process innovations or modification of existing products or process (Table A1, Q41, Q42). Again, Boutry and Nadel (2021) found a positive impact of normative isomorphism (particularly, code of good practice) on product innovations among French industrial firms.

Also, legitimacy derived from compliance with standards and regulations facilitates firms' access to institutional supports (e.g., grants, funding, tax rebates) for innovation development. Our results revealed that firms that fulfilled certain institutional criteria (e.g., qualifying trade or business activities, etc.) which demonstrate a form of legitimacy were able to access investments, funding and grants to support innovation development (Table A1, Q36). Considering that standards and regulations are critical requirement in all markets and industries, SMEs should continually renew their knowledge and understanding of current and emerging standards and regulations to inform innovation development. Participating in interest groups and networks dealing with standards and regulations are avenues for firms to learn about current and emerging information and discussions that impact their innovation activities.

Financing capacity

Financial resources are crucial for firms' innovation performance (Bierly et al.. 2009). The ability to generate internal and external finance to support innovation activities demonstrates firms' innovation capacity. Retained profits, formal loans, grants, and investment funds are sources of finance that SMEs can access to support innovations. To access external funds, SMEs have to develop convincing viable proposals, generate cash flow to attract investors, hire experienced staff or consultant with track record of successful application for private funding to drive the process.

Our results showed that baobab firms relied on internal financial resources (e.g., cash flow from retained profits, and revenue from previous innovations), bank loans, private investments (e.g., angel investors), and personal savings to finance their innovations (Table A1, Q33, Q34, 35, 36). Internally-generated funds from retained earnings have been identified as the main source of funding for innovations in most SMEs (Czarnitzki and Hottenrott, 2011). However, Cash flow from retained profits is found to be less dependable financing source for innovations because it is prone to volatility. Disruptions or instability in sales affects revenue generation

and profit which may lead to cutting down on financing of innovations, delay or postponement of innovation projects (Mare et al., 2021). On the other hand, bank lending is found to be appropriate for financing innovation particularly process innovations. Successfully developed process innovations may serve as collateral for further lending (Benfratello et al., 2008). That notwithstanding, the baobab firms relied on diversified sources of finance for innovations. They used a combination of cash flow, private investment and/or bank loans. Mare et al. (2021) surveying over 17,000 firms in 104 countries on the relationship between financial structure and firm innovation found that enterprises that have access to diversified sources of financing increase investment in innovations.

6. Conclusion

This study assessed innovation capacity and its role in the innovation performance of SMEs involved in baobab production. The results revealed ten innovation capacity dimensions that influence innovation performance of baobab enterprises. A six-component framework consisting of owner/manager's human capital, networking, knowledge management, intellectual property management, institutions/institutional environment integration, and financing capacities was developed to characterise the innovation capacity of baobab SMEs. The innovation capacity framework lends itself for use as an evaluation and conceptual framework for studying the factors that can foster innovation performance of NTFPs-based SMEs. Our study makes a number of contributions to management, policy and research.

6.1 Contribution to management

The study identified capabilities and resources critical for SMEs' innovation performance that owners/managers can invest in for survival and competitiveness. Key capacities that can be the focus of such investment are human capital, relational capital (networking integration), and knowledge management.

Human capital

- Human capital is the key driver of innovation (Bontis, 1998). Businesses with higher stock of human capital have high competitive advantage (Burdiarso, 2019). Consequently, SMEs should engage employees with specialised skills and knowledge aligned with the innovation vision of the firm. Owners/managers should adopt transformational leadership to engender organisational climate and culture that nurtures creativity, knowledge sharing, and capacity building through training, mobilisation of internal and external resources (tangible and intangible) to pursue innovation vision.

Relational capital

- Relational capital refers to the value derived from a firm's external relations (e.g., customers, suppliers, funding organisations, research institutions, etc.). It is considered the cornerstone of sustainable competitive advantage (Asiaei et al., 2018). SMEs should boost their relational capital by seeking and building beneficial networks and integrating relevant actors with trusted relationship (e.g., users/customers, suppliers, research institutions) into their innovation activities.

Knowledge management

- Knowledge management plays essential role in value creation through innovation (Abu-Rumman, 2018). Firms should establish platforms and processes, and adopt tools (e.g., ICT) to facilitate the creation, storage, transfer (sharing), and assimilation of both tacit and explicit knowledge within and outside of the firm.

6.2 Contribution to policy

Baobab SMEs have enormous socioeconomic importance. The industry is expected to catalyse rural development in Africa through the generation of annual income of 1 billion US dollars and employment for 2.5 million households (RTFP, 2007). For other NTFPs-based SMEs they have an important role in the forest sector's contribution to bioeconomy transition. For these reasons, policymakers should support their survival and competitiveness by boosting their innovation performance. This can be achieved through:

- Policy measures that focus on bolstering the innovation activities of SMEs with demonstrable potential for innovation through targeted grants, funding or financing options tailored to their needs
- Provision of skill development programmes (e.g., transformational leadership, project management) that improve or enhance the human capital of SMEs
- Creation of opportunities and avenues to facilitate networking and collaboration

6.3 Contribution to research

First this study contributes to literature on entrepreneurship and innovation by extending knowledge on the factors that characterise SMEs' innovation capacity in specific sectoral context (i.e., forest sector) including SMEs specificity. Second, by developing an innovation capacity framework of baobab SMEs, we contribute knowledge to establishing a consistent conceptual framework for the evaluation of factors that foster innovation performance of SMEs which has remained ambiguous (Pierre and Fernandez, 2018; De Jong and Marsili, 2006). And by extension, it also addresses a knowledge gap on a defined construct of innovation capacity of SMEs in the NTFPs subsector of the forest sector. Third, by using a qualitative case study approach in assessing innovation capacity of SMEs and focusing on the forest sector, we address a profound knowledge gap on how innovation capabilities are understood and implemented among small businesses in different contexts (Saunila, 2020).

6.4 Limitations and future research

In spite of the interesting implications highlighted above, it also has a number of limitations that provides avenues for further research. For instance, the study involved a cross-sectional design which places limitation on assessing causality between innovation capacity and innovation performance. The limitation was addressed by an extensive literature review of theories of innovation capacities and the theoretical arguments rationalising the relationship between innovation capabilities and innovation performance (Hair et al., 1999). Nonetheless, a longitudinal study can help investigate how innovation capacity is affected by growth and development of SMEs. Again, this study investigated innovation capacity and its role in innovation without considering how specific types of innovation may be influenced by specific sets of capacities. Future research could assess the set of innovation capabilities that influence specific innovation type (e.g., process, social) in the forest sector. Finally, a quantitative approach or a mixed method can be employed to test and extend the proposed innovation capacity framework in other industries of the forest sector.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

Funding
This research was financially supported by funds of the Federal Ministry of Food and Agriculture (BMEL) based on a decision of the Parliament of the Federal Republic of Germany via the Federal Office for Agriculture and Food (BLE), grant number 2816PROC17 (BAOQUALITY project).

Authors' contributions
WKD: Conceptualisation, methodology, investigation, data curation, analysis, validation, writing – original draft. **KM:** Methodology, validation, writing – review & editing. **KS**: Validation, Writing – review & editing, Supervision. **DD:** Methodology, validation, writing – review & editing, supervision, funding acquisition.

Acknowledgements
We express our appreciation to all the owners/managers of the baobab processing and marketing enterprises for their participation in this study. Many thanks to the anonymous reviewers whose critical comments have greatly shaped this paper.

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Appendix 1

Table A1. Major quotes illustrating dimensions of innovation capacity

Innovation capacity dimensions	Quotes
Owners/managers' characteristics	**Q1:** To create something that is new in order to have an advantage on the market. To offer something that is new and better than the competition, and therefore to capture the specific market demand or create new market demand. (C1, Pos. 18). **Q2:** To unlock new market opportunities. Which would in turn drive growth in demand for our product. Would also position us as kind of leaders in our field. (C2-Bayoba final, Pos. 22) **Q3:** When we set up the baobab company, we already had the conviction to give ownership to people. That was just a core value. Maybe it's an ideological statement. And we wanted to say, inclusive business for us means, we include these people who are poor. We include suppliers, we include them as workers but, we also include them as owners. So it was a commit that we made from the start, it was our philosophy. (C4, Pos. 47) **Q4:** Innovation at the beginning was a much higher percentage of our overall expenditure. I mean in the first two years, probably 50% a year… early on in the business, we had to borrow money in order to finance all these innovations. (C2, Pos. 65). **Q5:** I worked with a food scientist for nine months back in 2017, 2018 with the goal of finding a healthy natural ingredient or fruit or ingredient that delivered functional benefits. Essentially, we wanted to take advantage of the health trends in the market for healthy products, and also take advantage of the trend for functional products and put them together. (C3, Pos. 29, 48). **Q6:** I've gone to Kenya for instance, to look at the use of baobab fruits in the craft industries. I've done huge amounts of trials with our own staff teams. We put a lot of effort. (C4, Pos. 33). **Q7:** Later when I took my first job at (*name withheld*) Electronics, I was in marketing. As a marketing professional, we always had to work with the technical products, understand the difference between the previous version and the new one. Then, we had to translate that into the voice or understanding of the customer. From that experience, I developed the capacity to communicate or market innovative products to consumers. The training and work experience helped in addressing consumers' need through development of innovative products. (C1, Pos. 30). **Q8:** I've set up four companies. I like the challenge of setting things up and planning things. I'm always looking for the next challenge. (C4, Pos. 39). By education, I studied Business Administration with the main focus on marketing, and international management and communication. I completed a diploma thesis on marketing innovation. In my case, I wanted to specifically look at innovation in terms of marketing, sales, communication or promotion. From that, I had very good understanding about what innovation is, how innovation diffuses in society, how consumers perceive brand innovation and communication innovation. **Q9** It's my background… I studied business and finance at university and spent my first several years working in investment banking, working with drinks companies. And so, it all sort of trains me to think in a certain way, maybe spot opportunities, see what the trends are and see how products can be differentiated to find their own niche (C3, Pos. 102). **Q10:** I did Economics and Politics, and master's in Social development. I certainly do not see it to be irrelevant… My education, the nature of my education was such that, it breeds, you have confidence to try things, to go your own way. (C4, Pos. 39). **Q11:** We are two directors. My background is in information technology, and she studied bachelor of commerce for the undergraduate and did a masters in international trade… Definitely our backgrounds have really helped to push this company. With her business acumen and business training, and all the knowledge from her higher education she put in structures for the business in terms of record keeping and all that. Then for me, for my background, it helps me with dream operations and coming up with creative ways of running the business, especially now with things that has to do with social media marketing and so on. (C5, Pos. 18).
Network integration	**Q12:** From my experience or my interaction, people, my age have really great ideas but, they don't have the finances to do it. They don't know where to go. Like I mentioned, an organization like *(name withheld)* can help. I'm lucky I was able to know about it. We have database of all organizations and the support they offer. But, what about the person who's deep interior who is about 500 kilometers from *(name withheld)*? (C5, Pos. 23).

	Q13: So with these two products one of them, we produce ourselves and the other one, we are in partnership with a company in the UK where they produce it. But they produce it on our behalf because then we don't have the technology to do it. (C2, Pos. 27-28). **Q14:** *(Name withheld)* Forestry Research Institute offers their big platform for us to showcase our products. *(Name withheld)* Industry Research and Development Institute (food industry branch) provided training on hygienic way of food processing (e.g. cleaning the fruits, protection against moisture, yeast and mold, etc.). (C5, Pos. 20). **Q15:** We spoke to local process engineering companies and individual trying to get input from them. After successful trial and error, we contact an engineering company to now design the machine for us to use. They came up with some elements of the innovation, and we came up with some elements of the innovation. (C2, Pos. 59-61). **Q16:** Our producer is the main collaborator. We actually spoke the first time at a fair. Then, we established the relationship and we started working together. (C1, Pos. 14-16). **Q17:** They are an R&D and a production company. So what happened was that we approached them and said we would like to develop this new product. But instead of us paying them we managed to go into a partnership agreement with them where they did the product development and they paid the cost. And we agreed that we would supply the raw material, we would co-own the final product. And we would split the profits. (C2, Pos. 48).
Users/customers integration	**Q18:** We have different channels of feedback you can use as a consumer. For example, if you buy a product, you can always go to our website and send us an email or a contact form. You can also go to the product page and write the product and tell us what you think. And we often receive emails from people saying what they like, or don't like about the product. And that we can take them into consideration in our development of products. (C1, Pos. 34). **Q19:** I've got a lot of friends in the market because of we've been in the market for a long time, a lot of customers that we have built up relationships with. So I talk to them and say to them, we're thinking of developing this new product. What do you think, would you be interested, can you think of other people that would be interested? .... And then, the third step is to make some prototypes and then to show them to potential customers (C2, Pos. 26-28). **Q20:** Whether it's through research we can conduct online, whether through product samplings, in person talking at trade shows, talking with our customers who are buyers at stores or store managers who have a nice cafe or healthy food store. We're always talking to people to understand what they like, what they don't like, what they're looking for, how they perceive certain products and categories, all that sort of stuff. (C3, Pos. 65). We constantly learn from our customers and reflect that into our approach. And so that is something really important. There are clear impacts of innovations. (C4, Pos. 45).
Institutional support	**Q21:** Yes, we had funding support. The funding was used to support the partial funding of the salary of the in-house product specialist. (C1, Pos. 24). **Q22:** We have had in the past access to some grant money to support some innovation for the local market. (C2, Pos. 40). **Q23:** How was the cost covered? She was paid on the Green Innovation Center Scheme funded by GIZ. (C4, Pos. 30-31). **Q24:** … we got a grant from an organization called PUM Netherlands to acquire the oil press. It was cost share (80% by PUM Netherlands, 20% by us). Also a local organization called (*name withheld*) Climate Innovation Center helped fund our flight ticket to BIOFACH. (C5, Pos. 21). **Q25:** In the UK, there are initiatives to support small business, and on the investment side, there's SEIS and EIS which support investors. There's generous tax deductions or rebates you can get from the tax authorities related to your research and development spending. We take advantage of both of those. (C3, Pos. 69).
Organizational climate and culture	**Q26:** So I go and/or other members of my team go every year to at least one or two international trade shows… the second reason is that it, it helps to spark innovation. And it's very inspiring for us. So I would say that both of these innovations come from ideas that generated as a result of going to trade shows. (C2, Pos. 24). **Q27:** I want more of values, I want people who buy into the vision especially at the management or supervisory level, people who get why we are doing this. I think, it's really important that

	they're all on the same page. We do not exclude anybody from any aspect of our company. They need to know what's going on, they need to understand why it matters. (C4, Pos. 41, 66). **Q28:** We are particular about people we hire such that they can complement our knowledge and technical base for good innovation performance.
Learning process	**Q12** (see network integration) **Q19** (see users/customers integration) **Q26 (**see organizational climate and culture) **Q29:** We first came across information on baobab as superfruit through a seminar we attended. Following that, we conducted our research and got to know the crazy demand for the fruit. We linked up with *(name withheld)* Forestry Research Institute to build our capacity in harvesting, and how to scout for quality fruits. We conceded the idea to develop drinks from baobab to offer an alternative that is new, organic and healthy to prospective consumers. We watched a lot of videos on production prior to developing the prototypes. Then, we got linked to *(name withheld)* Industry Research and Development Institute (food industry branch) to learn about the hygienic way of food processing (e.g. cleaning the fruits, protection against moisture, yeast and mold, etc.). (C5, Pos. 16). **Q30:** We build it (*technical capacity of the staff*) of course through training and experience. Very few people or nobody we hired have ever done baobab processing before, because nobody ever did it. So, I think more important is your commitment to training them. (C4, Pos. 64).
Innovation-dedicated resources	**Q31:** The people that are in our team have a different background, different knowledge, and also this makes them very inspiring… We are particular about people we hire such that they can complement our knowledge and technical base for good innovation performance. That's important for us. (C1, Pos. 32). **Q32:** There are people, we have on our team, food technologist we work very closely in getting all of our HACCP recommendations correct. We're constantly looking to see where we can bring in support. (C4, Pos. 52).
Access to cash flow/private funding	**Q4 (see owners/managers'** **Q33:** We created a working capital fund within the foundation to support innovation activities (C4, Pos. 54). **Q34:** But as we've continued I can say like each and every coin we've made has been plough back into the business and that has helped us grow. (C5, Pos. 20). **Q35:** However difficult it has been, we've looked for maybe bank loans because some of these grants don't come easy. We apply for them. (C5, Pos. 20) **Q36:** The R&D tax credits and the EIS scheme in the UK…They're certainly both programs that have made it a lot easier for us to continue, and to have that first product, that is start the shots product. And that's because**,** they both give you access to money in different ways. One is a rebate from the government. The other makes it more attractive for investors to invest in your company. And so, to innovate and to take a risk, people need money to do it. (C3, Pos. 110).
Strategic management of intellectual property	**Q37:** In consumer world, I think that your biggest sort of source of protection against people stealing your IP is your brand. And so if you invest in your brand and you sort of protect your product from a brand perspective, you're likely to be okay after that. We spend a lot of time obviously sort of building our brand and investing in it… So, IP is really a brand issue and if you invest in your brand and protect your brand, most of the time you'll be fine. (C3, Pos. 61). **Q38:** What I wanted to do with (*product name withheld*) was to create a brand that we could use as a calling card that said look, we can produce anything here, we can produce products that are as good as anything you're going import. So again, the driver for that innovation was really a brand driver. I wanted to create a brand that drew attention or put us on the map that we are not going to sell 'shitty' baobab powder in plastic bag in informal market. But we are going to show you this world beating, high quality, organic product, packaged it beautifully and sell it in competition to imported goods. (C4, Pos. 27). **Q39:** …There is no question that the social side of it, the organization side of it have brought us a lot of credibility, a lot of focus from particularly, donor institutions and from and government. We have won awards. (C4, Pos. 45).

	Q40: The innovations have given us the opportunity to speak about innovations and get more press coverage, gets more visibility and people come to our store. It has also increase sales. (C1, 28).
Standards and regulations integration	**Q41:** Another organizational innovation is the creation of four decentralized primary processing centers (one in the district, three in the communities) where we take whole fruit and we store it from large drying racks so that the fruits are properly dried before we crack them. And then we crack them in controlled conditions in these decentralized primary processing centers. So we have a group of women in each place especially trained to crack open, bag it for further processing – all under a supervisor's control. The objective is to find a balance between total quality control which is absolutely critical (the market is getting ever more challenging because it's the food and beverages industry); and maintaining as much role for the women in the communities as possible… So, you know, there's a limit to what you can do, but I think within those limits, we're all trying to find ways to improve our quality control. (C4, Pos. 14-22). We only source from *(name of country withheld)* and we source from named villages in two districts. Obviously because of organic certification, we have to have traceability. So, we work with the same communities for several years. We have 35 women collectors, who are registered with the company. **Q42:** Process innovation wise, we've actually done quite a bit of work on how to manufacture drinks and also certain food products with the Baobab fruit. And so we've sort of explored many different ways of filtering the sediment without taking out the fiber… because of that, this is just one example where we were able to have four of our five shots high in fiber according to EU food standards regulations. And we were able to fulfill health claims that they are good for energy, good for your gut health, good for your overall wellness, your mind and body... (C3, Pos. 27-44). **Q43:** Our products were assessed or tested by the *(name withheld)* Bureau of Standards to check if the products meet the required standards. Currently, by means of assistant *(advisory)* we have been able to acquire EU certification…we've gone for trainings on food safety, HACCP. (C5, Pos. 16-18).

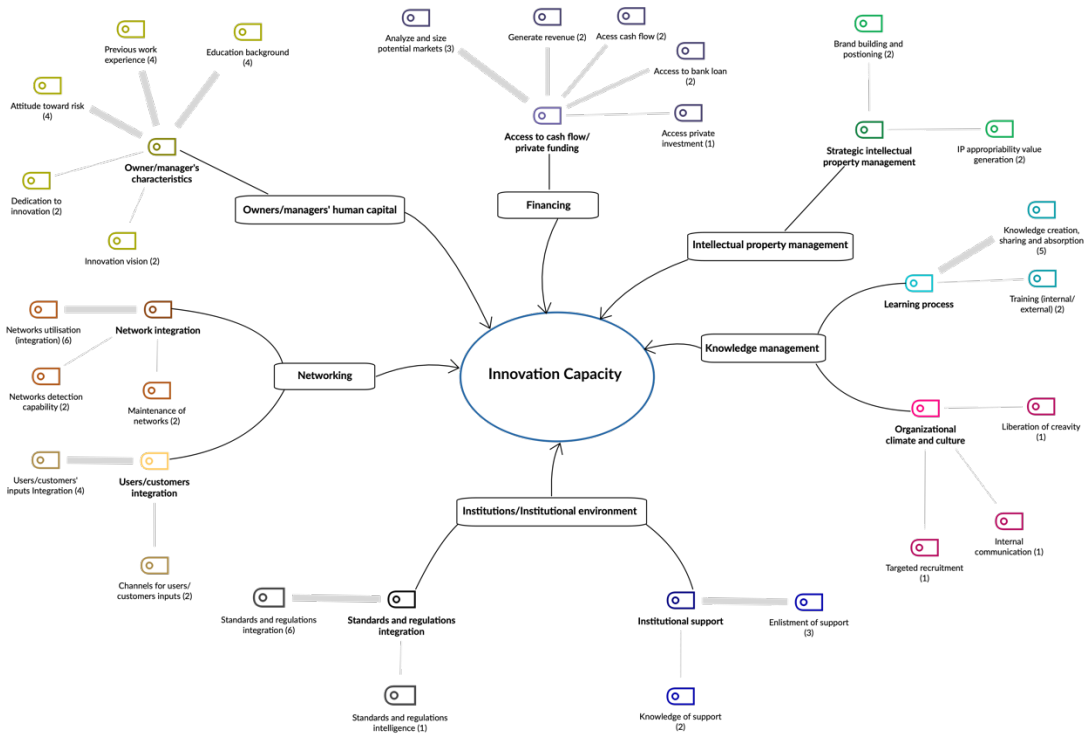

Figure A1. Subcodes, first and second order categories, and themes

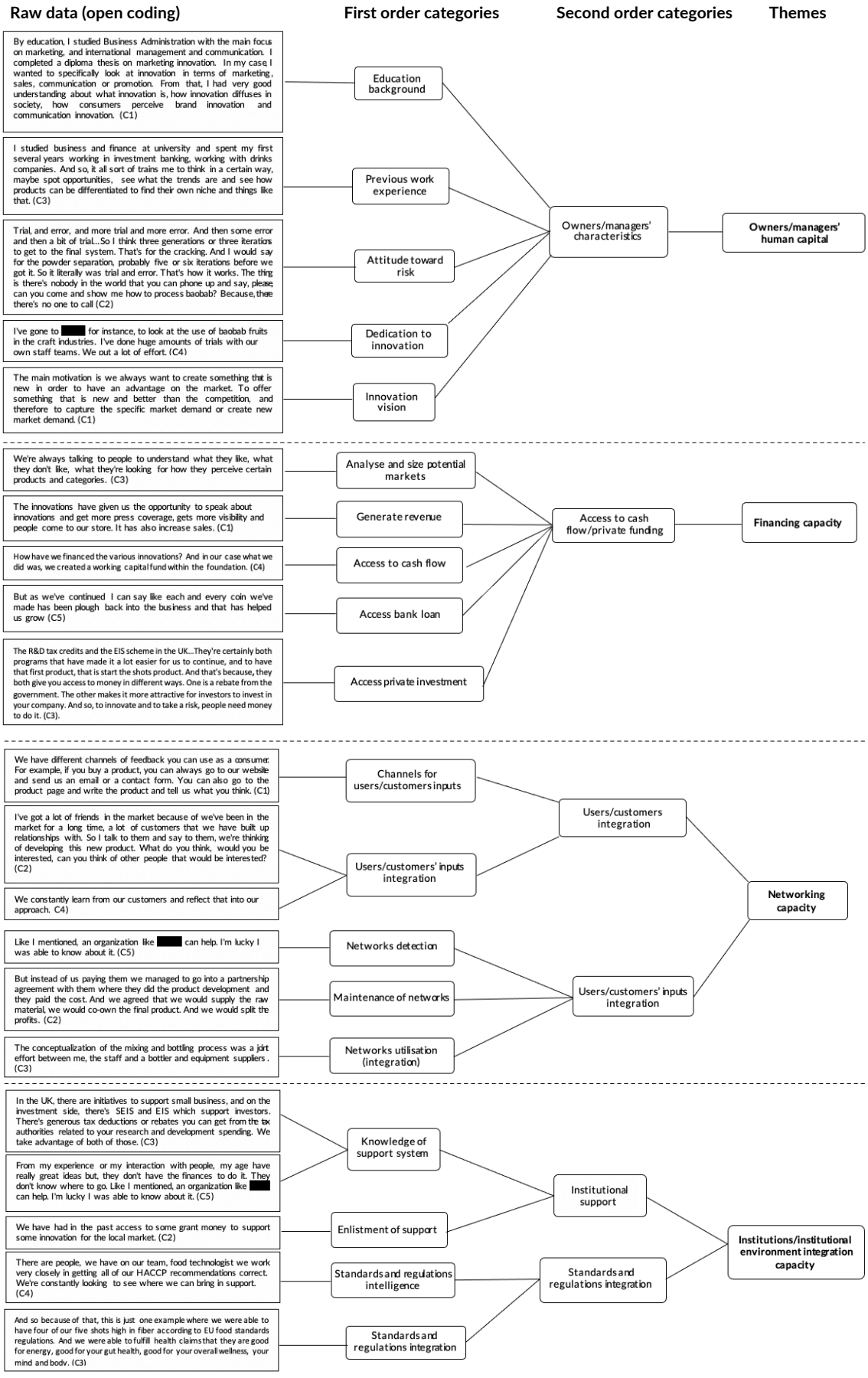

Figure A2. Coding and analysis process in its empirical form

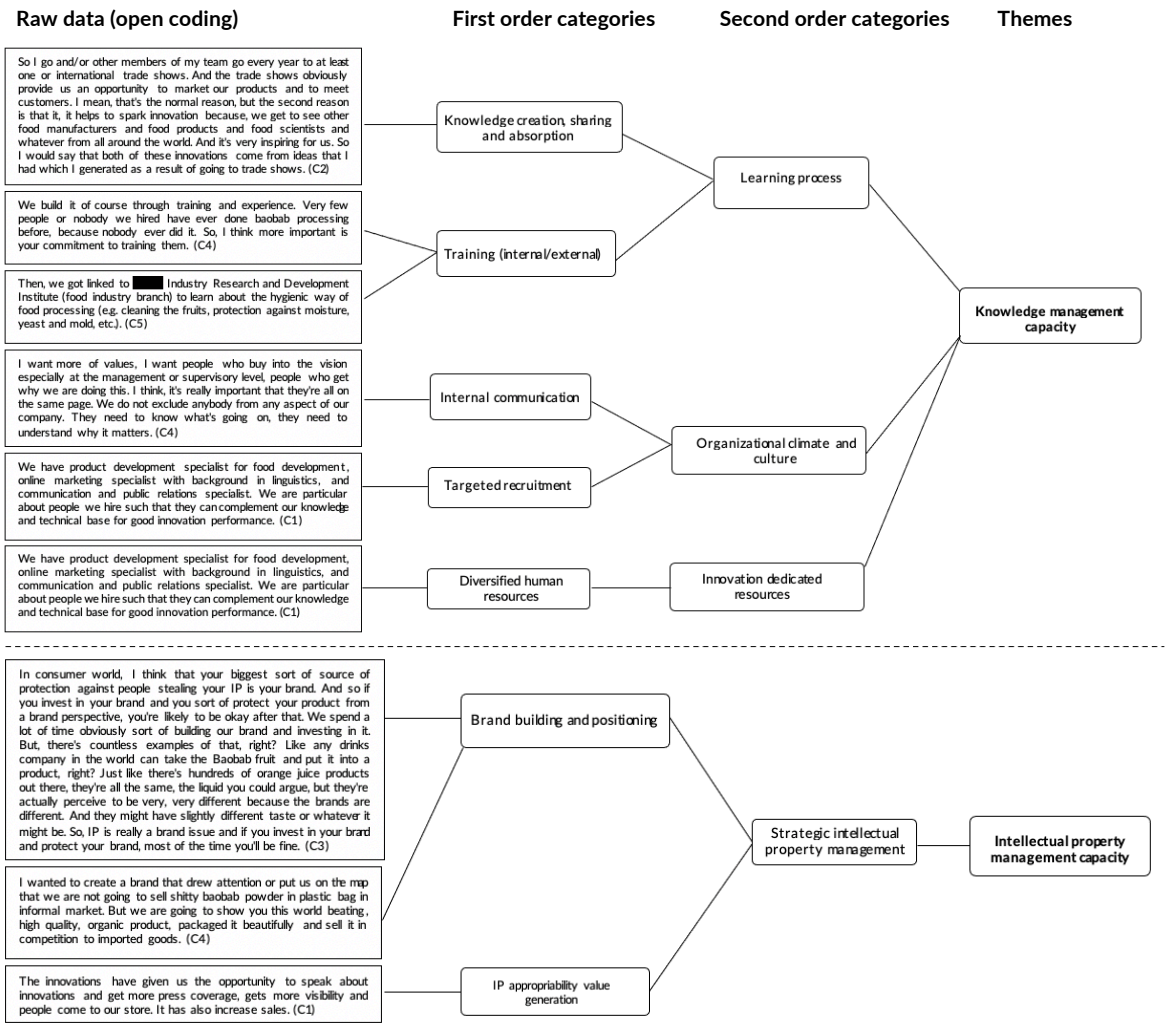

Figure A2. Coding and analysis process in its empirical form

Chapter 6

General Discussion and Conclusion

6.1 Informal baobab enterprises: characteristics, causes, and measures

This thesis sought to characterise informality, and business performance (financial and innovation)-enhancing factors of MSMEs involved in the processing and marketing of baobab. The characterisation revealed three types of informal baobab enterprises exhibiting a dualism of upper-, and lower-tier segments (Chapter 2). The upper-tier segment demonstrates higher financial performance, and adoption of good business practices such as financial planning, marketing, and costing and record keeping compared to the lower-tier segment. This result contributes to informal economy literature by showing that dualism is not only a phenomenon in the informal labour market but also a structural feature of informal enterprises. It further opens up an avenue for research to explore the development of the two segments of informal enterprises in relation to formalisation and growth potential; knowledge of which can inform policy decisions. That notwithstanding, the two segments (upper- and lower-tier informal baobab enterprises) were driven by both necessity and opportunity motivations with the upper-tier having a higher share of opportunity-driven owners/managers. The co-presence of the two contrasting motivation (opportunity and necessity) for starting and operating informal business corroborates emerging studies that found opportunity- and/or necessity-driven motives to influence informal entrepreneurship (Williams and Bezeredi, 2018; Snyder, 2004).

The positive relationship between opportunity motivation and performance (annual net profit) mediated by the adoption of good business practices (Chapter 4) corroborates other studies (e.g., Torres, 2021; Calderon, 2016) that showed that the high performance of opportunity-driven enterprises are explained by the adoption of business practices such as bookkeeping, marketing, and financial planning. Adoption of good business practices, and good financial performance are strong predictors of formalisation (Aga et al., 2021). Hence, informal baobab enterprises belonging to the upper-tier segment, that are driven by opportunity motives, adopt good business practices and experience good performance have the potential to formalise. The characterisation of informal baobab enterprises provides a robust framework that can be drawn upon by researchers, practitioners, and policymakers to assess the formalisation and growth potentials of informal firms.

Nonetheless, profound understanding of the underlying causes of informality is critical for identifying corresponding measures effective to address (in)formality. Reducing cost of formality, improving human capital, and coupling information campaigns with ‘incentivised’ registration are measures found to address (in)formality in the baobab sector (Chapter 3). These measures except ‘improving human capital’ reflect most common interventions implemented to address (in)formality in developing countries (Jessen and Kluver, 2021). Nevertheless, ‘increasing punishment for operating informally’ as an intervention to address (in)formality was deemed less favourable. This finding is contrary to several studies (e.g., Di Georgi et al., 2018; Ulyssea, 2020) that strongly recommend increasing deterrence as an effective measure to address (in)formality. That notwithstanding, the viewpoint is premised on the fact that, intensifying punitive measures would result in welfare loss. Charlot et al. (2015) and Fernandez et al. (2017) allude to this viewpoint by showing that despite improvement in enforcement ability, governments tolerate informal sector to prevent unemployment and welfare loss. Overall, the measures to address (in)formality in the baobab sector characterised interventions

that are holistic in outlook (e.g., improving human capital) and emphasised the benefit of formality.

6.2 Innovation capacity of baobab enterprises

Innovation capacity is an important lever for fostering innovation performance, and competitiveness of MSMEs. For baobab enterprises, ten dimensions (resources and capabilities) of innovation capacity were identified to influence innovations development. These represent more than 75% of all dimensions reported in literature to characterise innovation capacity of SMEs (Pierre and Fernandez, 2018). Of the ten dimensions, owner/manager's characteristics, access to cash flow/private funding, and users/customers integration demonstrated the highest relational effect thus, underscoring their centrality in influencing innovation performance. The interaction between leadership (reflective of owner/manager's characteristics and access to finance are shown to influence innovation performance (Oura et al,. 2016; Saunila, 2017). The results reiterate the importance of the human capital of owners/managers of MSMEs particularly those relating to transformational leadership skills in mobilising, managing and coordinating resources (human, financial, technical) to support innovation development.

The innovation capacity framework developed through the synthesis of the ten dimensions provides a conceptual and analytical framework to assess capabilities and resources needed at the firm level to foster innovation development in baobab enterprises and other NTFP-based MSMEs. The framework is an essential contribution to the forest sector, which lacks a defined construct of innovation capacity, though it is expected to significantly contribute to bioeconomy transition, which relies on innovativeness (von Braun, 2020; Weiss et al., 2020).

6.3 Reflection on methodology

This dissertation employed multiple cross-sectional data sets and analytical methods (quantitative, qualitative, and mixed) in addressing the research objectives. The choice of this methodological approach was motivated by the fact that the study focused on different perspectives of the subject matter and therefore required different data sets and corresponding analytical methods to effectively address the research objectives and answer the research questions.

Principal component analysis (PCA) was coupled with cluster analysis (CA) in a stepwise manner to characterise and develop a typology of the informal baobab enterprises to address the first research objective (Chapter 2). PCA and CA are fitting analytical methods because of the former's ability to reduce multiple variables to a smaller set of variables (principal components) and determine variables that most influence the variation of the phenomenon of interest; and the latter's ability to classify subjects or objects into groups (categories) based on the similarities among them (Hair et al., 2019). In this study, PCA was used to reduce the numerous of number of enterprises' characteristics into smaller set of variables that best characterise the informal enterprises. CA was used to develop a typology of the informal enterprises showing the various characteristics that identify them. A limitation of this analytical approach is that it relied on the assumption that the variables did not have underlying construct (latent variables). As it turned out, some of the variables (entrepreneurial motivation, business practices) are latent variables. Therefore, factor analysis instead of PCA would have been more appropriate. That said, the use of PCA was still appropriate since, the focus of the analysis was on identifying variables that explained most of the variation of the segments of the informal enterprises. Notably, the complimentary use of PCA and CA offers an alternative methodological approach for exploring the segmentation of informal enterprises, and

describing their multidimensional characteristics owing to its capability to accommodate multiple variables without imposing any predefined structure in the classification process.

Structural equation modelling (SEM) was employed in addressing the third research objective (Chapter 4) which focused on assessing the relationship between performance, and entrepreneurial motivation and business practices of informal baobab enterprises. The variables, entrepreneurial motivation and business practices are latent variables, thus exhibiting both direct and indirect relationship with the outcome variable, firm performance (net annual profit). SEM possesses the qualities of accurately modelling complex causal paths and effect of latent variables (Nusair and Hua, 2010). The results demonstrated a direct positive effect of opportunity motivation on firm performance as well as indirect positive effect (mediation) through the adoption of business practices thus, attesting to the appropriateness of the analytical method. Nonetheless, explicit causal inference could not be drawn due to the cross-sectional nature of the data and lack of temporal precedence. However, the relationship specified between the variables based on the extensive literature review helped to partly address this limitation and allowed for 'informed' speculation about the causal inference.

The qualitative multiple case study applied in addressing research objective four (Chapter 5) was also fitting since the goal was to explore the factors that foster innovation performance of baobab enterprises and the mechanisms through which it is achieved. Multiple case study allows for in depth understanding by exploring different and diverse cases (Thomas, 2011) while, increasing external validity and generalisability when well-crafted (Merriam, 1998). Nevertheless, qualitative methods are faced with issues of validity and reliability. Validity (*credibility and confirmability*) was addressed by using multiple data sources such as the firms' websites, industry association reports, and press articles to triangulate the interview data of participants. Also, participants validation (member check) was conducted to validate the individual accounts, and receive feedback on the findings or conclusions drawn. To ensure transparency (*dependability*), an 'audit trail' of the whole research process (e.g., sampling, interview transcripts, coding and codes) is maintained and clearly described. To ensure transferability, thick description of the cases (case vignette) is also provided. The qualitative case study has laid the basis for theorising the innovation capacity-innovation performance relationship of baobab enterprises. A quantitative analysis can be employed in future studies to validate the findings (i.e., test the hypothesised relationships).

Research objective two focused on exploring the underlying causes of informality and potential measures to address (in)formality based on the perspectives of the entrepreneur (Chapter 3) was addressed by employing Q methodology. The methodological approach allowed the exploration of entrepreneurs' complex, diverse, and in depth viewpoints on causes and solutions for informality and the underlying reasons behind their viewpoints in a structured and systematic manner (Stephenson, 1953; Watts and Stenner, 2012). By coupling the exploration of causes with solutions in a mixed method evaluation, we demonstrate a further application of Q methodology in policy and decision-making regarding (in)formality.

6.4 Reflection on conceptual framework

This study relied on theories underpinning informality and SMEs innovation capacity as conceptual framework to guide the analysis and interpretation of the results. The four schools of thought on the causes of firm informality proved adequate in characterising informality in the baobab sector. The theories informed the design of the interview guide and the development of the Q-set (statements) used for gathering data to address research objectives 1 and 2 (Chapters 2 and 3) respectively; and the design of the analytical framework for analysing and

interpreting the respective results. The identified causes of informality in the baobab sector reflected three causal theories of informality namely, legalist, dualist and structuralist. Specifically, costly registration and high tax burden relate to the *Legalist* school; lax enforcement of business regulation laws resonate with the *Structuralist* school; while low human capital, limited formal job opportunities, and quest for survival reflect the *Dualist* school. None of the causes identified depicted the *Voluntarist* school. This is validated by the findings that entrepreneurs' decision to operate informally is not motivated by the gaining of competitive advantage through tax avoidance (See Chapter 3, section 4.1).

The three schools of thought characterise the situation of most informal enterprises in developing countries (Dell'Anno, 2021) where there is low level of economic development, low human capital, high unemployment rate, inadequate social protection programmes for the poor thus, creating a strong need for survival through the setting up of informal businesses. One of the key arguments of the *Structuralist* school that 'informality results from the modern capitalistic production system of practice in open de-regulated economy' was not applicable in the case of the baobab sector. The sector did not have any large firms that outsourced nor subcontracted small and medium enterprises. The *Structuralists* argument that applied was 'laxity in enforcement of business regulation laws'. The key arguments of the *Dualists* school applied considering that Malawi has low human capital (UNDP, 2022), low level of formal education, and very few formal employment opportunities (less than 10% of the labour force employed in the formal sector) (GoM and UN, 2017). In relation to potential policy measures, 'increasing punishment' was perceived less appropriate for addressing (in)formality. This is contrary to the recommendations found in literature (e.g., Ulyssea, 2020; De Giorgi et al., 2018). The entrepreneurs argued that 'enforcement of increased punishment' for operating informal firms will only lead to closing down of businesses and entrenchment of poverty. The findings prompts revaluation of the theoretical argument underpinning its recommendation as a measure to address (in)formality particularly in the case of economies that have high unemployment rate, poor social protection system, and large segment of micro and small informal enterprises acting as avenues for employment and livelihood.

The theoretical framework for innovation capacity proved fitting for the study. The fourteen dimensions (resources and capabilities) defining the SMEs innovation capacity informed the development of codes used in analysing the data that addressed the fourth research objective (Chapter 5). It also provided the backdrop for interpreting the results and developing an innovation capacity framework for the baobab processing and marketing sector with potential application in the NTFPs subsector. The innovation capacity dimensions in our study (See Chapter 5, Fig. 1) accounted for over three-fourth of the theorised SMEs' innovation capacity (Pierre and Fernandez, 2018). The results thus contribute to attaining a consistent framework for the evaluation of SMEs' innovation capacity and its role in the innovation performance of SMEs in the baobab industry and other industries within the NTFPs-related sector. However, it is worth noting that two dimensions of the SMEs' innovation capacity (*innovation process management, and strategy and process revaluation*) were not explicitly identified in this study. These dimensions were implicitly addressed within other dimensions such as users/customers integration and network integration. For instance, activities like refining innovative processes based on customer feedback, engaging new collaborators to enhance innovation, or adapting a product following user input are akin to *innovation process management, and strategy and process revaluation.* This confirms common observations that very few SMEs formalise their innovation strategies and plans; a phenomenon attributable to resource constraints and the flexible organisational structures typically found in SMEs (Hudson et al., 2001; Terziovski, 2010).

6.5 Policy and managerial implications

The findings about causes of, and solutions to informality demonstrate that policy targeted at improving human capital, increasing formality benefits rather than intensifying punitive measures offer effective means to address firm (in)formality in the baobab industry. Informal baobab enterprises driven by opportunity motivation and adopt good business practices exhibit good performance and demonstrate the potential for growth. Our results demonstrate that targeting this segment of informal enterprises with small business management training programmes, business advisory services or mentoring, and innovative financing options tailored to their needs could be an important measure to facilitate their growth and formalisation potential. For low-performing necessity-driven enterprises, policy interventions should prioritise skills improvement to support transition toward wage employment. Innovation performance is critical for baobab MSMEs competitiveness and role in bioeconomy transition. Policy measures should be developed to enhance their innovation capacity by promoting the establishment of networks, platforms or mechanisms (e.g., cluster initiatives, industry associations) to foster collaboration, information sharing, and knowledge exchange; and creating bespoke financial mechanisms such as innovation grants, loan guarantees, and investment funds for baobab enterprises to support innovation development.

Entrepreneurs seeking to improve their performance (financial and innovation) should adopt good business practices such as financial planning, marketing, and costing and record keeping; and also enhance their transformational leadership skills, invest in relational capital (e.g., networking, collaboration), and adopt knowledge management tools and processes to facilitate the creation, storage, sharing, and assimilation of knowledge relevant for innovation development.

6.6 Research implications

This dissertation explored the causes of informality drawing on the four schools of thought. High cost of formality (regulatory factors) was identified as one of the key underlying causes of informality; a finding that aligns with most studies on informality (Jessen and Kluver, 2021). However, with the explanation of causes of informality shifting from structural issues to excessive government regulations over time (Gultom, 2014), we suggest that future research could employ the institutions and transaction costs framework to further investigate causes of informality to deepen the understanding of the determinants of informality.

The study employed a cross-sectional design in investigating the innovation capacity and its role in innovation performance of baobab enterprises. This has limitations in establishing causal relationships between innovation capacity and innovation performance. An extensive literature review on innovation capacity theories and theoretical arguments was conducted to mitigate the limitation (Hair et al., 1999). However, to gain deeper insights into how innovation capacity evolves as SMEs grow, future research could employ a longitudinal study. Furthermore, this study did not explore how different types of innovation may be influenced by specific capacities. Subsequent research in the forest sector could delve into the relationship between innovation types (e.g., process, product) and distinct sets of capabilities. This study developed an innovation capacity framework, future studies should test and extend the framework for application in other NTFPs-related or forest products-based industries.

This study explored the effect of entrepreneurial motivation and business practices on performance of informal baobab enterprises. Motivation and business practices adoption may evolve over time. A longitudinal design should be employed in future research to better understand how changes in motivation and business practices impact performance over time.

Also, only annual net profit was measured as a performance indicator. Future research should expand the performance metrics to include other indicators like return on assets, return on equity, sales growth, productivity, etc. to provide a more comprehensive view of performance outcomes. The findings about effect of motivation and business practices on performance are specific to the baobab sector. Future studies should test the model in other industries in the forest sector.

6.7 Conclusion

Forest products-based industries though crucial for income and livelihood generation as well as transition to circular bioeconomy, still grapple with high level of informality and low innovation performance, thereby undermining the realisation of these roles. With a particular focus on baobab, a promising NTFP-based processing and marketing industry, this thesis investigated characteristics of firm informality, and business performance (financial and innovation)-enhancing factors of baobab enterprises.

The findings about the structure, underlying causes, and potential measures to address informality; and financial and innovation performance-enhancing factors have broader implications for not only the baobab industry but also other forest product-based industries in developing and emerging economies. Policymakers and entrepreneurs can utilize this research to enhance competitiveness, address (in)formality, and promote innovations thereby, contributing to the sustainable development of these sectors and enhancement of their role in bioeconomy transition.

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Declaration of independence

I hereby confirm that my thesis entitled “Characterising the baobab industry: Informality and innovation capacity” is the result of my own work. I did not receive any help or support from commercial consultants. All sources and/or materials applied are listed and specified in the thesis.

Furthermore, I confirm that this thesis has not been submitted as part of another examination process neither in identical nor in similar form.

Kleve, 02 April 2024