

# The influence of entrepreneurial bricolage and design thinking on opportunity development

**Authors:**

Lindie Schuldt<sup>1</sup>   
Cornelia M. Joynt<sup>2</sup>   
Alex J. Antonites<sup>3</sup> 

**Affiliations:**

<sup>1</sup>Gordon Institute of Business Sciences, University of Pretoria, Pretoria, South Africa

<sup>2</sup>Department of Accounting, Faculty of Economic and Management Sciences, University of Pretoria, Pretoria, South Africa

<sup>3</sup>Department of Business Management, Faculty of Economic and Management Sciences, University of Pretoria, Pretoria, South Africa

**Corresponding author:**

Corlia Joynt,  
corlia.joynt@up.ac.za

**Dates:**

Received: 12 Oct. 2022

Accepted: 26 Feb. 2023

Published: 16 Aug. 2023

**How to cite this article:**

Schuld, L., Joynt, C.M. & Antonites, A.J., 2023, 'The influence of entrepreneurial bricolage and design thinking on opportunity development' *Southern African Journal of Entrepreneurship and Small Business Management* 15(1), a631. <https://doi.org/10.4102/sajesbm.v15i1.631>

**Copyright:**

© 2023. The Authors.  
Licensee: AOSIS. This work is licensed under the Creative Commons Attribution License.

**Read online:**

Scan this QR code with your smart phone or mobile device to read online.

**Background:** Entrepreneurial activity in an efficiency-driven economy is fundamental to economic growth, yet its sustainability and opportunities are concerning. Both entrepreneurial bricolage and design thinking could enhance opportunity development, but their effectiveness and incorporation into an integrated approach to opportunity advancement require further investigation.

**Aim:** This study explores design thinking and entrepreneurial bricolage as facilitating constructs for entrepreneurial opportunity development, employing the design-centred entrepreneurship perspective and the conceptual framework offered by various authors; it investigates the effectiveness of the theoretical frameworks mentioned; and lastly it explores the potential of amalgamating these frameworks into a more comprehensive structure for entrepreneurial opportunity development.

**Setting:** The sample consisted of entrepreneurs in South Africa.

**Methods:** Fourteen semi-structured interviews with founders of small and medium entrepreneurial ventures in various South African industry sectors were conducted.

**Results:** Current frameworks pertaining to bricolage and design thinking proficiencies were appropriate for opportunity development and could be effectively integrated. However, some contributory factors should be included, such as organisational culture, business partners and a non-linear rather than a methodical approach.

**Conclusion:** Entrepreneurial bricolage has a significant influence on developing and establishing opportunities. The value of design thinking was confirmed with a specific focus on a human-centred approach, creativity and innovation. However, contradictory to design thinking authors, entrepreneurs described the design thinking process as non-linear and disordered.

**Contribution:** This study provides empirical evidence to enrich the understanding of the elusive entrepreneurial opportunity development process by integrating the design-centred entrepreneurship framework with the entrepreneurial bricolage perspective into a single, more comprehensive framework.

**Keywords:** design thinking; design model; creativity; problem solving; innovation; opportunity development; bricolage.

## Introduction

Entrepreneurship is a significant catalyst to enhance economic activity as businesses and society are challenged by technological disruption, unstable economies and demographic fluctuations (Toma, Grigore & Marinescu 2014). It furthermore contributes meaningfully to resource distribution, economic progress and social transformation (Bjørnskov & Foss 2016), which results in more employment opportunities and an upsurge in per capita income growth (Du & O'Connor 2018). This prominence of the entrepreneurial phenomenon has made it a valuable field for research and development studies (Simón-Moya, Revuelto-Taboada & Guerrero 2014), with a focus on entrepreneurial antecedents, opportunity advances (Alvarez & Barney 2014) and their economy-wide significance (Bjørnskov & Foss 2016).

There is a growing consensus in the entrepreneurial domain that recognising and pursuing opportunities, with a focus on knowledge, creativity and entrepreneurial bricolage, are fundamental to entrepreneurial progression (Van Vuuren & Alemayehu 2018). However, many prospective entrepreneurs have limited knowledge of the market, industry and technological areas that are considered fundamental to transforming an idea into a feasible and desirable offering with the

potential to yield viable monetary outcomes (Goldsby et al. 2017). Traditionally, entrepreneurial behaviour was studied by drawing largely on economic thinking: the entrepreneur discovers and evaluates an opportunity and then seeks resources to develop the venture and aims to create returns from operating the venture. Conversely, Fisher (2012) contends that entrepreneurs sometimes deviate from this traditional model. In these cases, alternative theoretical perspectives on entrepreneurial behaviour, such as entrepreneurial bricolage, provide insights into their decisions.

Entrepreneurial bricolage is the creative employment of scarce resources (Vanevenhoven et al. 2011), which demands creativity and innovation from entrepreneurs. Innovation, although critical to the entrepreneurial process, is inadequate for opportunity development because rapidly changing environments and growing technological intricacies hinder the abilities of organisations and entrepreneurs to continuously leverage opportunities (Park, Srivastava & Gnyawali 2014). Entrepreneurial bricolage aids innovation practices and is regarded as a problem-solving agent in the opportunity-finding process (Witell et al. 2017). The essential role of bricolage in frugal innovation is additionally supported by Iqbal, Ahmad and Halim (2021) in emphasising its antecedent position in the process. The role of frugal innovation, on the other hand, spells sustainable performance, which is critical in current resource scarcity conditions. The same is also supported by the findings of Agarwal, Bhatti and Levänen (2021), by incorporating causation as a key component with bricolage. Butt, Bowra and Chaudhry (2021) further this thinking by elaborating on the mediating effect of bricolage and business model innovation while agreeing to the agency role of bricolage towards sustainable innovation, which is critical in the entrepreneurial space.

In essence, bricolage emphasises the actions that generate entrepreneurs' behavioural frameworks. As a result, a practical understanding of entrepreneurs and their actions enables inferences for enhanced opportunity development (Welter, Mauer & Wuebker 2016).

Design approaches (which include design thinking) are regarded as a means of constructing innovative solutions for prospective entrepreneurs, seeking to create novel offerings from plausible opportunities for new venture creation (Bucktowar, Kocak & Padachi 2015; Carlgren, Rauth & Elmquist 2016). Entrepreneurial design thinking in the broader design framework has been criticised in the past as lacking impact and relevance because of theoretical, methodological and scientific challenges (Cash 2018). Liedtka (2015) congregated a distinctive validation of the problem-solving purpose of design thinking but referred to the absence of data showing its role in material, innovative outcomes and entrepreneurial opportunity development. The idea of applying design thinking to facilitate innovation and opportunity development is therefore considered an emergent field of study without a clear theoretical foundation (Carlgren et al. 2016). This notion rapidly changed, and to substantiate the role of design thinking in entrepreneurship and innovation management, Klenner, Gemser and Karpen (2022:66) found a

concrete correlation by investigating the 'entrepreneurial ways of designing' and 'designerly ways of entrepreneuring'. These findings contributed to the theoretical foundation (or a lack thereof) by testing the relationship between design thinking and effectuation theory.

Even though some research has been conducted on the potential association between bricolage and the entrepreneurial process, a direct stimulus between entrepreneurial bricolage and opportunity development is yet to emerge (Rönkkö, Peltonen & Arenius 2014; Vanevenhoven et al. 2011).

The purpose of this research was, firstly, to explore design thinking and entrepreneurial bricolage as facilitating constructs for entrepreneurial opportunity development, employing the design-centred entrepreneurship perspective offered by Goldsby et al. (2017) in the conceptual framework proposed by Vanevenhoven et al. (2011); secondly to investigate the effectiveness of the theoretical frameworks offered by these authors and lastly to explore the amalgamation of these frameworks into a more comprehensive and practical structure given the prevalence of entrepreneurial bricolage and design thinking for entrepreneurial opportunity development and fulfilment.

This study contributes to academia and practice by integrating the design-centred entrepreneurship contribution (Goldsby et al. 2017) with the entrepreneurial bricolage perspective suggested by Vanevenhoven et al. (2011) into a single, more comprehensive framework to enrich understanding of the elusive entrepreneurial opportunity development process. Furthermore, this study contributes to empirical research on the applicability of the conceptual framework that was theorised by Vanevenhoven et al. (2011). Vanevenhoven et al. (2011) calls for empirical research to test the conceptual framework to gain deeper insights into opportunity development:

While our conceptual framework needs the support of subsequent data, we hope we have advanced efforts to create a reasoned model of the entrepreneurial process that will provide valuable insights when tested empirically. (p. 63)

This article is structured as follows. The next section provides a literature review and presents the research questions as a result. Thereafter, the methodology is discussed, followed by findings and the conclusion of this research.

## Literature review

### Entrepreneurship

An entrepreneur used to be regarded as an initiator – one who identifies and pursues the opportunity, and who assumes the burden of risk (Carland, Carland & Stewart 1996). Although risk-taking valour was earlier identified as one of the primary characteristics of entrepreneurship, both creativity and innovation have lately moved to the forefront (Linke 2017; Zoo, De Vries & Lee 2017). The findings of Mickiewicz and Kaasa (2022) support the enhanced emphasis of creativity in opportunity finding and exploitation phases of the

entrepreneurial process (as compared with the classical performance and risk orientations as key drivers). These proficiencies have been described as a primary driving force to differentiate organisational offerings from those of competitors (Jarvis 2016; Nieman & Niewenhuizen 2014). In a comprehensive bibliometric analysis, Rosa et al. (2021) illustrate a substantial increase in scientific journal publications in the past 6 years that include creativity and innovation as key components in entrepreneurship research. The latter positions and aligns the contribution of this study *per se*.

There is a growing consensus that the identification and pursuit of business opportunities have become distinguishing characteristics of entrepreneurship (Lans, Blok & Wesseling 2014). Within the view of opportunity development, Toma et al. (2014) proposed that entrepreneurship involves a process of innovative activities, 'a creative human process' in response to identified opportunities, where others perceive only disorder and ambiguity. In a more recent study, Lim, Lee and Al Mamun (2021) revealed that the ability or competency to identify opportunities is dissimilar from the skills to ideate for or exploit opportunities. Its findings contribute further to conveying that 'absorptive capacity', 'entrepreneurial alertness' and 'entrepreneurial knowledge' are meaningful contributors to opportunity-finding competency. In an extensive literature study, Claudhary and Trzeciński (2021) include agility as a key competence in opportunity-finding processes, especially in our current volatile and turbulent market conditions. Entrepreneurial alertness, in the context of opportunity finding, accentuates the inclusion of agility towards prompt identification of and reaction to new opportunities.

Scholarly interpretations of entrepreneurship, such as behavioural and occupational schools of thought, assume a narrow view of the entrepreneurial phenomenon, focusing on either entrepreneurial conduct (Stuetzer et al. 2018) or new venture creation as an occupational preference (Klein 2008). In contrast, the synthesis view represents an integrated approach to the entrepreneurial concept. Fayolle et al. (2016) describe it as an intricate and multi-dimensional occurrence that necessitates a more comprehensive analysis of entrepreneurship as a process, resource and state of being. Literature on the comprehensive analysis of entrepreneurship as a process is limited. This study aims to provide greater insight into the understanding of the entrepreneurial process of opportunity identification, development and pursuit, with creativity and design thinking as key components towards innovation.

## Innovation

Innovation is a critical antecedent to entrepreneurial development and inseparable from the entrepreneurial phenomenon (Ošeniaks & Babauska 2014). New innovations create a disequilibrium in the market, resulting in economic advancement (Malecki & Spigel 2017). The activation of various network features among diverse stakeholders aids the transformation from idea to implementation and offers organisations enhanced opportunities by resource integration and co-creation (Frow et al. 2015).

The process of innovation is considered a recurrent system of ideas that are generated rapidly, implemented, revised and re-enacted by testing and application, with interdependent processes and outcomes. However, it is recommended that existing theories of innovation practices be re-examined in the current digital era, specifically the foundational assumptions regarding innovation boundaries, the agency for innovation and the association between innovation processes and related effects. These assumptions were that: (1) innovation is focused on fixed products, (2) innovation-agency is centralised and (3) the practices and outcomes of innovation are noticeably diverse (Nambisan et al. 2017).

Innovation-driven economies exhibit more efficient and robust entrepreneurial ecosystems than those found in factor- and efficiency-driven economies and the latter encompasses several discouraging conditions for entrepreneurial advancement (Herrington & Kew 2018). Environmental factors that contribute to innovation play a pivotal role in shaping business opportunities and the subsequent success or failure of new business ventures (Angulo-Guerrero, Pérez-Moreno & Abad-Guerrero 2017; Simón-Moya et al. 2014).

Entrepreneurship in efficiency-driven economies, such as South Africa, is fundamental to economic growth, yet the quality of entrepreneurial activities and the establishment of opportunities in the country are concerning (Van Vuuren & Alemayehu 2018). South Africa is constrained by restrictive regulations, its lack of an entrepreneurial education system (Herrington & Kew 2018) and its slow entrepreneurial growth. Prospective entrepreneurs are hindered by insufficient resources (Van Vuuren & Alemayehu 2018). The positive relation between bricolage and innovation is well documented in recent studies (Beltagui, Sesis & Stylos 2021; Do Vale, Collin-Lachaud & Lecocq 2021; Iqbal et al. 2021; Kamara et al. 2022; Mishra 2021; Ratnayake 2022) and proves to be pivotal in the entrepreneurial process.

## Entrepreneurial bricolage

Entrepreneurial bricolage is the application of combinations of available resources to solve new problems and create opportunities (Chen & Fan 2015). Bricolage proficiencies – the creative employment of scarce resources – may enable the establishment, advancement and exploitation of opportunities (Vanevenhoven et al. 2011). Consequently, entrepreneurial bricolage is entrenched in the entrepreneurial process, with the capability to create significant value by using attainable resources (Welter et al. 2016). Simba, Ojong and Kuk (2021) argue from an emerging markets perspective, which is consequently the focus area of this study, that bricolage is even more of a suitable process in these complex market conditions and describe it as follows: '... firms would more or less use bricolage to resolve issues of resource constraints and develop idiosyncratic relationships with their resource-poor environments' (2021:114).

Bricolage is divided into four entrepreneurial competencies: (1) a dynamic approach to resource scarcity, (2) creative

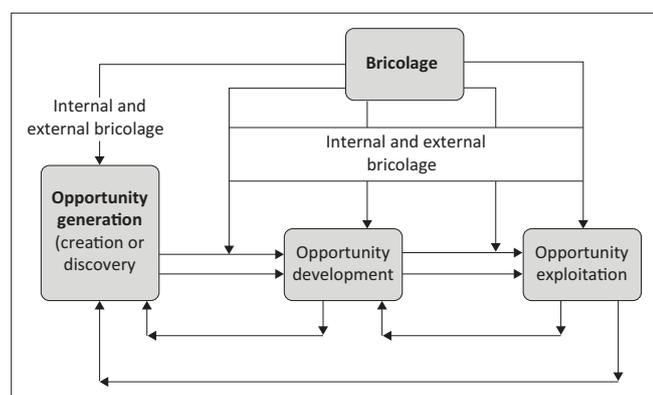
techniques of grouping resources, (3) the utilisation of available resources and (4) the ability to collaborate with external stakeholders (Witell et al. 2017). Accordingly, bricolage is the interplay between problem-solving, opportunity-finding and resource combination. Bricolage proficiencies and activities are therefore critical for establishing opportunities to reassign resources innovatively in the construction of novel offerings (Chen & Fan 2015).

Bricolage may entail both internal and external activities (Vanevenhoven et al. 2011), where *internal bricolage* refers to distinctive entrepreneurial characteristics, such as understandings, personal experiences and knowledge, and *external bricolage* refers to the activities undertaken in the external environment, including attaining resources and advancing collaborative networks with external partners.

The conceptual model suggested by Vanevenhoven et al. (2011) depicts the effect of bricolage on the entrepreneurial process (Figure 1). This model incorporates a synthesised approach to opportunity development, where opportunity detection or formation leads to opportunity expansion and opportunity exploitation. In this model, opportunities are iterative and may be altered or regenerated at any time. Both internal and external bricolage enhance the entrepreneur's efforts in each phase and enrich them when transitioning from one phase to another.

Bricolage initiatives may help to create a collaborative environment for internal management activities and develop external partner relationships. This collaborative environment enhances creative efficiencies and contributes to value-added business activities (De Klerk 2015).

While the entrepreneurial process is characterised by uncertainty, ambiguity and time pressures for decisions, opportunities transition between stages in the entrepreneurial process because of bricolage. Testing the conceptual model proposed by Vanevenhoven et al. (2011) will assist academia and other stakeholders through a better understanding of this intricate process. While Vanevenhoven et al. (2011:63)



Source: Adapted from Vanevenhoven, J., Winkel, D., Malewicki, D., Dougan, W.L. & Bronson, J., 2011, 'Varieties of bricolage and the process of entrepreneurship', *New England Journal of Entrepreneurship* 14(2), 53–66. <https://doi.org/10.1108/NEJE-14-02-2011-B005>

**FIGURE 1:** Conceptual model of the effect of bricolage on the entrepreneurial process.

contends that '...the use of bricolage as an explanatory concept is an appropriate means to examine entrepreneurship', this conceptual, theoretical proposition has not been tested empirically. Therefore, to investigate the importance of entrepreneurial bricolage in the entrepreneurial opportunity development process, the following research question (RQ) was developed:

*RQ 1:* What is the influence of entrepreneurial bricolage on the entrepreneurial opportunity development process?

Although literature on the influence and effect of entrepreneurial bricolage in the entrepreneurial opportunity development process is limited, a link between the business environment and design thinking practices was first established in the mid-1980s (Johansson-Sköldberg, Woodilla & Çetinkaya 2013).

## Design thinking

Design thinking is a collaborative problem-solving technique (Luchs, Swan & Creusen 2016). It is defined as 'a human-centred design methodology' and an approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology and the requirements for business success (Brown 2008).

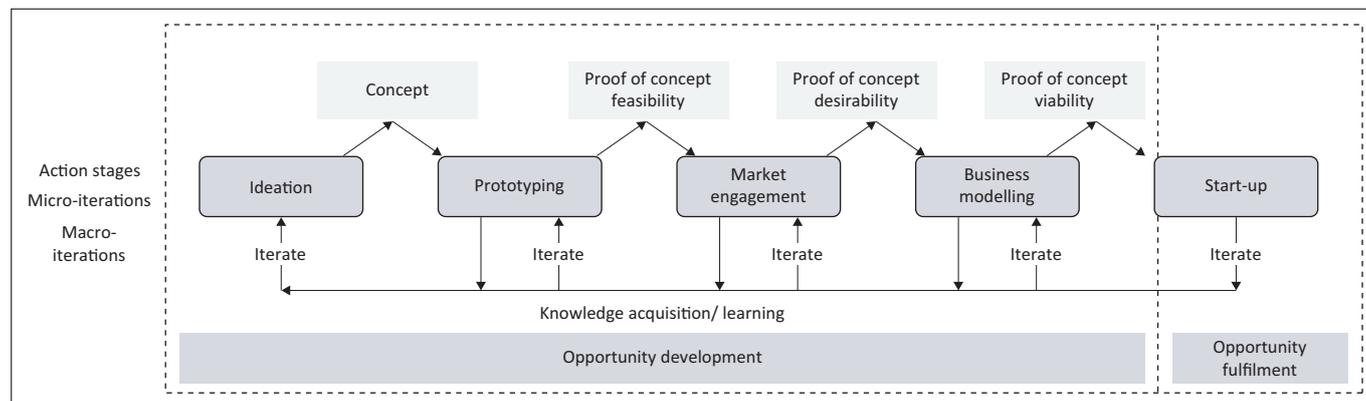
However, literature contains differences in the definition of design thinking and its iterative processes. Johansson-Sköldberg et al. (2013), for instance, defined the process as one of idea generation, deduction, testing and induction, whereas Seidel and Fixson (2013) focus on the three key approaches of need-finding, brainstorming and prototyping. A search for a more practical approach to defining design thinking reveals extensive descriptions of design thinking practice by prominent consultants, such as IDEO and Continuum, and leading educators, including the Darden Business School, the Rotman Business School and the Stanford Design School (Liedtka 2015). According to Liedtka (2015), even though these practitioners and scholars use different terminology, they share views of the design thinking process, as illustrated in Table 1. However, suggestions that design thinking may aid in dealing with a multifaceted reality and enable innovative strategic management lack theoretical basis (Johansson-Sköldberg et al. 2013).

The practical accounts of the design thinking process can therefore be summarised as an iterative process of discovering user requirements, which encompasses a deep understanding of the customer; the formation of numerous concepts to address consumer needs and experimentation with and prototyping of the ideas generated (Seidel & Fixson 2013), to find a solution that is feasible, desirable and viable (Goldsby et al. 2017). The design thinking approach, according to Goldsby et al. (2017), is valuable as an innovative approach to product or service enhancement and also an effective means of uncovering or establishing new venture opportunities. As such, the authors proposed integrating

**TABLE 1:** Models of design thinking processes in practice.

Stage	IDEO	Continuum	Stanford Design School	Rotman Business School	Darden Business School
Stage 1: Data gathering about user needs	Discovery and interpretation	Discover deep insights	Empathise and define	Empathy	What is?
Stage 2: Idea generation	Ideation	Create	Ideation	Ideation	What if?
Stage 3: Testing	Experimentation and evolution	Make it real: prototype test and deploy	Prototype and test	Prototyping and experimentation	What wows? What works?

Source: Liedtka, J., 2015, 'Perspective: Linking design thinking with innovation outcomes through cognitive bias reduction', *Journal of Product Innovation Management* 32(6), 925–938. <https://doi.org/10.1111/jpim.12163>



Source: Adapted from Goldsby, M.G., Kuratko, D.F., Marvel, M.R. & Nelson, T., 2017, 'Design-centered entrepreneurship: A four stage iterative process for opportunity development', *Journal of Small Business and Entrepreneurship* 29(6), 477–490. <https://doi.org/10.1080/08276331.2017.1377396>

**FIGURE 2:** A conceptual model for design-centred entrepreneurship.

design initiatives into the entrepreneurial process, terming the concept *design-centred entrepreneurship*.

The notion of design embraces ambiguity and complexity and, therefore, suitably enriches innovative activities in pursuit of new venture discovery or creation (Carlgren et al. 2016; Oyson & Whittaker 2015; Ramoglou & Zyglidopoulos 2015). The design thinking approach is a response to the digital era, characterised by modern technology and business – curtailing complexity and enhancing innovation (Kolko 2015).

## Design-centred entrepreneurship

The conceptual model proposed by Goldsby et al. (2017) applies design thinking principles to opportunity development, maximising organisational viability while controlling business risk. Their design process underscores the proof-of-concept elements, which were omitted from prior entrepreneurial literature. The design process emphasises successive and incremental indicators related to the feasibility, desirability and viability of business offerings. Goldsby et al. (2017) suggested that ideation, prototyping, market engagement and business modelling help develop venture opportunities and fulfilment (see Figure 2). A discussion of each of the action stages follows.

### Ideation

The starting point for opportunity development is the formulation of a concept in an ideation process (Goldsby et al. 2017). *Ideation* refers to developing novel and advantageous ideas to address both distinct and wicked problems (Perry-Smith & Manucci 2017). *Wicked problems* are ill-structured or difficult to comprehend (Dorst 2006), and

solving these problems has the potential to produce greater innovation outcomes and superior economic benefits. During this stage, deep insights are gathered from a customer perspective to explore plausible alternatives to perceived consumer difficulties; this supports the creation of organisational offerings that customers are likely to require, select and embrace (Goldsby et al. 2017). Seidel and Fixson (2013) and Liedtka (2015) proposed several techniques for the ideation phase, such as observing or interviewing potential customers, journey mapping, brainstorming and a jobs-to-be-done analysis.

### Prototyping

Newly formulated ideas need to be presented to indicate their intention clearly (Goldsby et al. 2017). The use of prototyping methods helps transform abstract ideas into tangible concepts through experience journeys, business concept illustrations and storyboarding (Liedtka 2015; Seidel & Fixson 2013). Customer feedback and insights from experts are obtained to determine the feasibility of the offering from market and technical perspectives (Goldsby et al. 2017).

### Market engagement

Establishing the proof-of-concept for the idea's customer appeal and desirability is imperative at this stage. The potential market and the business offering are iteratively created in a co-creating environment (Goldsby et al. 2017). The firm can view business offerings from a customer perspective through constructive consumer dialogue and gain insight into the risk-benefit considerations deliberated by the customer.

Greer and Lei (2012) acknowledged the market's positive association with a co-creating environment (or collaborative innovation, in design thinking terms) as being essential in developing novel products and services. However, these authors noticed several impediments to incorporating collective efforts. The impediments include increased development costs, possible interference in the development process should patrons decide to terminate their partnership with the particular firm and a potential deficiency of consumers' experience, knowledge and foresight. All these factors limit the value of the insights provided to the organisation (Greer & Lei 2012).

### Business modelling

The final stage of the design-centred entrepreneurship process is compiling a business model to clarify the operations of the prospective business (Goldsby et al. 2017). The nascent entrepreneur must indicate how resources, such as competencies, knowledge, skills and other assets (Galindo & Méndez 2014) obtained during the ideation, prototyping and market engagement phases, would be combined to formulate the venture's value proposition and explain how profits would be generated (Goldsby et al. 2017). The proof-of-concept status in this phase is economic feasibility.

A business model explains how organisations conduct business and encompasses system-level and holistic approaches (Zott, Amit & Massa 2011). Goldsby et al. (2017) view its purpose as illustrative as to how value is created and captured. It may include business activities and partners, necessary resources, cost structures, customer segments and relations, value propositions, sales channels and revenue streams (Joyce & Paquin 2016).

Limited research on the influence of design thinking led to the development of the following research question:

RQ 2: What is the influence of the design-centred approach on the entrepreneurial opportunity development process?

In summary, both design thinking and entrepreneurial bricolage have emerged as potential facilitators of entrepreneurial opportunity development and enactment, as is evident in the conceptual models of Vanevenhoven et al. (2011) and Goldsby et al. (2017), relating to entrepreneurial bricolage and design-centred entrepreneurship, respectively.

However, the models merely offer a theoretical account of these constructs but fail to integrate the concepts into a comprehensive framework for opportunity development. Even though Vanevenhoven et al. (2011) describe bricolage as a process of adaptive design, the authors omit central design thinking elements. Likewise, the conceptual model proposed by Goldsby et al. (2017) assimilates the principles of design thinking as integral to its process yet excludes entrepreneurial bricolage as a possible value-add. Literature lacks evidence in support of the amalgamation of these theoretical frameworks,

and consequently the following research question was developed to explore the potential to combine the conceptual frameworks proposed by Vanevenhoven et al. (2011) and Goldsby et al. (2017) into a more comprehensive and practical structure for entrepreneurial opportunity development.

RQ 3: Considering the prevalence of entrepreneurial bricolage and design thinking in opportunity development processes, can the frameworks be amalgamated to propose a comprehensive and practical structure for entrepreneurial opportunity development?

## Research methods and design

### Research design

The conceptual models put forward by Vanevenhoven et al. (2011) and Goldsby et al. (2017), relating to entrepreneurial bricolage and design-centred entrepreneurship, respectively, required supplementary exploration for integration into a comprehensive framework for opportunity development. Therefore, an exploratory design was considered appropriate (Carlgren et al. 2016).

This study required reflective perceptions, opinions and approaches collected through sampled communications with entrepreneurs; therefore, a qualitative approach was followed (McManus et al. 2017). A mono-methodological, qualitative approach was used to gain an enhanced understanding of the practical implications involved in entrepreneurial opportunity development (Kaivo-oja 2015). The research involved an in-depth understanding of entrepreneurs in their natural setting to permit a more extensive enquiry of the bricolage and design constructs and their facilitation in the entrepreneurial process (Chowdhury 2014).

The *entrepreneurial process* is a multifarious social construct that needs diverse viewpoints and methods in its research approach. An interpretive approach was used as a meaningful assessment of respondents' opinions and reflections (Leitch, Hill & Harrison 2010). The approach allowed the researchers to apprehend the differences among individual entrepreneurs as social protagonists and accentuated the significance of individual characteristics in a social setting (Chowdhury 2014; Saunders & Lewis 2012). The researchers considered the effectiveness and contributory constituents of entrepreneurial bricolage and design thinking in entrepreneurial opportunity detection, development and formation and investigated how they are revealed considering the context in which they transpire (Chowdhury 2014).

### Sampling

Non-probability sampling was applied because of the inaccessibility of a comprehensive population list. Accordingly, the likelihood of selecting a particular participant was not known (Saunders & Lewis 2012). A purposive sampling technique was employed. The selected participants were either founders or cofounders of small and medium entrepreneurial ventures in various South

African industry sectors. They were nominated for their specific virtues, knowledge and experiences and were therefore conversant with the subject matter, allowing relevant and meaningful data collection (Etikan, Musa & Alkassim 2016).

Because it was a qualitative study, the sample of 14 individual entrepreneurs was small (see Table 2 for their details). In qualitative research, the sample size is circumstantial, and even though the number of semi-structured interviews was premeditated, the conclusive determinant was data saturation (Etikan et al. 2016), which occurs when further data gathering delivers limited or no additional insights or themes (Boddy 2016). In this study, data saturation was attained after the 13th interview. It was followed by one additional interview before the data collection process was concluded.

## Data collection

Fourteen semi-structured, open-ended, in-depth, face-to-face interviews were conducted (Saunders & Lewis 2012). Open-ended questions were followed by targeted questions relating to the initial coding categories derived from the literature reviewed, which supported the qualitative deductive

approach (Hsieh & Shannon 2005). Two pilot interviews were conducted to evaluate the interview procedure and ensured that the questions were comprehensible and congruent to the research questions and objectives (Saunders & Lewis 2012). The piloted discussions were satisfactory and were consequently included in the final research sample.

Electronic correspondence was used to request the members of the sample to participate in the interviews, to introduce the researchers and provide details about the purpose of the research and how the collected data would be used. An interview guide (Appendix 1) was compiled to enable a more focused discussion and included initial questions and predetermined themes from pertinent literature, focusing on the theoretical models of Vanevenhoven et al. (2011) and Goldsby et al. (2017). The predetermined themes and questions merely served as a guideline, and questions could be altered or rearranged (Park & Park 2016). Interviewees were requested to discuss eight questions, some open-ended and some probing, after which they could add comments. They were encouraged to share their views freely and to respond to the questions from personal knowledge, perceptions and experiences. Table 3 maps the interview questions against the relevant research questions.

**TABLE 2:** Details of the participants.

Participant number	Age group (years)	Gender	Race	Qualifications	Position	Year(s) in position	Industry
1	34–37	M	Caucasian	Postgraduate	Founder	1	Retail
2	30–33	F	Caucasian	Postgraduate	Founder	3	Information technology
3	30–33	M	African	Undergraduate	Founder	5	Consulting
4	30–33	F	Caucasian	Grade 12	Founder	4	Information technology
5	30–33	M	Caucasian	Postgraduate	Co-founder	5	Information technology
6	30–33	M	Caucasian	Undergraduate	Co-founder	2	Information technology
7	>37	F	Caucasian	Postgraduate	Founder	6	Retail
8	>37	M	Caucasian	Postgraduate	Co-founder	8	Consulting
9	30–33	M	Caucasian	Undergraduate	Co-founder	5	Retail and wholesale
10	30–33	F	Caucasian	Undergraduate	Founder	3	Consulting
11	30–33	M	Caucasian	Undergraduate	Founder	10	Retail and wholesale
12	30–33	M	African	Postgraduate	Co-founder	1	Education
13	30–33	F	Caucasian	Undergraduate	Founder	3	Consulting
14	34–37	M	Caucasian	Postgraduate	Co-founder	2	Retail and wholesale

**TABLE 3:** Research question and interview question mapping.

Research questions	Interview questions/discussions
<i>Research Question 1:</i> What is the influence of entrepreneurial bricolage on the entrepreneurial opportunity development process?	Interview Question 4: Discussion – bricolage in general Interview Question 5: Discussion – internal bricolage Interview Question 6: Discussion – external bricolage Interview Question 7: Discussion – changes in the start-up process if capital was not a constraint Interview Question 8: Discussion – evident learnings during the opportunity finding phase
<i>Research Question 2:</i> What is the influence of design thinking on the entrepreneurial opportunity development process?	Interview Question 1: Discussion – ideation and market engagement Interview Question 2: Discussion – prototyping Interview Question 3: Discussion – business modelling Interview Question 8: Discussion – evident learnings during the opportunity-finding phase
<i>Research Question 3:</i> Considering the prevalence of entrepreneurial bricolage and design thinking in opportunity development processes, can the frameworks be amalgamated to propose a comprehensive and practical structure for entrepreneurial opportunity development?	Interview Question 1: Discussion – ideation and market engagement Interview Question 2: Discussion – prototyping Interview Question 3: Discussion – business modelling Interview Question 4: Discussion – bricolage in general Interview Question 5: Discussion – internal bricolage Interview Question 6: Discussion – external bricolage Interview Question 7: Discussion – changes in the start-up process if capital was not a constraint Interview Question 8: Discussion – evident learnings during the opportunity-finding phase

The time taken to complete each interview ranged from 20 min to 1 h and 15 min, with the average interview lasting around 50 min. With the permission of each participant, the interviews were recorded using a voice-recording device, and detailed notes were taken.

## Data analysis

The detailed notes and transcribed interview recordings were constantly scrutinised to pursue preliminary insights and recognise data saturation. Data were analysed using specialist qualitative data analysis software, based on both open and axial coding. The directed approach informed the variables of interest for the study and the initial coding categories. These categories were applied to the individual transcriptions, and new codes and categories were created for the text that could not be categorised by the initial coding (Hsieh & Shannon 2005). After scrutiny, some new coding categories were observed separately, and some were incorporated with the initial constructs identified, after which the combined coding categories were collated into preliminary research themes (Braun & Clarke 2006). Both descriptive data and frequency codes were used to refine the preliminary themes and to confirm the relevant findings; these resonate with previous research outcomes (Braun & Clarke 2006; Elo & Kyngäs 2008). The thematic analysis identified, examined and reported patterns that emerged from the data collected and presented significant ideas, thoughts and constructs related to the research questions and thus supported the narrative for the research conducted (Braun & Clarke 2006; Saunders & Lewis 2012).

## Trustworthiness

Semi-structured interviews present challenges regarding data reliability, forms of bias and the validity of the data collected (Saunders & Lewis 2012).

## Reliability

The open-ended questions utilised were flexible and could convey inconsistent results, should the study be repeated. This drawback was mitigated by the informed or directed approach to the interview process, which made it more homogenous.

## Bias

The use of the theoretical models proposed by Vanevenhoven et al. (2011) and Goldsby et al. (2017), which informed the directed approach, could cause confirmation bias (Hsieh & Shannon 2005). However, this possibility was moderated by the inclusion of open-ended questions. As probing questions potentially guide the answers provided by participants to some extent (Hsieh & Shannon 2005), the researchers made a concerted effort to preserve unrestricted feedback from participants. The range of diverse themes that were uncovered and recorded is evident of an unbiased interview process that was followed.

## Validity

Validity refers to the degree to which the collection technique accurately measures what it is proposed to measure and

whether the conclusions made correlate with the research questions (Saunders & Lewis 2012) was augmented with the use of a consistency matrix.

To further mitigate the challenges mentioned, the researchers scrutinised the groundwork and the management and recording of results during every research phase. Researchers also ensured that requests by respondents were clarified, responses were investigated and topics were discussed from multiple viewpoints (Elo et al. 2014; Leitch et al. 2010).

Finally, to enhance the value and rigour of the research findings, this article specifies the limitations of the study and the realistic expectations if it is replicated.

## Ethical considerations

Ethical clearance to conduct this study was obtained from the Gordon Institute of Business Science University of Pretoria Research Ethics Committee before collecting data from the participants. They were informed of the voluntary nature of participation and were assured that the information collected would be reported without individual identifiers. Participants signed research consent forms before the interviews commenced.

## Findings

The research conducted helped to attain the relevant research objectives and responses to the research questions posed. Table 4 lists the constructs derived from the literature, and this research study defines them and indicates their relevance to entrepreneurial bricolage, design thinking and design-centred entrepreneurship. The frequency with which each construct was mentioned in the interviews is displayed in descending order.

From the 14 interviews, 189 sub-constructs were derived that were categorised into eight main constructs (see Table 4). The 'x' in Table 4 denotes the overlap of constructs under the themes during responses. Constructs (such as innovation and creativity) and subsequent themes overlap in nature, for example, if a respondent commented on innovation as an enhancing factor for entrepreneurial bricolage and how it increases design thinking this construct's frequency would be denoted as 'one' but would be categorised under both themes, namely 'Entrepreneurial Bricolage' and 'Design Thinking' and is disclosed with the 'x' in the relevant column.

## Research Question 1: What is the influence of entrepreneurial bricolage on the entrepreneurial opportunity development process?

Entrepreneurial bricolage was found to have a significant influence in the development and establishment of entrepreneurial opportunity development. Its prominence in both the internal and external environment (or internal and external bricolage) is shown in Table 4 by the substantial

TABLE 4: A summary of findings.

No.	Construct	Construct description	Frequency	Themes		
				Entrepreneurial bricolage†	Design thinking‡	Design-centred entrepreneurship§
1	External bricolage	The attainment of resources, which may include political, economic, social, technological, legal and environmental aspects	318	x	x	x
2	Internal bricolage	Referring to entrepreneurial characteristics, understandings, experiences, knowledge and education; including partnerships and organisational culture	311	x	x	x
3	Human-centred approach	A design and management approach that develops solutions to problems by involving the human perspective in all steps of the problem-solving process	161	–	x	x
4	Creativity, ideation or innovation	The creation of ideas to produce novel offerings	91	x	x	x
5	Business modelling	The organisation's plan with regard to its value proposition, business processes and how profits will be generated	83	–	–	x
6	Dynamic and iterative system or approach	A system or approach denoted by constant change, activities and development	58	x	x	x
7	Prototyping the concept	The transformation of abstract ideas into early samples, models or releases of offerings to enable the evaluation of ideas	34	–	x	x
8	Successive, systematic and incremental process	A methodical approach applied according to a fixed plan or system, with sequential stages and relating to an increase or addition from one stage to another	0	–	x	x
<b>Total</b>			<b>1056</b>			

†, Relevance of themes to constructs = 4; ‡, Relevance of themes to constructs = 7; §, Relevance of themes to constructs = 8; x, Overlap of constructs.

number of references to these particular constructs. However, the constructs were found to either support or hinder the entrepreneurial process, depending on the variables considered.

### Internal environment

Vanevenhoven et al. (2011) documented and discussed a list of internal predicates (such as prior knowledge of markets, customer problems, life experiences and educational attainments); however, expanding on this theoretical proposition, *organisational culture* and the *value of partners* was found to be imperative catalysts for opportunity development in this study. These constructs were consequently added as additions to the internal bricolage constructs and extend the conceptual model put forward by Vanevenhoven et al. (2011).

The participants responded to the question on the importance of internal bricolage and alluded to organisational culture as follows:

'I have got two manufacturing staff that are very vested in my business. I am very open and transparent with them with financials and stuff, so they understand where we are. We have frank discussions about what the future of the business is and, very surprisingly, they have been unbelievably creative.' (Participant 1, Male, Postgraduate qualification)

'If people don't feel appreciated and they don't feel like they are adding value, then they are just not going to participate. But you find that a lot of them become advocates in their different organisations and they find a lot of opportunities for us, so it's very important.' (Participant 12, Male, Postgraduate qualification)

Participants responded to the question on the importance of internal bricolage and alluded to having a partner or partners,

which they considered as aiding in the development of opportunities as follows:

'Obviously, the constraints are more emotional, the fear of starting, but I think that a good ... help to start is having a good business partner ... never underestimate the importance of a business partner and not just any business partner, but one that's different to you and can see your blind spots and vice versa.' (Participant 5, Male, Postgraduate qualification)

'We are quite different in our approaches to problems and the way we run a business and all of that, but luckily it counted in our favour because what was lacking on my side he can make up for and vice versa.' (Participant 9, Male, Undergraduate qualification)

'Well, the three of us that started ... get along really, really well ... I think it has been more valuable than anything else.' (Participant 14, Male, Postgraduate qualification)

### External environment

The frequency with which external bricolage was mentioned accentuated its significant influence on opportunity development. Capital constraints and technological stimuli were the most prominent variables to enable opportunity creation and establishment.

*Capital constraints* sometimes induced entrepreneurial opportunity development, rather than hindering it. The lack of capital and consequent inability to appoint adequate staff obliged entrepreneurs to assume multiple roles within the organisation. This allowed them to gain in-depth knowledge of the business offerings and processes, enabling them to better detect potential opportunities and to enhance offerings. Some of the responses are as follows:

'I don't believe that you can build a business and, from the get-go, hire people to do a job. You need to know what that job is before you can make it most efficient ... financial constraints make you

thrifty, and that means that you figure it out; you don't just throw money at problems, and so you learn lessons and you do things smarter.' (Participant 1, Male, Postgraduate qualification)

'I would not have gotten to know all the steps in the business and all the processes and the products in as much detail.' (Participant 11, Male, Undergraduate qualification)

Various participants noticed that a greater ability to access capital would have advanced opportunity development and enactment:

'... employing the right people from the start ... having people to do new business development...' (Participant 10, Female, Undergraduate qualification)

'If funding was not an issue, I would have employed at least ten people and I would have been international by the third year. I would have run international operations by then.' (Participant 3, Male, Undergraduate qualification)

'We probably would have developed the brand a lot quicker ... and we definitely would have taken on the international market far quicker if we had capital, which we didn't.' (Participant 8, Male, Postgraduate qualification)

*Technology:* Access to technological utilities amplified the creation of new offerings or ventures and their consequent success:

'So those sort of are opportunities. Especially with tech you can do anything, you can build anything.' (Participant 5, Male, Postgraduate qualification)

'I am also relatively technical. I mean, I played the role of CIO at a large insurance company so I had a good background in that space. I knew what the technology could or couldn't do. We are trying to come up with creative ideas of how to solve problems for customers using technology in ways that haven't happened in the market.' (Participant 8, Male, Postgraduate qualification)

The importance of social media was highlighted by several other participants:

'You know you sometimes see trends also on social media ... and you realise, well, there's another gap in the market.' (Participant 7, Female, Postgraduate qualification)

'You have got to use all the platforms you can on social media and online.' (Participant 9, Male, Undergraduate qualification)

## Research Question 2: What is the influence of design thinking on the entrepreneurial opportunity development process?

The *human-centred approach*, which underpins the design thinking process, was among the top five constructs in the frequency table and included references to customer education, emotion, feedback, focus, relationships and understanding.

*Creativity and innovation* were at the forefront of recognising opportunities. Also, among the top five, this construct is perhaps best explained by the following remarks:

'Creativity is very, very important because you can't see past the problem if you can't see the opportunities.' (Participant 2, Female, Postgraduate qualification)

'Any start-up, for that matter, has to be creative about how they think about who they are, how they position themselves and how they are going to say it differently.' (Participant 5, Male, Postgraduate qualification)

'I think, if you are creative, you are resourceful. You can do a lot with the little that you have. Yes, and creativity feeds on itself. So, the more creative you are, the more creative you become, the more ideas you think of. It's not a stagnant thing.' (Participant 7, Female, Postgraduate qualification)

The research confirmed the utility of the design thinking approach. However, it indicated flaws in the practicality of prototyping in particular instances and in the systematic approach proposed in the literature reviewed.

### The flaws in the idea of prototyping

Some entrepreneurs were able to create a minimum viable product for customers to test and provide feedback, yet this ability was closely associated with the type of offering under consideration and, especially, the product's packaging. The 'look and feel' of the item sometimes played a significant role in customers' perception of its value, communicating its purpose, what the brand stood for and what it meant to the customers. In these instances, the practicality of producing a minimum viable product was not realistic. This restricted the iterative nature of the design thinking phases of prototyping, market engagement and ideation and sometimes led to offerings that did not appeal to their intended market.

### Flaws in the idea of a systematic approach

The process of creating, discovering and exploiting opportunities was found to be a non-linear and somewhat disordered practice, rather than the methodical approach advocated by the design thinking literature and the design-centred entrepreneurship process offered by Goldsby et al. (2017).

The following comments reveal the entrepreneurs' deviating and abstract process of creating opportunities and planning venture activities:

'Anyway, we were building the plane as we jumped out ... so you kind of just do it as you go ... you consider as much as you can.' (Participant 1, Male, Postgraduate qualification)

'So we went into this thing quite blinded. We established a need; we spoke to a few people.' (Participant 4, Female, Grade 12 qualification)

'Fairly unscientifically. I have run a big organisation. You basically take the collective insights that you have got over time, and you apply your intuition.' (Participant 8, Male, Postgraduate qualification)

The interviewees had the same sentiments about formulating a business model and plan (ranked fifth in the frequency table):

'It's trial and error, hey. So we – funny enough, we are only drafting our first business plan now, a year into the business.' (Participant 12, Male, Postgraduate qualification)

'Starting out, we didn't think of that. We had an idea of – we obviously had a very clear idea of what we wanted this product to be in the South African and international context, but we

haven't physically thought about what the organisation would look like to make that happen. It's something that we have only recently started to consider and define, actually.' (Participant 14, Male, Postgraduate qualification)

### Research Question 3: Considering the prevalence of entrepreneurial bricolage and design thinking in opportunity development processes, can the frameworks be amalgamated to propose a comprehensive and practical structure for entrepreneurial opportunity development?

The intersecting constructs in entrepreneurial bricolage and design-centred entrepreneurship shown in Table 4 affirmed the proposal to converge the two theoretical models suggested by Vanevenhoven et al. (2011) and Goldsby et al. (2017). The research findings established that these processes are interrelated and, in some instances, inseparable. However, particular aspects and phases of the design-centred entrepreneurship process supported by Goldsby et al. (2017) required modification to address the practicality of prototyping, and the inclusion of business modelling as a definitive stage following the ideation, prototyping and market engagement phases.

The enhanced framework depicted in Figure 3 integrates the processes of entrepreneurial bricolage and design-centred entrepreneurship. It demonstrates the mutual reliance of these processes and their role in developing and enacting entrepreneurial opportunities.

The integrated framework illustrates the dynamic and iterative approach of the entrepreneurial opportunity development process, supported by the conceptual models offered by Vanevenhoven et al. (2011) and Goldsby et al. (2017). A summary of the interactions between the constructs in the integrated model follows:

- Bricolage proficiencies initiate the process and have a continuing effect on the various opportunity development and exploitation phases (Vanevenhoven et al. 2011).
- The framework accentuates the significance of the human-centred approach (Carlgrén et al. 2016; Kimbell 2009; Prud'homme Van Reine 2017) in pursuing an enriched understanding of market trends, deficiencies of current business practices and difficulties experienced by customers.
- The integrated framework supports the uncovering and selection of potential solutions (Bucktowar et al. 2015; Liedtka 2015) and assists in testing and

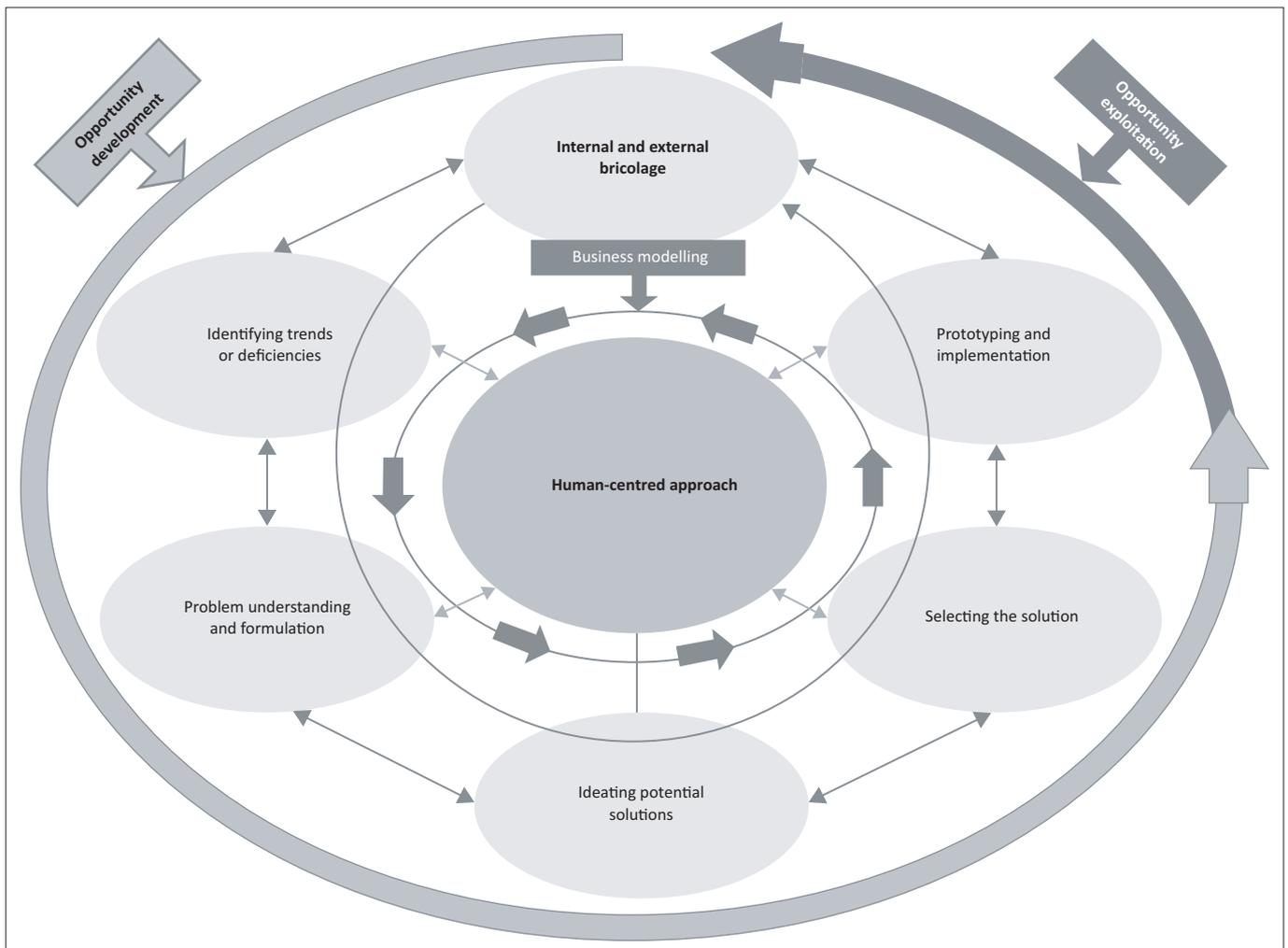


FIGURE 3: Entrepreneurial opportunity establishment: An integrated bricolage and design perspective.

implementing ideas (Johansson-Sköldberg et al. 2013; Seidel & Fixson 2013).

- The testing and implementation stages are merged into a single development phase because the prototyping is dependent on the type of product on offer.
- The business modelling process is an evolving endeavour because entrepreneurs refine initial business plans, processes and value propositions according to the knowledge and learning accumulated throughout the entrepreneurial opportunity process.

## Conclusion

### Summary of findings and theoretical implications

This study explored the influence of entrepreneurial bricolage and design thinking on entrepreneurial opportunity development, using the design-centred entrepreneurship perspective offered by Goldsby et al. (2017) and the conceptual framework proposed by Vanevenhoven et al. (2011). As a result of the exploratory nature of this study, important enhancements to the current theoretical frameworks were uncovered. Although the researchers did not intend to explore enhancements to the current theoretical frameworks, enhancements transpired from interviews with entrepreneurs. These enhancements are therefore reported to enrich literature although these were not deliberately explored through initial research questions in this study.

#### Entrepreneurial bricolage

Entrepreneurial bricolage was found to have a significant influence on developing and establishing entrepreneurial opportunities. The existing external variables of capital and technology displayed both progressive and delimiting properties, and business partners and organisational culture were added as internal variables to enhance the proposed conceptual frameworks.

Some respondents reported that capital constraints steered them to assume multiple roles in the process, leading to an enriched understanding of the offering, industry and market that enabled them to realise opportunities. Other respondents reported that a lack of capital constrained their ability to attain opportunities, especially international expansion. Nonetheless, capital deficiencies played a significant role.

Technological stimuli were among the most prominent external variables in enabling and establishing opportunities and amplifying the creation of new offerings or ventures.

Respondents valued the contributions of business partners, and their competencies were found to be deeply integrated into the internal processes required to develop and establish opportunities, whereas Vanevenhoven et al. (2011) viewed partnerships as part of the external environment.

Respondents gave prominence to integrating an advantageous organisational culture from the start, but

organisational culture was omitted from the bricolage process described by Vanevenhoven et al. (2011).

#### Design thinking

Overall, the value of design thinking in the entrepreneurial opportunity development process was confirmed, with a specific focus on the human-centred approach and an emphasis on creativity and innovation. However, respondents found the practicality of prototyping to be limited for some products, and their design process was non-linear and somewhat disordered, rather than the methodical approach advocated by Goldsby et al. (2017) and other design thinking authors.

#### Integrating bricolage and design thinking

The final research question confirmed the integrative potential of the two theoretical models suggested by Vanevenhoven et al. (2011) and Goldsby et al. (2017) and, as a result, proposed an enhanced framework that converges these models.

#### Contribution

The study contributed to the prevailing understanding of entrepreneurial opportunity development and enactment: firstly, it examined the conceptual models proposed by Vanevenhoven et al. (2011) and Goldsby et al. (2017). This study provides evidence in support of the application of these conceptual frameworks in understanding the entrepreneurial opportunity development process. In addition to exploring these frameworks from an empirical perspective, this study uncovered enhancements to these frameworks. Lastly, this study offers an integrated framework in which entrepreneurial bricolage and design thinking are synthesised to better encompass the intricate process of entrepreneurial opportunity development.

#### Managerial implications

The insights provided could help current and prospective entrepreneurs or owners of small and medium-sized enterprises (SMEs) understand how opportunities are created and enacted in an environment characterised by rapid decision-making, fluctuating markets and multiple resource constraints. The enhanced understanding could facilitate new ventures, novel offerings, organisational competitiveness and commercial sustainability.

#### Limitations of this study and suggestions for future research

The limitations observed here could provide areas for future research: (1) the population was defined as entrepreneurs within South Africa, thus limiting the relevance to different environments or countries. Similar studies conducted in diverse environments may be particularly useful; (2) the new framework could be tested in a different contextual setting or a larger population to determine its generalisability and usefulness.

## Acknowledgements

### Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

### Authors' contributions

All authors contributed equally to the development of the study, drafting, editing and submission of the manuscript.

### Funding information

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

### Data availability

Data are available upon request from the corresponding author, C.M. Joynt. It is held securely in the repository of the university and is only accessible by the researchers involved in the study.

### Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of any affiliated agency of the authors.

## References

- Agarwal, N., Bhatti, Y.A. & Levänen, J., 2021, 'Linking frugal innovation to frugal entrepreneurship through effectuation, causation, and bricolage', *Academy of Management Proceedings* 2021(1), 11386. <https://doi.org/10.5465/AMBPP.2021.11386abstract>
- Alvarez, S.A. & Barney, J.B., 2014, 'Entrepreneurial opportunities and poverty alleviation', *Entrepreneurship Theory and Practice* 38(1), 159–184. <https://doi.org/10.1111/etap.12078>
- Angulo-Guerrero, M.J., Pérez-Moreno, S. & Abad-Guerrero, I.M., 2017, 'How economic freedom affects opportunity and necessity entrepreneurship in the OECD countries', *Journal of Business Research* 73(C), 30–37. <https://doi.org/10.1016/j.jbusres.2016.11.017>
- Beltagui, A., Sesis, A. & Stylos, N., 2021, 'A bricolage perspective on democratising innovation: The case of 3D printing in makerspaces', *Technological Forecasting and Social Change* 163, 120453. <https://doi.org/10.1016/j.techfore.2020.120453>
- Bjørnskov, C. & Foss, N.J., 2016, 'Institutions, entrepreneurship, and economic growth: What do we know and what do we still need to know?', *Academy of Management Perspectives* 30(3), 292–315. <https://doi.org/10.5465/amp.2015.0135>
- Boddy, C.R., 2016, 'Sample size for qualitative research', *Qualitative Market Research: An International Journal* 19(4), 426–432. <https://doi.org/10.1108/QMR-06-2016-0053>
- Braun, V. & Clarke, V., 2006, 'Using thematic analysis in psychology', *Qualitative Research in Psychology* 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Brown, T., 2008, 'Design thinking', *Harvard Business Review*, viewed 15 August 2022 from <https://web-s-ebcshost-com.uplib.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=d9ce744e-b650-42f7-a3ba-60384bb1d09b%40redis>.
- Bucktowar, R., Kocak, A. & Padachi, K., 2015, 'Entrepreneurial orientation, market orientation and networking: Impact on innovation and firm performance', *Journal of Developmental Entrepreneurship* 20(4), 1550024. <https://doi.org/10.1142/S1084946715500247>
- Butt, S.A., Bowra, Z.A. & Chaudhry, N.I., 2021, 'Investigating the predictors and outcomes of entrepreneurial bricolage', *Review of Economics and Development Studies* 7(3), 343–356. <https://doi.org/10.47067/reads.v7i3.370>
- Carland, J.C., Carland, J.W. & Stewart, W.H., 1996, 'Seeing what's not there: The enigma of entrepreneurship', *Journal of Small Business Strategy* 7(1), 1–20.
- Carlgen, L., Rauth, I. & Elmquist, M., 2016, 'Framing design thinking: The concept in idea and enactment', *Creativity and Innovation Management* 25(1), 38–57. <https://doi.org/10.1111/caim.12153>
- Cash, P.J., 2018, 'Developing theory-driven design research', *Design Studies* 56, 84–119. <https://doi.org/10.1016/j.destud.2018.03.002>
- Chen, Y.W. & Fan, H.L., 2015, 'Creative self-efficacy and innovation speed of new ventures: The mediating role of entrepreneurial bricolage', *World Academy of Science, Engineering and Technology, International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering* 9(7), 2369–2372.
- Chowdhury, M.F., 2014, 'Interpretivism in aiding our understanding of the contemporary social world', *Open Journal of Philosophy* 4(3), 432. <https://doi.org/10.4236/ojpp.2014.43047>
- Claudhary, T.K. & Trzecieliński, S., 2021, 'Agile enterprise and opportunity recognition in SMEs: A concise bibliometric analysis', *European Research Studies* 24(5), 48–63. <https://doi.org/10.35808/ersj/2703>
- De Klerk, S., 2015, 'The creative industries: An entrepreneurial bricolage perspective', *Management Decision* 53(4), 828–842. <https://doi.org/10.1108/MD-03-2014-0169>
- Dorst, K., 2006, 'Design problems and design paradoxes', *Design Issues* 22(3), 4–17. <https://doi.org/10.1162/desi.2006.22.3.4>
- Do Vale, G., Collin-Lachaud, I. & Lecocq, X., 2021, 'Micro-level practices of bricolage during business model innovation process: The case of digital transformation towards omni-channel retailing', *Scandinavian Journal of Management* 37(2), 101154. <https://doi.org/10.1016/j.scaman.2021.101154>
- Du, K. & O'Connor, A., 2018, 'Entrepreneurship and advancing national level economic efficiency', *Small Business Economics* 50(1), 91–111. <https://doi.org/10.1007/s11187-017-9904-4>
- Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K. & Kyngäs, H., 2014, 'Qualitative content analysis: A focus on trustworthiness', *SAGE Open* 4(1), 2158244014522633. <https://doi.org/10.1177/2158244014522633>
- Elo, S. & Kyngäs, H., 2008, 'The qualitative content analysis process', *Journal of Advanced Nursing* 62(1), 107–115. <https://doi.org/10.1111/j.1365-2648.2007.04569.x>
- Etikan, I., Musa, S.A. & Alkassim, R.S., 2016, 'Comparison of convenience sampling and purposive sampling', *American Journal of Theoretical and Applied Statistics* 5(1), 1–4. <https://doi.org/10.11648/j.ajtas.20160501.11>
- Fayolle, A., Landstrom, H., Gartner, W.B. & Berglund, K., 2016, 'The institutionalization of entrepreneurship: Questioning the status quo and re-gaining hope for entrepreneurship research', *Entrepreneurship and Regional Development* 28(7–8), 477–486. <https://doi.org/10.1080/08985626.2016.1221227>
- Fisher, G., 2012, 'Effectuation, causation, and bricolage: A behavioral comparison of emerging theories in entrepreneurship research', *Entrepreneurship Theory and Practice* 36(5), 1019–1051. <https://doi.org/10.1111/j.1540-6520.2012.00537.x>
- Frow, P., Nenonen, S., Payne, A. & Storbacka, K., 2015, 'Managing co-creation design: A strategic approach to innovation', *British Journal of Management* 26(3), 463–483. <https://doi.org/10.1111/1467-8551.12087>
- Galindo, M.Á. & Méndez, M.T., 2014, 'Entrepreneurship, economic growth, and innovation: Are feedback effects at work?', *Journal of Business Research* 67(5), 825–829. <https://doi.org/10.1016/j.jbusres.2013.11.052>
- Goldsby, M.G., Kuratko, D.F., Marvel, M.R. & Nelson, T., 2017, 'Design-centered entrepreneurship: A four stage iterative process for opportunity development', *Journal of Small Business and Entrepreneurship* 29(6), 477–490. <https://doi.org/10.1080/08276331.2017.1377396>
- Greer, C.R. & Lei, D., 2012, 'Collaborative innovation with customers: A review of the literature and suggestions for future research', *International Journal of Management Reviews* 14(1), 63–84. <https://doi.org/10.1111/j.1468-2370.2011.00310.x>
- Herrington, M. & Kew, P., 2018, *Is there a change in attitude towards the small and medium business sector South Africa 2017/18*, pp. 1–84, Global Entrepreneurship Monitor, Cape Town, South Africa.
- Hsieh, H.F. & Shannon, S.E., 2005, 'Three approaches to qualitative content analysis', *Qualitative Health Research* 15(9), 1277–1288. <https://doi.org/10.1177/1049732305276687>
- Iqbal, Q., Ahmad, N.H. & Halim, H.A., 2021, 'Insights on entrepreneurial bricolage and frugal innovation for sustainable performance', *Business Strategy & Development* 4(3), 237–245. <https://doi.org/10.1002/bsd2.147>
- Jarvis, L.C., 2016, 'Identification, intentions and entrepreneurial opportunities: An integrative process model', *International Journal of Entrepreneurial Behavior and Research* 22(2), 182–198. <https://doi.org/10.1108/IJEBR-02-2015-0041>
- Johansson-Sköldberg, U., Woodilla, J. & Çetinkaya, M., 2013, 'Design thinking: Past, present and possible futures', *Creativity and Innovation Management* 22(2), 121–146. <https://doi.org/10.1111/caim.12023>
- Joyce, A. & Paquin, R.L., 2016, 'The triple layered business model canvas: A tool to design more sustainable business models', *Journal of Cleaner Production* 135, 1474–1486. <https://doi.org/10.1016/j.jclepro.2016.06.067>
- Kaivo-oja, J., 2015, *Towards better participatory foresight processes-linking participatory foresight research to the methodological machinery of qualitative research and phenomenology*, Finland Futures Research Centre, Turku School of Economics, University of Turku.
- Kamara, S., Arslan, A., Kontkanen, M. & Tarba, S.Y., 2022, 'A bricolage perspective on construction innovation in a BOP market: Evidence from a Finnish family-owned micro-enterprise', in D. Dikovo & E. Ipsmiller (eds.), *Research handbook on innovation in international business*, pp. 206–218, Edward Elgar Publishing, Cheltenham, UK.
- Kimbell, L., 2009, 'Design practices in design thinking', *European Academy of Management* 5, 1–24.
- Klein, P.G., 2008, 'Opportunity discovery, entrepreneurial action, and economic organization', *Strategic Entrepreneurship Journal* 2(3), 175–190. <https://doi.org/10.1002/sej.50>
- Klenner, N.F., Gemser, G. & Karpen, I.O., 2022, 'Entrepreneurial ways of designing and designerly ways of entrepreneurship: Exploring the relationship between design thinking and effectuation theory', *Journal of Product Innovation Management* 39(1), 66–94. <https://doi.org/10.1111/jpim.12587>

- Kolko, J., 2015, 'Design thinking comes of age', *Harvard Business Review* 1–7, viewed 7 July 2022 from [https://cdn.fedweb.org/fed-42/2892/design\\_thinking\\_comes\\_of\\_age.pdf](https://cdn.fedweb.org/fed-42/2892/design_thinking_comes_of_age.pdf).
- Lans, T., Blok, V. & Wesselink, R., 2014, 'Learning apart and together: Towards an integrated competence framework for sustainable entrepreneurship in higher education', *Journal of Cleaner Production* 62, 37–47. <https://doi.org/10.1016/j.jclepro.2013.03.036>
- Leitch, C.M., Hill, F.M. & Harrison, R.T., 2010, 'The philosophy and practice of interpretivist research in entrepreneurship: Quality, validation, and trust', *Organizational Research Methods* 13(1), 67–84. <https://doi.org/10.1177/1094428109339839>
- Liedtka, J., 2015, 'Perspective: Linking design thinking with innovation outcomes through cognitive bias reduction', *Journal of Product Innovation Management* 32(6), 925–938. <https://doi.org/10.1111/jpim.12163>
- Lim, W., Lee, Y. & Al Mamun, A., 2021, 'Delineating competency and opportunity recognition in the entrepreneurial intention analysis framework', *Journal of Entrepreneurship in Emerging Economies* 15(1), 212–232. <https://doi.org/10.1108/JEEE-02-2021-0080>
- Linke, R., 2017, 'Design thinking, explained', *Ideas Made to Matter*, viewed 10 October 2022, from [http://mitsloan.mit.edu/newsroom/articles/design-thinking-explained/?utm\\_source=mitsloantwitter](http://mitsloan.mit.edu/newsroom/articles/design-thinking-explained/?utm_source=mitsloantwitter).
- Luchs, M.G., Swan, K.S. & Creusen, M.E., 2016, 'Perspective: A review of marketing research on product design with directions for future research', *Journal of Product Innovation Management* 33(3), 320–341. <https://doi.org/10.1111/jpim.12276>
- Malecki, E.J. & Spigel, B., 2017, 'Innovation and entrepreneurship', in H. Bathelt, P. Cohendet, S. Henn & L. Simon (eds.), *Elgar companion to innovation and knowledge creation*, pp. 625–637, Edward Elgar Publishing, Northampton, MA.
- McManus, P., Mulhall, S., Ragab, M. & Arisha, A., 2017, 'An investigation in the methodological approaches used in doctoral business research in Ireland', paper presented at *ECRM 2017 16th European Conference on Research Methods in Business and Management Studies*, Dublin, Academic Conferences and Publishing, June 22–23.
- Mickiewicz, T. & Kaasa, A., 2022, 'Creativity and security as a cultural recipe for entrepreneurship', *Journal of Institutional Economics* 18(1), 119–137. <https://doi.org/10.1017/S1744137420000533>
- Mishra, O., 2021, 'Design thinking and bricolage for frugal innovations during crisis', *Journal of Innovation Management* 9(3), 1–26. [https://doi.org/10.24840/2183-0606\\_009.003\\_0002](https://doi.org/10.24840/2183-0606_009.003_0002)
- Nambisan, S., Lyytinen, K., Majchrzak, A. & Song, M., 2017, 'Digital innovation management: Reinventing innovation management research in a digital world', *MIS Quarterly* 41(1), 223–238. <https://doi.org/10.25300/MISQ/2017/41:1.03>
- Nieman, G. & Nieuwenhuizen, C., 2014, *Entrepreneurship: A South African perspective*, Van Schaik, Pretoria.
- Ošenięks, J. & Babauska, S., 2014, 'The relevance of innovation management as prerequisite for durable existence of small and medium enterprises', *Procedia – Social and Behavioral Sciences* 110, 82–92. <https://doi.org/10.1016/j.sbspro.2013.12.850>
- Oyson, M.J. & Whittaker, H., 2015, 'Entrepreneurial cognition and behavior in the discovery and creation of international opportunities', *Journal of International Entrepreneurship* 13(3), 303–336. <https://doi.org/10.1007/s10843-015-0156-6>
- Park, B.J.R., Srivastava, M.K. & Gnyawali, D.R., 2014, 'Walking the tight rope of coopetition: Impact of competition and cooperation intensities and balance on firm innovation performance', *Industrial Marketing Management* 43(2), 210–221. <https://doi.org/10.1016/j.indmarman.2013.11.003>
- Park, J. & Park, M., 2016, 'Qualitative versus quantitative research methods: Discovery or justification?', *Journal of Marketing Thought* 3(1), 1–8.
- Perry-Smith, J.E. & Mannucci, P.V., 2017, 'From creativity to innovation: The social network drivers of the four phases of the idea journey', *Academy of Management Review* 42(1), 53–79. <https://doi.org/10.5465/amr.2014.0462>
- Prud'homme Van Reine, P., 2017, 'The culture of design thinking for innovation', *Journal of Innovation Management* 5(2), 56–80. [https://doi.org/10.24840/2183-0606\\_005.002\\_0006](https://doi.org/10.24840/2183-0606_005.002_0006)
- Ramoglou, S. & Zyglidopoulos, S.C., 2015, 'The constructivist view of entrepreneurial opportunities: A critical analysis', *Small Business Economics* 44(1), 71–78. <https://doi.org/10.1007/s11187-014-9590-4>
- Ratnayake, C., 2022, 'Entrepreneurial resource bricolage and social innovation: Moderating effect of entrepreneurial alertness', *Journal on Innovation and Sustainability RISUS* 13(2), 92–110. <https://doi.org/10.23295/2179-3565.2022v13i2p92-110>
- Rönkkö, M., Peltonen, J. & Arenius, P., 2014, 'Selective or parallel? Toward measuring the domains of entrepreneurial bricolage', in A.C. Corbett & J.A. Katz (eds.), *Entrepreneurial resourcefulness: Competing with constraints*, Advances in Entrepreneurship, Firm Emergence and Growth, vol. 15, pp. 43–61, Emerald Group Publishing Limited, Bingley.
- Rosa, A.C.M., Rosa, A.M., Das Neves, J.M.S., Souza, C.P. & Dos Santos, B.R.O.B., 2021, 'Innovative entrepreneur and creativity: A bibliometric analysis', *Global Scientific Journals* 9(3):449-460.
- Saunders, M. & Lewis, P., 2012, *Doing research in business and management*, Pearson, Harlow.
- Seidel, V.P. & Fixson, S.K., 2013, 'Adopting design thinking in novice multidisciplinary teams: The application and limits of design methods and reflexive practices', *Journal of Product Innovation Management* 30(Suppl. 1), 19–33. <https://doi.org/10.1111/jpim.12061>
- Simba, A., Ojong, N. & Kuk, G., 2021, 'Bricolage and MSEs in emerging economies', *The International Journal of Entrepreneurship and Innovation* 22(2), 112–123. <https://doi.org/10.1177/1465750320969621>
- Simón-Moya, V., Revuelto-Taboada, L. & Guerrero, R.F., 2014, 'Institutional and economic drivers of entrepreneurship: An international perspective', *Journal of Business Research* 67(5), 715–721. <https://doi.org/10.1016/j.jbusres.2013.11.033>
- Stuetzer, M., Audretsch, D.B., Obschonka, M., Gosling, S.D., Rentfrow, P.J. & Potter, J., 2018, 'Entrepreneurship culture, knowledge spillovers and the growth of regions', *Regional Studies* 52(5), 608–618. <https://doi.org/10.1080/00343404.2017.1294251>
- Toma, S.-G., Grigore, A.-M. & Marinescu, P., 2014, 'Economic development and entrepreneurship', *Procedia Economics and Finance* 8, 436–443. [https://doi.org/10.1016/S2212-5671\(14\)00111-7](https://doi.org/10.1016/S2212-5671(14)00111-7)
- Vanevenhoven, J., Winkel, D., Malewicki, D., Dougan, W.L. & Bronson, J., 2011, 'Varieties of bricolage and the process of entrepreneurship', *New England Journal of Entrepreneurship* 14(2), 53–66. <https://doi.org/10.1108/NEJE-14-02-2011-B005>
- Van Vuuren, J. & Alemayehu, B.Z., 2018, 'The role of entrepreneurship in transforming efficiency economies into innovation-based economies', *The Southern African Journal of Entrepreneurship and Small Business Management* 10(1), 1–12. <https://doi.org/10.4102/sajesbm.v10i1.140>
- Welter, C., Mauer, R. & Wuebker, R.J., 2016, 'Bridging behavioral models and theoretical concepts: Effectuation and bricolage in the opportunity creation framework', *Strategic Entrepreneurship Journal* 10(1), 5–20. <https://doi.org/10.1002/sej.1215>
- Witell, L., Gebauer, H., Jaakkola, E., Hammedi, W., Patricio, L. & Perks, H., 2017, 'A bricolage perspective on service innovation', *Journal of Business Research* 79, 290–298. <https://doi.org/10.1016/j.jbusres.2017.03.021>
- Zoo, H., De Vries, H.J. & Lee, H., 2017, 'Interplay of innovation and standardization: Exploring the relevance in developing countries', *Technological Forecasting and Social Change* 118, 334–348. <https://doi.org/10.1016/j.techfore.2017.02.033>
- Zott, C., Amit, R. & Massa, L., 2011, 'The business model: Recent developments and future research', *Journal of Management* 37(4), 1019–1042. <https://doi.org/10.1177/0149206311406265>

Appendix 1 starts on the next page→

## Appendix 1: Interview guideline

### Discussion Guide and Interview Questions

Organisation: Start Time:

Date: End Time:

Thank you for taking the time to meet with me today, your contribution to this research is much appreciated. This research aims to determine whether entrepreneurial bricolage and design thinking may be considered as facilitators to entrepreneurial opportunity development.

Information obtained in this interview will be treated as confidential, and as such, I would like to encourage you to share your views freely. Before we commence with the interview, I would like to request to make use of a recording device. May I also request that a consent form is signed?

### Demographical information:

- i. Please indicate your age group and gender.
- ii. What are your current qualifications?
- iii. What position or role do you fulfil in the organisation?
- iv. Please describe your start-up phase.
  - **Prompt 1:** When did your business start (registration date)?
  - **Prompt 2:** When did you activate your first paying client?
  - **Prompt 3:** Elaborate on any constraints faced in starting your business.
- v. Kindly explain your start-up structure.
  - **Prompt 1:** Are you the sole founder or part of an entrepreneurial team (please explain the structure of such a team)?
  - **Prompt 2:** Do you have employees (if yes, how many)?
  - **Prompt 3:** What was your start-up costs?
- vi. Please clarify the nature of your business and the relevant industry.

### Question 1: Ideation and market engagement

- 1.1 Kindly define your business offering.
  - **Prompt 1:** Do you consider your business offering to be novel and distinctive compared with products or services delivered by competitors?
- 1.2 How did you formulate your idea or concept?
  - **Prompt 1:** Was the idea formulated because of perceived consumer difficulties?
  - **Prompt 2:** How did/do you uncover consumer wants and needs? (Proof of concept – desirability).

- **Prompt 3:** Have you considered to collaborate with customers or business partners? Why or why not?

### Question 2: Prototyping

- 2.1 Please explain the aspects considered in determining the feasibility of your business offering.
  - **Prompt 1:** How do you transform abstract ideas into feasible business offerings?
  - **Prompt 2:** How do you determine market feasibility?
  - **Prompt 3:** How do you determine technical feasibility? (Proof of concept – feasibility).
  - **Prompt 4:** Kindly explain if any form of prototyping was used and if so please describe the nature of prototypes utilised.
- 2.2 How did you experience the resource acquisition process?
  - **Prompt 1:** Which resources were required to aid in the transformation process and are these easily attainable?

### Question 3: Business modelling

- 3.1 Elaborate on your organisation's value proposition.
  - **Prompt 1:** How did you determine your venture's value proposition?
  - **Prompt 2:** How is value created and captured? (Proof of concept – viability).
- 3.2 Did/do you expect profitability in the short, medium and long-term?
  - **Prompt 1:** How did you determine potential profits for the organisation?
- 3.3 Which elements were considered in determining how the organisation will 'do business'?
  - **Prompt 1:** Did you consider elements such as business activities and partners, resources necessary, cost structures, customer segments and relations, value propositions, sales channels and revenue streams? Why or why not?
  - **Prompt 2:** Which of these elements do you consider to be most important? Why do you consider these to be significant?

### Question 4: Bricolage in general

- 4.1 Discuss your opportunity finding process.
  - **Prompt 1:** How did you discover your current or prospective business opportunity?
- 4.2 How did you convert the opportunity into an established venture?
  - **Prompt 1:** Did creativity play a role? How?
  - **Prompt 2:** Was it difficult to obtain the required resources? Explain which resource and why?
  - **Prompt 3:** Did other stakeholders aid in the transformation process? Who were they and how did they contribute towards the establishment of the business?

## Question 5: Internal bricolage

5.1 Discuss the role your personal characteristics played in starting the venture.

- **Prompt 1:** Do you consider personal characteristics to be advantageous with regard to the innovative use of scarce resources? Which characteristics do you regard as beneficial? In which way did these assist? (Entrepreneurial characteristics, in this sense, refer to understandings, personal experiences and knowledge).
- **Prompt 2:** Do you regard this as a continues process? If so, in which sense?

## Question 6: External bricolage

6.1 Describe the effect of the external environment at the start-up phase.

- **Prompt 1:** Do you consider the external environment to be advantageous with regards to the innovative use of scarce resources? Which external elements do you regard as beneficial? In which way did these assist? (The external environment, in this regard, includes the attainment of resources, and the advancement of collaborative networks with external partners).
- **Prompt 3:** Do you regard this as an ongoing process? If so, in which sense?

## Question 7:

How would you change your start-up process if capital was not a constraint?

## Question 8:

What was the most evident learning that took place during the opportunity finding phase of your business?