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Establishing a Creative Innovation Framework for informal Micro-Enterprises

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Abstract: The existing innovation models assume an established innovation system and do not provide direct support on a practical level on what activities should be carried out in each basic innovation phase. Thus, this study sought to design a tailored creative innovation framework that can serve as a guide for informal micro-enterprises to engage in radical and incremental innovation with their imperfections. Through the application of sequential explanatory mixed-methods research, both quantitative and qualitative data were collected from 400 informal micro-enterprises in the Gauteng Province, South Africa. The data were analysed using descriptive statistics, correlation analysis, factor analysis, thematic, and constant comparison methods. The results reveal that informal micro-enterprises require guidance on how to engage in innovation activities throughout all basic innovation phases, which is from discovery to launch. Thus, there is a great deal of innovation-related support required in the informal sector. The study concludes that with proper guidance more informal micro-enterprises will engage in innovation activity and become sustainable. Sustainable informal micro-enterprises can create jobs and some of them will register to become formal businesses, thereby increasing the government's tax base. A flourishing informal sector will aid in resolving South African and other developing countries' economic challenges.

Keywords: informal micro-enterprises; innovation framework; Gauteng Province; South Africa

JEL Classification: A14; D13; J46; L31; O30

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1. Introduction

In the past, small businesses were deemed a marginal sector of the economy. It was not until the late, 1990s and early 2000, when small businesses were considered to be a key sector of the economy, and that led to the development of strategies to incorporate them into the mainstream economy. To date, small businesses are the major contributors to economic growth, job creation, and poverty alleviation (De Beer and Armstrong, 2015; Marnewick, 2014; TIPS, 2002). In most developed countries, small businesses contribute more than 60% to Gross Domestic Product (GDP), whereas South African small businesses contribute 36% to national GDP and create 40% of the jobs (Yu, 2017; GEM, 2017; Kumah & Omilola, 2014).

In South Africa, small businesses, in particular, micro-enterprises operate in both the informal and formal sectors (Mendi & Mudida, 2018). This study focused on micro-enterprises that operate in the informal sector of the Gauteng Province, Republic of South Africa. Gauteng Province is home to the biggest townships in the Republic of South Africa (SEDA, 2012). Moreover, 465,100 informal micro-enterprises are based in Gauteng Province (SEDA, 2016). Nonetheless, it is estimated that 70-80% of these enterprises fail in the first year and those that survive the first year rarely exist for more than five years (DSBD, 2018; Asikhia & Van Rensburg, 2015; Rogerson, 2000). Whereas in the USA, 70% of start-ups survive the first two years and 55% fail within the fifth year (Remund, Ortiz & Gehrke, 2017).

Innovation has been recognised as a catalyst that increases small businesses' probabilities to become sustainable. Innovating small businesses are likely to become sustainable and expand (Mendi and Mudida, 2018; Links, Hart and Jacobs, 2014). Despite the afore-mentioned innovation benefits, the existing literature revealed that informal micro-enterprises engage less in innovation activity and those that do innovate, often engage in incremental rather than radical innovation (Mendi & Mudida, 2018; De Beer & Armstrong, 2015; Links, Hart & Jacobs, 2014; La Porta & Shleifer, 2014).

Renowned innovation scholars designed innovation models that denote that innovation requires substantial investment in research and development (R&D), human capital, structural capital, availability of a supportive and cooperative environment (Silviana, 2018; Abdu & Jibir, 2017; Stock et al., 2017; Seifried, Katz & Tutka, 2016; Izadi, Zarrabi & Zarrabi, 2013; Serrano-Santoyo, 2013; Booyens, Molotja & Phiri, 2012; Georgellis, Joyce & Woods, 2000). The existing innovation models are not tailored for informal micro-enterprises' context as they fail to provide guidance on how to creatively innovate with little or no investment in R&D, no financial and non-financial support from the government, as well as collaboration networks between informal micro-enterprises, large enterprises, and universities.

As explained by Izadi, Zarrabi, and Zarrabi (2013), the existing innovation models assume an established innovation system as they were mostly developed in western economies. Similarly, De Beer and Armstrong (2015) assert that the existing innovation models do not provide direct support on a practical level on how certain innovation stages can be executed. Thus, the study sought to design a tailored creative innovation framework that can serve as a guide for informal micro-enterprises to engage in radical and incremental innovation with their imperfections. To make this possible, we had to determine how a creative innovation framework that will guide informal micro-enterprises in the townships to engage in radical and incremental innovation with little or no investment in research and development, no financial and non-financial support from the government and no collaboration networks with large enterprises and universities should look like.

The world is imperfect and the necessary conditions are often absent. Given the importance of innovation in a globalised world, it is crucial to seek new means to promote its adoption and appropriation (Gummesson, 2014). The designed creative innovation framework turns threats into opportunities and when effectively applied, more informal micro-enterprises can engage in innovation activity, they can become sustainable, corporate performance can be enhanced, sustainable jobs can be created and the economy at large can be enhanced. As asserted by Pylak and Wojnicka-Sycz (2016), changes in regional innovation models and frameworks speed up the development process of less-developed regions.

The identified problem led to the formulation of the following research question:

i. What should a creative innovation framework that will guide informal micro-enterprises in the townships of the Gauteng Province to engage in radical and incremental innovation with little or no investment in research and development; no financial and non-financial support from the government; and no innovation collaboration networks with large enterprises and universities look like?

2. Literature Review

2.1. Informal Micro-Enterprises

In South Africa, the National Small Enterprises Act of 1996, read with the revised schedule 1 of the National Definition of Small enterprise in South Africa 2019, defines a small enterprise as an incorporated entity. This includes cooperative enterprises and non-governmental organisations, managed by one owner or more, which operate in any sector or sub-sector of the economy (Republic of South Africa, 1996a). Micro-enterprises are considered to have on average up to 10 employees and annual earnings of up to R10 million (Republic of South Africa, 1996a). Micro-enterprises operate in both the formal and informal sectors.

WIPO (2013) defined the informal sector as economic activities that occur among unincorporated entities that are often unregistered. Despite this widely publicised definition, there is an ongoing debate about what the informal sector is and is not. The informal sector is considered a transitional sector that temporarily provides employment and income for the poor, especially those who cannot get employment in the formal sector by some authors. It is also considered to be subordinate to the formal sector as informal firms are considered to be rendering services or supplying goods on the behalf of the formal firms. Whereas, other authors consider the informal sector to be constituted by firms that choose to operate informally. Informal operation enables these firms to avoid costs and legislative requirements imposed on the formal sector by the government (Links, Hart & Jacobs, 2014). This study was conducted with the view that firms choose to operate informally and the informal sector is transitional.

Following the afore-mentioned insights and the provisions of the National Small Enterprises Act of 1996, we conceptualised informal micro-enterprises as unincorporated enterprises that have one to ten employees, and are often not registered with the Companies and Intellectual Property Commission (CIPC). If a micro-enterprise is registered but fails to register its employees with labour organisations, it was considered informal. A salient feature of developing countries is the presence of a substantial number of informal micro-enterprises (Mendi & Mudida, 2018; Links, Hart & Jacobs, 2014). In these countries, the informal micro-enterprises not only offer employment opportunities to the less skilled members of the society but also university graduates who struggle to find employment in the formal sector due to economic stagnation. Subsequently, without the informal micro-enterprises, unemployment rates and other economic challenges would degenerate (De Beer & Armstrong, 2015). While the existence of informal micro-enterprises is necessary as denoted above, they are often unsustainable due to operational constraints that pose a risk to economic stability and can exacerbate the existing economic challenges.

2.2. Innovation Activity

Innovation has proven to be a catalyst that enables all forms of firms to flourish and has been recognised as a major contributory factor to economic growth (Mendi & Mudida, 2018). To date, innovation has been understood as a systematic process that involves creativity, commercialisation, and diffusion of new products and services; introduction and implementation of new or improved marketing strategies; and changes to the organisational structure (Smith 2015; Ivers, 2013). Innovations can be radical or incremental, radical innovations are novel and require intensive investment in R&D, whereas incremental innovations are improvements to existing products, services, and processes, among other forms of incremental innovation (Jugend et al., 2018; Booyens, Molotja, & Phiri, 2012). An example of a radical

innovation would be the launch of a drug that cures COVID-19, whereas an example of incremental innovation is the adoption of existing software to improve a certain informal micro-enterprise's processes.

2.3. Existing Innovation Models/Frameworks

We reviewed several innovation models to determine what other authors have written about innovation models and the gaps in the literature. Innovation models can be quite useful both for understanding innovation process and for practical purposes if used appropriately. Moreover, they can be used as benchmarking tools for understanding the actual innovation pattern followed by firms (Izadi, Zarrabi and Zarrabi, 2013). Izadi, Zarrabi and Zarrabi (2013) critically reviewed firm-level innovation models over three decades. The review revealed that in terms of the innovation systems framework, innovation incorporates both traditional research and development activities and the diffusion of technologies through society and all of the factors, which influence these. The most significant challenge with the innovation systems framework is its application in developing countries as it assumes an established innovation system. The innovation systems framework was conceptualised in the context of the strong market economies of North America, Europe, and Japan (Izadi, Zarrabi & Zarrabi, 2013).

Cooper (1993) developed Cooper's Stage-Gate Model, the model illustrates the basic stages in the innovation process. Although the model covers all basic innovation stages, it was designed for well-established firms with R&D facilities. Stock et al. (2017) designed a model for sustainable innovations. The model focuses on idea generation in the early phase of the innovation process with an emphasis on sustainability and innovation drivers. Stock et al. (2017) further posit that there are three elementary drivers of the early phase of innovation, namely: creativity, motivation, and knowledge. Unfortunately, the afore-mentioned model only focuses on the first stage of the innovation process (i.e., invention or discovery stage) and does not cater for other phases. Moreover, the model seems to be specifically designed for sustainable innovations thereby limiting its application to other forms of innovation.

Rose, Jones and Furneaux (2016) designed an innovation model for formal software firms with highly qualified technicians. Unfortunately, this model was designed to cater to the circumstances of formal software firms. The elements of the model appear to be customised for intellectual users. The existing literature reveals that the literacy level of owners and employees of informal micro-enterprises is low. Thus, the application of Rose, Jones and Furneaux (2016) innovation model in the informal sector will be a challenge. Amini, Torane and Hernandez-Munoz (2015) designed an innovation model described as a system that creates, fosters, and catalyses open innovation. For open innovation to effectively occur, there have to be effective innovation collaboration networks among role players (i.e., universities,

government, large and small firms, among others) in the national innovation system. The existence of effective innovation collaboration networks between, informal micro-enterprises, small businesses, universities, and the government remains a challenge in South Africa and other developing countries.

Other innovation models, such as innovation models designed by Serrano-Santoyo (2013) and Silviana (2018) were conceptualised for complexity science and open innovation. Thus, the application of these models in the informal micro-enterprises' context will be a challenge. Rogers (2003) and Seifried, Katz and Tutka (2016) also designed innovation models but just for the last phase of the innovation process, which is innovation diffusion and for formal businesses. It is apparent from the innovation models reviewed that R&D, supportive environment, human and structural capital are crucial determinants of innovation output. Unfortunately, due to their informality and other factors, informal micro-enterprises continue to encounter financial and non-financial constraints. These constraints negatively affect their ability to invest in R&D, human and structural capital. Moreover, they also do not qualify for the government's financial support and innovation-related support. In light of the undisputed innovation benefits, there is a need for the establishment of alternative mechanisms and less expensive mechanisms through which informal micro-enterprises can engage in innovation activities.

This study was guided by Arrow's (1962) innovation management theory, which hypothesised that small businesses are more innovative than large enterprises. The study was also guided by the dualist and the legalist schools of thought. Moreover, Cooper's Stage-Gate Model (1993) was adopted to guide the design of the creative innovation framework.

3. Methodology

This study adopted the sequential explanatory mixed-methods research and pragmatism research philosophy. Accordingly, the quantitative data were collected and analysed before the qualitative data could be collected and analysed. We adopted the sequential explanatory mixed-methods research to ensure that the most relevant participants were sampled, for illustration and completeness of data. A sampling frame of South African townships' informal micro-enterprises that engaged in innovation activity between January 2016 and December 2018 does not exist. Thus, the quantitative phase assisted with the sampling of the most relevant participants who were interviewed for illustration and completeness of data during the qualitative phase. Dodourova and Bevis (2014) posit that it is often challenging for researchers to identify and sample key participants who can provide the most relevant information. Thus, researchers should put measures in place to identify the most suitable participants for their studies.

3.1. Population and Sampling

The study focused on informal micro-enterprises in the townships of the Gauteng Province, Republic of South Africa. The study adopted convenience sampling for the quantitative phase and further adopted purposive sampling for the qualitative phase. Four hundred (400) respondents were sampled for the quantitative phase, whereas 44 participants were sampled for the qualitative phase. Leedy and Ormrod (2014) assert that a sample size of 400 will be adequate when the population size exceeds 5 000.

Unincorporated townships' micro-enterprises with one to ten employees and often not registered with the CIPC were sampled for the quantitative phase. The qualitative phase was limited to informal micro-enterprises that engaged in innovation activity between January 2016 and December 2018 without formal research and development investment, an innovation aimed government support, and innovation aimed collaboration networks with large enterprises and universities.

3.2. Data Collection and Analysis

Primary data were collected through a questionnaire and semi-structured interviews. During the quantitative phase, 400 questionnaires were physically distributed in four townships of the Gauteng Province over two months. The townships are Soweto, Katlehong, Vosloorus, and Soshanguve. The questionnaires were randomly distributed in every section of each identified township to enhance the generalisability of the findings. During the distribution, we established a sampling frame for the qualitative phase by recording the basic identification information of the respondents. Two hundred and seven (207) completed questionnaires were received from the respondents. Thus, the study had a response rate of 52%.

The completed and validated questionnaires were coded and captured. SPSSv25 software was used for the reliability test using Cronbach's alpha (α) reliability coefficient of greater than 0.7 (see Table 1).

Table 1. Reliability Analysis

Subscale	Cronbach's Alpha (α)	Number of items	Mean	Standard deviation	Internal consistency
Creative innovation framework features	0.7	8	4.3	0.1	Acceptable

Source: Primary Data

The captured data were then analysed through descriptive statistics, correlation analysis, and factor analysis. In terms of the outcomes of the quantitative data analysis, 44 participants complied with the interview criteria as explained in the population and sampling Section.

In cognisance of the findings of the quantitative phase, pre-formulated interview questions were refined. Following this, face-to-face semi-structured interviews were conducted. We planned to interview 44 qualifying participants. However, 21 participants were interviewed as we reached the data saturation point.

Data collected through the semi-structured interviews were analysed through the thematic and constant comparison method. Interview notes were transcribed in short summarised sentences. The responses were closely reviewed and compared, we then extracted themes, named them, compared them, and interpreted them.

4. Findings and Discussion

In this section, we present the findings and discussion. We start by presenting the quantitative phase, followed by the qualitative phase, and the integration of the quantitative and qualitative findings. The guiding research question is denoted in the introduction Section.

4.1. Quantitative Phase

4.1.1. Descriptive analysis

During the quantitative phase, respondents were asked to identify features that they would like to see on the creative innovation framework by stating whether the predetermined statements are important or unimportant on a Likert-scale type of questions ranging from one to five. The predetermined statements were informed by the existing literature. Table 2 portrays the frequency of the responses.

Likert scale for means: 1 = unimportant, 2 = of little importance, 3 = moderately important, 4 = important, 5 = very important

Key: U = unimportant, LI = of little importance, MI = moderately important, I = important, VI = very important

Table 2. Creative Innovation Framework Features

No	Tested feature	U(%)	LI(%)	MI(%)	I(%)	VI(%)	Mean	Skewness
1	Provide guidance on appropriate sources of funding	2.4	4.3	3.9	29.5	59.9	4.4	-1.9
2	Provide guidance on appropriate sources of knowledge/information	2.4	1	2.9	45.9	47.8	4.4	-2.0
3	Provide guidance on how to generate innovative ideas	2.4	1	2.9	52.7	41.1	4.3	-1.9
4	Provide guidance on how to evaluate innovative ideas	1.9	1.4	3.4	48.3	44.9	4.3	-1.8
5	Provide guidance on how to transform ideas into products/ services that are sold in the market; Processes and marketing strategies that are implemented	2.4	1.9	6.3	55.6	33.8	4.2	-1.6
6	Provide guidance on how to test prototypes	2.4	1.9	6.3	56	33.3	4.2	-1.6
7	Provide guidance on how to market innovations	2.4	1.4	2.9	54.6	38.6	4.3	-1.8
8	Provide guidance on how to introduce innovations into the market	3.4	1	1.9	59.4	34.3	4.2	-2.0

Source: Primary Data

Mean values greater than three indicate that the respondents agree with the statements listed, whereas mean values less than three indicate that the respondents disagree. All statements listed in Table 2 have mean values greater than three. Thus, the respondents would like to see all listed items as features of the creative innovation framework. Accordingly, the respondents indicated that the creative innovation framework should provide guidance on suitable funding mechanisms and sources of knowledge and information. It should provide guidance on how to generate innovative ideas and how to evaluate them. It should provide guidance on how to execute the innovation development phase and how to market innovations. Moreover, it should provide guidance on how to launch innovations.

Due to their informality, informal micro-enterprises do not have access to bank loans and government business grants. Thus, suitable funding mechanisms had to be determined. Mulibana (2020) posits that innovation-funding mechanisms suitable for informal micro-enterprises are metamorphosis savings, metamorphosis stokvel, and funds from friends and family. Mulibana (2020) further explained that informal micro-enterprises obtain knowledge and information required to engage in innovation activities through coopetition, credible customers, social media, and news platforms.

Since the existing literature revealed that informal micro-enterprises do not invest in formal R&D, we had to determine suitable mechanisms through which they can

generate and evaluate innovative ideas. Accordingly, Mulibana (2020) explained that suitable innovative ideas generation mechanisms for informal micro-enterprises are credible customers' assemblies, ingenuity, and communities of practice. Moreover, innovating informal micro-enterprises evaluate innovative ideas based on customers' priorities and customers' affordability.

Following the evaluation and selection of innovative ideas, selected ideas are referred to the transformation phase. At this phase, scoping for the selected idea (s) takes place and the ideas are transformed into innovations. According to Mulibana (2020) in the informal micro-enterprises context, scoping and transformation of innovative ideas into innovations are executed using internal resources such as metamorphosis savings and equipment and externally through coopetition.

Lastly but not least, Informal micro-enterprises market their innovations through on-the-shop display, word of mouth, and social media. Moreover, they enhance the chances of innovation diffusion through promotions (Mulibana 2020).

4.1.2. Correlation Analysis

We determined the correlation between respondents' demography and the tested creative innovation framework features using Spearman's rank correlation. Fortunately, several tested creative innovation framework features had meaningful results. The results are indicated below:

i. Spearman's Rank Rho Test

This test is concerned with the correlation between two ranked variables (X and Y). The correlation is statistically significant if the p-value is less than 0.05 level of significance. The coefficient of Spearman's rank correlation is given by:

$$r = 1 - \frac{6\sum D^2}{N(N^2-1)} \quad (1)$$

where

D = differences of ranks of corresponding values of X and Y

N = number of paired values in the data

$-1 \leq r \leq 1$

Table 3. Spearman's Rank Correlation between the Level of Education and Views of Respondents about Creative Innovation Framework Features

Item		
Social media applications such as WhatsApp groups are used to market innovations to customers. (N = 207)	Correlation coefficient(r)	-0.138*
	p-value	0.048

Source: Primary Data

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

The p-value is less than 0.05 level of significance. Thus, the correlation between the level of education and the views of the respondents about the creative innovation framework feature listed in Table 3 is statistically significant. Negative coefficient ($r < 0$) means that informal micro-enterprises' owners and employees with higher levels of education disagree with the item listed in Table 3, whereas their less-educated counterparts agree. Figure 1 depicts this finding. The finding suggests that highly educated respondents do not find WhatsApp useful in marketing innovations and they prefer other suitable innovation marketing mechanisms. Whereas their less-educated counterparts find WhatsApp useful. Indeed the degree of adoption of the identified suitable innovations' marketing strategies differs from one informal micro-enterprise to the other. Nonetheless, for informal micro-enterprises to reach a wider market segment, they have to adopt various innovations' marketing strategies. The adoption of one marketing strategy has inherent cons and may negatively affect innovation diffusion.

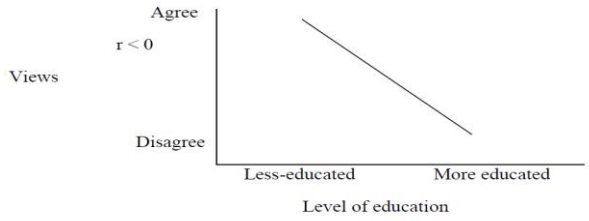

Figure 1. Views of Respondents Versus the Level of Education (r < 0)
Source: Primary data

Table 4. Spearman's Rank Correlation between Business Age and Views of Respondents about the Creative Innovation Framework Features

Item		
Provide guidance on how to transform innovative ideas into products/services that are sold in the market; processes and marketing strategies that are implemented. (N = 207)	Correlation coefficient(r)	-0.185*
	p-value	0.007

Source: Primary Data

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

Since the p-value (0.007) is less than 0.01 level of significance, the correlation between business age and views of the respondents about the creative innovation framework feature listed in Table 4 is statistically significant. The negative correlation coefficient (r = -0.185) means that the respondents who have been in business for a long time (> 5 years) may not need guidance on how to transform innovative ideas into innovations. Whereas respondents who have been in business for a short period (< 5 years) need guidance on how to transform innovative ideas into innovations. This finding is portrayed in Figure 2.

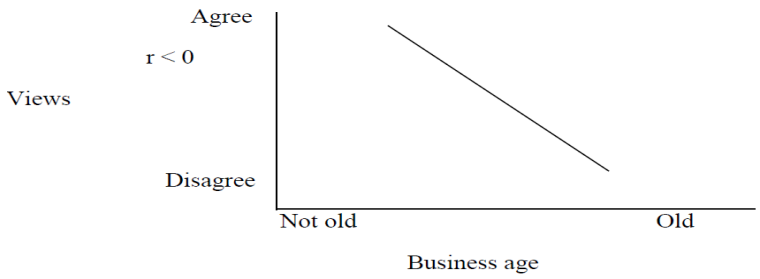

Figure 2. Views of Respondents Versus Business Age (r < 0)

Source: Primary data

ii. The T-Test between two independent samples

*Scale for means: 1 = unimportant, 2 = of little importance, 3 = moderately important, 4 = important, 5 = very important

Table 5. T-Test between Two Independent Samples

	Position in the business	Sample Size	Mean	p-value	Comments
*Creative innovation framework features: provide guidance on how to generate innovative ideas	Owner Employee	149 58	4.38 4.05	0.012	Significant difference, p-value < 0.05
* Creative innovation framework features: provide guidance on how to evaluate innovative ideas	Owner Employee	149 58	4.40 4.14	0.006	Significant difference, p-value < 0.05

Source: Primary Data

The SPSS v25 was used to perform a T-test between two independent samples in Table 5. Since the p-values are less than 0.05 level of significance, there is a significant difference in perceptions between the owners and employees about the

innovation items mentioned in Table 5. The mean scores lie between 1 and 5 on the scale. Innovation items that are not mentioned under this test have p-values greater than 0.05 level of significance, meaning that there is no significant difference in perceptions between employees and owners of townships' informal micro-enterprises about innovation issues.

Accordingly, while most owners indicated that guidance on the generation of innovative ideas is very important, most employees just indicated that it was important. The finding suggests that while employees require guidance to generate innovative ideas, they will not require it as much as the owners. Moreover, while most owners indicated that guidance on the evaluation of innovative ideas is very important, most employees just indicated that it was important. This finding suggests that while employees require guidance to evaluate innovative ideas, they do not require it as much as the owners.

4.1.3. Factor analysis

Table 6. Component Correlation Matrix

		Component	
	Statements	1	2
V1	Provide guidance on appropriate sources of funding	.697	-.040
V2	Provide guidance on appropriate sources of knowledge/information	.725	.000
V3	Provide guidance on how to generate innovative ideas	.775	-.005
V4	Provide guidance on how to transform ideas into products/services that are sold in the market; processes and marketing strategies that are implemented	.757	.162
V5	Provide guidance on how to market innovations	.786	.057
V6	Provide guidance on how to introduce innovations into the market	.804	.044
V7	Provide guidance on how to evaluate ideas	-.062	.868
V8	Provide guidance on how to test prototypes	-.138	.853
	PERCENTAGE OF TOTAL VARIANCE	43.38	18.94
	CUMULATIVE PERCENTAGE OF VARIANCE	43.38	62.32

Source: Primary data

Extraction Method: Principal

Component Analysis.

2 components extracted.

Table 6 depicts the correlation coefficients of the two extracted principal components (factors), percentages of the total variance, and cumulative percentages of variance. Components 1 and 2 explain 43.38% and 18.94% respectively of the total variance. The first two components account for 62.32% of the total variance. The first

component is highly correlated with variables V1 – V6. Component 1 may be thought of as an innovation management factor. This factor encompasses crucial innovation phases that innovations go through, hence it is being referred to as an innovation management factor.

The second component is highly correlated with variables V7 and V8. Component 2 may be thought of as an innovation quality assurance factor. The rationale for this is that innovative ideas are evaluated to ensure that only feasible ideas that are in the best interest of the customers are implemented. Whereas prototypes are tested to ensure that only innovations that are fit for purpose are commercialised.

4.2. Qualitative Phase

The participants were asked to indicate what they would like to see as features of the creative innovation framework. 33% (7 of 21) of the participants indicated that they would like the framework to guide them on how to acquire knowledge and information about the existing problems in the market. 24% (5 of 21) of the participants indicated that the framework should guide them on how to obtain funding and equipment that would be required for innovation purposes. 24% (5 of 21) of the participants indicated that the creative innovation framework should guide them on how to market innovations and how to grow their businesses. Lastly, 19% (4 of 21) of the participants indicated that the framework should guide them on how to carry out all basic innovation stages. The qualitative phase also sought to determine the required features that could not be identified through the quantitative phase.

4.3. Integration of Quantitative and Qualitative Findings

The analysis of the quantitative and the qualitative phases revealed that owners and employees of informal micro-enterprises would like to see all basic innovation phases as features of the tailored creative innovation framework. The basic innovation phases are, discovery, scoping, designing, developing, scaling up, and launching. We have referred to discovery as the generation of innovative ideas. We referred to scoping as the evaluation and selection of ideas. We referred to designing and developing as transformation. We referred to scaling up as testing and launching as the introduction. The rationale for this is to simplify things, the study was conducted with the subjects of investigation and what the literature revealed about them in perspective. Thus, terms that are easy to interpret and understand had to be used.

While owners and employees of informal micro-enterprises indicated that they would like to see all basic innovation phases as features of the creative innovation framework, the Spearman's rank rho test revealed that in the innovation transformation phase, informal micro-enterprises that have been in business for more than 5 years will not require as much guidance as informal micro-enterprises that

have been in business for a shorter period. Moreover, the T-test between two independent variables revealed that while employees require guidance to generate innovative ideas, the owners require it more. The t-test further revealed that while employees require guidance to effectively evaluate innovative ideas, owners require it more.

The analysis also revealed that the evaluation of innovative ideas and testing phases are innovation quality assurance phases, whereas the other phases can be referred to as the innovation management phases. Over and above the innovation phases that are mentioned above, the participants indicated that they would like to be guided on how to access knowledge and information required to engage in innovation activities. They indicated that they would like to be guided on how to access additional funding and equipment for innovation purposes. And lastly, the participants indicated that they would like the creative innovation framework to guide them on how to effectively market their innovations.

4.4. The Creative Innovation Framework and Discussion

Based on the integrated findings of the study and guidance received from the Stage-Gate model (1993), we designed a creative innovation framework for informal micro-enterprises (see Figure 3).

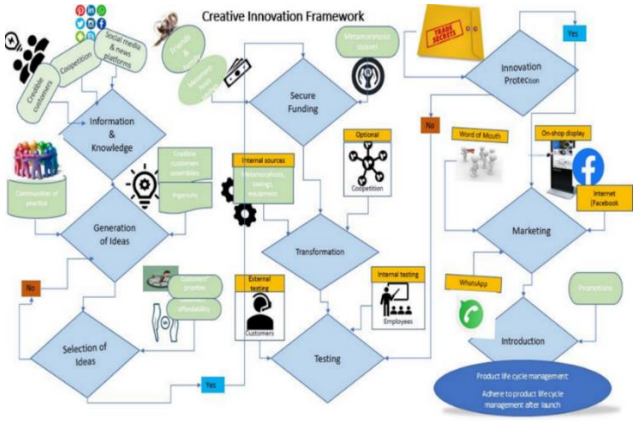

Figure 3. Creative Innovation Framework
Source: Primary Data

The creative innovation framework provides tailored guidance on how informal micro-enterprises can engage in radical and incremental innovation without formal R&D investment, financial and non-financial support from the government, as well as innovation collaboration networks with large enterprises and universities. As depicted on the framework, the framework is constituted by 10 descriptive innovation phases which is contrary to other innovation frameworks/models with approximately six phases (Stock et al., 2017; Rose, Jones & Furneaux, 2016; Cooper,

1993).

The first phase describes suitable mechanisms through which informal micro-enterprises can acquire knowledge and information required to engage in innovation activities. The second phase provides suitable and feasible innovative ideas generation mechanisms. The third phase indicates factors that informal micro-enterprises should consider when evaluating and selecting innovative ideas. The study revealed that this phase is one of the innovation quality assurance phases. The fourth phase indicates suitable sources of funding that informal micro-enterprises can use to secure funds required to transform innovative ideas into innovations.

The fifth phase provides guidance on how informal micro-enterprises can transform selected innovative ideas into innovations. In this phase, we describe both internal and external innovation transformation mechanisms that are feasible in the informal micro-enterprises' context. The sixth phase provides guidance on how informal micro-enterprises can test prototypes. This phase is one of the innovation quality assurance phases. The seventh phase indicates mechanisms through which informal micro-enterprises can protect their innovations to leverage them.

The eighth phase indicates affordable and effective marketing strategies that informal micro-enterprises can use to market their innovations to reach wider market segments. The ninth phase indicates what informal micro-enterprises can do when launching innovations to make them more appealing to potential customers. Lastly, the 10th phase indicates that informal micro-enterprises should adhere to product life cycle management principles to ensure innovation success.

4.5. Validation of the Creative Innovation Framework

We used expert validation to validate the creative innovation framework. Three innovation experts were identified based on their practical knowledge (experience) of the innovation process. Moreover, to some extent, the identified experts displayed knowledge of small businesses' innovation activities. A set of questions about the tailored creative innovation framework were formulated. The questions aimed to assess the feasibility of using the identified innovation activity mechanisms to execute innovation activities in each identified innovation phase. The questions were then shared with the identified experts together with the framework and a brief background on how the framework is supposed to work. Following this, the experts were asked to test the framework based on their experience and answer the questions accordingly.

The experts endorsed the designed creative innovation framework and indicated that it will be useful in guiding informal micro-enterprises to engage in radical and incremental innovation. Nonetheless, under the information and knowledge phase, one of the experts pointed out that caution has to be exercised when processing data from the identified platforms as the reliability and integrity of these data sources vary

considerably. Under the evaluation and selection of innovative ideas phase, one of the experts indicated that product specifications must be aligned to customer needs and priorities. Thus, the consideration of buying power should not compromise this alignment.

In the innovation transformation phase, one of the experts explained that due to risks associated with innovation activities, coopetition and participation of various stakeholders is key. Thus, informal micro-enterprises should practice open innovation as well. In the innovation testing phase, one of the experts explained that the testing activity through the identified mechanisms can work with caution, as testing requires a considerable size of credible analysis. Testing for customer acceptability is different from the micro bio and chemical analyses. Thus, employees are best placed to carry out technical tests. In the introduction phase, experts indicated that promotions must be done with due consideration based on lessons learnt from large businesses in the formal sector. In other innovation phases, experts endorsed the identified innovation activities' mechanisms without any recommendation.

5. Conclusion and Recommendations

The designed creative innovation framework turns threats into opportunities by offering alternative mechanisms through which townships' informal micro-enterprises can engage in radical and incremental innovation. Townships' informal micro-enterprises that will effectively apply the creative innovation framework will become sustainable. Sustainable informal micro-enterprises can create more jobs or at least retain the existing jobs. Moreover, some of the sustainable informal micro-enterprises will register to become formal, thereby increasing the Government's tax base. Thus, a flourishing informal sector will aid to resolve Gauteng Province's and South African economic challenges.

The designed creative innovation framework can also be useful to formal small businesses and large enterprises that are seeking alternative ways of innovating. Formal R&D investment is costly and firms do not always get a return on investment due to innovation failure. Thus, in the near future, all forms of firms will look for more affordable mechanisms to engage in radical and incremental innovation.

Based on the findings and conclusions, the study provides the following recommendations for future research:

i.South Africa and other developing countries require innovation more than the developed countries because developing countries have high rates of unemployment, their economies are not growing at a rate higher than the population growth rate. There is high inequality, there is a shortage of food and a substantial number of

people live below the poverty line. Thus, future studies should determine how informal micro-enterprises can innovate in a manner that enhances economic growth and job creation or rather not lead to job cuts.

ii. Coopetition can aid informal micro-enterprises to engage more in open innovation. Thus, there is a need to determine how informal micro-enterprises can foster coopetition relationships.

iii. Family and friends was identified as a source of funding. Nonetheless, family and friends could also act as a huge impediment to the success and growth of a small business. As such, the mechanism under which funds from family and friends should be used to fund innovation needs to be further explored.

iv. Future studies should also determine what can be done to make the government's innovation-oriented financial and non-financial support initiatives accessible to informal micro-enterprises without formalising them.

References

Abdu, M. & Jibir, A. (2017). Determinants of firms innovation in Nigeria. *Kasetsart Journal of Social Sciences*, 39, (3), pp. 448-456.

Amini, A.; Torane, M. & Hernandez-Munoz, L. (2015). Designing an Innovation Engine Model and a Software Tool to Meet Large Organizations Challenges with SMEs capabilities, a Pilot Study. *Journal of Social and Behavioral Sciences*, 195, pp. 251-257.

Arrow, K. J. (1962). Economic Welfare and the Allocation of Resources for Invention. *National Bureau of Economic Research, the Rate and Direction of Inventive Activity: Economic and Social Factors*. Princeton: Princeton University Press reprinted in Essays in the Theory of Risk-Bearing 1971.

Asikhia, O. U. & van Rensburg, M. J. (2015). SMMEs wealth creation model: a conceptual framework. *African Journal of Hospitality, Tourism and Leisure,* 4, (1), pp. 1-19.

Booyens, I.; Molotja, N. & Phiri, M. Z. (2012). Innovation in High-Technology SMMEs: The Case of the New Media Sector in Cape Town. *Springer Science and Business media*, 24, (2), pp. 289-306.

Cooper, R. G. (1993). *Winning at new products: Accelerating the process from idea to launch*. Addison-Wesley, Reading, Mass., 2. Ed. Edition.

De Beer, J. & Armstrong, C. (2015). Open Innovation and knowledge appropriation in African Micro and Small Enterprises (MSEs). *The African Journal of Information and Communication (AJIC)*, 16, pp. 2-12.

Dodourova, M. & Bevis, K. (2014). Networking innovation in the European car industry: Does the Open Innovation model fit? *Transportation Research Part A*, 69, pp. 252-271.

DSBD. (2018). *Speech by Minister of small business development, Ms Lindiwe Zulu, on the occasion of the launch of UNISA enterprise and supplier development*. Pretoria: Department of Small Business Development.

GEM. (2017). *Global Entrepreneurship Monitor Report 2016/17*. London: Global Entrepreneurship Monitor.

Georgellis, Y.; Joyce, P. & Woods, A. (2000). Entrepreneurial action, innovation and business performance: the small independent business. *Journal of Small Business and Enterprise Development*, 7, (1), pp. 7-17.

Gummesson, E. (2014). Commentary on the role of innovation in driving the economy: Lessons from the global financial crisis. *Journal of Business Research*, 67, (1), pp. 2743-2750.

Ivers, H. (2013). *Innovation in Small Firms, Select Research on Activity and Capacity*. New York: Nova Science Publishers, Inc.

Izadi, A.; Zarrabi, F. & Zarrabi, F. (2013). Firm-level innovation models. *Journal of Social and Behavioral Sciences*, 75, pp. 146-153.

Jugend, D.; Jabbour, C. J. C.; Scaliza, J. A. A.; Rocha, R. S.; Junior, J. A. G.; Latan, H. & Salgado, M. H. (2018). Relationships among open innovation, innovative performance, government support and firm size: Comparing Brazilian firms embracing different levels of radicalism in innovation. *Journal of Technovation*, 74-75, pp. 54-65.

Kumah, O. M. & Omilola, B. (2014). *Small Business is Big Business*. South Africa: UNDP.

La Porta, R. & Shleifer, A. (2014). The unofficial economy in Africa. *University of Chicago Press*, 1, pp. 261-306.

Leedy, P. D. & Ormrod, J. E. (2014). *Practical Research: Planning and Design, 10th Ed.* New Jersey: Pearson Education, Inc.

Links, A. L. M.; Hart, T. & Jacobs, P. (2014). The dynamics of local innovations among formal and informal enterprises: stories from rural South Africa. *African Journal of Science, Technology, Innovation and Development*, 6, 3, pp. 175-184.

Marnewick, C. (2014). Information and communications technology adoption amongst township micro and small business: The case of Soweto. *South African Journal of Information*, 16, (1), pp. 1-12.

Mendi, P. & Mudida, R. (2018). The effect on innovation of beginning informal: Empirical evidence from Kenya. *Journal of Technological Forecasting and Social Change*, 131, pp. 326-335.

Mulibana, L. (2020). Creative innovation framework for informal micro-enterprises in the townships of Gauteng Province. *PhD dissertation*. North-West University, Mahikeng, South Africa.

Pylak, K. & Wojnicka-Sycz, E. (2016). Transforming Innovation Models to Change the Development Paths of Less-Developed Regions. *Procedia Engineering*, 161, pp. 2179-2183.

Remund, M. C.; Ortiz, M. P. & Gehrke, H. J. (2017). The Vitruvian Man of Leonardo da Vinci as a model of innovative entrepreneurship at the intersection of business, art and technology. *Journal of Innovation and Entrepreneurship*, 6, (17). https://doi.org/10.1186/s13731-017-0077-9.

Republic of South Africa. (1996). *National Small Business Act 102 of 1996*. Pretoria: Government Printer.

Rogers, E. M. (2003). *Diffusion of Innovations*. 5th Ed. New York: Free Press.

Rogerson, C. M. (2000). Successful SMMEs in South Africa: the case of clothing producers in the Witwatersrand. *Development Bank of Southern Africa*, 17, (5), pp. 1-31.

Rose, J.; Jones, M. & Furneaux, B. (2016). An integrated model of innovation drivers for smaller software firms. *Journal of Information and Management*, 53, (3), pp. 307-323.

SEDA. (2012). *Analysis of the Needs, State and Performance of Small and Medium Businesses in the Agriculture, Manufacturing, ICT and Tourism Sectors in South Africa*. South Africa: Small Enterprise

Development Agency. Report number: 1.

SEDA. (2016a). *Accelerating SMME growth in South Africa*. South Africa: Small Enterprise Development Agency.

SEDA. (2016b). *The Small, Medium and Micro Enterprise Sector of South Africa*. South Africa: Small Enterprise Development Agency. Report number: 1.

Seifried, C.; Katz, M. & Tutka, P. (2016). A conceptual model on the process of innovation diffusion through a historical review of the United States Armed Forces and their bowl games. *Sport Management Review*, 20, pp. 379-394.

Serrano-Santoyo, A. (2013). Exploring a Framework for Innovation from the Perspective of Complexity Science. *Procedia Technology*, 9, pp. 139-145.

Silviana, B. G. (2018). Open innovation model: enabling the market uptake of innovation. *Procedia Manufacturing*, 22, pp. 893-899.

Smith, D. (2015). *Exploring Innovation*. 3rd ed. London: McGraw-Hill.

STATSSA. (2015). *Quarterly Labour Force Survey*. Pretoria: Statistics South Africa.

Stock, T.; Obenaus, M.; Slaymaker, A. & Seliger, G. (2017). A model for the development of sustainable innovations for the early phase of the innovation process. *Procedia Manufacturing*, 8, pp. 215-222.

TIPS. (2002). *The Economics of SMMES in South Africa*. South Africa: Trade and Industrial Policy Strategies.

Wagner, E. R. & Hansen, E. N. (2005). Innovation in large versus small companies: insights from the US wood products industry. *Journal of Management Decision*, 43, (5), pp. 837-850.

WIPO. (2013). *Conceptual study on innovation, intellectual property and the informal economy*. London: World Intellectual Property Organisation.

Yu, D. (2017). *The lesser known and scarier facts about unemployment in South Africa*. https://theconversation.com/the-lesser-known-and-scarier-facts-about-unemployment-in-south-africa-83055.