

Gyensare, Michael Asiedu; Arthur, Reginald; Twumasi, Evelyn; Agyapong, Joan-Ark

Article

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Cogent Business & Management

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Suggested Citation: Gyensare, Michael Asiedu; Arthur, Reginald; Twumasi, Evelyn; Agyapong, Joan-Ark (2019) : Ecologies of innovation among small and medium enterprises in Uganda as a mediator of entrepreneurial networking and opportunity exploitation, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 6, pp. 1-23, <https://doi.org/10.1080/23311975.2019.1641256>

This Version is available at:

<https://hdl.handle.net/10419/206206>

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Received: 11 October 2018
Accepted: 04 July 2019
First Published: 10 July 2019

*Corresponding author: Samuel Mayanja, Business and Management, Cavendish University Uganda, Uganda
E-mail: smyanja@cavendish.ac.ug

Reviewing editor:
Sebastian Aparicio, Business, Universitat Autònoma de Barcelona, Spain

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MANAGEMENT | RESEARCH ARTICLE

Ecologies of innovation among small and medium enterprises in Uganda as a mediator of entrepreneurial networking and opportunity exploitation

Samuel Mayanja^{1*}, Joseph M. Ntayi², J. C. Munene³, James R. K Kagaari⁴ and Balunywa Waswa⁵

Abstract: This paper examines the mediating effect of ecologies of innovation on the relationship between entrepreneurial networking and opportunity exploitation among small and medium enterprises (SMEs) in Uganda. The study design was a cross-sectional survey, data were analysed using SPSS and Analysis of Moment Structure on a sample of 228 SMEs. The mediated model provides support for the hypothesis that ecologies of innovation partially mediate the relationship between entrepreneurial networking and opportunity exploitation. This confirms that the presence of ecologies of innovation significantly acts as a conduit in the association between entrepreneurial networking and opportunity exploitation. The practical



Samuel Mayanja

ABOUT THE AUTHORS

Samuel Mayanja is undertaking post-graduate studies leading to the award of a PhD degree at Makerere University. He is Director School of Working Adults at Cavendish University Uganda. His research interests are in entrepreneurship, self-employment, rural finance, business succession planning and generational transfer and project management. Email: ssekajjasam@gmail.com

Joseph M. Ntayi, PhD, is a professor of Procurement and Logistics Management at Makerere University Business School, Kampala, Uganda. His research interests are in logistics, entrepreneurship, public procurement, business ethics, industrial marketing, Purchasing and supply chain management.

J. C. Munene, PhD, is a professor of Psychology and Director of the PhD programmes at Makerere University Business School, Kampala, Uganda. His research interests are in industrial and organizational psychology.

Balunywa Waswa, PhD, is a professor of entrepreneurship and Principal of Makerere University Business School. His research interest is in innovations, repeat entrepreneurs and small business start-ups.

James R. K Kagaari, PhD, is an associate professor of industrial psychology. He lectures at Kyambogo University and Makerere University Business School.

PUBLIC INTEREST STATEMENT

Uganda is ranked among the 10 most entrepreneurial countries in the world. However, its entrepreneurship is more necessity than opportunity-driven. Although Uganda has many underutilised opportunities in agriculture, tourism, fisheries, education among others, with high entrepreneurial index in the world, 50% of SMEs do not celebrate their third birthday. While efforts have been made to train SME owners/managers on how to exploit opportunities, they are still struggling to access resources from entrepreneurial networks, and create ecologies of innovation that promote opportunity exploitation. Thus, SME owner/manager should promote entrepreneurial opportunity exploitation through entrepreneurial networking and ecologies of innovation. The authors make a significant contribution to the existing body of literature by showing SME owners/managers how they should create an enabling environment to promote creativity and innovation in accessing resources from entrepreneurial networks to exploit opportunities. Championing a shift from the necessity to entrepreneurial opportunity-driven entrepreneurship will require government and public sector to design strategies that stimulate and sustain growth potential.

implications are that opportunity exploitation can be understood and predicted through ecologies of innovation, entrepreneurial networking can also predict opportunity exploitation directly. Business owners and managers need to fully understand and utilise the ecologies of innovation to exploit opportunities effectively. Social implications, a deeper understanding of how entrepreneurial networking and ecologies of innovation affect employee relations will not be fully realised until employers create a platform for rational thinking, creativity and learning about this interaction. This study utilises social network theory to extend the existing research on opportunity exploitation.

Subjects: Economics; Finance; Business, Management and Accounting; Industry & Industrial Studies

Keywords: entrepreneurial networking; ecologies of innovation; opportunity exploitation; SMEs

1. Introduction

Researchers have noted a significant body of knowledge on the role of small and medium enterprises (SMEs) in both advanced and transition economies. Previous studies on opportunity exploitation have explored a range of predictor variables, including: information asymmetry, prior knowledge, experiential learning, personality traits, and social networks, while ignoring ecologies of innovation (Dimov, 2010; Kuckertz, Kollmann, Krell, & Stöckmann, 2017).

Ecologies of innovation (EoI) involve the interaction of individuals in creating the knowledge needed for value creation in any business. Ecologies of innovation transform emergent, tacit knowledge at their boundaries so that employees on all sides can appreciate the collective enterprise of innovation, and how their different knowledge fits in (Schmidt, Müller, Ibert, & Brinks, 2018). Knowledge workers in ecologies of innovation can generate intense, often intuitive ways of opportunity exploitation (Acton, Foti, Lord, & Gladfelder, 2019). This study intends to bring out this oversight into view that ecologies of innovation were left out as a mediator, yet there is no way you can exploit an opportunity without ecologies of innovation. In this study, we posit that ecologies of innovation mediate the relationship between entrepreneurial networking and opportunity exploitation.

According to Ge et al. (2016), entrepreneurs who discover opportunities, analyze marketing information first, use their professional advantages in marketing and finance to exploit and utilise opportunities existing in the market before others. While the recognition of opportunities is a necessary condition for entrepreneurship, it is not sufficient. Subsequent to the discovery of an opportunity, a potential entrepreneur must decide to exploit the opportunity (Shane & Venkataraman, 2000). Benefits in terms of effective opportunity exploitation arise from employees' interactions and interdependencies (Audretsch, Kuratko, & Link, 2016; Kibirango et al., 2017). Scholars have shown interest in opportunity exploitation but they tended to ignore EoI because of the complex nature of SMEs (Daryani & Amini, 2016).

Scholars like Shamsudeen, Keat, and Hassan (2017), suggest that if entrepreneurial opportunity is being recognised, the exploitation of such opportunity will need ecologies of innovation (EoI). Hence, the presence of ecologies of innovation provides insight into how to develop innovative products and services that increase a business's competitiveness. However, this cannot be the responsibility of a single individual. Today's new products and services are complex, consisting of many parts with unknown dynamic interactions. Focusing on EoI creates a novel dynamic internal working environment for creating better production methods and new ways to access resources

and organise markets (Lindhult & Hazy, 2016; Mayanja, Ntayi, Munene, Balunywa, & Kibirango, 2019).

Theoretically, previous studies regarded innovation as a linear approximation scheme that predicted the future state of an organisation and not as a complex system for re-combining existing arrangements to create new modes of organising (Hirsch, Smile & Devaney, 2004). The failures of the linear model have created a demand to foster other sources of innovation like open triple/quadruple helix and national/regional innovation systems. The later theories of innovation have emphasised that innovations typically take place in normal, social cooperative, economic and technological activities that advance radical leaps. Therefore, the focus has shifted to interactive, non-linear innovation processes in multi-actor innovation networks for opportunity exploitation (Arnkil, Järvensivu, Koski, & Piirainen, 2010; Bakar, 2015). The innovation process explicitly recognises the potentially complex interdependencies and possibilities for multiple interactions between the various elements of the innovation process. It also accords great importance to the demand side, rather than concentrating primarily on the supply side (Miller, 2016). The innovation system concept can be understood in both a narrow and a broad sense (Barasa, Kimuyu, Vermeulen, Knobon, & Kinyanjui, 2014). Productive innovation can continuously emerge when people work locally in ecologies orchestrating their knowledge to define and solve problems.

There is sparse literature to posit that ecologies of innovation create enabling environment for business owners/managers to exploit opportunities; if they did, it was not as a mediator between entrepreneurial networking and opportunity exploitation among SMEs in developing economies. Previous studies have majorly focused on developed economies especially with the internationalisation of SMEs (Tasselli, Kilduff, & Menges, 2015). Better connections within entrepreneurial networks usually improve access to information, social support, motivation, money and material resources that facilitate the ability of a business to exploit an opportunity when it arises (Kuckertz et al., 2017; Slotte-Kock & Coviello, 2010). This study posits the view that EoI constitute a conduit through which entrepreneurial networking can enhance opportunities for opportunity exploitation.

Uganda is one of the low developing countries (LDCs) that is experiencing a high failure rate of SMEs, although it is ranked as one of the most entrepreneurial countries in the world (GEM, 2009). Many Ugandans tend to start businesses in all spheres of operations; unfortunately, many of these businesses shut-down before even celebrating a third birthday in operation (Abaho, Aarakit, Ntayi, & Kisubi, 2017). Uganda is rich in entrepreneurial networks, entrepreneurs are creative, recognise opportunities and endeavour to exploit them, but the failure rate is still high. Previous studies have also indicated the unbecoming behaviour of most Ugandan businessmen/women such as a poor saving culture, acts of financial indiscipline, lack of a desire and commitment to achieve greater heights and lack of a vision which are key factors hindering the survival and growth of SMEs (Eurostat, 2015; Rooks, Szirmai, & Sserwanga, 2009). Nanyondo (2017) also indicates that the unfortunate education system of Uganda which mainly prepares students for ready office jobs and gives little attention to entrepreneurship education is another factor accounting for the low business survival rates in Uganda. Most of the Ugandan enterprises are largely informal with approximately 97% unregistered businesses, employing close to 80% of the population. Despite the high business failure rate in Uganda, Central Broadcasting services provide one of the success stories of opportunity exploitation.

The Central Broadcasting services radio (CBS) in Uganda is a success story in which the networking strategies were applied by management to create a successful enterprise. Using the Corporate Social Responsibility (CSR) budget, CBS radio established and supported listenership groups to promote activities that generated income. However, when the government switched off the radio station in 2009 over allegations of inciting violence, its closure affected the cash flow since it could no longer air advertisements. The CBS management called back flexible employees and started contacting some of the organisations that used to advertise with CBS radio. Among the organisations, CBS radio contacted for collaboration was Stromme Foundation who accepted to work together. Stromme Foundation provided

financial support for organised groups to learn financial literacy, income-generating projects, primary health care and technical education for children of organised group members. The resources mobilised from the Stromme Foundation created the desire for entrepreneurship and momentum among the CBS groups to start making candles, soap, writing books, practising urban agriculture, animal husbandry, and many other potentially profitable activities. The groups were trained in savings, connected to linkage marketing to access markets for their products, and it gave birth to an association called “Empower Women through Savings and Loan Association” (POWESA). The association started mobilising more members, savings, provided social support, information and linkage to markets. By 2016, POWESA members had mobilised share capital of \$1,033,333 and savings of \$3,055,556. Despite being closed by the government for two and a half years, CBS was voted the best radio station, winning awards from 2010–2016, for its programmes that promoted development. POWESA groups formed a Savings and Credit Cooperative Society which they want to transform into Cooperative bank. CBS radio used entrepreneurial networking to mobilise financial and non-financial resources to exploit the opportunity of supporting its listener groups. This greatly improved their sense of purpose and well-being.

This article, therefore, seeks to answer the following question; do ecologies of innovation mediate the relationship between entrepreneurial networking and opportunity exploitation among SMEs? Responding to this question, the study is anchored on social network theory (Frankenberger, Weiblen, & Gassmann, 2013; Rost, 2011; Wasserman & Faust, 1994). The literature reviewed is based on four hypotheses; exploitation of opportunities relies on entrepreneurial networking, entrepreneurial networking relates to ecologies of innovation, ecologies of innovation relate to opportunity exploitation, and ecologies of innovation mediate the relationship between entrepreneurial networking and opportunity exploitation. Methodologically, the study design is a cross-sectional survey, it employs mixed methods to allow us to reflect on what research participants mean by their answers and provides a more engaging social experience. This study contributes to knowledge of understanding how ecologies of innovation mediate the relationship between entrepreneurial networking and opportunity exploitation among SMEs in Uganda. The study will help the business owners/managers to come up with flexible policies that allow employees to interact in a conducive environment to come up with new ways of doing things. This study has limitations because it is not longitudinal and data were collected from one district; therefore, the findings may not be generalised to the whole country.

The rest of this paper is organised as follows: the next section reviews literature based on hypotheses of the study, followed by the research methodology, presentation of results, discussion of results, implications, limitations and areas for future research.

2. Theoretical foundation

In this study, the relationship between entrepreneurial networking and opportunity exploitation as mediated by EoI was investigated through social network theory (Frankenberger et al., 2013; Rost, 2011; Wasserman & Faust, 1994). The theory posits that complex systems are based on the premise of dyadic relations and interdependence among actors. Continuous interactions promote responsiveness in the system and adaptation to the environment. Network cohesiveness, interactions, and networking style enhance the ties of strength between actors and affect the degree of information flow and sharing (Borgatti, Mehra, Brass & Labianca, 2009). Herforth, Theuvsen, Vásquez, and Wollni (2015) revealed that social networks enhance the availability of information about sources of business opportunities, finances, market and materials (2014). Similarly, Meagher (2013) observed that social networks can act as screening devices for selecting potential collaborations and supporting the process of accessing valuable resources through enabling environments. However, the theory is limited in its ability to scientifically explain how social networks can be replicated. Interpreting relationships, various interactions may or may not be objective and it is often subjective (Tendai, 2013). Therefore, social network theory offers a partial explanation on how to take advantage of entrepreneurial networking and opportunity exploitation in developing economies.

3. Literature review

3.1. Entrepreneurial networking and opportunity exploitation

Entrepreneurial networking is the process through which formal or informal collaborative relationships between entrepreneurs and their social, business and institutional contacts are created (Schallenkamp & Smith, 2009). Entrepreneurial networking embodies a collection of specific phenomenon where the setting imposes certain socio-cultural patterns of established entrepreneurial relationships (Borgatti et al., 2014; Burt, Kilduff, & Tasselli, 2013). These relationships provide emotional support for risk-taking which is necessary for opportunity exploitation (Lux, Lamont, Ellis, Ferris, & Muchira, 2016).

De Jong and Marsili (2011), argue that Africa is rich in resources, there are nearly unlimited opportunities for shrewd investors because there are relatively few people able to identify and fully exploit them. Opportunity exploitation involves entrepreneurial activities conducted in order to gain economic returns from the recognition of a potential opportunity. An entrepreneur perceives an opportunity, makes a decision to act upon it and the resulting operations are aimed at realising the value of the opportunity (Hansen, Monllor, & Shrader, 2016). There is debate as to why some people can identify opportunities and others fail is based on three arguments. Scholars like Gregerson and Trischler (2014), argue that some individuals who engage in entrepreneurship are those who have the talent to exploit opportunities by identifying the ones that are most likely to create new market demands. The second debate is how people conceptualise their environments and the third debate is about how those conceptualisations influence opportunity cognition and exploitation (Karlesky, 2015). The three propositions are embedded in the importance of entrepreneurial networking and opportunity exploitation.

Entrepreneurial networking facilitates opportunity exploitation by enhancing the means to mobilise resources through social interactions. However, we need to clarify and better understand the actions performed by individuals who set out to exploit opportunities (Kuckertz et al., 2017). This means that while there is a contribution made by Kuckertz et al. (2017) to the explanation of opportunity exploitation, the construct entrepreneurial networking was not studied in totality. This is what the current study attempts to address, and therefore, we hypothesise that entrepreneurial networking is related to success in opportunity exploitation.

H1: *Exploitation of opportunities relies on entrepreneurial networking*

3.2. Entrepreneurial networking and ecologies of innovation

Entrepreneurial networking plays a crucial role in promoting the development of EoI within and across businesses. EoI arise through the creation of enabling environment for new services, products, processes, business models, forms of organisation and ways of running a business (Malecki, 2018). According to social network theory (Frankenberger et al., 2013; Rost, 2011) innovation is best promoted through a broad system of processes and interactions that have come to be compared to the ecosystems that biologists use to describe the interactions of plant, animal communities, and thus are termed as ecologies of innovation (Frese & Gielnik, 2014; Lindhult & Hazy, 2014). These EoI exist within a defined system that involves interrelated tangible and intangible elements that can be either internal or external to a business. Johannessen (2013) highlighted three main components of an innovation ecosystem: process, culture, and competencies that increase efficiency and effectiveness.

Hyslop (2015) argue that not only entrepreneurial networking is critical for accessing knowledge to create in-house innovations or for the diffusion of technological improvements, but it is equally important for learning new ways of operating through thinking of the business environment like an ecosystem. Scholars like Goldstein, Hazy, and Silberstang (2010) assert that uncertainty, unpredictability, and uncontrollability can stimulate creative thinking by sparking the adaptive capabilities of business employees. The employees' capacity for developing novel practices, processes, and new routines is the central aspect of an entrepreneurial ecosystem

(Frese & Gielnik, 2014). The previous studies tended to focus on established organisations with established structures and not SMEs in developing countries. We, therefore, hypothesise that entrepreneurial networking relates to the ecologies of innovation.

H2: *Entrepreneurial networking relates to ecologies of innovation*

3.3. Ecologies of innovation and opportunity exploitation

The entrepreneurship opportunity does not provide an explanation for situations where failure is seen as emergent dynamism within organisations and why it leads to EoI (Daryani & Amini, 2016; Goldstein et al., 2010; McMillan, 2008). It is not enough to identify an opportunity; one must think carefully about the EoI and the types of collaborations that link businesses together. This is important because it posits that innovation is a means and a path to exploit an opportunity in order to achieve a sustainable competitive advantage (Stettner & Amburgey, 2014). Once an opportunity has been identified, an entrepreneur must take action in the context of the business ecosystem in order to initiate change whether incremental, radical or revolutionary.

Mannan, Khurana, and Haleem (2016) posit that EoI are the basis for opportunity exploitation. This concept fits with the idea that the EoI act as a conduit through which the creativity and innovativeness of SME employees can be stimulated. Consequently, we believe that experimentation, interaction, feedback, and developing adaptability through the discernment of emerging patterns will generate new solutions to the prevailing challenges so that opportunities can be fully exploited (Acton et al., 2019; Goldstein et al., 2010; Hazy, 2010). There is a contention by McMillan (2008) that not all business owners/managers may have leadership skills to create enabling environment for employees to exploit opportunities in a complex environment. This study contributes to the role of ecologies of innovation in exploiting opportunities among SMEs. We, therefore, hypothesise that EoI are related to opportunity exploitation.

H3: *Ecologies of innovation relate to opportunity exploitation*

3.4. Entrepreneurial networking, ecologies of innovation and opportunity exploitation

Entrepreneurial networking is related to EoI and is a potential mediator of opportunity exploitation. Business opportunities, as well as entrepreneurial networks, are constantly evolving; opportunities objectively embedded in social structures, networks and network ties play a significant role in the discovery and enactment process of opportunities (Goldstein & Hazy, 2010). Entrepreneurial networks support interpretive processes by providing information and knowledge. As a consequence, the relationship and correlation between the development process of entrepreneurial networking and the pertinent opportunity exploitation can be earmarked (Davidsson, 2015).

Whenever an individual discovers an opportunity using strong or weak ties, he/she evaluates it and then identifies links that may allow the business to take economic advantage of the opportunity. Such individuals need interactions with others as well as enabling environments to be able to network effectively (Fonfara, Ratajczak-Mrozek, & Leszczyński, 2017). Scholars like Wang, Ellinger, and Wu (2013) argue that social ties also facilitate opportunity exploitation because other people often provide entrepreneurs with information helpful to the process of taking advantage. Previous studies explored the relationship between entrepreneurial networking and opportunity exploitation without ecologies of innovation as a mediator. In this study, we hypothesise that EoI can mediate the relationship between entrepreneurial networking and opportunity exploitation.

H4: *Ecologies of innovation mediate the relationship between entrepreneurial networking and opportunity exploitation.*

4. Methodology

The study design adopted was cross-sectional survey. This design was used to gather a big volume of data at a specific point in time. The data gathered were from a pool of participants with varied

characteristics and demographics. Critical realism was used because it involves quantitative and qualitative approaches. The qualitative approach was used to address the issues that arise from using a quantitative method. Critical realism attempts to understand and respond to reality as perceived in real domains (Benton & Craib, 2001). Dialectical critical realism (DCR) was used because it begins with the researcher's assumptions that the structures being researched have a real, ontological grounding which is independent of the researcher (Easton, 2010).

4.1. Population and sample size

The study population consisted of 93,117 registered SMEs with more than five employees in the sectors of trade, services, and manufacturing (UBOS, 2013). The unit of analysis was registered SMEs, while the unit of inquiry were business owners/managers. A total sample of 392 SMEs was generated using Krejcie and Morgan (1970) sample selection approach. We targeted 784 respondents and 456 questionnaires were returned from 228 SMEs. The response rate was 58%.

4.2. Sample characterisation

The descriptive statistics reveal that the nature of businesses were majority trade 102 (44%), services were 85 (37%), while manufacturing was 41 (18%). Most of the businesses had existed more than 9 years accounting for 36%. Furthermore, business owners/managers were male (62.4%) whereas female were (37.6%). The owners/managers were aged between 30 and 39 years (55%). The number of years' individuals had worked with the organisation is 3–6 years (44.8%). The highest level was the degree at 83.3%. Among the respondents, 91.3% were managers, while 8.7% were business owners. Therefore, the businesses and respondents had adequate experience and were knowledgeable about opportunity exploitation in Uganda.

4.3. Sampling design and procedures

Multi-stage sampling was used to select SMEs in the three categories from the five divisions of the Kampala district. After identifying the divisions, systematic random sampling technique was applied to determine K^{th} number (238) based on the list of businesses that had been in existence for than one year, from the three sectors (trade, services and manufacturing). The key respondents purposively selected were business owners/managers because they are key in networking among SMEs.

4.4. Measures of variables

Entrepreneurial networking was measured through interactions, interdependence, ties and networking styles based on Davidsson and Honig (2003), Hazy (2006), using a 6-point Likert scale. The confirmatory factor analysis (CFA) retained all four of the components in the model (appendix Figure A1). EoI were measured using events acquaintance, emergence dynamism, order transformation, new rules and ideas based on Goldstein et al. (2010), Moura and Adler (2010), Lichtenstein and Plowman (2009). The CFA retained all five of the components in the model (appendix Figure A3). Opportunity exploitation was measured using recognition, tension, and evaluation based on Arenius and Clercq (2005) and Shane (2003). The CFA retained all four of the components in the model (appendix Figure A2). The questionnaire that we gave our

Table 1. Validity and reliability

No. Variables	CVI	Reliability Cronbach Alpha(α)	NO. Items retained	Scale
Entrepreneurial networking	.605	.769	10	1–6
Ecologies of innovation	.627	.768	11	1–6
Opportunity exploitation	.604	.829	10	1–6

respondents measured constructs on a 6-point scale because there are an equal number of positive and negative statements as shown in Table 1.

4.5. Validity and reliability

All variables for the study were tested for validity and reliability as outlined in the literature (Blumberg, Cooper, & Schindler, 2011; Sekaran & Bougie, 2010). The validity and reliability of entrepreneurial networking was 0.769. The EoI parameter was at 0.768 and the opportunity exploitation was 0.829, all above 0.5. Table 1 shows the validity and reliability of the study.

4.6. Control of common methods variance (CMV)

The influence of CMV has been a pervasively cited concern in organisational research (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Obtaining data through the use of self-reporting has inherent problems and limitations that can adversely affect questionnaire-based studies in social sciences (Gorrell, Ford, Madden, Holdridge, & Eaglestone, 2011). This study materially avoids this problem because we performed an exploratory factor analysis where coefficients of 0.6 and above were considered sufficient for determining reliable scales (Neuman, 2006). As indicated above in Table 1, all our variables have several factors explaining a single variable.

4.7. Data management and analysis

For quantitative data, analysis began with the coding of the instruments. Then, data were checked, cleaned, recorded and labelled using an SPSS—AMOS (statistical package for social scientists) version 23. The cleaning of data was done with missing values being replaced using linear interpolation. The outliers were identified using box and whisker plots that were due to entry errors had to be removed and replaced with correct values. The Kolmogorov–Smirnov and Shapiro–Wilks tests for normality of data and Levene’s tests for homogeneity of variance revealed non-normal distribution that precipitated into logarithmic transformations of the whole data set.

4.7.1. Analysis of quantitative data

The tests were conducted in two stages: Stage one involved descriptive statistics, reliability and factor analysis. Descriptive statistics included computations of; means, standard deviations, scale endpoints and cross tabulations. For factor analysis; all items that were cross loading on other components with values exceeding 0.5 and items that had loadings below 0.5 were not included in the analysis. Pearson zero-order correlations between the study variables were automatically obtained with 5% significance level. The multiple regressions were also computed to establish the predictive powers of the independent variables on dependent variables under study. The hierarchical regressions established the presence of the moderating effects and also the extent to which independent variables predicted the dependent variable.

4.7.2. Analysis of qualitative data

After each interview, the notes and recordings were checked to ensure their completeness and understandability. Scratch notes, field notes, headnotes, timed writings and analytical notes (Sanjek, 1990 cited in Kikooma, 2010) were entered the computer and data files were created using QSR Nvivo program. The transcription of the recorded interviews was made by two members. The researchers did the final editing of the transcriptions line by line to confirm that what was heard is what was understood and interpreted (Kikooma, 2010). From Nvivo analysis using Miles and Huberman (1994) approach, a conceptually ordered meta-event matrix was generated. The rigour found in the qualitative study (Lincoln & Guba, 1985) follows the ‘trustworthy’ interpretive approach vested in the attributes of credibility, transferability, dependability and conformability that this study followed.

4.8. Testing for mediation

The position of this study in developing the hypotheses had been that EoI will mediate the relationship between entrepreneurial networking and opportunity exploitation among SMEs. From a conceptual perspective, the most common application of mediation is to “explain” why a relationship between two constructs exists. In this paper, EoI explain the relationship between entrepreneurial networking and opportunity exploitation (Baron & Kenny, 1986; Hoyle & Kenny, 1999). To understand how mediating effects are shown in the SEM model, we examined the model in terms of direct and indirect effects (see Table 4).

5. Results

5.1. Pearson zero-order correlation

Zero-order correlation analysis was performed to determine the association between entrepreneurial networking, ecologies of innovation and opportunity exploitation. The correlation coefficients were found to be significantly associated with each other at 0.01 level. The results reveal a positive association between entrepreneurial networking and the mediating variable (EoI) ($r = .486$, $P \leq 0.001$). There is also a significant positive correlation between entrepreneurial networking and opportunity exploitation ($r = 0.598$, $P \leq 0.001$), while entrepreneurial networking had a significant positive relationship ($r = .556$, $P \leq 0.001$). Table 2 presents the correlations between the main study constructs for purposes of cross-validation of the measurement model.

5.2. Regression model

Before performing the SEM analysis for hypothesis testing, we examined the hypothesised measurement model and confirmed that it had an acceptable fit, thus enabling us to proceed to SEM. The measurement model for entrepreneurial networking, EoI and opportunity exploitation had fit indices. The average variance extracted (AVE) assesses the discriminant validity, shows that a test of a concept is not highly correlated with other tests designed to measure theoretically different concepts was 0.60 (Fornell & Larcker, 1981).

The SEM model in Figure 1 indicates a good fit. A careful look at the standardised regression weights indicate that entrepreneurial networking significantly predicts opportunity exploitation ($\beta = 0.731$, $p < 0.05$) and also entrepreneurial networking predicts EoI ($\beta = 0.784$, $p < 0.001$). EoI predicts opportunity exploitation ($\beta = 0.241$, $p < 0.001$). This means that hypothesis (H1) which state that “entrepreneurial networking will have a positive and significant relationship with opportunity exploitation” is supported by the data. Hypothesis (H2) state that “entrepreneurial networking will have a positive and significant relationship with EoI” is also substantiated. Hypothesis (H3), state that “EoI will have a positive and significant relationship with opportunity exploitation” is likewise valid. The direct relationship between entrepreneurial networking and opportunity exploitation is significant ($\beta = 0.935$, $p < 0.001$). Based on this evidence, H1 which states that entrepreneurial networking will have a positive and significant relationship with opportunity exploitation

Table 2. Association among study constructs

	N Mean SD	Entrepreneurial Networking	Ecologies of Innovation	Entrepreneurial Opportunity
Entrepreneurial Networking	228 4.54 .704	1.000		
Ecologies of Innovation	228 4.57 .688	.486**	1.000	
Entrepreneurial Opportunity	228 4.51 .653	.598**	.556**	1.000

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

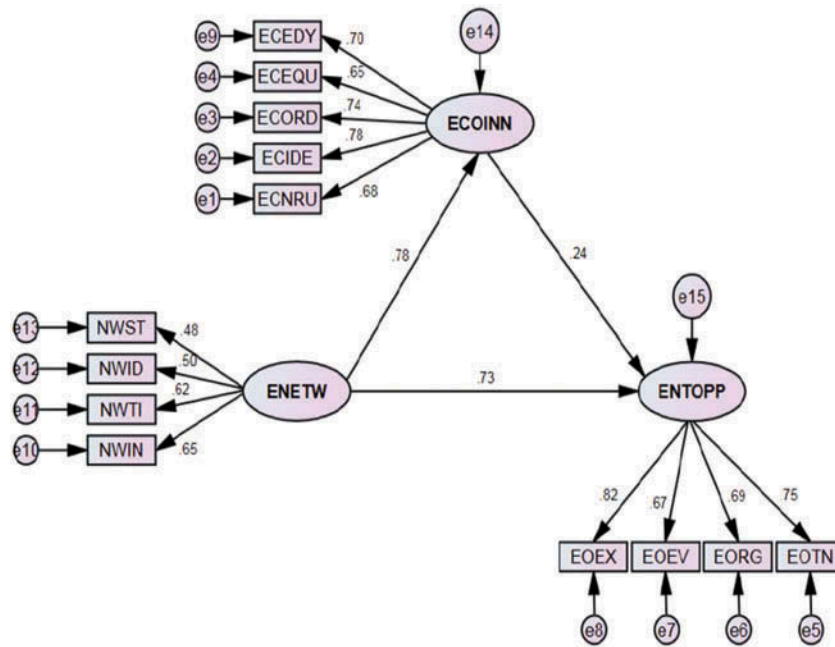
Source: Primary data.

Figure 1. SEM model showing entrepreneurial networking, ecologies of innovation and opportunity exploitation.

Structural Model Statistics

Note:

ENETW—Entrepreneurial Networking
 ECOINN—Ecologies of Innovation
 ENTOPP—Opportunity exploitation
 Chi-square = 134.634, degrees of freedom = 62, Probability level = 0.000, RMSEA = 0.072, Goodness of fit index (GFI) = 0.913, Normed fit index (NFI) = 0.892, Comparative fit index (CFI) = 0.938, Tucker-Lewis index = 0.922, Adjusted goodness of fit Index (AGFI) = 0.872.



was supported. Moreover, this sets the stage for testing H4 which states that “EoI mediate the relationship between entrepreneurial networking and opportunity exploitation” (Table 3).

In this study, it was hypothesised that EoI mediate the relationship between entrepreneurial networking and opportunity exploitation. From a conceptual perspective, the most common application of mediation is to “explain” why a relationship between two constructs exists. In this paper, the EoI explains the relationship between entrepreneurial networking and opportunity exploitation. To understand how mediating effects are shown in the SEM model, we examined the model in terms of direct and indirect effects (see Table 3). SEM is considered for assessing mediation because it offers a reasonable way to control for measurement error as well as some interesting alternative ways to explore the mediation effect (Baron & Kenny, 1986; Holmbeck, 1997; Hoyle & Kenny, 1999). Models involving latent variables with multiple-measured indicators are inherently corrected for measurement error by estimating common and unique variance separately. This, in turn, increases the likelihood that indirect effects, if present, will be discovered. More complicated mediation models, such as those with several mediators linked serially or operating in parallel (or both), can be explored in the context of SEM with any combination of latent or measured variables. The normal theory approach developed by Sobel (1982) has been incorporated in popular SEM software applications (Jöreskog & Sörbom, 1996) and EQS (Bentler, 1997), and it was discussed in the context of SEM by Bollen (1989) and Brown (1997). A bootstrapping approach to assessing indirect effects was implemented in the current version of AMOS (Arbuckle & Wothke, 1999).

The mediation results were further explored using the Medgraph, a statistical tool that has been noted to be quite efficient at establishing the mediating effect when we have only three variables, a dependent variable, a mediator and a dependent variable. In Table 4, A1 and Figure A5 mediation results show that the total effect of the entrepreneurial networking on opportunity exploitation is positive and significant ($p < .001$). Further, when we introduce the mediating variable, the indirect path from entrepreneurial networking → ecologies of innovation → opportunity exploitation is statistically significant. The value of the effect from entrepreneurial networking → opportunity exploitation remains significant though reduced in magnitude ($\beta = 4.78^{***}$, sig. $< .001$). The results suggest a partial mediating effect of the EoI in the model. This was confirmed by the sobel z value of 3.353 at 99%

Table 3. Regression weights of the mediated model and the unmediated model (direct regression)

Mediated Model		Unstandardised Coeff.	S.E.	C.R.	Standardised Coeff.	P
EINNOV ←.....	ENETW	.803	.119	6.726	.784	***
EOPPOR ←.....	EINNOV	.244	.178	4.245	.241	.091
EOPPOR ←.....	ENETW	.755	.178	4.245	.731	***
Unmediated Model/ Direct Regression						
EOPPOR ←.....	ENETW	.910	.115	7.897	.935	***

Notes: p (two-tailed), p***<.0001
 ENETW—Entrepreneurial Networking
 EINNOV—Ecologies of Innovation
 EOPPOR—Opportunity exploitation

Table 4. Direct and indirect mediation statistics

Standardised Total Effects	Entrepreneurial Networking	Ecologies of Innovation	Entrepreneurial Opportunity
Ecologies of Innovation	.076*	.000	.000
Opportunity Exploitation	.068*	.166*	.000
<i>Standardised Direct Effects</i>			
Ecologies of Innovation	.076*	.000	.000
Opportunity Exploitation	.172*	.166*	.000
<i>Standardised Indirect Effects</i>			
Ecologies of Innovation	.000	.000	.000
Opportunity Exploitation	.125*	.000	.000

Note: *, sig. < .05.

confidence interval level. Further, the lower and the upper confidence intervals have a range that does not include a zero and this confirmed that a partial mediation exists (Table 4).

This result substantiates our hypothesis (H4). Overall, the mediated model explains 94% of the variance in perceived opportunity exploitation. In other words, the error variance is 6% of the perceived opportunity exploitation itself (Figure A5).

6. Discussion

Hypothesis (H1) suggests that exploitation of opportunities relies on entrepreneurial networking. The formal and informal relationships provide information, social support, and resources that are useful for exploiting opportunities. Entrepreneurial networking is seen as key to opportunity identification, tension, evaluation and exploitation and also widely seen as vital to the entrepreneurial process. The more individuals identify new opportunities the more they look for entrepreneurial networks that support the exploitation of opportunities (Kuckertz et al., 2017). The business owner or manager who understands how markets develop and function takes action to make a profit through the interdependence of network members. Individuals who identify opportunities to introduce new products or services need emotional, economic, ecological and moral reliance on social networks for collaborative learning. This is in agreement with the following qualitative findings:

Social networks are important to us because they have helped our business grow. We receive reliable information about the markets and materials we need at competitive prices through our interactions with network members. We are able to access valuable materials that help us to produce quality products at competitive prices. Therefore the network members offer us business opportunities like new markets and suppliers we would not have accessed easily on our own without being part of a network Interviewee 1

Davidsson (2015) also agrees that entrepreneurial networks encourage opportunity identification and help to avoid the accumulation of redundant information. Entrepreneurial networking provides business opportunities to entrepreneurs which in turn creates tension that arises from two or more competing opportunities that may need social network support before they can be exploited. Management must make a decision on the perceived opportunity and look for a social network that can support the business ideas. The tension generated by the perception of a valuable opportunity stimulates a combination of internal and external motivations that foster the belief that the emerging opportunity is worth pursuing through entrepreneurial networking. Unique opportunities create tension only if there is a potential pool of resources from the social network that the entrepreneur believes can be captured through re-organisation (Hansen et al., 2016; Levie & Lichtenstein, 2010).

When individuals evaluate opportunities worth exploiting, they seek deep connections with others in order to access resources from the social networks. The social relationships that may influence an entrepreneur to attach value to an opportunity can vary in strength as well as in multiplicity and symmetry. Entrepreneurs with broad, diverse social networks develop stronger ties to suppliers and are able to access skills and information that is helpful in evaluating an opportunity. Those new businesses that receive the most support from strong ties have the highest survival rates compared to ventures that have less support from strong ties (Engel, Kaandorp, & Elfring, 2017).

Kuckertz et al. (2017) observe that opportunity exploitation co-evolve with market and customer knowledge in a close interaction between employees and customers. The exploitation of market inefficiencies results from information asymmetry of the form that occurs across networks. Informal organising within social networks combined with small business size increases the efficiency of opportunity exploitation due to increased flexibility among employees. The opportunities that arise from interactions among members in a network promote collaborative learning to improve on the resource combination and utilisation for opportunity exploitation. Both quantitative and qualitative results support this view as indicated by the quote from a respondent below:

... we obtain business information from people we know and trust. The Business opportunities we access are related to the number of old and new people we meet in our networks who may need our products/services. Opportunities about new customers, materials, supplies are better recognized when we use a mixture of close and new relationships from the people we meet during networking meetings ... Interviewee 3

Scholars like Westaby, Woods, and Pfaff (2016) posit that entrepreneurial networks create business markets and resources that motivate entrepreneurs to seek out new opportunities for exploitation. Social networks also act as screening devices for selecting collaborations and social support. This result is consistent with other research. For example, Mainela, Puhakka, and Servais (2014) found that the relationship with other entrepreneurs positively influences the opportunity exploitation. However, Dimov (2004) argued that while these studies provided an invaluable, detailed account of the nature of information processing and decision-making involved in the identification and exploitation opportunities, they are less equipped for understanding why some people and not others recognise opportunities. Social network theory supports this study because it is premised on relations, ties and interdependence among actors can result into information flow and sharing of scarce resources for opportunity exploitation (see for, e.g., Gretzel, 2001; Wasserman & Faust, 1994).

Hypothesis (H2) reveals that entrepreneurial networking relates to EoI, and resources from social networks influence emergence dynamism among SMEs. When SME leaders identify useful resources for opportunity exploitation, they apply emergence dynamism and failure tolerance to encourage employees to achieve desired goals, after which they create an enabling environment for accessing resources from social networks. Innovation occurs most effectively when there is an exchange of knowledge among employees to improve the existing systems and processes in order to utilise the social networks for business competitiveness. The importance of diversity among employees helps in developing new ideas and relationships that create dynamic networking for business support (Liu, 2018). This also corroborates the qualitative findings below:

... We deliberately keep away from some contacts in the network because they are not supportive and negate our objectives when they start competing with us directly other than supporting our ideas Interviewee 2

Acton et al. (2019) also observed that the emergence dynamism enables a web of interaction within the organisation that produced positive and negative feedback for the kind of social network needed for participation. Previously, it was argued that new rules in an organisation promote a strong culture that preserves valued customs and norms. Effective leaders are “aware of the relations between others; the strength and quality of ties among others; benefits and contributions

of others to the network and the existence of cleavages". This is consistent with the works of Goldstein and Hazy (2010), Balkundi and Kilduff (2006) also emphasise the role of feedback and relevant information in strengthening interactions and cooperation among employees.

Scholars like Mason and Brown (2014) argue that forward-thinking of SMEs to identify and groom employees who tend to be better informed on how to deal creatively with prevailing challenges is likely to network successfully. Employees of SMEs can learn from their social network agents how to create an enabling environment that provides a platform for enhancing rational thinking and creativity in accessing resources and mitigating the negative bias of network members (Ahmad, 2015). The absence of an environment conducive to innovation tends to suffocate employee motivation and creativity that could arise from employees' interactions and the enhanced sharing of ideas. The qualitative findings also confirm that:

... our staff gets information about the quality of our products from their interactions with agents and clients. Whenever the competitor's products are placed strategically compared to ours, we advise our team to engage the agents to find out why the competitor's products are better placed than ours Interviewee 4

The dynamics of this process results in the formation of new norms. These allow innovations to spread quickly through locally connected networks or via those geographic or more general finite-dimensional structures that favour the dissemination of information (Westaby et al., 2016).

Entrepreneurial networking management influences the EoI since it is considered to be crucial for SMEs to achieve successful innovation and to improve their proficiency (De Moura & Adler, 2011). However, according to Mayanja et al. (2019) not all SMEs in Uganda are able to create and manage their collaborations to maximum advantage because some of them do not have flexible structures. Entrepreneurial networking amongst SME plays a pivotal role in innovation and this has become more relevant as technologies become more complex. However, there is an ongoing debate on the value of weak or strong ties based on Granovetter's work. The strand supporting the importance of weak ties claims that weak ties provide actors with access to information and resources beyond those that they can find in their close social circle or collaborators (Tsouri, 2017). This kind of ties is useful for ecologies of innovation, increase the chances of successfully exploiting opportunities from a social network (Eriksson, 2010). Social network theory (Wasserman & Faust, 1994) supports this study in Uganda because it acts as screening devices for selecting potential collaborations and supporting the process of accessing valued resources through enabling environments. Social network theory supports this finding because social networks act as a conduit for information flow and sharing among actors to create an enabling environment for opportunity exploitation.

Hypothesis (H3) suggests that ecologies of innovation relate to opportunity exploitation among SMEs in Uganda. Mannan et al. (2016) argued that when entrepreneurs identify opportunities, they must also identify their capabilities for innovation, including the structural support in place to generate and evaluate new ideas. Daryani and Amini (2016) argued that it is not enough to identify an opportunity without thinking about the EoI and collaborations that link businesses together. This is important because it presupposes that innovation is a means and a path to exploit an opportunity in order to achieve a sustainable competitive advantage. George (2018) posit that opportunity recognition literature still fails to provide a clear understanding of which one works best or which process is more applicable in the opportunity exploitation process. Once an opportunity has been identified, an entrepreneur has to take action through EoI to implement change in concepts, products, processes, interfaces, systems, organisations or human experience. These actions may involve introducing new ideas that result in increased SME performance, which is in line with the works of (Laosirihongthong, Prajogo, & Adebajo, 2014).

Kuckertz et al. (2017) posit that owners/managers of SMEs must set up guidelines for an orderly transformation that is unaffected by product changes and does not affect the nature of

employees' work. This has a positive effect on people and events in the organisation that leads to entrepreneurial networking and helps management and employees to easily access resources through social networks. Individual ties are also created since employees belong to social groups which frequently interact with other groups outside the organisation, thus creating an enabling environment that promotes interactions among the employees and also within the social networks themselves (Mudamburi, 2012; Short, Ketchen, Shook, & Ireland, 2010). SMEs in Uganda once appreciate EoI can foster opportunity exploitation because not only owners/managers are the driving force behind the generation and development of new ideas, but also customers, employees and other firms are accepted as sources for invention. This study supports theoretical assumptions, which point out that in Uganda SME owners/managers have recognised the importance of innovation and as a result are willing to overcome their difficulties within the innovation process to exploit opportunities (Hutter, Hautz, Repke, & Matzler, 2013).

Hypothesis (H4) confirms that ecologies of innovation mediate the relationship between entrepreneurial networking and opportunity exploitation. Our results established a partial mediation of EoI in the relationship between entrepreneurial networking and opportunity exploitation. This implies that entrepreneurial networking had a direct effect on opportunity exploitation. We also found that EoI acted as a conduit through which entrepreneurial networking was connected to opportunity exploitation. The results suggest that EoI partially mediate the relationship between entrepreneurial networking and opportunity exploitation as justified by the fact that new business ideas can be developed when there is freedom of individual action and thought (Goldstein et al., 2010; McMillan, 2008).

Although entrepreneurial networking and EoI are significant predictors of opportunity exploitation, EoI has proven to be a significant mediator of the relationship between entrepreneurial networking and opportunity exploitation among SMEs in Uganda. This emphasises the idea that EoI is probably a function primarily as a means of opportunity exploitation. Lewin (2015) posits that opportunity exploitation is a network challenge because it depends on individual traits, competencies, and motivations from which it derives benefits. Each entrepreneurial network is unique and is likely to influence the direction of the entrepreneurial process and opportunity exploitation. The entrepreneurial network may offer many opportunities and to be successful, an SME owner/manager must strive to exploit the opportunities while overcoming the negative influences of other network members (El Khouli, 2013). Entrepreneurs are dedicated to finding new opportunities and innovations from within their social networks, yet they may miss an advantage because they lack the strong exploitative capabilities needed to aggressively pursue an opportunity (Stettner, Aharonson, & Amburgey, 2014).

Social network theory supports this study because entrepreneurial networks in form of strong and weak ties, structural holes in social networks act as conduits for information flow and sharing (Granovetter, 1973; Williams & Durrance, 2008). SMEs that effectively join entrepreneurial networks are likely to have increased access to resources, markets, and new opportunities as information overlap is minimised (Burt, 2017). This study posits that ecologies of innovation mediate the relationship between entrepreneurial networking and opportunity exploitation.

7. Conclusions

Entrepreneurial networking and EoI are true drivers of opportunity exploitation among SMEs in Uganda. The direct relationship between entrepreneurial networking and opportunity exploitation was found to be significant without the mediating effects of EoI, this relationship remains significant when the mediation of EoI is allowed. Our model confirms that the presence of EoI acts as a beneficial and effective channel in the association between entrepreneurial networking and opportunity exploitation. It is important to understand the power of EoI as partial mediator between entrepreneurial networking and opportunity exploitation among SMEs in Uganda. Managers/owners of SMEs should invest in entrepreneurial networks to access tangible and intangible resources, create enabling environment for innovations to exploit opportunities is an essential aspect of sustaining SMEs.

7.1. Theoretical, methodological, and practical

The study dwells on how social network theory contributes to theory development in the field of entrepreneurship by empirically investigating ecologies of innovation mediating the relationship between entrepreneurial networking and opportunity exploitation among SMEs. This study tested theories of mediating effects so as to uncover real versus spurious relationships in the phenomena that addressed opportunity exploitation among SMEs. We demonstrated that the inclusion of EoI as a third variable in the model positively influenced the outcome and was therefore effective. Researchers are advised not to underrate its role in the SME literature, especially when dealing with the predictive potential of entrepreneurial networking in opportunity exploitation.

Methodologically, this study provides a precise quantitative and qualitative methodological process attempting to clearly define each of the underlying constructs like entrepreneurial networking, ecologies of innovation and opportunity exploitation, where reliability and validity tests were conducted to purify the measurement scales using confirmatory factor analysis. The results confirmed the correspondence rules between both empirical and theoretical concepts. Thus, this study provides a useful direction for future empirical research into opportunity exploitation among SMEs in a developing country like Uganda.

Policies aimed at harmonising the regulatory framework, promoting the survival and growth of start-ups in the country should be implemented since EoI amplify opportunity exploitation. Furthermore, business owners/managers should come up with flexible policies that allow employees to interact, develop flat structures, and come up with their own networking styles to access resources for opportunity exploitation.

Managers of SMEs should create an environment conducive to innovation by improving access to resources and providing social support for opportunity exploitation. In addition, they should promote networking and the utilisation of social networks for identifying and following up on opportunities. Managers of SMEs should also build up their employees' capabilities through trainings to address challenges of newness and novelty.

7.2. Limitations of the study and areas of further research

The study was limited to registered SMEs in the sectors of trade, manufacturing and services operating in Kampala, Uganda. It is, therefore, possible that the results are only applicable to a relatively narrow window of opportunity. This study used a cross-sectional survey and it is possible that the views held by business managers may change over the years. In spite of these limitations, policymakers concerned with SMEs in Uganda and in other developing nations, academicians, business owners and managers, and even general readers interested in the field of entrepreneurial networking, EoI and opportunity exploitation development might find this study useful.

Funding

The authors received no direct funding for this research.

Author details

Samuel Mayanja¹

E-mail: smayanja@cavendish.ac.ug

ORCID ID: <http://orcid.org/0000-0002-6780-4041>

Joseph M. Ntayi²

E-mail: jntayi@mubs.ac.ug

J. C. Munene³

E-mail: jcmunene@mubs.ac.ug

James R. K. Kagaari⁴

E-mail: jmskagaari@gmail.com

Balunywa Waswa⁵

E-mail: wbalunywa@mubs.ac.ug

¹ School of Working Adults, Cavendish University, Kampala, Uganda.

² Faculty of Economics, Energy and Management Science, Makerere University Business School, Kampala, Uganda.

³ Faculty of Graduate Studies and Research, Makerere University Business School, Kampala, Uganda.

⁴ Department of Psychology, Kyambogo University, Kampala, Uganda.

⁵ Faculty of Entrepreneurship and Small Business Management Makerere, University Business School, Kampala, Uganda.

Citation information

Cite this article as: Ecologies of innovation among small and medium enterprises in Uganda as a mediator of entrepreneurial networking and opportunity exploitation, Samuel Mayanja, Joseph M. Ntayi, J. C. Munene, James R. K. Kagaari & Balunywa Waswa, *Cogent Business & Management* (2019), 6: 1641256.

Correction

This article was originally published with errors, which have now been corrected in the online version. Please see Correction (<https://doi.org/10.1080/23311975.2019.1648948>)

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Appendices

Figure A1. Entrepreneurial networking.

Chi-square = 33.290, degrees of freedom = 21, probability = 0.043, RMSEA = 0.051, goodness of fit index (GFI) = 0.969, normed fit index (NFI) = 0.932, comparative fit index (CFI) = 0.973, Tucker-Lewis index = 0.953, adjusted goodness of fit index (AGFI) = 0.934

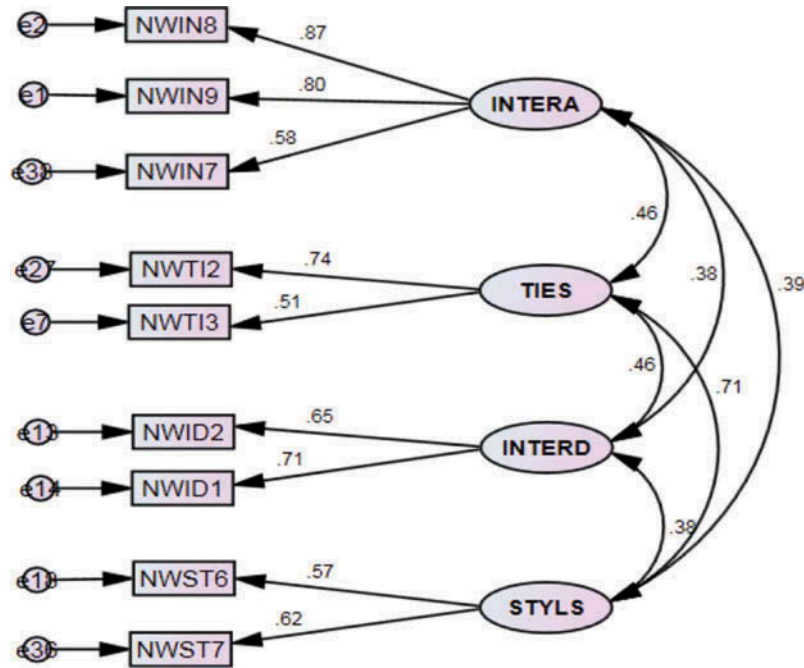


Figure A2. Opportunity exploitation.

Chi-square = 63.905, degrees of freedom = 47, probability = 0.051, RMSEA = .040, goodness of fit index (GFI) = 0.957, normed fit index (NFI) = 0.946, comparative fit index (CFI) = 0.985, Tucker-Lewis index = 0.979, adjusted goodness of fit index (AGFI) = 0.928.

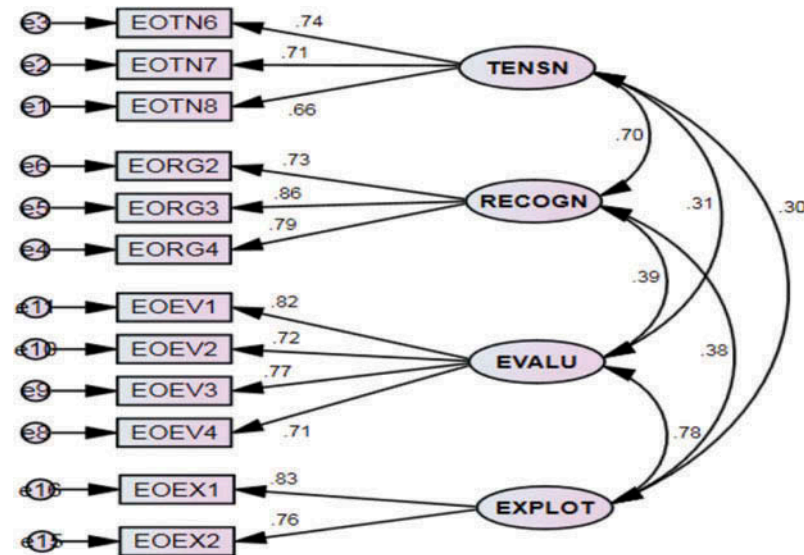


Figure A3. Ecologies of Innovation.

Chi-square = 88.433, degrees of freedom = 42, probability level = 0.000, RMSEA = 0.070, goodness of fit index (GFI) = 0.943, normed fit index (NFI) = 0.888, comparative fit index (CFI) = 0.936, Tucker-Lewis index = 0.899, adjusted goodness of fit index (AGFI) = 0.893.
Note: ENETW—Entrepreneurial Networking, EOPPOR—Opportunity exploitation, Chi-square = 88.448, degrees of freedom = 19, Probability level .000, GFI = 0.905, AGFI = 0.819, RMR = 0.029, TLI = 0.786, CFI = 0.855, NFI = 0.825.

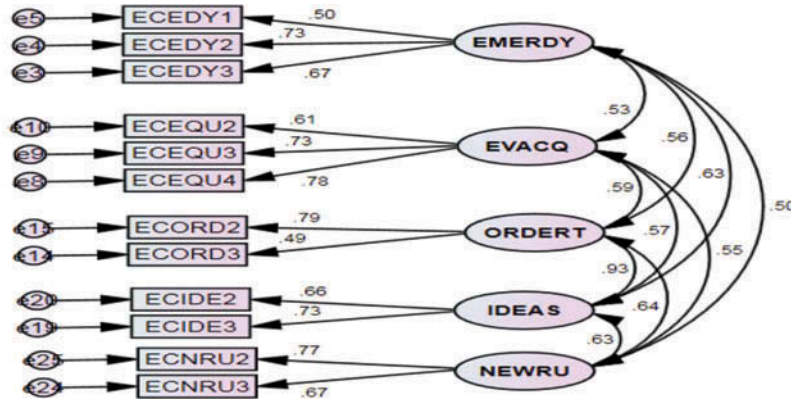


Figure A4. Measure of the direct relationship on the relationship between entrepreneurial networking and opportunity exploitation.

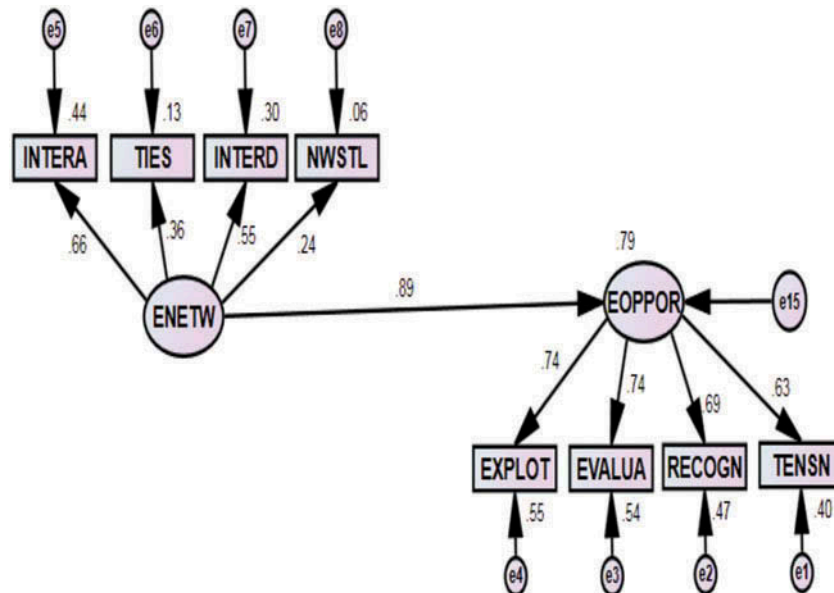


Figure A5. Medgraph: ecologies of innovation partially mediated entrepreneurial networking and opportunity exploitation.

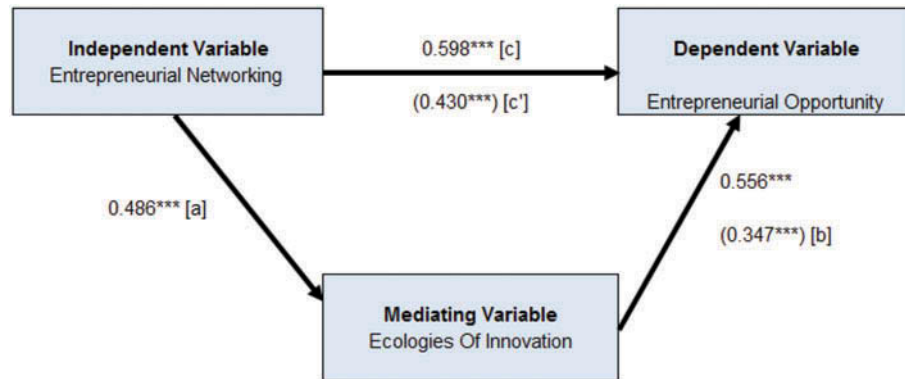


Table A1. Type of mediation significant

Sobel z-value		4.933	$p = < .000001$
95% Symmetrical Confidence interval			
	Lower	.093	
	Higher	.215	
Unstandardised indirect effect			
	a*b	.154	
	se	.031	
Effective Size measures			
Standardised Coefficients			R ² Measures (Variance)
Total:		.598	0.358
Direct:		.430	0.140
Indirect:		.168	0.217
Indirect to Total ratio		.282	0.607



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