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## Ecologies of innovation as a mediator between nexus of generative influence and entrepreneurial networking among small and medium enterprises in Uganda

Samuel Mayanja<sup>a</sup> , Joseph M. Ntayi<sup>b</sup>, J. C. Munene<sup>c</sup>, Balunywa Wasswa<sup>d</sup> and James R. K. Kagaari<sup>e</sup>

<sup>a</sup>School of Postgraduate Studies and Research, Cavendish University Uganda, Kampala, Uganda;

<sup>b</sup>Faculty of Economics, Energy and Management Science, Makerere University Business School,

Kampala, Uganda; <sup>c</sup>Faculty of Graduate Studies and Research, Makerere University Business

School, Kampala, Uganda; <sup>d</sup>Makerere University Business School, Kampala, Uganda; <sup>e</sup>Department

of Psychology, Kyambogo University, Kampala, Uganda

### ABSTRACT

This paper examines the mediating role of ecologies of innovation in the relationship between nexus of generative influence and entrepreneurial networking among small and medium enterprises (SMEs) in Uganda. A cross sectional survey design using quantitative approach was employed in this study. Data were collected with the help of self-administrated questionnaire from 228 SMEs. Systematic random sampling technique was used. Multiple regression data were analyzed with the help of SPSS software. The results indicated that ecologies of innovation fully mediates the relationship between nexus of generative and entrepreneurial networking. The data was cross sectional in nature, thus limiting monitoring changes in resources accessed from entrepreneurial networks by entrepreneurs over time. The implications are that, policy makers and managers of SMEs should pay more attention to the role of nexus of generative influence in creating ecologies of innovation, conducive environment for employees to interact with mutual influence to advance creativity and innovation that enhance increased access to resources from entrepreneurial networks. The study of nexus of generative influence, ecologies of innovation and entrepreneurial networking using complexity theory among SMEs in Uganda is a contribution to literature.

### RÉSUMÉ

Cet article examine le rôle médiateur des écologies de l'innovation dans le rapport entre les liens d'influence générative et la mise en réseau entrepreneuriale parmi les petites et moyennes entreprises (PME) en Ouganda. Cette étude a reposé sur un concept d'enquête transversale basé sur une approche quantitative. Les données ont été collectées à l'aide d'un questionnaire auto-administré par 228 PME. Une technique d'échantillonnage aléatoire systématique a été utilisée. Les données de régression multiple ont été analysées à l'aide du logiciel SPSS. Les résultats indiquent que les écologies de l'innovation jouent pleinement le

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Nexus of generative influence; ecologies of innovation; entrepreneurial networking; SMEs; complexity systems leadership theory

### MOTS-CLÉS

lien d'influence générative; écologies de l'innovation; mise en réseau entrepreneuriale; PME; Théorie du leadership des systèmes complexes

**CONTACT** Samuel Mayanja  [smayanja@cavendish.ac.ug](mailto:smayanja@cavendish.ac.ug); [ssekajjasam@gmail.com](mailto:ssekajjasam@gmail.com)  School of Postgraduate Studies and Research, Cavendish University Uganda, Kampala, Uganda.

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rôle d'une médiation dans le rapport entre les réseaux générateurs et entrepreneuriaux. Les données étaient de nature transversale, limitant ainsi le suivi des changements des ressources auxquelles accèdent les entrepreneurs, au fil du temps et par l'entremise des réseaux d'entreprises. Il en découle que les décideurs politiques et les dirigeants de PME doivent accorder plus d'attention au rôle joué par le lien d'influence générative dans la création des écologies de l'innovation, d'un environnement favorable à l'interaction des employés et d'une influence mutuelle pour faire avancer la créativité et l'innovation qui renforcent l'accès aux ressources des réseaux d'entreprises. L'étude des liens entre l'influence générative, les écologies de l'innovation et la mise en réseau entrepreneuriale, basée sur la théorie de la complexité parmi les PME en Ouganda est une contribution à la littérature

## 1. Introduction

Individuals and businesses strive to achieve social and economic goals through formal and informal networks in form of cooperation and normative environment (Burt and Burzynska 2017; Karadag 2016). Entrepreneurial networking creates and shapes network ties including tie formation and maintenance behaviors as well as any assemblage of such behaviors into unique networking styles, strategies or processes (Porter and Woo 2015; Vissa 2012). Entrepreneurial networking provides an entrepreneur with resources like financial support, image, emotional support, access to other networks, trust and market knowledge which are useful for business competitiveness (Durda and Krajcik 2016; Turkina, Van Assche, and Kali 2016).

Entrepreneurial networking has been criticised for focusing mainly on the static aspects of network content of relations, their governance, and structures ignoring how the formal and informal relationships are established (Hoang and Yi 2015). This focus limits the understanding of entrepreneurial networking because it is seen as an objectively given reality that comes into being and changes without participation of entrepreneurs (Sarasvathy and Venkataraman 2011). However, before entrepreneurs can start using their social network relations for business purposes, these relations are initiated before they become workable. This aspect of entrepreneurial networking is an active process of relationship establishment undertaken by entrepreneur has attracted little attention.

Theoretically, previous studies used different lenses to investigate entrepreneurial networking ignoring the perspective of nexus of generative influence and ecologies of innovation among SMEs in developing economies. Brand, Croonen, and Leenders (2018), studied entrepreneurial networking using franchisor's knowledge transfer mechanisms. They predicted that franchisor's knowledge transfer mechanisms is associated with entrepreneurial networking. This study was anchored on resource based view theory (Bain 1968; Penrose 1959). According Torres-Coronas, Vidal-Blasco, and Sánchez (2015), suggested that emotional intelligence is a good predictor of entrepreneurial networking because it guides an entrepreneur which network to join based on the resources expected. This study was based on social network theory

(Frankenberger et al. 2013; Rost 2011; Wasserman and Faust 1994). Other scholars like Prashantham et al. (2019), used effectuation in conceptualizing entrepreneurial networking in international new ventures. In that study, they used effectuation theory (Sarasvathy 2001). Kerr, Kerr, and Xu (2018), considered a baseline personality traits like the Big-5 model, self-efficacy and innovativeness, locus of control, and the need for achievement. They also considered risk attitudes, goals and aspirations of entrepreneurs in influencing entrepreneurial networking. The study was supported by personality traits theory (Frese, Rousseau, and Wiklund 2014). On close scrutiny of the above studies, the influence of owner-manager, nexus of generative influence and ecologies of innovation have been omitted, while they are important in predicting entrepreneurial networking in complex nature of SMEs. More recently, there has been some shift in the academic and policy debate on innovation from a more traditional systems approach to ecologies of innovation (Papaioannou, Wield, and Chataway 2009). In this study, we intend to address this oversight. We extend entrepreneurial networking debate by including nexus of generative influence and ecologies of innovation variables. This study is rooted in complexity systems leadership theory which advances knowledge of entrepreneurial networking in complex environment with non-linear approach.

Previous researchers paid less attention on this line of inquiry at SME level in developing countries like Uganda to point out how SMEs can develop and use nexus of generative influence and ecologies of innovation relationships to overcome the liabilities of smallness, newness and isolation to achieve competitiveness (Mayanja et al. 2019; Turyahikayo 2015). Developing countries like Uganda need to promote entrepreneurial networking because it stimulates business growth by reducing transaction costs, creating business opportunities, and generating knowledge spill overs. Conceptual and empirical research on the importance of entrepreneurial networking among SMEs is still rather limited (Turkina, Van Assche, and Kali 2016). SMEs in Uganda are largely informal with approximately 97 percent unregistered businesses, employing close to 80 percent of the population with family members constituting the main source of labor in most of these businesses (Abaho et al. 2017). Entrepreneurial networks are vital living organisms, changing, growing and developing over time. Yet in their history, entrepreneurial networks are much more than an extension of the entrepreneurial asset base. Entrepreneurial networking is reconceptualization of complex relational, dynamic and enactment of environment in which businesses operate (Jack, Dodd, and Anderson 2008). Accordingly, there is indeed a knowledge gap in our understanding of how entrepreneurial networking is formed and how it does not fully cover the development aspect of entrepreneurial networking in less developed countries (LDCs).

In this paper, we conjuncture that ecologies of innovation mediates the relationship between nexus of generative influence and entrepreneurial networking among SMEs to access tangible and intangible resources from formal and informal relationships (Hazy and Uhl-Bien 2015; Lindhult and Hazy 2016). The rest of the paper proceeds as follows: the next section is literature review and hypothesis development, methodology, results, discussion, conclusion, study implications and limitations of the study.

## 2. Theoretical foundation

Entrepreneurial networking has previously been studied using resources based view theory perspectives that offer an innovative approach to the development and implementation of networking strategies for SMEs (Barney 1991; Wernerfelt 1995). Scholars like Frankenberger et al. (2013), Rost (2011), Wasserman and Faust (1994) studied entrepreneurial networking using social networking theory because tangible and intangible resources are accessed through social relations. This study contributes to knowledge by using complexity systems leadership theory because entrepreneurial networking is becoming more complex in dynamic environment.

### 2.1. Complexity systems leadership theory

In this study, the relationship between nexus of generative influence and entrepreneurial networking as mediated by ecologies of innovation is investigated through Complexity System Leadership Theory (CSLT), (Goldstein, Hazy, and Silberstang 2010; Hazy 2012; Lindhult and Hazy 2014 and McMillan 2008). It is depicted that dynamic systems are governed by non-linear relationships. The theory identify, explore the strategies and behaviors that foster organizational and sub unit creativity, learning and adaptability. Small changes could have very large consequences (butterfly effect) for subsequent operations. The result of uncertainty about such issues as how systems can behave collectively when they are composed of unpredictable parts is comprised of dynamic networks of relationships. Marion and Uhl-Bien (2011) claim that complex problems are best tackled by complex responses. The theory stresses how behaviors, processes and outcomes are inherently hard to predict, although prediction remains as one of the key objectives of positivist approach (Tourish 2019). According to Hazy and Uhl-Bien (2015) posits that higher levels of innovation could only be achieved through the emergent novelty-ecosystems.

Goldstein, Hazy, and Silberstang (2010) argue that creating such ecosystems could be made possible by interaction resonance, behavior or practice across the business setup (generative-influence). These further contend that unfolding-series of events alertness, tend to stimulate opportunity-tension, trigger opportunity-recognition; prompt opportunity-evaluation; and consequently opportunity-exploitation using entrepreneurial networks to access resources (Hazy and Uhl-Bien 2015, Shane 2003). While Complexity Systems Leadership Theory provides valuable insights into the nature of reality for complexity organizations, the theory is unable to predict the future (Lindhult and Hazy 2014). Complexity studies tend to yield multiple non-linear outcomes (McMillan 2008). Furthermore, CSLT investigational methods may lack external validity (Hentschke and Caldwell 2010). In this study, CSLT as an individual theory can predict mixed multiple possible outcomes arising out of entrepreneurial networking. This theory is used in explaining nexus of generative influence, ecologies of innovation and entrepreneurial networking among SMEs in Uganda.

## 3. Literature review and hypotheses development

### 3.1. Nexus of generative influence and entrepreneurial networking

Nexus of generative influence is the process of innovation not led by any one individual but emerges through an unfolding series of events at every level of the

organization (Hazy and Uhl-Bien 2013). Nexus of generative influence focuses on the mutual influence that occurs within every exchange. In particular, complexity science shows how the typical focus on “heroic” and generative leaders can result in a lack of innovation in modern organizations. In contrast, we reframe “leader” and “leadership” as referring primarily to events rather than to people (Tourish 2019). Through a series of interactions over time, leadership events alter the underlying framework of engagement. They change the rules by which individuals interact, influencing the ends to be achieved, such as where a work group is headed, as well as the means by which it gets there (Hazy and Uhl-Bien 2015).

Accordingly, rather than concentrating on how a supervisor expresses influence over an employee, nexus of generative influence sees them both expressing leadership. Moreover, nexus of generative influence refers to capturing the benefits of this mutual interplay as a generative process—it spawns new opportunities that increase the organization’s potential for novelty, flexibility and growth. As a process that builds progressively, nexus of generative leadership tunes into patterns of interaction rather than specific one-time moves that a manager may initiate and carry out (Kibirango et al. 2017).

Frese and Gielnik (2014) emphasize that for any organization to evolve, it requires employees with a high degree of interaction resonance, behavior practices across an institution. According to Goldstein, Hazy, and Silberstang (2010), the success of such interactions depends on the support of, and an appropriate balance between, top-down and bottom-up influence. Besides, many purported leadership experts and all semi-autonomous agents (departments) seem not to understand the rationale behind what can stimulate the business adaptive capability and the transformation process, since they do not understand such complexity paradigms (Hazy and Uhl-Bien 2015).

Based on over twenty qualitative studies, Hazy and Uhl-Bien (2015) argue that, three basic modes of leadership interact to make up the leadership capability i.e. thinking, logic and development from which leaders view the world. These authors further argue that the levels of each of these interacting leadership modes can be measured over time as they act in combination to adjust the structure and dynamics of each unit’s social network as it evolves in response to local conditions. Each distinct way of leading serves a necessary organizing function because each mode drives a distinct outcome. However, the relevance and appropriateness of various leadership approaches evolve and change as local conditions emerge. This paper advances the Hazy and Uhl-Bien (2015) claim that the three basic modes of leadership can be measured locally in various workgroups across the organization over time.

Uhl-Bien and Arena (2018), argue that for studying nexus of generative influence requires tools that can help individual leaders solve organizing problems as events unfold, accessing resources from entrepreneurial networks in complex local environments. Previous studies focused on nexus of generative influence in corporations from developed countries and not relationship with entrepreneurial networking among SMEs from developing countries. It is also noted that previous studies were conducted using experiments and this study used survey to collect big volume of data in short period of time.

Onyx and Leonard (2011) posit that nexus generative influence shows how to engage all the members of an organization through enhanced entrepreneurial network

connectivity and interaction resonance within these networks. This is why nexus of generative influence focus attention on the nexus between individuals, the relational space between people throughout the organizational system. Each individual gathers information about the internal workings of the organization as well as the environment according to that person's own position and history. In social systems, interaction shows itself in the prevalence of social networks that connect the components of any system to access tangible and intangible resources that help individuals and businesses to achieve their objectives and goals (Lichtenstein 2016).

HI: Nexus of generative influence has positive and significant relationship with entrepreneurial networking

### ***3.2. Nexus of generative influence and ecologies of innovation***

In an ecology of innovation leadership encourages and supports “experiments in novelty,” building new organizational pathways that allow these experiments to fully emerge into innovations (Paraschiv et al. 2012). Complexity science thus places leadership in a greatly enhanced position to help organizations effectively navigate through critical periods of growth and change (Psychogios and Garev 2012). The construct of nexus of generative influence creates interaction conditions that generate variations, experiments at the margin and initiatives that challenge current thinking. Nexus of generative influence leadership practices also facilitate fine-grain interactions that recognize emergent coarse-grain properties as they arise locally in disparate areas (de Vasconcelos Gomes et al. 2018). It is by these exploration and experimentation that innovation grows even through a small “cutoff” in technology. Through a series of interactions over time, leadership events alter the underlying framework of engagement. They change the rules by which individuals interact, influencing the ends to be achieved, such as where a work group is headed, as well as the means by which they get there (Valkokari 2015).

According Tourish (2019), posits that nexus generative leadership uses a complexity science perspective to yield fresh insights on dynamic processes underlying innovation and departs somewhat from prior research, in that it suggests that it is not simply the composition of the team or the ability to increase interactions but how interactions are managed and regulated that leads to innovation. It focuses on the management of complexity itself as an enabler of innovation and explores the role of leadership as the catalyst that creates an effective context for innovation to occur. It emphasizes ways in which complexity can be reduced and absorbed structurally in the system without limiting the richness of interaction that is critical to innovation (Frese and Gielnik 2014). This is, however, too rare in organizations with individuals who happen to possess opposing viewpoints especially among SMEs (Li 2016). In most cases, generative influence presence, allows individuals to voice their opposing viewpoints in a meaningful manner in situations where the SME manager acts like a leader and has close interactions with employees to learn from each other. These different features create novelty since two identical things do not often create something new (Goldstein, Hazy, and Silberstang 2010, p. 39).

H2: Nexus of generative influence has positive and significant relationship with ecologies of innovation

### ***3.3. Ecologies of innovation and entrepreneurial networking***

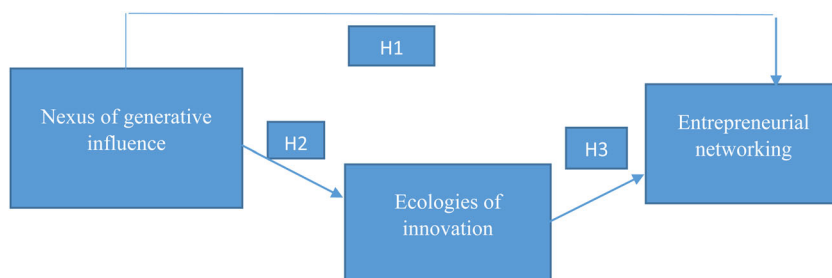
Ecologies of innovations are a foundation upon which successful entrepreneurial networking for SMEs all over the world are built (Mason and Brown 2014). Ecologies of innovation are an end and a path to achieve sustainable competitive advantage in the endless search for growth, increase of profit and customer loyalty, SMEs develop new technologies, products, processes, contents and services. Entrepreneurial networking without ecologies of innovations may end up being inward looking without clear understanding of macro environment (Taddeo et al. 2017). In this way, Machirori and Fatoki (2013), suggest for SMEs to thrive, they need to focus on entrepreneurial networking and network participation. However, entrepreneurial networking activities need to be well planned since there is no guarantee that they (networks) will be representative or that certain voices or perspectives will be included. Ecologies of innovations need to be structured in the presence of an innovation culture, forming an ecosystem based on multidisciplinary collaboration, amongst other interrelated elements (de Moura and Adler 2011).

According to Mayanja et al. (2019) argue that in SMEs' entrepreneurial networking, there are inequalities of control and power, and differing views and motives which influence the access of resources. Entrepreneurial networking perspective allows a discussion of asymmetric learning relationships where inequalities of control and power serve as stabilizing and controlling force in the network. Burkhard et al. (2016), also agree that ecologies of innovation cannot be created on its own without the brain of leadership, combining the right hemisphere, with its creative abilities, and the left hemisphere, with its business management capacity that give SMEs the best chance to succeed in the market. The use of hybrid structures, combining bottom-up and top-down business strategies, in contrast to those uniquely hierarchic or those completely open and unstructured, for instance, favors the success of innovative solutions (Hoyos-Ruperto et al. 2013). The leadership capabilities and structure in place determines how the business will create enabling environment for entrepreneurial networking and the kind of resources it will access. Developing an ecology in an organization through which innovations can emerge is a step by step strategic decision process employees can use from across the ecosystem (Goldstein, Hazy, and Silberstang 2010). Over and over again, successful organizations adopt strategies that rely on establishing new connections, exchanges, interchanges with various other players in its ecosystem including creating linkages with external environment (Boylan and Turner 2017). It is, therefore, hypothesized that:

H3: Ecologies of innovation has positive and significant relationship with entrepreneurial networking

### ***3.4. Nexus of generative influence, ecologies of innovation and entrepreneurial networking***

Nexus of generative influence offers a view of how individuals at all levels can make a difference in their organizations through the practice of generative influence. The



**Figure 1.** Entrepreneurial networking conceptual framework.

key to generative leadership lies in creating ecologies of innovation in the workplace in which experiments in novelty eventuate in innovative practices, processes, and routine that enable an organization to become adaptable to today's organizational environments (Frese and Gielnik 2014). Entrepreneurial networking develop across organizational boundaries to provide opportunity sets that can ultimately influence a business strategic direction. Lichtenstein (2016) argue that, although SMEs have managers, not all managers have nexus of generative influence since not all managers have self-organizing skills to create enabling environment through ecologies of innovation to attract tangible and intangible resources. As businesses share information across boundaries, the resulting entrepreneurial networking serve as a mechanism for the exchange of rich information. For example, entrepreneurial networking enable SMEs to obtain knowledge about available resources or regulatory requirements, or to learn of opportunities to forge new alliances (Mayanja et al. 2019). Sometimes, however, entrepreneurial networking constrain the amount of available opportunities and information. This occurs when the networks are not sufficiently broad, diverse, or when the entrepreneurial networks themselves restrict access to specific information (Hossain 2015).

Entrepreneurial networking serve another function; it also facilitate the development of network dependent learning. Learning takes place within two primary contexts, individually and, most importantly from a complex systems view, within a social connectivity framework (Engel, Kaandorp, and Elfring 2017). The latter perspective posits that learning is a non-linear multi-level emergent property of the collective that occurs as individuals interact with others and with their environment in a group or networked setting. Thus, learning can emerge from micro-enactments between individuals or groups (Hazy and Uhl-Bien 2014) as well as from macro system-wide interactions as many different levels simultaneously co-evolve. Building-up of ecologies of innovation, construction of more effective entrepreneurial networks, and the search and amplification of experiments in novelty result in the emergence of innovations (Yüksel 2013).

In this case, heterogeneity, the vast diversity of components, agents, and parts involved in an ongoing variety of distinct interactions with others, is one of the important features of complex leadership system (Frese and Gielnik 2014). These different features create novelty since two identical things cannot create something new. This is true for organization and the presence of the type of leadership that can operate and coordinate different individuals with different background and information. This in turn allows ecologies of innovation to emerge from nexus of generative influence and accessing resources from entrepreneurial networks (Ebbbers 2014). Figure 1 below presents the study conceptual framework.

H4: Ecologies of innovation positively and significantly mediates the relationship between nexus of generative influence and entrepreneurial networking

#### 4. Research design and sample

This study adopted a cross-sectional survey and quantitative research design. It incorporated the standardized measures and statistical techniques associated with the positivist's paradigm to obtain in-depth responses on the three study variables. The study population consisted of 93,117 registered SMEs with more than five employees, existed for more than one year in Kampala, district based on trade, services, and manufacturing sectors (UBOS 2013). According to Krejcie and Morgan (1970) sample determination table, we targeted a sample of 384 SMEs but a total of 228 SMEs responded. The unit of analysis was SMEs while the unit of inquiry were business owner/manager. In each SME we purposively targeted a business owner and manager because they are key in networking. However, since we had the contacts of the respondents, a follow-up was made and 32 questionnaires that were incomplete were fully answered, thus, enabling us to collect 456 responses. These SMEs were chosen because Kampala is a business hub in Uganda with high concentration of businesses.

Multi stage sampling in the five divisions of Kampala district were used based on SMEs strata (manufacturing, services and trade). Systematic sampling technique was used to determine  $k^{\text{th}}$  number (242) based on the list of businesses that were in existence for more than one year, with more than five employees and whose capital base was more than US\$10,000. Measurement items adopted in this study were subjected to pre-test in another district with same characteristics before the main survey. Items for final study were reworded and all vague and ambiguous questions were improved by keeping them simple, specific and concise. Multiple regression analysis and ANOVA were performed to show how variations in nexus of generative influence and ecologies of innovation affect entrepreneurial networking among SMEs in Uganda (Hair, et al. 2010). Data were collected through a self-administered questionnaires because it is effective for privacy during the survey interview. Data were collected by research assistants after they were trained by the researchers. One way of dealing with self-report bias was to create a temporal separation by introducing a time lag between the measurement of the predictor and criterion variables. We developed two questionnaires; one with item scales that measure the criterion variable and another with items measuring the predictor variables. The two questionnaires were administered to the same respondents at different times providing an interval of one month thereby reducing the consistency motif (Heider 1958; Osgood and Tannenbaum 1955; McGuire 1969). A response rate of 59.3% was achieved (Fincham 2008). Additionally, the limited availability and efficiency of postal/communication services in Uganda are unfavorable for questionnaires to be mailed to our respondents.

Table 1 below presents the descriptive statistics of the study sample.

The descriptive statistics in Table 1 reveal that the nature of businesses were majority trade 102 (44%), services were 85(37.3%), while manufacturing were 41(18%). Among the businesses that the study focused on had exited more than

**Table 1.** Descriptive characteristics.

N = 228		Count	Valid percent	Cumulative percent
	Services	85	37.3	37.3
	Trade	102	44.7	82.0
	Manufacturing	41	18.0	100.0
<b>Period the business has been running and workforce size</b>				
N = 228		Count	Valid percent	Cumulative percent
<i>Period the Business has been running</i>	1 yr	8	3.5	3.5
	1–3 yrs	24	10.5	14.0
	4–6 yrs	33	14.5	28.5
	7–9 yrs	81	35.5	64.0
	More than 9 yrs	82	36.0	100.0
N = 228		Count	Valid percent	Cumulative percent
<i>No of workers in the Business</i>	Less than 21	168	73.7	73.7
	21–40	25	11.0	84.6
	Over 40	35	15.4	100.0
<b>Individual Characteristics</b>				
N = 456		Count	Valid percent	Cumulative percent
Gender	Male	286	62.7	62.7
	Female	170	37.3	100.0
N = 456		Count	Valid percent	Cumulative percent
Age Group	18–29	121	26.5	26.5
	30–39	254	55.7	82.2
	40–49	71	15.6	97.8
	50–59	8	1.8	99.6
	60 and above	2	.4	100.0

9 years counted 36 percent, Most of business owners/managers who responded to the questionnaires were male (62.4%) whereas female were (37.6%). The results revealed that the majority of owners or managers in the total sample were aged between 30 and 39 years (55.7%). The number of years the individuals had worked with the organization 3–6 years (44.8%). The highest level of education among the business owners and managers was degree at 83.3%. Among the sample respondents, 91.3% were managers while 8.7% were business owners. The business owners/managers are the ones who normally network and were knowledgeable about entrepreneurial networking in Uganda. The characteristics of the respondents in this study were similar to those of other developing countries (Ardic, Mylenko, and Saltane 2011).

#### 4.1. Measurement of variables, validity and reliability

This is concerned with reduction of phenomenon into representative measurable factors (Machery 2007). The study made inference to the theoretical works of previous scholars to operationalize the variables that include; nexus of generative influence, ecologies of innovation and entrepreneurial networking into measurable contracts. All questions were anchored onto a six -point likert scale. The respondents could not choose the moderate value, middle point in this kind of rating scale because the respondents had to choose between one of the two qualifications of the scale to be the answer, with this method, the respondents had to consider for a while or a level (Chang, Puryear, and Cairney 1993).

**Table 2.** Reliability and validity of the instrument.

Variable	Cronbach alpha value	Content validity index
Nexus of generative influence	.932	.789
Ecologies of innovation	.912	.833
Entrepreneurial networking	.919	.850

#### 4.1.1. Nexus of generative influence

Nexus of generative influence (NGI) was operationalized using measures developed by Hazy and Uhl-Bien (2013), Lichtenstein and Plowman (2009) using dimensions of interactions, flexibility, adaptability and resonance. The Cronbach alpha coefficient ( $\alpha$ ) for the nexus of generative influence construct was 0.932, the Content Validity Index (CVI) was 0.789 as shown in Table 2.

#### 4.1.2. Ecologies of innovation

In this study, ecologies of innovation (EI) was measured using items of Goldstein, Hazy, and Silberstang (2010), de Moura and Adler (2011), Lichtenstein and Plowman (2009). It was operationalized as events acquaintance, order transformation, ideas and new rules. The Cronbach alpha coefficient ( $\alpha$ ) was, 912 and CVI, .833, which were acceptable as they met the minimum value of 0.7 recommended by Nunnally (1978).

#### 4.1.3. Entrepreneurial networking

Entrepreneurial networking (EN) was measured using items adopted from Surie and Hazy (2006), Davidsson and Honig (2003) and Vissa (2012), operationalized as ties, interactions, interdependence and networking styles. The Cronbach alpha coefficient ( $\alpha$ ) was .919 and CVI was .850 which were acceptable, satisfies the norms of Hair et al. (2010) as shown in Table 2.

### 4.2. Confirmatory factor analysis

Exploratory factor analysis (EFA) was performed to test for factor loading on each of the study constructs (Hair et al. 2010). The EFA results of the study indicated the factor items loaded well on the constructs of nexus of generative influence, ecologies of innovation and entrepreneurial networking with communality value above 0.5.

Further, confirmatory factor analysis (CFA) was carried out to test whether the dimensions of a theoretically grounded model of variables fitted in the study data based on model fit indices (Williams, Onsmann, and Brown 2010), to confirm whether the factors extracted converged as manifest variables of the latent variables. Structural equation model (SEM) was carried out to confirm the dimensions to test the fit of theoretically grounded model of SMEs to our data (Jöreskog and Sörbom 1989). CFA for the measurement model was performed using SEM. Since our data had achieved the assumption of normality earlier, SEM was investigated using maximum likelihood estimation. This was done by developing several competing models to be fitted to our data (Judea 2000). CFA enabled us to construct a model to describe meanings of entrepreneurial networking through nexus of generative influence and ecologies of innovation. Our results revealed an accepted model fit based on several fit indexes. The results in Figure A1, show the nexus of generative influence measurement model

fit indices; Chi-square = 28.033; Degree of Freedom (DF) = 32, Probability (P) = .668; Goodness of Fit Index (GFI) = .977, Tucker Lewis Index (TLI) = 1.01; Normed Fit Index (NFI) = .947; Relative Fit Index (RFI) = .926; CMIN/DF = .876; Root Mean Square Error of Approximation (RMSEA) = .000. [Figure A2](#) show the ecologies of innovation measurement model fit indices; Chi-square = 28.018; Degree of Freedom (DF) = 28, Probability (P) = .463; Goodness of Fit Index (GFI) = .976, Tucker Lewis Index (TLI) = 0.946; Normed Fit Index (NFI) = .956. Relative Fit Index (RFI) = .930; Root Mean Square Error of Approximation (RMSEA) = .036. While [Figure A3](#) show entrepreneurial networking measurement model fit indices; Chi-square = 33.958; Degree of Freedom (DF) = 29, Probability (P) = .241; Goodness of Fit Index (GFI) = .971, Tucker Lewis Index (TLI) = .906; Normed Fit Index (NFI) = .937; Relative Fit Index (RFI) = .902; Root Mean Square Error of Approximation (RMSEA) = .027. The model fit indices were all above the threshold of .95 and the RMSEA were less than the 0.05 cutoff point implying the retained items explained well the latent variables.

### 4.3. Common methods bias, data collection and missing values

We controlled for common method biases by reducing ambiguity by keeping questions as simple and specific as possible (Campbell and Fiske 1959) are a problem in survey research because they are one of the main sources of measurement error (Bagozzi and Yi 1990; Kline, Sulsky, and Rever-Moriyama 2000; Lindell and Brandt 2000). Measurement error threatens the validity of the conclusions about the relationships between measures and is widely recognized to have both a random and a systematic component (Podsakoff et al. 2003, 879). One way of dealing with self-report bias was to create a temporal separation by introducing a time lag between the measurement of the predictor and criterion variables. We developed two questionnaires; one with item scales that measure the criterion variable and another with items measuring the predictor variables. The two questionnaires were administered to the same respondents at different times providing an interval of one month thereby reducing the consistency motif (Heider 1958; Osgood and Tannenbaum 1955; McGuire 1969).

Data was analyzed using SPSS version 23 and Analysis of Moment Structures (AMOS) is not responsive to data sets with missing data. The study used structural equation modeling (SEM) with AMOS in statistical modeling, to control for missing data, the questions that capture entrepreneurial networking were used. A Missing Value analysis was done, results revealed that 1.026% of the data were missing completely at random. All missing values were filled using serial means. Diagnostic tests were carried and results revealed that the data conformed to the assumptions of parametric data. We therefore went ahead and tested for the hypotheses.

## 5. Results

### 5.1. Pearson zero order correlation

Zero order correlation analysis was performed to determine the association between nexus of generative influence, ecologies of innovation components and entrepreneurial networking among SMEs. The correlation coefficients in [Table 3](#) below show that

**Table 3.** Correlation between the study variables.

	Mean	SD	1	2	3
Nexus of generative influence-1	4.03	.525	1.000		
Ecologies of innovation-2	4.42	.621	.401**	1.000	
Entrepreneurial networking-3	4.53	.624	.514**	.486**	1.000

\*\*Correlation is significant at the .01 level (2-tailed).

the study variables are significantly associated with each other at 0.01 level. The means (M) and standard deviation (SD) of the study variables were as follows: nexus of generative influence (M = 4.03, SD = .525), ecologies of innovation (M = 4.42, SD = .621) and entrepreneurial networking (M = 4.53, SD = .624). The standard deviation which describes the spread or variability of the sample distribution was examined. From the results, the maximum standard deviation was 0.624, which is less than 1 implying that the respondents were very consistent in their opinions as recommended by Hair et al. (2010), Saunders et al. (2013).

Additionally, results reveal a positive association between nexus of generative influence and entrepreneurial networking ( $r = 0.514$ ,  $p < 0.05$ ), which implies that nexus of generative influence is associated with entrepreneurial networking among SMEs. The results also show that nexus of generative influence and ecologies of innovation are positively correlated ( $r = 0.401$ ,  $p < 0.05$ ), which implies that changes in nexus of generative influence are associated with changes in ecologies of innovation. Similarly, ecologies of innovation and entrepreneurial networking are positively correlated ( $r = 0.486$ ,  $p < 0.05$ ). This imply that changes in ecologies of innovation are associated with changes in entrepreneurial networking.

## 5.2. Testing hypothesized model

The three out of four hypotheses were tested using the regression model from the SEM results. The tested hypotheses were to; examine the influence of nexus of generative influence on entrepreneurial networking; investigate the influence of nexus of generative influence on ecologies of innovation; and the influence of ecologies of innovation on entrepreneurial networking. The three hypothesized paths were statistically significant as discussed below (Table 3).

Hypothesis 1 (H1): stated that nexus of generative influence is positively related with entrepreneurial networking. The results from regression analysis indicated a non-significant relationship between nexus of generative influence and entrepreneurial networking and ( $\beta = 180$ ,  $p > .05$ ), and thus the hypothesis was not supported. This suggests that positive changes in nexus of generative influence are not associated with positive changes in entrepreneurial networking among SMEs in Uganda.

Hypothesis 2 (H2): suggested that nexus of generative influence is positively related to ecologies of innovation. The results show that there is a significant and positive relationship between nexus of generative influence and ecologies of innovation ( $\beta = 586^{**}$ ,  $p \leq .05$ ), and thus the hypothesis was supported. This suggests that positive changes in nexus of generative influence are associated with positive changes in ecologies of innovation among SMEs in Uganda.

**Table 4.** Showing direct and indirect effects of nexus of generative influence, ecologies of innovation and entrepreneurial Networking.

Standardized total effects	NEXGI	ECOINN	ENETW
ECOINN	.586	.000	.000
ENETW	.534	.604	.000
Standardized direct effects	NEXGI	ECOINN	ENETW
ECOINN	.586	.000	.000
ENETW	.180	.604	.000
Standardized indirect effects	NEXGI	ECOINN	ENETW
ECOINN	...	...	...
ENETW	.354	...	....
<i>p</i> -value for Indirect effect	.011		
Mediation supported	Yes		
Type of mediation	Full		

**Table 5.** Mediated model.

Standardized total effects	NEXGI	ECOINN	ENETW
ECOINN	.586	.000	.000
ENETW	.534	.604	.000
Standardized direct effects	NEXGI	ECOINN	ENETW
ECOINN	.586	.000	.000
ENETW	.180	.604	.000
Standardized indirect effects	NEXGI	ECOINN	ENETW
ECOINN	...	...	...
ENETW	.354	...	....
<i>p</i> -value for Indirect effect	.011		
Mediation supported	Yes		
Type of mediation	Full		

Hypothesis (H3): Ecologies of innovation are positively related to entrepreneurial networking. The results show that there is a significant and positive relationship between ecologies of innovation and entrepreneurial networking ( $\beta = .604^{**}$ ,  $p \leq .05$ ), and thus the hypothesis was supported. This suggests that positive changes in ecologies of innovation are associated with positive changes in entrepreneurial networking among SMEs in Uganda.

### 5.2.1. Mediated effect

According to Lowry and Gaskin (2014), Hair et al. (2010), and Kline (2005), the mediation rule of thumb is the following: if the difference between total effect and indirect effect is zero, this will prove the existence of a full mediation (Tables 4 and 5 derived in Figures A4 and A5). On the other hand, if the indirect path (b-path) is reduced from the direct path (a-path) but remains significant when a mediation variable is included as an additional predictor, then the partial mediation is supported. If the  $\beta$  estimate values of the “b-path” reduce as compared to the “a-path” values (without a mediation) and are found still significant in the SEM bootstrap analysis, it will then prove the existence of a partial mediation. Guided by these rules of thumb on mediation, values in Table 6 revealed full mediation effect hypothesis (H4) was supported.

Hypothesis (H4): Ecologies of innovation mediate the relationship between nexus of generative influence and entrepreneurial networking. The results in Table 5 below, established that ecologies of innovation play a full mediation in the relationship between nexus of generative influence and entrepreneurial networking. This was

**Table 6.** Regression weights of the mediated model and the unmediated model (direct regression).

Mediated model			Unstandardized estimate	S.E.	C.R.	Standardized estimate	<i>p</i>
ECOIN	←	NEXGI	.601	.175	3.425	.586	***
ENETW	←	NEXGI	.164	.168	.975	.180	.330
ENETW	←	ECOIN	.537	.231	2.327	.604	.020
Direct regression							
ENETW	←	NEXGI	.509	.142	3.589	.468	***

*p* (two-tailed), \*\*\* *p* < .01

noted from the significant indirect effect of the model ( $\beta = .354^{**}$ ,  $p \leq .05$ ). This indicates that inclusion of ecologies of innovation into the relationship resulted into full mediation. Thus, ecologies of innovation are a critical conduit through which nexus of generative influence affects entrepreneurial networking among SMEs.

## 6. Discussion and conclusion

The study sought to investigate the mediating role of ecologies of innovation on relationship between nexus of generative influence and entrepreneurial networking. H1: findings revealed a non- significant relationship between nexus of generative influence and entrepreneurial networking. SME owner/manager with nexus of generative influence may not necessarily motivate individuals to join different networks and mobilize resources that are useful for supporting new and old business ideas, when the internal environment is not conducive (Williams et al. 2017). Hazy and Uhl-Bien (2015) posit that business owner/manager may end up not being innovative in modern businesses when they change the rules by which individuals interact, influence the ends to be achieved, such as where a work group is headed, as well as the means by which it gets there. Uhl-Bien and Arena (2018), argue that business owner/manager may fail to motivate employees to access resources from entrepreneurial networks because nexus of generative influence is dynamic, and it goes beyond the competencies of individuals alone; it is the product of interaction tension, adaptive tension and restrictive tension which may not be common among small businesses. Engel, Kaandorp, and Elfring (2017) support the findings of this study that nexus of generative influence may not necessarily associate with entrepreneurial networks because of their complexity and not all business owner/manager can understand the dynamics of accessing resources directly from entrepreneurial networks without creating internal working environment.

Complexity leadership theory renders support to this finding because when agents interact, they may experience tension in form of pressures and challenges to their personal knowledge base (Lindhult and Hazy 2016). However, the study finding state that, tension, networking style, ties and interactions are significantly associated with employees' innovativeness to access resources from entrepreneurial networks. The encouragements received from the top management, tolerance of failure measures

exercised, the degree of freedom are good motivators to employees to network. Once employees are provided with necessary support, availability of systems to achieve desired goals and top management resonate with employees, entrepreneurial networking is likely to be enhanced.

Furthermore, H2 was supported, meaning that a positive change in nexus of generative influence is associated with ecologies of innovation. The findings suggest that where employees of SMEs are motivated and supported by owner/manager to share their conceived ideas harmoniously, they are likely to create conducive environment for innovation (Li 2016). Employees who inspire one another either from bottom-up, horizontally or top-down, they are likely to implement policies, structures and governance, adequate to nurture mutual interactions among employees for the SMEs to thrive. This imply that the possibility of employees to interact and inspire one-another is an opportunity to design and implement policies, structures and governance for competitiveness is high (de Vasconcelos Gomes et al. 2018). It should be noted, however, that connections and interactions of different employees within a co-evolution in non-linear environment arises from divergent views that contribute to ecologies of innovation. Goldstein, Hazy, and Silberstang (2010) argue that the process of innovation is not led by any one individual but emerges through an unfolding series of events at every level of the organization. Scholars like Yüksel (2013) posit that enabling leadership does not claim to abandon the ingrained bureaucratic settings, rather, intends to provide a map for contemporary leaders to avoid stifling creativeness and make their organizations function more like complex adaptive systems.

Kibirango et al. (2017) argue that flexible generative influence organizes and adapts according to changing environments. Leadership must be self-renewing, resilient, learning to find solutions to complex problems in an innovative way. Top leadership develops flexible processes and profit maximizing operating rules. Leaders who are guided by the insights of non-linearity, can create ecologies of innovation throughout their organizations. Owner/manager in an ecology of innovation encourage and support experiments in novelty, building new organizational pathways that allow these experiments to materialize into novel offerings and improvements for competitiveness (Hazy and Uhl-Bien 2014).

Hazy and Uhl-Bien (2015), reveal that leadership that continuously scan environment for better opportunities support employee interactions to work together to pursue viable business ideas. Diversity within organizations, when appropriately guided and channeled, will lead to departures from the expected and cultivate innovation. Therefore, diversity is a *sine qua non* for organizations when innovative outcomes are anticipated from the network of interactions. These interactions supply the nutrients, building materials, wastes, and information that get transmitted from system to system in a vital exchange (Valkokari 2015). No sub-ecosystem can survive on its own. Instead, the vast set of interchange and exchange that connects one to another enables the entire ecology to thrive. It is the interactions in the system, through which something new emerges, such as norms in a work group or a groundswell of momentum for a new enterprise.

Complexity systems leadership theory (Lindhult and Hazy 2016) supports the findings. Businesses have always been complex, what has changed is our ability to understand them as complex systems and thereby influence them. Complexity means that

“system components” individuals, or more generally “agents” each with a different perspective and information, interact with each other in a mode of mutual influence.

Additionally, findings of hypothesis 3 established a significant and positive relationship exist between ecologies of innovation and entrepreneurial networking. Ecologies of innovation offer opportunities for entrepreneurial networking among SME employees (innovativeness and/or creativity tendencies). In a business, wherever and whenever ecologies of innovation are enhanced, entrepreneurial networking among employees in Uganda intensifies substantially as well (Mayanja et al. 2019). In this study, ecologies of innovation like in complexity science, include employees’ interdependence and their respective stakeholders, who operate in a co-evolution environment with relevant policies, structures and governance to facilitate emerging ideas from their network of interactions (Lindhult and Hazy 2016).

Boylan and Turner (2017) found out that where SME top management apply emergency of dynamism, tolerance of failure, encourage employees to achieve desired goals, then they are likely to access resources from networks. Innovation occurs more effectively where there is exchange of knowledge among employees. Whenever enabling environment is enhanced, entrepreneurial networking is likely to be more effective. The importance of diversity among employees help in developing new ideas and relationships that help in dynamic networking for business support. Ritala and Almpantopoulou (2017) argue that although scholars with different roots utilize different ecologies of innovation concepts, they agree that further research is needed in order to investigate more thoroughly the mechanisms and rules governing the interaction within ecologies of innovation to access resources based on networking style of an entrepreneur.

Complexity systems leadership theory (Lindhult and Hazy 2014) renders support to the results because SMEs groom employees who tend to be more informed on how to deal with prevailing challenges creatively, develop new ideas for venture creation are likely to network successfully. Employees tend to be informed when they learn from their social network agent’s differences depending on an enabled environment, which provide a platform for enhanced rational thinking and creativity about accessing resources and mitigating negotiations from network members.

Hypothesis 4 results revealed that ecologies of innovation fully mediates the relationship between nexus of generative influence and entrepreneurial networking. This implies that business owner/manager on their own may not effectively network without creating enabling environment (de Vasconcelos Gomes et al. 2018). Thus, ecologies of innovation are a conduit through which nexus of generative influence connects to entrepreneurial networking. This indicates that without ecologies of innovation, nexus of generative influence cannot be associated with entrepreneurial networking among SMEs. Entrepreneurial networking can only be explained by nexus of generative influence through ecologies of innovation. Staff with divert views can only work together for common objectives when there is enabling environment to harmonize the information for them to network in a dynamic environment (Goldstein, Hazy, and Silberstang 2010).

Martiskainen (2017), assert that nexus of generative influence is the one that creates the tone for innovation. Whenever business leadership create enabling environment for innovation, employee’s level of creativity and innovativeness is likely to be high. Business owner/managers are the ones to create self-supporting

systems for enabling innovation. Nexus of generative influence through ecologies of innovation are true drivers of entrepreneurial networking. However, while the direct relationship between nexus of generative influence and entrepreneurial networking without ecologies of innovation was found to be non-significant, the relationship becomes significant when mediation of ecologies of innovation is allowed. Therefore, ecologies of innovation significantly acts as a conduit in association between nexus of generative influence and entrepreneurial networking (Frese and Gielnik 2014).

## 7. Conclusion

The study concludes that, there is non-significant relationship between nexus of generative influence and entrepreneurial networking. There is also a significant relationship between nexus of generative influence and ecologies of innovation. Besides, the results indicated that there is a significant and positive relationship between ecologies of innovation and entrepreneurial networking. Finally, the results revealed that ecologies of innovation are a significant mediator in the relationship between nexus of generative influence and entrepreneurial networking among SMEs in Uganda. Therefore, ecologies of innovation significantly acts as a conduit in association between nexus of generative influence and entrepreneurial networking. The study provides evidence valid enough to conclude that ecologies of innovation among SMEs in Uganda enhances entrepreneurial networking. This implies that effective entrepreneurial networking can be achieved, especially among SMEs where owner/manager facilitates the establishment of ecologies of innovation to exist.

## 8. Study implication

### 8.1. Theoretical, methodological, policy and managerial

This study focuses on how complexity systems leadership theory contributes to theory development in the field of entrepreneurship. The study contributes to knowledge of understanding how ecologies of innovation mediate the relationship between nexus of generative influence and entrepreneurial networking among SMEs. The theoretical implication of this study is its contribution to the ongoing entrepreneurial networking debate. It is upon this backdrop that emphasis ought to be placed on how Ugandan entrepreneurs will better improve on using their leadership skills through mentorship and role models in creating a conducive environment for accessing resources from formal and informal relations to attain competitive advantage.

Methodologically, this study used cross-sectional survey data, collected big volume of data in short period of time, thus, a longitudinal study may be used in future research. Besides, the study was purely quantitative, therefore a qualitative survey through interviews may be conducted in future. In addition, although the sample was large enough, the study ignored other sectors like agriculture, tourism, financial institutions who may be used as samples in future studies.

The policy makers, business owners/managers could use these findings as a guideline of developing flexible policies that allow employees to deviate from norms, learn from mistakes, use flat structures and encourage employee interactions. SME owners/managers should develop policies that promote networking styles of employees who are executors, implementers, relationship builders and strategic thinkers to improve on entrepreneurial networking of SMEs. Entrepreneurial networking grow and develop organically. If government cannot create networks it can support them, and there may be a scope for shifting government policy away from supporting individual small businesses, in favor of supporting entrepreneurial networks where they are to be found, instead. Clearly any policy shift of this kind would have to be carefully monitored by Private Sector Foundation.

Owners/managers of SMEs should also be trained on how to develop generative influence skills to help them create ecologies of innovation in the workplace, in which experiments in novelty eventuate in innovative practices, processes and routine. The experiments will enable businesses to become adaptable to changing environment. SME owners/managers should engage all employees through enhanced network connectivity and interaction resonance to build entrepreneurial networking. Differences in perspective should be encouraged to co-exist and to persist since out of them come novel seeds of innovation. The entrepreneurial networking model can be used to explain, predict and replicate based on SME employees interaction enablement, mutual collaborations and adaptability.

## ***8.2. Limitations of the study and areas of further research***

First, prior research in decision making has shown that respondents are not good at capturing their own behavior (Neuman 2007), resulting in potentially inaccurate representations of behavior tendencies. In this study subjective appraisals were not used which requires future research to generate and include more objective and subjective triangulation measures.

Secondly, future research could use the same hypotheses, but implement the study in terms of a longitudinal rather than a cross-sectional design and, also test the model in other economies. In spite of the limitations, policy makers in Uganda and perhaps in other developing nations dealing with SMEs, academicians, business owners, managers and even general readers interested in the field of generative influence and entrepreneurial networking development might find this study useful.

Thirdly, Neuman (2007) suggested that different cultural contexts affect how people behave and act within entrepreneurial networks. Previous entrepreneurial networking studies have shown that there is a relationship between entrepreneurial networking and culture (Shane 2003). Caution about generalizing the results of this study might be taken especially when comparing it with other regions.

In addition, although all the items used in measurements of our research variables proved to be reliable and valid, the item scales were adopted from previous scholarly referenced journal articles not specifically and contextually developed for entrepreneurial networking among SMEs in Uganda.

## Disclosure statement

The authors have not declared any conflict of interests.

## Notes on contributors

*Samuel Mayanja*, is lecturer at Cavendish University Uganda. He holds PhD from Makerere University. His research focuses on Entrepreneurial networking among SMEs in Uganda. He holds MBA, Project Management- Makerere University; PDG Microfinance Operations, Makerere Business School; BBA (Accounting) Makerere University. He has 10 years' experience in higher education management in Uganda. Sam is a development practitioner in managing integrated programs on Population and Development. He also facilitates small entrepreneurs to start and grow their businesses in developing economies. He is currently the Chair person for Children at Risk Network in Uganda that advocates for creating safe environment for children. He is a chairperson for Special Children Foundation- Children with Special needs.

*Professor Dr. Joseph Ntayi*, is a distinguished international scholar, consultant and practitioner with proven professional and ethical track record in: Microfinance, Savings and Credit Cooperatives, Corporate Governance, Public Administration and Management and Project Management. Professor Dr. Ntayi is: (a) a member of the Emerald Research Network; (b) a member of the International Research for Public Procurement (IRPP); (c) a member of the International Purchasing and Supply Education and Research Association (IPSERA) (d) a member of the National Institute of Government Purchasing (NIGP) - (USA); (e) a member of the Chartered Institute of Logistics and Transport Management; (f) a member of the Chartered Institute of Marketing (MCIM); (g) a member of the European Union Marketing Association (MEUMA)

*Professor John C. Munene*, is a PhD Director at Makerere University Business School. He creates and manages a vision of the PhD Programme. He also provides the strategic foundations of a PhD Programme for a generation of people growing up in an environment of knowledge explosion in a society with a culture that does not automatically reward personal reading as a basis of personal, professional, and academic growth, i.e. to develop and implement a programme that would convert a younger generation into knowledge transformers rather than knowledge tellers.

*Professor Waswa Balunywa*, is highly grounded in entrepreneurship, innovations and strategic management. He is also a principle of Makerere University Business School.

*Associate Professor James RK Kagaari*, lectures at Kyambogo University and Makerere University Business School and is the current President of the Uganda Council of psychologists. The International Association of Applied Psychology (I.A.A.P) has honoured him with an award of "Fellow" for his contributions to the growth and development of psychology globally and has now saved a four year term as a member of IAAP Board of Directors. In addition, James Kagaari is serving as a member of the IAAP Task Force on Global Terrorism.

## ORCID

Samuel Mayanja  <http://orcid.org/0000-0002-6780-4041>

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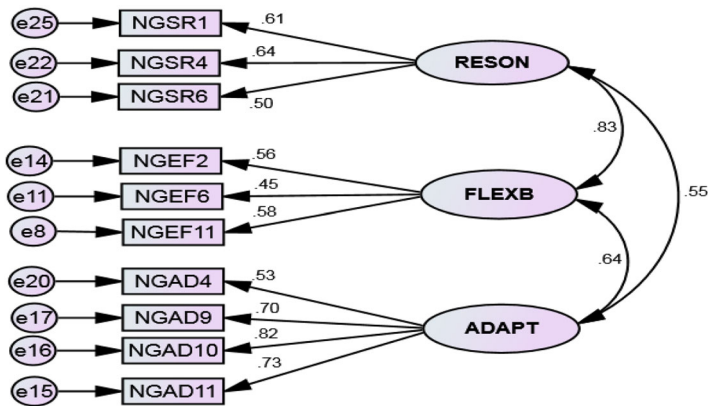
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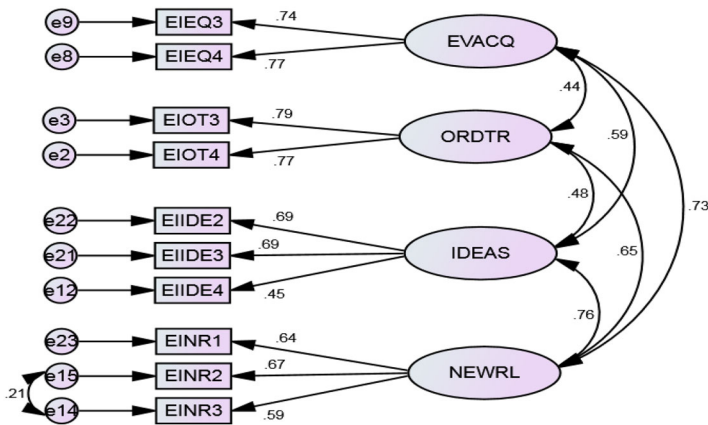
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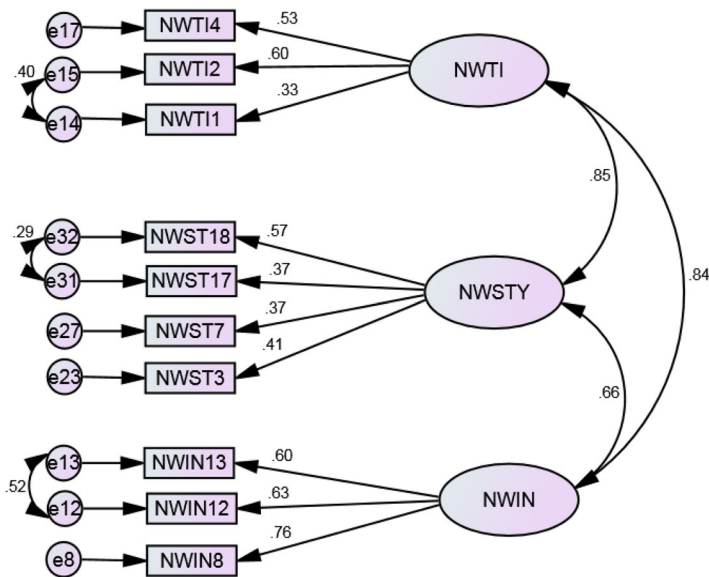
Appendix



**Figure A1. CFA- Nexus of Generative Influence.**  
 Chi-square = 28.033; Degree of Freedom (DF) = 32, Probability (P) = .668; Incremental Fit Index (IFI) = 1.008.; Goodness of Fit Index (GFI) = .977, Tucker Lewis Index (TLI) = 1.01 Comparative Fit Index (CFI) = 1.000; Normed Fit Index (NFI) = .947; Relative Fit Index (RFI) = .926; CMIN/DF = .876; Root Mean Square Error of Approximation (RMSEA) = .000

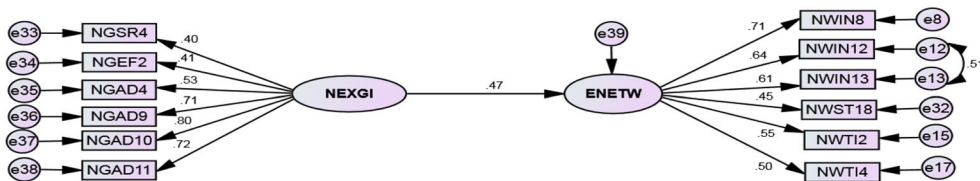


**Figure A2. CFA- Ecologies of Innovation.**  
 Chi-square = 28.018; Degree of Freedom (DF) = 28, Probability (P) = .463; Incremental Fit Index (IFI) = 1.000; Goodness of Fit Index (GFI) = .976, Tucker Lewis Index (TLI) = .946; Comparative Fit Index (CFI) = 1.000; Normed Fit Index (NFI) = .956; Relative Fit Index (RFI) = .930; CMIN/DF = 1.001; Root Mean Square Error of Approximation (RMSEA) = .036



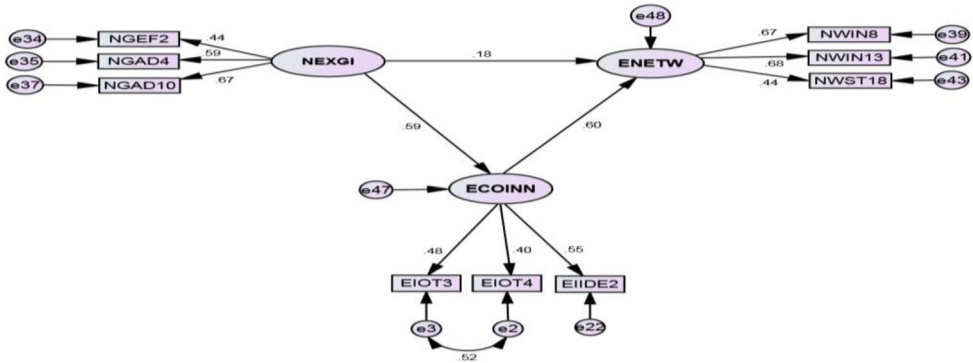
**Figure A3. CFA- Entrepreneurial Networking.**

Chi-square = 33.958; Degree of Freedom (DF) = 29, Probability (P) = .241; Incremental Fit Index (IFI) = .990; Goodness of Fit Index (GFI) = .971, Tucker Lewis Index (TLI) = .906; Comparative Fit Index (CFI) = .990; Normed Fit Index (NFI) = .937; Relative Fit Index (RFI) = .902; CMIN/DF = 1.171; Root Mean Square Error of Approximation (RMSEA) = .027.



**Figure A4. Unmediated.**

Chi-square = 57.405; Degree of Freedom (DF) = 52, Probability (P) = .282; Incremental Fit Index (IFI) = .992; Goodness of Fit Index (GFI) = .959, Tucker Lewis Index (TLI) = .990; Comparative Fit Index (CFI) = .992; Normed Fit Index (NFI) = .924; Relative Fit Index (RFI) = .904; CMIN/DF = 1.104; Root Mean Square Error of Approximation (RMSEA) = .021.



**Figure A5. Mediated Models.**

Chi-square = 18.131; Degree of Freedom (DF) = 23, Probability (P) = .750; Incremental Fit Index (IFI) = 1.014; Goodness of Fit Index (GFI) = .983, Tucker Lewis Index (TLI) = 1.023; Comparative Fit Index (CFI) = 1.000; Normed Fit Index (NFI) = .950; Relative Fit Index (RFI) = .921; CMIN/DF = .788; Root Mean Square Error of Approximation (RMSEA) = .000.