Does Metacognition Drive Innovation The Case of Entrepreneurial Firms in Kenya

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Does metacognition drive innovation? The case of entrepreneurial firms in Kenya

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Abstract: The study tested whether metacognition drives innovativeness in small and medium size enterprises in Kenya. We sought to extend this line of cognitive research in developing economies by using data derived from small and medium sized enterprises, because the sector is a key pillar in the innovation process and economic growth. The study utilised a sample of 466 small and medium enterprises (SMEs) drawn from Kenya. Partial least square (PLS) Structural Equation Modelling was used to test the hypothesis. We found support for the hypothesised relationship, that metacognition drives innovativeness. Specifically, metacognitive experience and metacognitive awareness were found to have a positive and significant effect on innovativeness, while metacognitive knowledge was not found to have a significant relationship with innovativeness.

Keywords: entrepreneurs; metacognition; innovativeness; SMEs; small and medium enterprises; Kenya.

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1 Introduction

Scholars have focused considerable attention toward understanding the antecedents to innovation in entrepreneurial ventures-why some entrepreneurs are more adept at innovating than others. While different reasons have been advanced to answer this question, a strongly supported proposition relates to the entrepreneurial mindset (Kuratko et al., 2020; Ashourizadeh et al., 2014) as a precursor to myriad outcomes in entrepreneurial ventures. For instance, some studies have focused on risk propensity (Kraiczy et al., 2015; García-Granero et al., 2015), while others have considered cognition (Haynie et al., 2012; Haynie et al., 2010). Thus, while these factors have been considered, few studies have investigated the other side of the "cognition coin' –that is, metacognition. What are the metacognitive attributes that enhance innovativeness in entrepreneurial firms? We suggest that such focus would complement existing literature that relates to metacognition to important entrepreneurship outcome-innovation, and provide insights into how entrepreneurs offer innovative products and services.

Indeed, cognitive approach to entrepreneurship has gained currency and emerged as an option to trait perspective because trait approach has consistently produced mixed results (Sánchez et al., 2011). According to Sánchez et al. (2011), understanding cognitive elements such as heuristics, self-efficacy, scripts and cognitive styles in entrepreneurship present a fertile field of research that has hitherto received little attention. Metacognition describes a higher order cognitive process that organises what individuals know, tasks situations as well as their operating environment (Flavell, 1981). It is about being self-aware, think aloud, being strategic, and to self-monitor. Metacognition captures the knowledge and information processing capability. As such entrepreneurial metacognition offers an understanding of how entrepreneurs do some of the things they do and why they pursue existing opportunities.

It is argued that cognitive approach to entrepreneurship reflect the important role cognitive attributes inherent in entrepreneurs play in their choice to be entrepreneurs, opportunity recognition, and in venture growth and performance (Frederiks et al., 2019; Sánchez García, 2014). Indeed, studies indicate that understanding an entrepreneurs' mindset is important because it has implications on opportunity identification and new venture creation (Haynie et al., 2010; McMullen and Kier, 2016; Neneh, 2019). Those using this approach believe that the cognitive framework distinguishes entrepreneurs from non-entrepreneurs, and successful from non-successful entrepreneurs (Baron, 2004).

In their paper for instance, Baron and Ensley (2006) argue that the cognitive framework of an entrepreneur facilitates connection of dots between the environment, market trends, and customer niches. Based on this premise, entrepreneurs should continuously acquire new knowledge and increase their depth and breadth of knowledge and experience for innovativeness and creativity to be promoted. Extant literature indicates that individuals who are high in metacognitive abilities are more likely to recognise multiple decision frameworks, engage in a conscious process of considering multiple alternatives and receive feedback from the environment including incorporating feedback decision frameworks (Haynie and Shepherd, 2009; Melot, 1998). We believe that this conscious decision process of recognising multiple alternatives and seeking feedback from the environment has implications on innovativeness of an entrepreneur.

Extant literature since the work of Schumpeter in 1934 to date emphasises that innovation-defined as introduction of novelty in the product, process, structure or technique (Baron and Tang, 2011) is instrumental to entrepreneurial success. The introduction of novelty and creative processes largely depends on the metacognitive abilities of an entrepreneur. Scholars have pointed out that innovation requires individuals to acquire and utilise existing knowledge base (Benlabsir et al., 2018) and source for information from external sources (Chang and Cho, 2008). We believe that metacognition is critical in enhancing innovative behaviour due to its capacity to involve elements such as planning, monitoring, and regulating specific actions desired in creating and sustaining novelty. Although the relationship between metacognition and creation of novelty is plausible, we do not find sufficient studies to bridge this gap, and more so in developing economies.

While metacognition is critical in opportunity recognition and eventual growth of firms (Yoo et al., 2018), little empirical evidence exists on how metacognition affect firm innovativeness. We noted that entrepreneurs involved in small and medium enterprises require dynamism, flexibility and adaptability for their businesses to succeed. Similar views are expressed by Hitt et al. (2011) who assert that the dynamic and uncertain conditions prevailing in entrepreneurial contexts demand entrepreneurs to continuously rethink strategic actions. We, therefore, focus on entrepreneurs because they have been found to be agents of innovation in the firms they lead. We interrogate whether metacognition drives innovativeness of small and medium enterprises (SMEs) in Kenya. Specifically, the paper seeks to examine whether metacognitive knowledge, metacognitive awareness, and metacognitive experience as facets of metacognition, drive innovation within SMEs in Kenya.

In Kenya, entrepreneurial activity is recognised as an avenue through which high levels of poverty and unemployment are addressed (Mwangi and Ngugi, 2014; Musamali and Tarus, 2013). The SME sector remains the driving force in spurring innovation, creating jobs, and growing the economy. According to Mwaura et al. (2015), the critical role SMEs play in strengthening the Kenyan economy and their potential to catalyse the country's development has earned recognition. A report by the Republic of Kenya (2016) indicated that SMEs accounted for 24.6% of the national output and offered more than 14 million employment opportunities in 2015. Despite the critical role SMEs play in job creation and economic development in Kenya, the sector is under the threat of changing technology and a competitive environment. Previous studies indicate that SMEs in Kenya experience high rates of mortality, with three out of five collapsing in the first few months of operation (RoK, 2013); while most collapse within three years of commencement (Ngugi, 2013).

To address the rate high rate of mortality in the sector, the Government of Kenya commissioned the Sessional paper No.2 of 1992 and Sessional Paper No.1 of 2005 which focused on small scale sector development in Kenya and in particular, how to infuse innovative behaviour and ensure survival of such enterprises. The Sessional papers noted that most SMEs in Kenya need to utilise existing opportunities and be innovative. As such it proposed a raft of measures such as training and capacity building to facilitate their survival. There are a couple of reasons for using a Kenyan sample to test the metacognitive model: First, the number of SME's in Kenya has been increasing rapidly in the last two decades (GoK, 2007). This scenario has necessitated that Kenyan SME's become prolific in innovation. Secondly, small business sector in Kenya is an important industry that accounts for more than 18% of GDP and contributes significantly up to 80% employment creation (GoK, 2012); thirdly, the business environment is dynamic owing to high levels of competition and increased levels of innovation. In particular, Kenya is among the countries that has consistently outperformed others on innovation relative to GDP from 2011 to 2019. In 2018, for instance, Kenya takes the second slot among the 26 economies in Sub-Saharan Africa and 77 in the world (Global Innovation Index, 2019). The Global Innovation Index (2019) Report further indicates that most of these innovations from developing economies emanate from SMEs.

The purpose in this paper is twofold: First, we conceptualised metacognition into three dimensions following the proposition of Nutley et al. (2002): knowledge, awareness and experience and examined how these proposed dimensions affect entrepreneurial innovativeness; and second, we propose that the role metacognition on innovation is context specific, and therefore, we tested our model using data from entrepreneurs in Kenya in order to address recurring limitation of studies using datasets from developing economies. The rest of the paper is structured as follows: Section 2 discusses relevant literature and development of hypotheses, Section 3 presents methodology used; section 4 provides results, while Section 5 discusses results and conclusions.

2 Literature review and hypothesis development

The study is anchored on innovation decision process theory proposed by Nutley et al. (2002). The theory postulates that knowledge, awareness and experience are three key elements of metacognition which play a fundamental role in individual decision making. Previous studies corroborate this view that cognitive factors such as knowledge (Cacciolatti and Lee, 2015), expert scripts (Sánchez García, 2014), alertness (Sharma, 2019; Tang et al., 2012), cognitive abilities and infrastructure (Bennett, 2019; Crawford, 2012) have important implications in entrepreneurial decision making and therefore, this study delves on whether the components of metacognition influence the way firms innovate.

2.1 The concept of innovation

Innovation is variously defined in existing literature. Lin and Jung (2006) posits that the word innovation has its origin in the Latin word '*innovare*' which relates to making something new. Daugherty et al. (2011) perceive innovation as an object, practice or idea that is new or novel to an individual. According to the Oslo Manual (2018), innovation relates to coming up with a new or improved process, product or a combination of both

which is significantly different from the processes and products previously available to users. The Oslo manual delineates four main types of innovation: organisational innovation which relates to the development of a new organisational strategy aimed at changing the workplace organisation, business practices, and relationship with stakeholders; process innovation, which relates to the implementation of a new or improved delivery approach that may include changes in operational techniques, methods and equipment; product innovation which involves introduction of new or improved service or good through improved specifications and materials; and market innovation which involves the development of a new marketing strategy which comes with changes in product design, packaging, pricing and promotion.

Innovation in the context of SMEs is driven by respective SMEs specificities (Gronum et al., 2012), consequently, these specificities and characteristics define SMEs innovation capacity (Salerno et al., 2015). Among the characteristics that stand out include: owner/entrepreneur characteristic; network integration, user and customer integration, institutional support, innovation strategy, planning and conditions for innovation, as well as market dynamism. Forsman (2011) argues that the entrepreneurs own personal and professional capacities that combine knowledge, experiences and training allows the entrepreneur to manage innovation in the enterprise efficiently. Gronum et al. (2012) adds that the owner's personality allows openness and dedication to innovation.

Network integration is recognised as an important factor for innovation capacity among SMEs owing to lack of resources. It is noted that through networks, SMEs are able to access resources and also share risks and costs (Gronum et al., 2012; Lasagni, 2012). Innovation capacity among SMEs is, therefore, a function of detection of potential networks, creation and maintenance of collaborative relationships, and exploitation of elements (Forsman, 2011). Liu and Laperche (2015) point out that users and customers are perhaps a big source of innovation performance among SMEs. They argue that through diverse tastes, users bring new ideas and insights into the business. Another specification that defines innovation capacity in SMEs is institutional support. Laperche and Sommers (2010) for instance contend that institutional support targeting SME competitiveness and innovation has widely been in use to foster global competitiveness and growth. Liu and Laperche (2015) observe that institutional support mainly relies on financial support through direct financing and tax incentives. Consequently, SMEs are seen to be innovative when they are able to detect and use these financial supports.

2.2 Metacognitive knowledge and innovativeness

Metacognitive knowledge is an individual's descriptive knowledge with regard to the interplay between the individual, task, and strategy characteristics (Veenman, 2015). Blummer and Kenton (2014) posit that in problem solving, metacognitive knowledge focuses on an individual's control of own cognition. Entrepreneurs who have higher levels of metacognitive knowledge have been found to be more conscious when choosing opportunities from multiple options (Ling et al., 2013). Harris and Woolley (2009) indicated that greater understanding of tasks tends to give a person a concrete action directed to innovative outcomes.

Many studies have examined the effect of metacognitive knowledge on innovation albeit, through the creative thinking proxy of innovation. Evidence has shown that metacognitive knowledge correlates moderately with visual-spatial creativity (Lizarraga

and Baquedano, 2013) as well as with creativity in mathematics (Erbas and Bas, 2015). Abdivarmazan et al. (2014) on the other hand used a pretest-post-test design to show that metacognitive knowledge training significantly improves creative problem solving. In support of this line on thought, Wu et al. (2014) noted that people with more knowledge are generally curious and, thus seek new information and opportunities that tend to be more innovative. It is also noted that knowledgeable people are likely to recognise problems and generate ideas, and actively defend and champion novelty. Other studies such as Kosiken and Vanharanta (2002) have argued that the depth of knowledge have greater implications on problem-solving abilities and innovative capabilities, because knowledge provides one with the ability to process information, make choices and implement the decisions.

Nevertheless, there have been contradictory findings to the effect that no correlation exist between individual metacognitive knowledge and creative thinking (Preiss et al., 2016) and innovativeness. Similarly, it has been shown that differences in creative minds occasion different cognitive processing characteristics. In view of such contradictory arguments and taking note of the fact that most of the previous studies were conducted in developed countries and not necessarily in SMEs; we argue that metacognitive knowledge has the capacity to drive innovation in entrepreneurial firms. We, therefore, postulate that:

H1: Metacognitive knowledge positively influences innovation in SMEs in Kenya.

2.3 Metacognitive awareness and innovativeness

Metacognitive awareness involves self-reflection on the learning processes in order to understand and improve them (Conley, 2014). Hacker et al. (2009) observed that metacognitive awareness is the knowledge of metacognitive factors influencing performance, knowledge of strategies to improve learning processes and increase the ability to control and manage mental processes.

Evidence in existing research confirms that metacognitive awareness impacts positively on critical thinking which is key in the innovation process. Çakici (2018) for instance, examined metacognitive awareness and thinking abilities of pre-service EFL teachers and established that prospective teachers' metacognitive awareness correlated highly and positively with their critical thinking skills. Several other studies have demonstrated that metacognitive awareness directs and governs critical thinking skills (Kaur, 2017; Daud and Hafsari, 2015; Semerci and Elaldi, 2014; Tabrizi and Erfani, 2014).

Despite the fact that most studies delving into the issue of metacognitive awareness mainly focus on the teaching sector, and relate metacognitive awareness with critical thinking, we argue that innovation is a learning process that involves self reflection, akin to that inherent in metacognitive awareness. For SMEs to be innovative, entrepreneurs no doubt need self-reflection. We, therefore, hypothesise that:

H2: Metacognitive awareness positively influences innovation among SMEs in Kenya.

2.4 Metacognitive experience and innovativeness

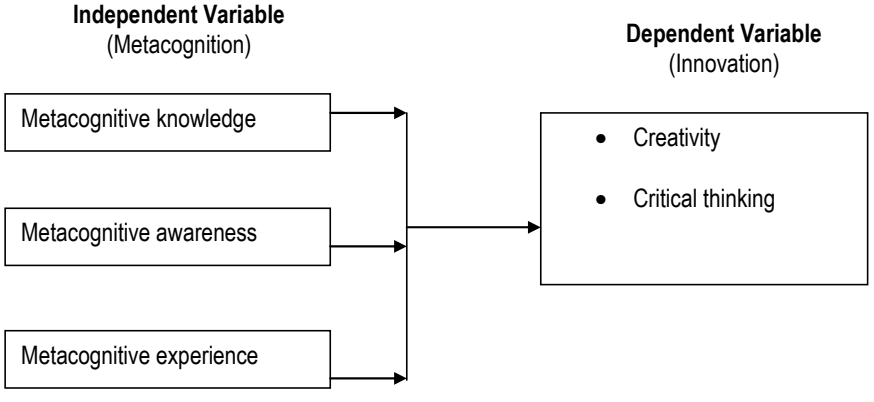
Scholars have found that metacognitive experience manifests in the form of metacognitive cue of processing fluency (Jia et al., 2016; Alter and Oppenheimer, 2009). This processing fluency inherent in metacognitive experience has the potential to influence cognitive tasks such as brand assessment, aesthetic appreciation, and reading comprehension (Miele and Molden, 2010). Evidence shows that metacognitive experience manifested through process fluency has a positive influence on cognitive activities such as goal setting, work efforts, strategy choice, and processing styles, all of which are involved in creative thinking (Lucas and Nordgren, 2015; Miele and Molden, 2010).

Nevertheless, previous research has demonstrated that the distribution of knowledge in society is not uniform (Dimov, 2007; Baron, 2006). It is little wonder, therefore, that some individuals are able to recognise opportunities which others may not. Baron (2006) argues that individuals who possess a wealth of experience will have more understanding of particular markets, technologies and novel ideas. Controversies however exist with regards to whether or not. Metacognitive experience promotes or inhibits creative thinking (Forthmann et al., 2019; Benedek et al., 2011; Unsworth et al., 2011). Following these controversies and given that managerial experience and operational skills feature among critical success factors for SMEs in Kenya (Douglas et al., 2017), we, therefore, postulate that:

H3: Metacognitive experience positively affects innovation in SMEs in Kenya.

On account of the postulations made above, the following conceptual framework was developed (Figure 1).

Figure 1 Conceptual framework



3 Methodology

3.1 Participants

The study was carried out within SMEs in Kenya. For purposes of the current study, we defined an SME as a firm comprised of less than 100 employees as per the Sessional paper No. 2 of 2005 of Kenya (GoK, 2005). The study employed the covariance based

confirmatory research design which is known to be used in explaining relationships between variables (Butler, 2014). A sample of 500 entrepreneurs was drawn from SMEs in Kenya, out of whom 466 participated in the study. This number of participants was deemed suitable for the chosen design following suggestions by other scholars (Bagozzi and Yi, 2012; Henseler, 2012). Data for the study were collected using a self-administered top manager's questionnaire comprising of five sections in line with the four constructs under study and managers background information.

3.2 Measurement of variables

Metacognition was measured using the adaptive cognition scale developed by Shepherd et al. (2009). The scale was developed to measure metacognitive knowledge, metacognitive awareness and metacognitive experience. In particular the 7 items used to measure metacognitive knowledge were found to have an internal consistency of 0.834, the 6 items used to measure metacognitive experience had an internal consistency of 0.770; while the 8 items used to measure metacognitive awareness had an internal consistency of 0.804. For each of the 21 items, the response indicated the extent to which participants agreed or disagreed with the proposed statement on a rating from (1) strongly disagree to (7) strongly agree.

Innovativeness was measured using innovativeness scale developed by Hollenstein (1996). The scale consists of 6 items anchored on a 7–point Likert type scale ranging from (1) strongly disagree to (7) strongly agree. Average scores were calculated from the participants' responses and used in the analysis.

3.3 Analysis

We used both descriptive and inferential analytical approaches to analyse our results. Inferential analysis was conducted using partial least square-structural equation modelling (PLS-SEM) facilitated by Analysis of Moment Structures (AMOS version 21). Choice of SEM for this analysis was informed by the fact that being a second generation multivariate method, it has the capacity to handle both confirmatory and causal models (Alavifar et al., 2012). Moreover, SEM has previously been successfully used for confirmatory and causal relationships similar to those in the current study (Alavifar et al., 2012).

The measurement and structural models were validated using AMOS which has been found suitable for handling covariance based models (Butler, 2014). The goodness of fit criterion which involved fitting the hypothesised measurement to the sample data was employed. Absolute, incremental and parsimony indexes were compared with those recommended by Cheung and Rensvold (2002) in Table 1. In the case of the structural model, standardised regression weights and variance explained were used to infer causation and power.

Table 1 Recommended indices

$\chi^2 sig$	χ^2/df	*GFI*	*AGFI*	*NFI*	*RFI*	*CFI*	*RMSEA*
$p \leq 0.05$	<5.0	>0.90	>0.90	>0.90	>0.90	>0.90	<0.05

Source: Cheung and Rensvold (2009)

4 Results

4.1 Descriptive results

Respondents' background characteristics focusing on age, gender, level of education, and work experience revealed the following: a majority of the respondents were aged 26–30 years (34.1%), followed by 31–35 years (30.5%) and 36–40 years (17.6%). The remaining respondents were aged above 40 years (11.4%) and below 25 years (6.4%). With regard to gender, slightly over 50% were male while the rest (49.8%) were female. The distribution of education level revealed that 43.1% of the respondents had attained college level, 38.0% secondary level, 13.1% University level, 4.3% form six, while 1.5% attained primary level. Regarding their experience in the firm, 29.6% had an experience of between 3–4 years, 27.0% for between 2–3 years, and 13.1% for between 1–2 years. The remaining firms were found to have been in existence for 5-10 years (10.9%) or below 1 year (1.9%) (see Table 2).

Table 2 Profile of participating entrepreneurs

Demographic characteristic	*Variable*	*Frequency*	*Percentage*
Age	Below 25 years	30	6.4
	26–30 years	159	34.1
	31–35 years	142	30.5
	36–40 years	82	17.6
	Above 40 years	53	11.4
Gender	Male	234	50.2
	Female	232	49.8
Education level	Primary	7	1.5
	Secondary	177	38.0
	Form six	20	4.3
	College	201	43.1
	University	61	13.1
Years of firm existence	Below 1 year	9	1.9
	1–2 years	61	13.1
	2–3 years	126	27.0
	3–4 years	138	29.6
	5–10 years	51	10.9

Table 3 presents the means, standard deviation and correlation results. The correlation results indicate that the three indicators of metacognition are positively related to innovativeness. In particular, metacognitive knowledge is positively and significantly related to innovativeness ($r = 0.127$; $p < 0.01$), metacognitive awareness is positively related to innovativeness ($r = 0.123$; $p < 0.01$), and metacognitive experience is positively related to innovativeness ($r = 0.136$; $p < 0.01$). This indicates that the cognitive abilities of an entrepreneur have implications on their innovativeness in the firms they serve.

Table 3 Correlation results

Variables	*Metacognitive Knowledge*	*Metacognitive awareness*	*Metacognitive experience*	*Innovativeness*
1 Metacognitive knowledge	1			
2 Metacognitive awareness	0.506**	1		
3 Metacognitive experience	0.143	0.203**	1	
4 Innovativeness	0.127**	0.123**	0.136**	1
Internal consistency	0.846	0.749	0.827	0.805
Mean	50.736	50.553	5.724	4.714
Standard deviation	0.765	0.773	0.658	0.981

**Correlation is significant at the 0.01 level.

4.2 Validation of the model

The measurement model was validated by comparing default fitness indices with recommended fit indices. The results indicated that default fitness indices satisfied recommended values except for RFI which was however close to 0.90. The measurement model was, therefore, valid in terms of the four constructs as follows:

Model fit summary

CMIN

Model	*NPAR*	*CMIN*	*DF*	*DF*	*CMIN/DF*
Default Model	59	146.295	94	0.000	1.556
Saturated Model	153	0.000	0		
Independence Model	17	1668.098	136	0.000	12.265

RMR, GFI

Model	*RMR*	*GFI*	*AGFI*	*PGFI*
Default Model	0.053	0.965	0.944	0.593
Saturated Model	0.000	1.000		
Independence Model	0.223	0.563	0.508	0.500

Baseline comparisons

Model	*NFI Delta1*	*RFI rho1*	*IFI Delta2*	*TLI rho2*	*CFI*
Default Model	0.912	0.873	0.967	0.951	0.966
Saturated Model	1.000		1.000		1.000
Independence Model	0.000	0.000	0.000	0.000	0.000

RMSEA

Model	*RMSEA*	*LO 90*	*HI 90*	*PCLOSE*
Default Model	0.035	0.023	0.045	0.993
Independence Model	0.156	0.149	0.162	0.000

After confirming the validity of the measurement model, validation of the hypothesised structural model was done. The results of the analysis of moment structures of the initial structural model revealed that the chi-square p-value was below 0.05. Similarly, the values of Chisq/df = 4.285 which was within the recommended value. However, the values of GFI = 0.889; AGFI = 0.855; NFI = 0.699; RFI = 0.651; TLI = 0.708; and RMSEA = 0.084 contravened the recommended values. The initial model was, therefore, adjudged to be a poor fit. Post-hoc modification indices (MI) was conducted to achieve a better model fit. The model was modified by correlating error terms as suggested by the modification indices. After a series of modifications the fit indices achieved levels recommended by Cheung and Rensvold (2009) as follows:

Model fit summary

CMIN

Model	*NPAR*	*CMIN*	*DF*	*DF*	*CMIN/DF*
Default Model	57	174.116	96	0.000	1.814
Saturated Model	153	0.000	0		
Independence Model	17	1668.098	136	0.000	12.265

RMR, GFI

Model	*RMR*	*GFI*	*AGFI*	*PGFI*
Default Model	0.058	0.959	0.934	0.602
Saturated Model	0.000	1.000		
Independence Model	0.223	0.563	0.508	0.500

Baseline comparisons

Model	*NFI Delta1*	*RFI rho1*	*IFI Delta2*	*TLI rho2*	*CFI*
Default Model	0.896	0.852	0.950	0.928	0.949
Saturated Model	1.000		1.000		1.000
Independence Model	0.000	0.000	0.000	0.000	0.000

RMSEA

Model	*RMSEA*	*LO 90*	*HI 90*	*PCLOSE*
Default Model	0.042	0.032	0.052	0.913
Independence Model	0.156	0.149	0.162	0.000

4.3 Testing of the hypotheses

We tested our hypotheses using SEM with the support of AMOS version 21. Hypothesis 1 predicted that metacognitive knowledge positively affect innovativeness. The results in Table 4 reveal that metacognitive knowledge does not influence innovativeness ($\beta = -0.371$, $p > 0.05$). Therefore, the hypothesis is rejected. Hypothesis 2 postulated a positive and significant relationship between metacognitive awareness and innovativeness. The results indicated that metacognitive awareness is positive and significantly related with innovativeness ($\beta = 0.364$, $p < 0.05$). Thus, the stated hypothesis is accepted. Hypothesis 3 suggested that metacognitive experience affects innovativeness. The results supports this proposition ($\beta = 0.536$, $p < 0.01$). This implies that entrepreneurs with more metacognitive experience are more likely to be innovative. Figure 2 presents the results of the relationships between metacognitive variables and innovation among SMEs in Kenya.

Figure 2 Final modified structural equation model (see online version for colours)

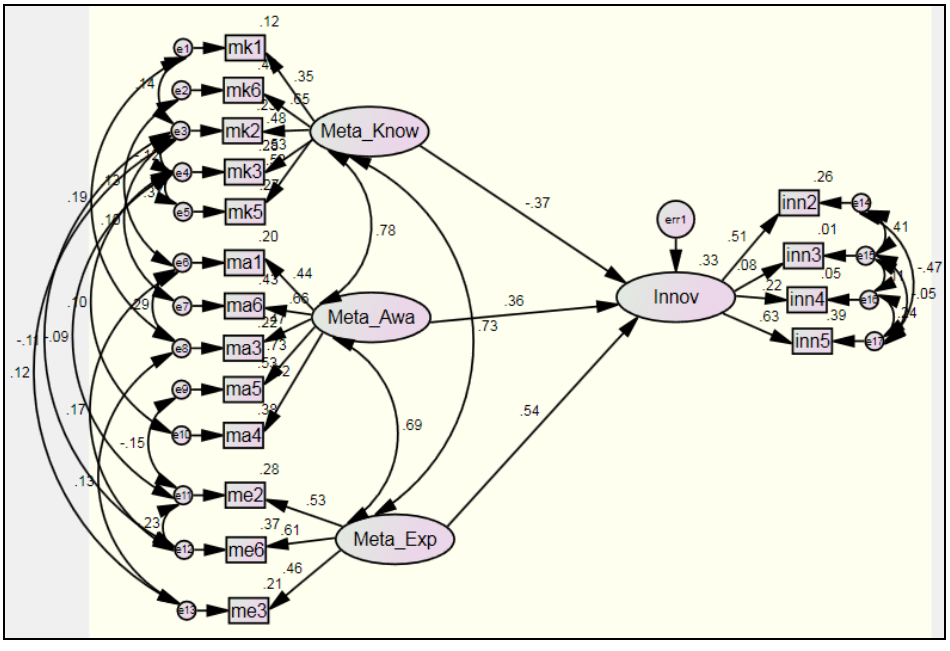


Table 4 Regression weights

	Estimate	*S.E*	*C.R*	*P Label*
Innovation ← Metacognitive Knowledge	–0.371	0.269	–1.838	0.066
Innovation ← Metacognitive Awareness	0.364	0.232	2.305	0.021
Innovation ← Metacognitive Experience	0.536	0.331	2.907	0.004

5 Discussions

The purpose of this study was to investigate how metacognition affect innovative capabilities of the entrepreneurs in Kenya. We hypothesised that people with high levels of metacognition is characterised by positive attitudes towards novelty, complexity and uncertainty, and therefore, are more likely to have confidence in their ideas, engage in information search and undertake critical information processing, resulting in innovative decisions. To test this proposition, we conceptualised metacognition into three dimensions: knowledge, awareness and experience and tested how these metacognitive dimensions influence the entrepreneur's ability to generate innovative ideas. We posit that entrepreneurs differ based on their metacognitive capabilities in the key metacognitive domains of knowledge, awareness and experience. In this study, we found that indeed, metacognition plays an important role in influencing the entrepreneurs' innovativeness. The findings suggest that one's ability to generate innovative ideas is a function of one's metacognitive behaviour, which triggers cognitive processes that spawn ideas for novel products and services (Dyer et al., 2008). Indeed, our findings support our proposition that metacognition has implications on entrepreneurial decision making such as innovativeness.

We found that two dimensions of metacognition: metacognitive awareness and metacognitive experience facilitate entrepreneurial innovativeness. In this respect, we provide additional nuance to the application of metacognition to innovation research which aids our understanding of how and why some firms are more innovative than others. Specifically, we show that entrepreneurs who have higher levels of metacognitive awareness-the general level of awareness one has concerning their own cognitions focused on a specific entrepreneurial task (Haynie et al., 2010), exhibit higher levels of innovativeness. Indeed, we argue that increase in the level of metacognitive awareness increases the likelihood of an entrepreneur to engage metacognitive resources towards formulating and evaluating decision alternatives most likely to produce innovative outcomes. Therefore, the level of metacognitive awareness activated in response to a given task will determine how resources are deployed in terms of thinking and strategy. In other words, higher levels of metacognitive awareness of an entrepreneur activates the deployment of thinking and other resources towards engaging in novel products, processes, structures and systems.

This study also found that entrepreneurs who have high levels of metacognitive experience- individual experience based on previous memories, intuitions and emotions (Flavell, 1981), the higher their level of their innovativeness. Metacognitive experience is a feeling derived from previous exposure to similar events in the past, for instance a feeling that a task is difficult or easy to achieve (Haynie et al., 2010). These experiences occur in our daily lives, and provide an opportunity to frame how an entrepreneur will interpret a given task, in particular, how entrepreneurs undertake decisions that are innovative. Wu et al. (2014) argue that innovation is largely based on individual past experiences, particularly in generating and applying new ideas and approaches in product and service development. In their argument, people with more experiences tend to engage and enjoy situations marked by novelty, complexity and uncertainty and are able to draw out information from the environment. They are able to scan the environment and process relevant information for innovation. The chances of pursuing an innovation is dependent on past experiences in similar projects (Koskinen, 2000), and in particular, experiences that were successful in the past. In this sense, people cannot take advantage of

information unless he or she has earlier 'social software' connected to that information (Badaracco, 1991), and therefore, previous experiences provide a mechanism to undertake innovative decisions. We, therefore, believe that entrepreneurs with higher levels of metacognitive intuitions and emotions derived from experience are likely to be more innovative.

6 Concluding remarks, implications and limitations

In this paper, we have provided evidence of how the various dimensions of metacognition affect innovativeness in entrepreneurial firms in Kenya. We found that entrepreneurs' metacognitive awareness and experience affect their innovativeness in the firms they operate. Our empirical findings have several implications for entrepreneurship theory, public policy and practice. First, we locate metacognition in entrepreneurial decision making. From a theoretical perspective, our results suggest that metacognition has implications on entrepreneurial innovativeness. In particular, the self-awareness and experience of the entrepreneur plays an important role in the innovation process. From a policy perspective, we found that innovativeness of firms is dependent on metacognitive levels of entrepreneurs. Therefore, there is need to develop adequate infrastructure to enhance metacognitive awareness and experience among entrepreneurs. Entrepreneurs should acquire and integrate cognitive abilities with particular emphasis on pattern recognition and flexibility in thinking. Entrepreneurs ought to establish a trail to enable knowledge and experience to be shared and transferred from one enterprise to another and from entrepreneurs and back to the enterprise. With proper facilitation in terms of training and capacity building, entrepreneurs will be able to use and apply their metacognition to improve innovativeness in their products and processes. There is need to encourage founders or managers of SMEs to acquire, share and apply their metacognitive awareness and experience in order to achieve their goals which are able to lead to better innovation.

As in any empirical study, this one also has a number of limitations. First, the study was cross-sectional thereby constraining ability to make causal inferences and to gauge time effects. In particular, the effect of metacognitive knowledge, awareness, experience and innovation may not be realised in a short period of time. Consequently, a more appropriate approach would be to conduct a longitudinal study that would allow for other potentially hidden aspects to manifest themselves. A final concern is that the study is limited to SMEs operating in Kenya. The findings may, therefore, not be generalisable to other contexts. We suggest that future research could be replicated using larger samples from different regions in developing countries and also larger firms in order to enhance generalisability of the results.

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