

Entrepreneurial ecosystem pillars and performance of SMEs in the manufacturing sector of Uganda

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Abstract

Purpose – The purpose of this paper was to determine which entrepreneurial ecosystem pillars matter most in enhancing the performance of SMEs in the manufacturing sector of Uganda.

Design/methodology/approach – Descriptive cross-sectional survey of 310 SMEs in manufacturing sector were sampled. Stratified and simple random sampling techniques were employed because of the population's homogenous characteristics. Data was collected using a Self-Administered Questionnaire and analyzed using SPSS and AMOS version 23.

Findings – The results indicate both institutional arrangements and resource endowments significantly influence performance of small and medium enterprises (SMEs) in the manufacturing sector of Uganda. However, institutional arrangements have a stronger predictive power on performance of SMEs in the manufacturing sector of Uganda as compared to resource endowments.

Research limitations/implications – The data was cross-sectional in nature thus limiting monitoring changes in the performance of SMEs in the manufacturing sector over a long period of time. Besides, the study concentrated on SMEs in the manufacturing sector which is just subset of the industrial sector leaving other sectors like trade and services.

Originality/value – An empirical study on entrepreneurial ecosystem pillars in a strategic and important sector – SMEs manufacturing sector, at a micro-level, and being done in Uganda is a contribution to existing literature. This is because, most entrepreneurial ecosystem studies are largely conceptual and are normally done at macro and meso-levels targeting SMEs generally and mostly in developed countries which have completely different business environment compared with developing countries.

Keywords Entrepreneurial ecosystem pillars, Institutional arrangements, Resource endowments, Performance, Manufacturing and SMEs

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1. Introduction

World over, manufacturing has been a leading sector in all successful and emerging economies that have achieved rapid employment creation and economic growth, World Manufacturing Foundation (WMTF, 2022). Moreover, there is a broad recognition that countries cannot develop without a mature manufacturing sector (Guloba *et al.*, 2023; Haraguchi and Cheng, 2016). Therefore, expanding the manufacturing sector is recognized as essential for low-income countries because of the strong forward and backward linkages not only in the manufacturing sector alone but across all sectors (African Development Bank, 2018).

Although Africa has grown rapidly over the past decade, few countries have achieved significant structural transformation in terms of manufacturing (Behuria, 2019). For instance Africa accounts for only 1.9% of global value added in manufacturing and has not radically changed for decades, National Planning Authority (NPA, 2020). Besides, Africa's manufacturing value added contracted from USD 702bn in 2012 to USD 603bn in 2018. Similarly, the share of the manufacturing sector to GDP in East Africa dropped drastically between 1990 to 2018, from 17% to only 11% (African Development Bank, 2018). So if this trend is not reversed, attainment of Agenda 2063 aspiration one, objective one that aims at achieving structural transformation through manufacturing and value addition to create shared growth through private sector development, entrepreneurship and decent jobs for all will be challenged (Agenda 2063 Framework document, 2015).

In Uganda, manufacturing is a key goal for the government in sustaining high rates of economic growth for job creation and shared prosperity (Leipzig and Manwaring, 2020). On that note, manufacturing is one of the 18 programs identified in National Development Plan (NDP III) to promote sustainable industrialization for inclusive growth and sustainable employment creation (NPA, 2020) as the country strives to attain Vision 2040. However, the sector is largely dominated by SMEs which make up 93.5% of firms operating in the sector (Calabrese *et al.*, 2019). This represents a serious challenge in that these SMEs are not usually able to reap the benefits of economies of scale given the significant association between firm size and performance (Escandon-barbosa and Salas-Paramo, 2023; Yadav *et al.*, 2022). Relatedly, SMEs in the sector mainly engage in end-product assembly and raw materials processing, producing low value added products (Goobi, 2021). According to Ministry of trade, industry and co-operatives, small businesses are businesses that employ between 5 and 49 people with total assets ranging between 10 to 100 million Ugandan shillings and Medium businesses are those businesses that employ between 50 and 100 people with total assets more than 100 million but not exceeding 360 million Ugandan shilling (Ministry of Trade Industry and Co-operatives, 2015).

Whereas scholars (Ferreira *et al.*, 2023; Mukiza and Kansheba, 2020) argue that entrepreneurs need to develop mutualistic interdependencies for knowledge with scientific communities, for financial resources from funding bodies (banks, investors or venture capitalists), for human resources from Universities and other training institutions, for regulatory approval and licensing, and provision of good physical infrastructure from various government ministries and departments and product sales from informed customers so as to thrive in a particular territory. The case is different for the SMEs in the manufacturing sector of Uganda. Because existing studies show that performance of SMEs in the manufacturing sector is mainly affected by low skilled human capital (Guloba *et al.*, 2021), lack of access to finance (Ministry of Finance, Planning and Economic Development, 2017), weak institutional support (NPA, 2023), low demand for locally manufactured products (Sserunjogi *et al.*, 2021) and high cost of physical infrastructure arising from high costs of power which is 15.6 cents per unit (Ministry of Trade, Industry and Co-operatives, 2020), high taxes and high transport and communication costs.

Due to the above cited challenges, SMEs in the manufacturing sector mainly operate under capacity at 54% due to declining sales caused by insufficient demand for locally manufactured goods which are believed to be of poor quality and sold at high prices (Sserunjogi *et al.*, 2021). This has resulted into low production reflected in low manufacturing output levels though slightly increased from 268.34 to 329.74 from 2018 to 2022 respectively (UBOS, 2023). In terms of employment, the manufacturing sector is characterized with a declining share in total employment from 9.3% in 2018 to 8.3% in 2022 (UBOS, 2023). This is a challenge for Uganda, as its rapid population growth requires large-scale job creation to absorb new entrants into the labor market. Besides, Supporting Economic Transformation (SET) program estimated that between 2015 and 2030, Uganda needs to create 650,000 new jobs annually (or 1,780 jobs each day) so as to employ its growing population in the labor market. However, this could be achieved through labor-intensive manufacturing (Calabrese *et al.*, 2019).

To reverse this trend, the government has developed several interventions to enable the manufacturing sector to significantly contribute to the nation's development agenda (NPA, 2020). For instance; the Uganda's industrial policy of 2008 (MTIC, 2008) which outlined a comprehensive framework for state intervention in terms of regulations designed to strengthen local manufacturing and make it more competitive (Goobi *et al.*, 2017). More to note, in 2007, Uganda Investment Authority embarked on establishing industrial parks to facilitate efficient and low-cost production of goods for local market and export (Goobi, 2021). In addition, the Technical, Vocational Education and Training policy (TVET) was introduced in 2019 so as to produce skilled and competent workforce that is employable and responsive to national needs, Ministry of Education and Sports (MoES, 2019) and the Buy Uganda Build Uganda policy that was launched in 2014 to develop a vibrant, dynamic and competitive private sector, and promote consumption of locally manufactured goods (MoFPED, 2020). However, the interventions are largely conflicting, fragmented, isolated and uncoordinated (Fowler and rauschendorfer, 2022) and hence have not enabled SMEs in the manufacturing sector realize their full potential. This resonates well with Bouncken and Kraus (2022) who argued that firm performance cannot be enhanced by just developing standalone policies however good they may be but rather firm performance depends on the effective work of multiple and integrated factors and actors that build an ecosystem.

Though in infancy, literature on entrepreneurial ecosystem indicate that a well-functioning entrepreneurial ecosystem with interconnectedness of key pillars enables entrepreneurship growth and subsequent value creation (Wurth and Spigel, 2021). For instance, strong entrepreneurial culture and supportive public policies and economic growth (Mack and Mayer, 2016); system conditions and framework conditions on firm performance (Ullah, 2019); entrepreneurial ecosystem and internationalization (Tabas and Komulainen, 2020); entrepreneurial talent, entrepreneurial network development, entrepreneurial culture and economic growth (Memon *et al.*, 2019). What is clear is that most of the above studies have been done at either macro or meso levels. And for the few studies that were done at micro level for instance; drivers of SMEs to participate in an ecosystem (Tabas *et al.*, 2022); entrepreneurial ecosystem on SMEs (Delaila *et al.*, 2022); entrepreneurial ecosystem on entrepreneur's perception and business success (Khuong and Van, 2022); entrepreneurial ecosystem and competitive advantage (Meutia *et al.*, 2021) were done in developed countries which have completely different business dynamics in comparison with developing countries like Uganda. Besides, most of the empirical studies on entrepreneurial ecosystem at micro levels targeted all SMEs, whereas studies on key strategic and important sectors like manufacturing are largely unavailable. So more research is needed to enrich our understanding of entrepreneurial ecosystem at a micro level in key strategic and important sectors like manufacturing sector in

emerging economies like Uganda (Kansheba and Wald, 2022). A gap that the current study sought to fill. Henceforth this study sought to investigate which entrepreneurial ecosystem pillars matter most in enhancing the performance of SMEs in the manufacturing sector of Uganda and was guided by these two objectives and questions respectively:

- (1) To investigate the relationship between institutional arrangements and performance of SMEs in the manufacturing sector of Uganda.
- (2) To establish the relationship between resource endowments and performance of SMEs in the manufacturing sector of Uganda.

Research questions:

- RQ1. What is the relationship between institutional arrangements and performance of SMEs in the manufacturing sector of Uganda?
- RQ2. What is the relationship between resource endowments and performance of SMEs in the manufacturing sector of Uganda?

The use of the word entrepreneurial ecosystem in business gained momentum after the publication of the research article “predators and prey,” a new ecology of competition by Moore (1993) whereby business environment was termed as business ecosystem. In the same year, Van de Ven (1993) proposed a model of entrepreneurial ecosystem that was composed of four broad elements and he termed it infrastructure for entrepreneurship. These elements include institutional arrangements that legitimate, regulate and incentivize entrepreneurship, then public resource endowments of basic scientific knowledge, financing mechanisms and pools of competent labor, market demand of informed consumers for products and services offered by entrepreneurs and proprietary business activities that private entrepreneurs provide through research and development, manufacturing, marketing and distribution functions. Then subsequent scholars (Field, 2012; Isenberg, 2010; WEF, 2013; Mason and Brown, 2014; Stam and Spigel, 2016; Stam and Van De, 2021) built and expounded on those elements.

However, this study adapted a model of entrepreneurial ecosystem proposed by Stam and Van De (2021) who categorized entrepreneurial ecosystem pillars into institutional arrangements and resource endowments whereby institutional arrangements is captured by formal institutions, informal institutions (culture) and networks, and resource endowments captured by human capital, finance, physical infrastructure and market demand. The choice of the above entrepreneurial ecosystem pillars is informed by the existing literature that highlights that the weaknesses and poor state of the above-named pillars have significantly contributed to the poor performance of the SMEs in the manufacturing sector of Uganda.

Whereby lack of access to affordable finance affects SMEs in the manufacturing sector to grow to their full potential as ideas can only be executed and opportunities be grabbed when there is sufficient money to invest (Ogujiuba *et al.*, 2023). Relatedly, without a deep base of skilled human capital, SMEs in the manufacturing sector are challenged to design and develop quality and competitive products (Leendertse *et al.*, 2022). Besides, formal institutions are the rules of the game (Stam and Van De, 2021) and thus provide the fundamental preconditions for resources to be used productively. Informal institutions are codes of conduct, norms of behavior and conventions emanating from a society’s culture (Mukiza and Kansheba, 2020). They play a very significant role when the formal institutions are either vague or absent completely. More to note, networks give owners and managers of SMEs a chance to meet and interact with their peers and also access information about markets, regulations and sharing of resources (Al-abri *et al.*, 2018). Whereas a highly developed physical infrastructure enables economic interaction and help entrepreneurs to

connect with other actors like suppliers and customers, market demand consists of disposable income per capita. Therefore, it is believed that the presence of these elements and their interconnectedness is crucial for the well-functioning of an entrepreneurial ecosystem which affects the performance of SMEs in the manufacturing sector. Henceforth, this paper is structured into the following sections: introduction, literature review, methods, results, discussion of the findings, conclusion and study implications.

2. Literature review

2.1 Theoretical foundation

Resource-based view theory is the widely used theory in most studies on performance of SME which argues that organizations are bundles of resources that are valuable and enables SMEs to perform. However, these resources do not need to be necessarily owned by the SMEs since most SMEs are financially constrained but may be accessed through collaborating with other actors in the ecosystem (Ullah, 2019). Therefore, the current study borrows ideas from the Resource Dependency Theory (RDT) by Pfeffer and Salancik (1978). Resource Dependence Theory explains interorganizational and organizational behavior concerning critical resources that must be available for the organizations to operate effectively (Johnson, 1995). It argues that organizations that are not self-reliant must engage in interdependent relationships with other actors to access resources needed so as to enhance their performance. Therefore, SMEs in an ecosystem rely on each other for critical resources for growth through their interactions in the ecosystem. Thus, Mukiza and Kansheba (2020) contend that firms within an ecosystem are able to enjoy additional benefits beyond their resources and capabilities due to shared risks and resources. Nonetheless the successful performance of SMEs in the manufacturing sector is dependent on resources from their networks in the ecosystem (Tabas *et al.*, 2022).

2.2 Institutional arrangements

Stam and Van De (2021) proposed a model of entrepreneurial ecosystem comprising of institutional arrangements and resource endowments whereby institutional arrangements were captured by formal institutions, informal institutions and networks as presented.

2.2.1 Formal institutions. Institutions are commonly known as the rules of the game because they shape the behaviors and performance of firms (North, 1990). Institutions not only directly affect the entrepreneurs through compliance but also indirectly by changing the values, culture and mindset of the general population. They may be formally described in the form of laws, policies or procedures, or they may emerge informally as norms, standard operating practices or habits that guide human behavior. According to North (1990), formal institutions are written policies, laws and regulations, including political rules, economic rules and contracts. These formal institutions exhibit a hierarchy from constitutions, to statute and common laws, to specific bylaws, and finally to individual contracts (Kafourous *et al.*, 2022).

Therefore, the government needs to provide supportive institutions directed toward entrepreneurial development. The major focus should not be to provide capital but to create a conducive environment for businesses to thrive. Institutions that are well-grounded and solid enough should be developed through conscious government strategies, regulatory framework and friendly legislation strategies like low tax rates and fair tax administration, flexible labor regulations and manufacturing regulations, zero tolerance to corruption so as to boost the performance of SMEs. This resonates well with previous scholars; Chowdhury *et al.* (2018) who argued that supportive formal institutions are a prerequisite for SME performance. However, North (1990) contends that not just institutions matter for firms to perform but rather

those that prioritize competitive advantage and enable firms reduce their costs of production and produce quality goods that are not easily imitated by their competitors.

2.2.2 Informal institutions. Informal institutions are codes of conduct, norms of behavior and conventions emanating from a society's culture (North,1990). These encompass the customs, norms, beliefs and values that guide social interactions which are commonly shared as behavior in a given context. It is widely believed that informal institutions play a significant role when formal institutions are silent, unclear or fail (North,1990; North, 1992; North, 2005). This is mainly because they consist of extensions, elaborations and modifications of formal rules, socially sanctioned norms of behavior and internally enforced standards of conduct (Stam and Van De, 2021). These beliefs mainly focus on societal norms to pursuing entrepreneurship against paid employment. As well the status entrepreneurs command in society can be a driving force toward entrepreneurship growth and development. Once society acknowledges this, then there will be high tendencies for innovation, creativity and experimentation to become entrepreneurs that will contribute massively to the evolution and growth of entrepreneurial ecosystems.

2.2.3 Networks. Networks entail interacting and building positive relationships with individual and business for professional purposes (Barczak *et al.*, 2021). Networks of entrepreneurs enable the smooth flow of information and effective distribution of knowledge, labor and capital. Pervious scholars (Sendawula *et al.*, 2023) have significantly linked firm performance to entrepreneur's network characteristics. SMEs can network formally under their business or industrial association or can do so individually. But what is clear is that various forms of networking bring positive results to a business (Aladejebi, 2020). However, Adudu *et al.* (2021) emphasizes that while networking, SMEs should focus more on network governance, network content and network structure for best results. So networking enables SMEs to access the resources essential and critical for their operations (Hilmersson and Hilmersson, 2021).

2.3 Resource endowments

The second categorization of entrepreneurial ecosystem pillars according to Stam and Van De (2021) is resource endowments captured by finance, human capital, physical infrastructure and market demand as discussed.

2.3.1 Finance. Finance is the process of obtaining and managing of funds in a business. It is believed to be the life-blood of an organization and a critical resource for SMEs either at startup or scale-up phases. However, most SMEs are financially constrained which undermines their performance (Hidayati and Dartanto, 2021). Lack of access to financial services can represent a major impediment to opportunity exploitation (Muwanguzi *et al.*, 2018). However, much as some scholars argue that finance is essential for SMEs to perform (Simler,2020), others argue that provision of easy funds to SMEs makes them incompetent (Owoade,2017). He further argued that much as finance is needed by SMEs, it should not be the hallmark of government support and policy intervention to SMEs. To him if easy money is provided to SMEs, even the most innovative firms will cease to innovate. Rather he argues that what is most important to enhance SME performance is providing a conducive work environment for businesses to thrive and make their own money. He argued that the need for funding is only important in the beginning of an ecosystem formation because this can be imported from outside the ecosystem once success stories of entrepreneurial achievements go global.

2.3.2 Human capital. Human capital is defined as the collection of knowledge and skills derived from education or experience possessed by entrepreneurs or their employees (Dimov, 2017). Similarly, Goldin (2016) defined human capital as the stock of productive skills, talents, health and expertise of the labor force. It is believed that success of SMEs relies on the ability of

the entrepreneurs and their employees to think and be able to create novel products that attract and meet customer needs. So, growth and sustainability of an enterprise is possible when there is availability of skilled workforce (Simionescu and Naros, 2019).

2.3.3 Physical infrastructure. Kumari and Sharma (2017) argued that infrastructures are those services without which primary, secondary and tertiary production activities cannot function and that these infrastructures include transportation, communication, power and water supply. However, in line with this study, physical infrastructure entails the nature and state of roads that connect entrepreneurs to other actors like their suppliers and customers in the markets. It also includes the accessibility, costs and reliability of power supply and water. Hirschman (1958) posits that infrastructure contributes to economic growth both through supply and demand channels by reducing cost of production. And it has also been argued that physical infrastructure, basically roads, power and water affected the performance of SMEs. Therefore, the government should establish wide and far-reaching roads, electricity network and water systems to ease business operations without challenges (Mugaiga and Tugume, 2020).

2.3.4 Market demand. Market demand refers to the quantity of a product or service that all consumers in a particular market are willing and able to purchase at a given price during a specific period of time. If consumers demand more (output) of the products manufactured locally, SMEs will produce more output to meet the increasing demand. The law of demand and supply would give these SMEs an opportunity to set the price a little higher during spikes to increase profitability and keep sales at steady pace. But the stiff competition that exists between the locally manufactured goods and the cheap imported products affect the level of sales and consequently the level of manufacturing output which hinders the performance of the manufacturing sector (MTIC, 2015). Thus, a thriving ecosystem enables SMEs identify untapped market niches and draw on local resources to grow entrepreneurial ventures into competitive firms.

2.4 Entrepreneurial ecosystem pillars and the performance of SMEs

Entrepreneurial ecosystem encompasses all actors and factors coordinated in such a way that they enable productive entrepreneurship in a given territory Stam (2018). Existing studies show that presence of a healthy entrepreneurial ecosystem with interconnectedness of key pillars leads to entrepreneurship success. Tabas *et al.* (2022) assert that SMEs are motivated by several factors to participate in entrepreneurial ecosystem which include; social drivers (networks, cooperation, communication and knowledge sharing) resource drivers (access to resources, formal and informal support and market research) and cognitive drivers (shared goals and common values). Similarly Ogujiuba *et al.* (2023) discovered that skills provision and financial management are essential pillars to sustain business growth. Relatedly, Al-Abri *et al.* (2018) revealed that human capital, government support, finance and technology have a significant impact on entrepreneurship success and startups. Therefore, taking a more structural and integrated approach to support SMEs can boost their performance (Ferreira *et al.*, 2023).

2.4.1 Institutional arrangements and the performance of SMEs. According to Stam and Van De (2021), institutional arrangements include formal institutions, informal institutions and networks as discussed earlier. Previous scholars; Chowdhury *et al.* (2018) argue that supportive institutions are a prerequisite for performance of SMEs. And this was equally supported by Duran *et al.* (2019) who contends that the performance of firms is high when formal constraining institutions are less developed and when suitable informal enabling institutions are present. Supportive institutions provide learning, builds relationships, networking, and intelligence about foreign markets, costs reduction and internationalization of business processes. However, poorly developed institutions like excessive bureaucracy, erection of strict legal barriers to trade with other countries, high taxes and favoritism negatively influence firm performance (Marlon *et al.*, 2019). Further still, Audretsch *et al.* (2021) revealed that

not just institutions matter in shaping the entrepreneurship ecosystems, but in particular those institutions that enhance productive entrepreneurship while reducing unproductive entrepreneurship. Therefore, the debate on institutional arrangements and performance of SMEs is inconclusive but we can still hypothesize that:

H1. There is a positive relationship between institutional arrangements and Performance of SMEs in the manufacturing sector of Uganda.

2.4.2 Resource endowments and performance of SMEs. Resources include all assets, capabilities, organizational processes, firm attributes, information and knowledge controlled by a firm that enables it to conceive of and implement strategies that improve its performance (Boonklum *et al.*, 2020). Resource endowments in an organization can be considered as a collection of physical resources, human resources, technological resources and financial resources (Chigara, 2021). Several scholars (Khan *et al.*, 2019; Masood *et al.*, 2022; Sachitra and Chong, 2018) argue that resources such as human assets, physical assets, financial assets and dynamic capabilities are significantly associated with high firm performance. Similarly, Kamasak (2017) found out that intangible resources and capabilities contribute more greatly to firm performance compared to tangible resources. However, in contrast Jawed and Siddiqui (2019) discovered a negative and insignificant role of tangible and intangible resources on firm performance. Nonetheless the debate on resource endowments and firm performance is still inconclusive however, we can hypothesize as follows:

H2. There is a relationship between resource endowments and performance SMEs in the manufacturing sector.

3. Methods

3.1 Design, population and sample

This study followed a positivism research paradigm so as to emphasize the importance of acquiring knowledge through scientific methods of inquiry (Major, 2017). To address the study hypotheses, we adopted a quantitative survey approach that was cross-sectional in nature. The study population was composed of 1,600 SMEs in manufacturing from the membership of the Uganda Manufacturers' Association (UMA, 2022). The sample size was 310 that was determined using Krejcie and Morgan table. However, the valid questionnaires collected were 274, making a response rate of 88%. The unit of analysis were the SMEs in the manufacturing sector and the unit of inquiry were the owner/managers of the SMEs in the manufacturing sector as previous scholars Baer and Frese (2003) believe that owners or managers are well educated and knowledgeable of all the activities in and around the enterprise. The respondents were randomly selected from the different SMEs that were grouped into small groups called strata according to their homogeneity in the nature of business across the country.

3.2 Data collection

Self-administered questionnaires (SAQ) comprising of close-ended questions were used to collect the views and perceptions of owner/managers of SMEs in the manufacturing sector (refer to Appendix). Despite its limitations, a structured questionnaire is widely accepted as a good tool for collecting views and perceptions from a relatively large population (Gladys, 2021). The questionnaire composed of closed ended questions structured in four sections. Section A was composed of questions on entrepreneur characteristics including; age group, education level and gender. Then Section B was composed of items on firm characteristics like sector, number of employees and legal form. Section was composed of items on

entrepreneurial ecosystem pillars that were rated on a seven-point scale where 1- No obstacle, 2- Minor obstacle, 3- Moderate obstacle, 4- Major obstacle, 5- Very severe obstacle, 6-Don't know and 7-Not applicable (WEF, 2013). Section D was composed of items on performance of SMEs in the manufacturing sector that were rated on a five Likert scale ranging from 5-strongly agree to 1-strongly disagree.

3.3 Data management

Data quality was ensured using validity and reliability checks. For content validity, the researcher ensured that instruments' questions were in line with the study objectives. In so doing, experts in the field were contacted and requested to assess the relevance and correctness of items in the instrument as well as the wording and clarity of questions in the instruments (Rodriguez-salvanés, *et al.*, 2009; Cohen and Kunreuther, 2007). After which a pilot test of the SAQ was conducted before full scale data collection to establish the valid and invalid items. The instrument was accepted as valid because the content validity index was above 0.7 as recommended by Amin (2005). Besides discriminant validity was also measured using Heterotrait Monotrait Ratio (HTMT) to assess whether constructs that theoretically should not be related are actually unrelated. It was discovered that the HTMT values were less than 0.900 and hence we can conclude that the items in the instrument are unique to those of other variables.

More to note, reliability was determined using Cronbach's Alpha co-efficients which were above 0.7 for all the constructs. For instance, the Cronbach Alpha for SME performance indicators for instance; employment growth, output growth and sales growth were 0.880, 0.897 and 0.911 respectively. The composite reliability was 0.905, 0.916 and 0.925 and Average variance extracted 0.544, 0.548, 0.508 respectively and VIF below 5.00 hence there are no issues of multicollinearity. Likewise, the Cronbach's Alpha for the constructs of institutional arrangements and resource endowments range 0.700 to 0.859. The composite reliability (CR) for all the measures was above 0.7 and average variance extracted (AVE) above 0.50 and with Variance Inflation Factor (VIF) less than 5.00. This clearly shows that the tool was reliable because Cronbach's Alpha co-efficient, Composite Reliability and Average Variance Extracted were all above the recommended thresholds with VIF less than 5.00 meaning that there are no cases of multi-collinearity as recommended by Hair *et al.* (2017) as presented in Table 1.

3.4 Data analysis

Data was analyzed following the study hypotheses. Structural Equation Modeling (SEM) and Analysis of Moment Structures (AMOS) version 23 were applied to determine the adequacy of model fit to the data. SEM is a statistical technique for testing and estimating relationships using a combination of statistical data and qualitative assumptions. SEM allows both confirmatory and exploratory modeling hence convenient for both theory testing and theory development. The concepts used in the model were operationalized to allow testing of the relationships between variables in the model. Data were screened to check for missing values, out of range values and outliers using descriptive statistical analysis.

3.4.1 Sample characteristics. Descriptive statistics show that small businesses were more than medium businesses because they were 58.4% as compared to medium businesses that were 41.6%. In terms of total assets, businesses with total assets ranging from ten million shillings to one hundred million shillings were 57.7% also more than those businesses with total assets ranging from one hundred million shillings to three hundred sixty million shillings which accounted for 42.3% as presented in Table 2. This resonates well with the findings where small businesses were more than medium businesses.

3.4.2 Demographic characteristics. While analyzing demographic characteristics of the respondents, it was found out that most respondents were in the age bracket of 41–50 who

Table 1. Reliability and validity

Dimensions of the study variables	Cronbach's alpha	CR	AVE	VIF
<i>Institutional arrangements</i>				
Formal institutions	0.798	0.831	0.711	1.219
Informal institutions	0.792	0.763	0.726	1.229
Networks	0.859	0.821	0.745	1.249
<i>Resource endowments</i>				
Finance	0.700	0.816	0.526	1.324
Human capital	0.726	0.830	0.550	1.388
Market demand	0.797	0.788	0.557	1.327
Physical infrastructure	0.756	0.755	0.509	1.161
<i>SME performance</i>				
Employment growth	0.880	0.905	0.544	1.709
Output growth	0.897	0.916	0.548	2.036
Sales growth	0.911	0.925	0.508	1.946

Source: Primary data

accounted for 36.9%, followed by those with ages between 31 and 40 who accounted for 35.8%. When it comes to gender, most Ugandan businesses are owned or managed by men who accounted for 52.6% as compared to women who accounted for 47.4%. This is also supported by UBOS statistics (2023) which shows that most businesses in Uganda are either owned or managed by males. In terms of education level, most respondents were university diploma holders who accounted for 33.2%, followed by university education degree holders who were 25.5%, then those with Vocational training certificates (16.4%) and those with secondary school certificates (17.9%) as presented in [Table 3](#). This makes us conclude that most Ugandan business owners or managers are educated to university level therefore they were able to understand and respond to the questionnaire items with appropriately.

3.5 Measurement and operationalization of variables

The choice of measures of the study variables was done through theoretical and literature reviews. Performance of SMEs in the manufacturing sector is the dependent variable for this study. Performance is the ability of a firm to efficiently exploit the available resources to achieve its set objectives as well as satisfying the demands of its stakeholders ([Freeman, 1990](#)). Literature on performance suggests that there is no consensus on the specific criteria that should be adopted in measuring performance. Henceforth, there are both financial

Table 2. Firm characteristics

Firm characteristics	Count	Percent	Cumulative percent
<i>Number of full-time employees</i>			
5–49 employees	160	58.4	58.4
50–100 employees	114	41.6	100.0
<i>Total assets</i>			
Between 10 to 100 million	158	57.7	57.7
Between 100 million to 360 million	116	42.3	100.0

Source: Primary data

Table 3. Respondents' characteristics

Respondents' characteristics	Count	Percent	Cumulative percent
<i>Age group distribution</i>			
21–30	58	21.2	21.2
31–40	98	35.8	56.9
41–50	101	36.9	93.8
51–60	17	6.2	100
Total	274	100	
<i>Gender</i>			
Male	144	52.6	52.6
Female	130	47.4	100
<i>Educational level</i>			
Secondary	49	17.9	17.9
Vocational training	45	16.4	34.3
University education – diploma	91	33.2	67.5
University education – degree	70	25.5	93.1
Post-graduate – masters	19	6.9	100

Source: Primary data

performance measurements like profits, returns on sales, return on equity and return on assets and nonfinancial performance measurements like output, sales volume and number of employees (Lawal *et al.*, 2018). However, financial measures have been criticized as lagging measures because they give feedback on past performance and can be manipulated by managers (Kaplan and Norton, 1992). This was equally supported by Garengo *et al.* (2005) who argues that traditional accounting measures of performance show misleading signs for continuous improvement. Therefore, the current study adapted non-financial performance measures like output growth, sales growth and employment growth.

Entrepreneurial ecosystem pillars is the independent variable for the study which refers to a set components that make up an ecosystem and that must interconnect so as to foster entrepreneurship growth in a given territory (Ács *et al.*, 2019). This study adapted a model proposed by Stam and Van De (2021) of measuring entrepreneurial ecosystem. This was measured using institutional arrangements captured by formal institutions, informal institutions, networks and resource endowments captured by human capital, finance, physical infrastructure and market demand as presented in Table 4.

3.6 Exploratory factor analysis

Exploratory factor analysis was performed to check for factor loading on each of the study constructs (Hair *et al.*, 2017). Here the factor items loaded well on their respective constructs of both performance of SMEs in the manufacturing sector and Entrepreneurial ecosystem pillars only that some items were dropped as presented in Table 5.

In the conceptual model, institutional arrangements was captured by three dimensions which include formal institutions, informal institutions and networks. In the EFA, all the three dimensions were retained each expressed by at least four indicators. These three dimensions jointly account for a variance of 80.414% in the overall variable institutional arrangements and the rest of the percentage is explained by other factors. Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was not significant (0.809) >0.700, thus the data was adequate to explore using factor analysis. More to note, Bartlett's Test of Sphericity which shows how well the dimensions are related to each other was

Table 4. Operationalization and measurement of the study variables

S/N	Variable	Operational definition	Measurement	Author (source)
1	Entrepreneurial ecosystem pillars	Ács <i>et al.</i> (2019) defined of entrepreneurial ecosystem pillars as a set of components that make up an ecosystem that must integrate and interconnect so as to foster entrepreneurial, country or regional growth.	Institutional arrangements <ul style="list-style-type: none"> • Formal institutions • Informal institutions • Networks Resource endowments <ul style="list-style-type: none"> • Human capital • Finance • Physical infrastructure • Market demand 	Van De Ven (1993); Isenberg (2010); Stam and Spigel (2016); Stam and Van De (2021); Mujahid <i>et al.</i> (2019); Jones and Ratten (2021); WEF (2013)
2	Performance	Performance is the ability of a firm to efficiently exploit the available resources to achieve its set objectives as well as satisfying the demands of its stakeholders (Freeman, 1990).	<ul style="list-style-type: none"> • Output growth • Employment growth • Sales growth 	Freeman (1990); lebens and Garengo <i>et al.</i> (2005); Kaplan and Norton (1992); Calabrese <i>et al.</i> (2019)

Source: Created by authors

Table 5. EFA for institutional arrangements

<i>Items for dimensions of institutional arrangements</i>	<i>Networks</i>	<i>Formal institutions</i>	<i>Informal institutions</i>
INET1	0.688		
INET3	0.652		
INET4	0.800		
INET5	0.783		
INET6	0.709		
IFOM2		0.646	
IFOM3		0.651	
IFOM4		0.830	
IFOM5		0.790	
INFO1			0.513
INFO2			0.688
INFO3			0.510
INFO4			0.539
Eigen values	7.690	3.027	2.149
Variance %	48.062	18.921	13.432
Cumulative %	48.062	66.982	80.414
Kaiser-Meyer-Olkin measure of sampling adequacy			0.809
Bartlett's test of sphericity	Approx. Chi-Square		1177.049
	Df		120
	Sig.		0.000

Source: Primary data

significant (*Sig.* <0.05) meaning that there is a significant relationship between the measures of institutional arrangements, namely, networks, informal institutions and formal institutions. Hence dismissing the assumption that the measures of a variable are not related having used Varimax as a method of rotation.

Similarly, resource endowments was measured by finance, physical infrastructure, human capital and market demand. In the EFA, all the four dimensions were observed as measures of resource endowments each expressed by indicators ranging from four to six. These four dimensions jointly account for a variance of 76.038% in the overall variable resource endowments and the rest of the percentage is explained by other factors. KMO was above the threshold (0.847) >0.700, thus the data was adequate to explore using factor analysis. Additionally, Bartlett's Test of Sphericity was significant (*Sig.* <0.05) meaning that there is a significant relationship between finance, physical infrastructure, human capital and market demand having used Varimax rotation as the method of rotation as presented in [Table 6](#).

Performance was measured by three dimensions in the conceptual model namely; sales growth, output growth and employment growth. In the EFA, all the three dimensions were observed as measures of performance each expressed by indicators ranging from four to eight. These three dimensions jointly account for a variance of 70.956% in the overall variable performance and the rest of the percentage is explained by other factors. However, some items were dropped for the measures for instance on sales growth, PSAG1, 6, 9, 12 and 13 were dropped. Equally on output growth, item POGR 2 and 5 were dropped and on

Table 6. EFA for resource endowments

Items for dimensions of resource endowments	<i>Finance</i>	<i>Physical infrastructure</i>	<i>Market demand</i>	<i>Human capital</i>
RFIN1	0.588			
RFIN2	0.740			
RFIN3	0.649			
RFIN4	0.804			
RFIN5	0.872			
RFIN6	0.524			
RPHF3		0.798		
RPHF4		0.713		
RPHF8		0.536		
RPHF9		0.841		
RMKT1			0.757	
RMKT3			0.625	
RMKT4			0.534	
RMKT5			0.721	
RHCA2				0.627
RHCA3				0.513
RHCA4				0.578
RHCA5				0.803
Eigen values	7.212	5.190	4.314	3.814
Variance %	28.379	18.667	15.423	13.570
Cumulative %	28.379	47.046	62.468	76.038
Kaiser-Meyer-Olkin measure of sampling adequacy				0.847
<i>Bartlett's test of sphericity</i>		Approx. Chi-Square		2779.615
		Df		351
		Sig.		0.000

Source: Primary data

employment growth, PEMG1, 2, 5 and 6 were dropped. Sales growth has eight indicators with factor loading ranging from 0.508 to 0.654. The other dimension is output growth that has seven indicators with factor loadings ranging from 0.503 to 0.711. And lastly employment growth that has four indicators with factor loading ranging from 0.504 to 0.672. KMO is 0.952, $p > 0.700$, an indicator that the sample was adequate for factor analysis. In addition, the three variables are significantly related basing on the Bartlett's test of Sphericity that was significant (Sig. < 0.05) using varimax rotation method as presented in [Table 7](#).

3.7 Normality tests

An assessment of the normality of data is a pre-requisite for many statistical analyses such as analysis of variance (ANOVA) and Structural Equation Modeling (SEM) which were used in this study. Therefore, normality was tested both graphically (visual inspection) and numerically (statistical tests) ([Hair et al., 2018](#)). Graphically, it was done using the P-P plots which allow us to compare the cumulative probability of a given distribution of data against the cumulative normal probability. The P-P Plots were presented along with histograms with the normal curves superimposed over the distribution showing the relative degree to which the data is falling within the normal distribution curve and scatter plots for linearity. On the P-P plots data points fell close to the 45-degree diagonal in the graph for all the variables, hence the data was fairly conforming to that of a normal distribution ([Hair et al.,](#)

Table 7. EFA for performance of SMEs in the manufacturing sector

Items for dimensions of performance	Sales growth	Output growth	Employment growth
PSAG2	0.522		
PSAG3	0.557		
PSAG4	0.540		
PSAG5	0.508		
PSAG7	0.598		
PSAG8	0.654		
PSAG10	0.613		
PSAG11	0.578		
POGR1		0.503	
POGR3		0.586	
POGR4		0.659	
POGR6		0.595	
POGR7		0.711	
POGR8		0.564	
POGR9		0.503	
PEMG3			0.593
PEMG4			0.640
PEMG7			0.504
PEMG8			0.672
Eigen values	10.841	5.833	5.322
Variance %	34.325	19.140	17.491
Cumulative %	34.325	53.464	70.956
Kaiser-Meyer-Olkin measure of sampling adequacy			0.952
Bartlett's test of sphericity	Approx. Chi-Square		5080.998
	Df		465
	Sig.		0.000

Source: Primary data

2018). Statistically, normality was checked for, using Kolmogorov and Shapiro Wilk tests. And for all the study variables, the tests were not statistically significant ($\text{sig.} > 0.05$) as presented in Table 8. Therefore, we can conclude that the data is not significantly different from that of a normal distribution.

4. Results

4.1 Confirmatory factor analysis

Confirmatory factor analysis (CFA) was also conducted and it is a statistical technique that is used to verify the factor structure of a set of observed variables. CFA allows a researcher to test the hypothesis that a relationship exists between the observed variable and the underlying constructs. CFA was done after the EFA and the CFA models were generated with reference to the following fit indices thresholds so as to establish model fit for each of the variables as recommended by Kim (2007) as presented in Table 9.

4.1.1 Confirmatory factor analysis for institutional arrangements. The independent variable is entrepreneurial ecosystem pillars categorized into institutional arrangements and resource endowments. However, in the EFA, all the three dimensions loaded well on institutional arrangements including formal institutions, informal institutions and networks. This was also evident in the CFA only that some items for the different constructs were dropped to attain a model fit and it is evident that most of the constructs retained had at least three items. For instance, under formal institutions items retained were INOM2 (manufacturing regulations), IFOM3 (corruption) and IFOM4 (tax rates). Then under informal institutions we retained INFO1 (societal perceptions about entrepreneurship), INFO2 (poor entrepreneurial culture) and INFO3 (social norms) and under networks there is INET3 (poor business information flow), INET4 (difficulties in getting peer advice) and INET6 (sharing of knowledge) respectively as the major challenges affecting performance of SMEs in the manufacturing sector. However, for the retained items in the measures, all the

Table 8. Statistical tests for normality

Study variables	Kolmogorov-Smirnov	Sig.	Shapiro-Wilk	Sig.
Institutional arrangements	0.148	0.133	0.959	0.348
Resource endowments	0.246	0.088	0.878	0.123
SME performance	0.140	0.200	0.942	0.194

Source: Primary data

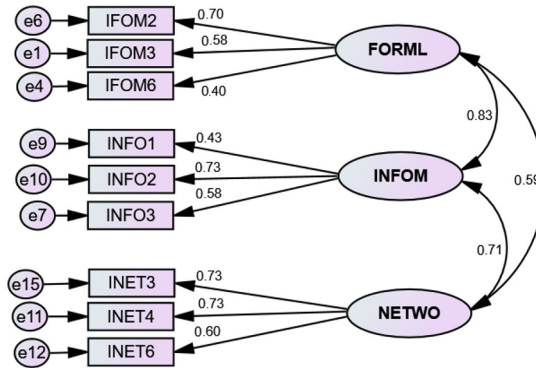
Table 9. Model fit thresholds

Indices	Model fit estimate thresholds
Chi-square	> 1.000
Incremental fit index	> 0.900
Tucker Lewis index	> 0.900
Comparative fit index	> 0.900
Root mean squared error of approximation (RMSEA)	< 0.080

Source: Kim (2007)

model fit indices were achieved for instance the Chi square = 53.860, Degree of freedom (DF) = 24 Probability = 0.000, Incremental Fit Index (IFI) = 0.945, Tucker Lewis Index (TLI) = 0.916, Comparative Fit Index (CFI) = 0.944 and Root Mean Square Error of Approximation (RMSEA) = 0.068. It is also clear that every item loading in the model surpassed the threshold of 0.400 as recommended by Hair et al. (2017) affirming the efficacy of the observed variables as reliable indicators of their respective latent variable. These measures were also indicating relatively moderate to high correlations among themselves. This was no surprise since these are measures of the same variable as presented in Figure 1.

4.1.2 *Confirmatory factor analysis for resource endowments.* In the EFA for resource endowments, all the four dimensions loaded well on the construct resource endowments including finance, human capital, physical infrastructure and market demand although some items for the measures were dropped. However, in the CFA only three dimensions are observed for instance human capital, physical infrastructure and market demand as finance was dropped for model fit purposes. The measures retained at least three to four items for instance under human capital; there is RHCA3 (training full time staff), RHCA4 (recruitment of experienced workforce) and RHCA5 (getting adequately trained staff). Then under physical infrastructure there is RPHF4 (cost of mobile internet), RPHF6 (electricity outages), RPHF7 (cost of electricity) and RPHF8 (poor roads for transportation). Then under market there is RMKT3 (market size), RMKT4 (low disposable income) and RMKT5 (low market share) respectively as the major challenges. For all the retained items in the measures, all the model fit indices were achieved for instance the Chi square = 65.121, Degree of freedom (DF) = 32 Probability = 0.000, Incremental Fit Index (IFI) = 0.954, Tucker Lewis Index (TLI) = 0.934, Comparative Fit Index (CFI) = 0.953 and Root Mean Square Error of Approximation (RMSEA) = 0.062. It is also clear that every item loading in the model surpassed the threshold of 0.400 as recommended by Hair et al. (2017) affirming the efficacy of the observed variables as reliable indicators of their respective latent variable. These



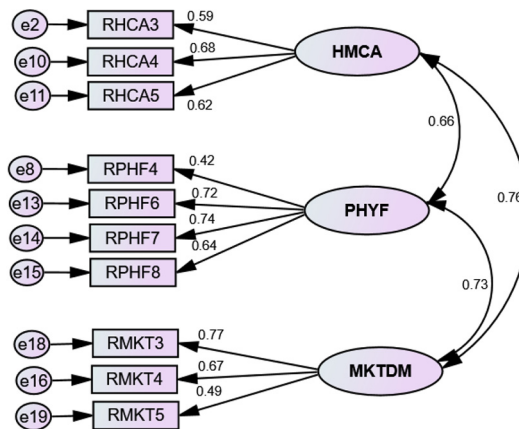
Notes: Chi-square = 53.860; degree of freedom (DF) = 24; probability (P) = 0.000 incremental fit index (IFI) = 0.945; tucker lewis index (ITL) = 0.916; comparative fit index (CFI) = 0.944 ; root mean square error of approximation (RMSEA) = 0.068

Source: Primary data

Figure 1. CFA for institutional arrangements

measures were also indicating high correlations among themselves. This was no surprise since these are measures of the same variable as presented in Figure 2.

4.1.3 *Confirmatory factor analysis for performance of SMEs in the manufacturing sector.* Performance measured the ability of a firm to efficiently exploit the available resources to achieve its set objectives as well as satisfying the demands of its stakeholders (Freeman, 1990). This was measured with output growth, sales growth and employment growth in the conceptual model, all the three dimensions loaded well on the EFA though some items were dropped. The CFA model shows that all the three dimensions of performance of SMEs in the manufacturing sector were retained. However, some items were dropped and these were retained for example under output growth what was retained include POGR1 (increase in production volume), POGR6 (increase in production costs), POGR7 (increase in inventory costs), POGR8 (reduction in machine downtime) and under employment growth there is PEMG3 (having committed employees), PEMG4 (increase in labor wages), PEMG7 (increase in expenses of training full time staff) and PEMG8 (increase in payment of social insurance) and under sales growth the retained indicators include PSAG11 (increase in promotions and exhibitions), PSAG10 (increase in sales volume), PSAG& (increase in customer loyalty), PSAG5 (increase in number of new customers), PSAG4 (having a dedicated sales team), PSAG3 (employee regards him or herself a sales person) and PSAG2 (investment in training the sales team) respectively as major indicators of performance of SMEs in the manufacturing sector. For the retained items under the respective constructs, all the model fits indices were attained for instance Chi square = 218, Degree of freedom (DF) = 101, Probability = 0.000, Incremental Fit Index (IFI) = 0.942, Tucker Lewis Index (TLI) = 0.930, Comparative Fit Index (CFI) = 0.941 and Root Mean Square Error of Approximation (RMSEA) = 0.065 as presented in Figure 3.

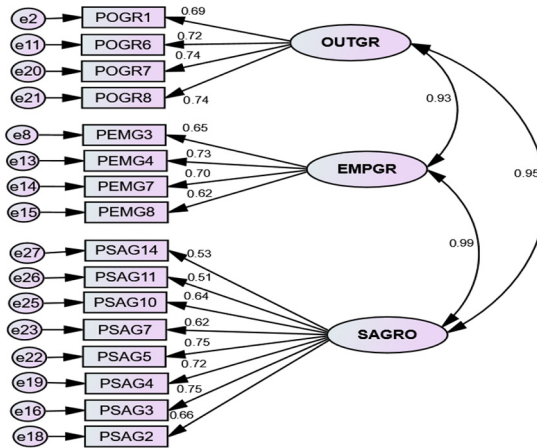


Notes: Chi-square = 65.121; degree of freedom (DF) = 32; probability (P) = 0.000 incremental fit index (IFI) = 0.945; tucker lewis index (ITL) = 0.934; comparative fit index (CFI) = 0.953 ; root mean square error of approximation (RMSEA) = 0.062

Source: Primary data

Figure 2. CFA for resource endowments

4.1.4 Structural model for dimensions of entrepreneurial ecosystem pillars and SME performance. It was earlier on observed in CFA that institutional arrangements retained all the three measures as initially conceptualized and also seen in the EFA including formal institutions, informal institutions and networks. However, in the structural model we can only observe that formal institutions with manufacturing regulations and corruption as the major challenges (indicators) and informal institutions with societal perception on entrepreneurship, poor entrepreneurship culture and social norms as the major challenges respectively. On the other hand, resource endowments was measured by four dimensions including finance, human capital, physical infrastructure and market demand in the conceptual model but in the EFA, only three dimensions were observed as capital was dropped. However, in the structural model, all the three measures in the CFA are still observed though some items were further dropped. So, the ones retained include RHCA5 (having adequately trained staff) under human capital and under physical infrastructure RPHF4 (cost of mobile internet), RPHF7 (cost of electricity) and RPHF8 (roads for transportation) and under market RMKT3 (market size), respectively, as the major challenges affecting the performance of SMEs in the manufacturing sector. For performance the items retained include PSAG2 (having a trained sales team), PSAG3 (every employee regards himself a sales person), PSAG4 (having a dedicated sales team), PSAG5 (increase in the number of customers), PSAG10 (increase in sales volume), PSAG11 (increase in promotions and exhibitions) and PSAG12 (full management support to the sales team). Then POG8 (reduction in machine downtime) and POG1 (increased production volume) were retained under output growth as well as PEMG8 (increase in payment in social insurance), PEMG7 (increased expenses in training full time staff) and PEMG4 (increased labor wages) as indicators of employment growth, respectively, as presented in Figure 4.



Notes: Chi-square = 218.892; degree of freedom (DF) = 101; probability (P) = 0.000 incremental fit index (IFI) = 0.942; tucker lewis index (ITL) = 0.930; comparative fit index (CFI) = 0.941; root mean square error of approximation (RMSEA) = 0.065

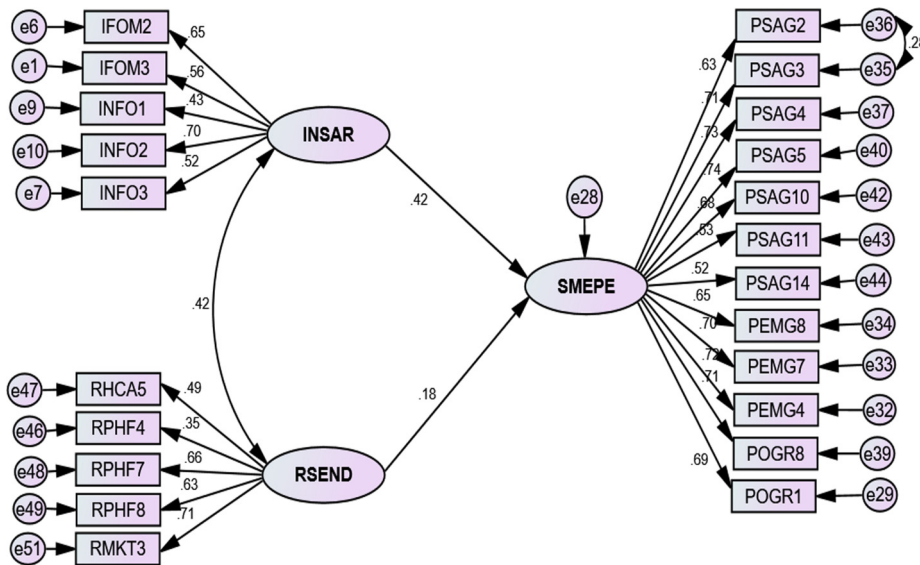
Source: Primary data

Figure 3. CFA for performance of SMEs in the manufacturing sector

The findings indicate that institutional arrangements have a significant and positive effect on the performance of SMEs in the manufacturing sector ($\beta = 0.433, p < 0.001$). Similarly, resource endowments also has a significant positive effect on performance of SMEs in the manufacturing sector ($\beta = 0.190, p < 0.001$) so the two developed directional hypotheses were supported. However, the predictive power of institutional arrangements on performance of SMEs in the manufacturing sector is stronger than that of resource endowments on the performance of SMEs in the manufacturing sector of Uganda as presented in Table 10.

4.2 Discussion of the results

The study findings are discussed in line with the study hypotheses for instance; *H1* predicted a positive relationship between institutional arrangements and performance of SMEs in the manufacturing sector of Uganda which was supported. Similarly, *H2*: also predicted a positive relationship between resource endowments and performance of SMEs in the manufacturing sector of Uganda and was equally supported. However, the results also clearly show that institutional arrangement are stronger predictors of performance of SMEs in the manufacturing sector of Uganda as compared to resource endowments. This confirms the argument by North (1990) who noted that businesses happen in an environment which is the source of uncertainty hence institutions should be put in place to guide the interactions and behaviors of all the players. Thus, it is argued that institutions are very critical because they provide an enabling environment and equitable ground for SMEs to thrive (Iskandar et al., 2022). This coincides



Notes: Chi-square = 303.375; degree of freedom (DF) = 205; probability (P) = 0.000
incremental fit index (IFI) = 0.951; tucker lewis index (ITL) = 0.944; comparative fit index (CFI) = 0.950 ; root mean square error of approximation (RMSEA) = 0.042

Source: Primary data

Figure 4. Structural model for dimensions of entrepreneurial ecosystem pillars and SME performance

Table 10. Structural model estimates

Relationships	B	S.E.	B	C.R.	P	Verdict
SMEPE ← INSAR	0.786	0.176	0.421	4.471	***	<i>Supported</i>
SMEPE ← RSEND	0.411	0.190	0.184	2.167	0.030	<i>Supported</i>

Note: *** $p < 0.001$
Source: Primary data

with prior studies for instance; [Purbasari and Wijaya \(2019\)](#) who confirmed that government support institutions are essential entrepreneurial ecosystem pillars for the well-functioning of SMEs. Institutions are the rules of the game so they determine the fundamental preconditions for SMEs to thrive because different ecosystem actors have to adhere to them ([Pocek, 2022](#)).

Formal institutions like reduction in corruption and bureaucratic tendencies as well as flexible manufacturing regulations act as support incentives for SMEs to operate their businesses and thrive. Well-developed institutions arrangements are normally accompanied by state investment in public infrastructure like education which impacts human capital development and eases knowledge transfer ([Kafouros et al., 2022](#)) of SMEs in their networks. However, if formal rules are not well thought through, they can lead to disintegration tendencies of the ecosystem for instance policies that are not deeply grounded on the local ecosystem due to lack of knowledge on the realities of the local ecosystem. This arises if the local ecosystem actors are not consulted at the early stages of the policy development ([Ogujiuba et al., 2023](#)). The study findings also conquer with [Duran et al. \(2019\)](#) who established low performance when formal enabling institutions and informal constraining institutions are developed. And a high performance when formal constraining and informal enabling institutions are developed. Similarly, [Marlon et al. \(2019\)](#) found out that supportive formal institutions have a positive influence on internationalization and negative formal institutions such as excessive bureaucracies, high taxation and inefficient regulatory framework due to high levels of corruption have a negative influence on internationalization. So this confirms [Audretsch et al. \(2021\)](#) that not just institutions matter but those that support productive entrepreneurship.

On the other hand, much as institutions are critical in enhancing the performance of SMEs in the manufacturing sector, access to key resources like skilled human capital with the necessary expertise and experience, good physical infrastructure and access to market are also essential if SMEs are to realize their full potential. This resonates well with the resource dependency theory which postulates that SMEs that are not self-reliant must engage in interdependent relationships with other firms in the ecosystem to access resources needed for them to perform ([Mukiza and Kansheba, 2020](#)). So, when SMEs network, they benefit from their connections in terms of information flow about what produce, how to produce, when to produce and for whom to produce for. This was supported by [Pocek \(2022\)](#) and [Tabas et al. \(2022\)](#) who contend that when firms enter ecosystems, they enjoy opportunities like easy access to resources, strengthening member relations and trust thus enhancing firm performance and growth due to economies of scale.

5. Conclusion

The purpose of the study was to determine which entrepreneurial ecosystem pillars matter most in enhancing the performance of SMEs in the manufacturing sector of Uganda. This was achieved through a cross-sectional survey and explanatory research approach whereby data was collected from SMEs in the manufacturing sector and analyzed using SPSS version 23 by employing SEM and AMOS. From the findings, it can be concluded that much as SMEs that cannot generate resources internally for their operations can access such resources from their networks, all that

happens in an external environment which is a recipe for uncertainty and also resource rich partners can exploit the resource dependent partners in the due course of the interaction. Therefore, institution arrangements matter most because they guide and regulate the behaviors of all the actors in the ecosystem and their business operations. Notably, understanding the key pillars provide guidance to government and other key actors in the ecosystem on what pillars should be strengthened and interconnected so as to build a well-functioning entrepreneurial ecosystem that can enhance the performance of SMEs in the manufacturing sector. So, what is evident is that for SMEs to thrive, existence of supportive formal and informal institutions SMEs should be given utmost attention. Nonetheless, also resources like; physical infrastructure, skilled human capital and markets should also be in place. Therefore, there should be an interconnectedness of these key pillars and actors that form an ecosystem. For it is already evident that SMEs will not thrive with merely the existence of well-developed standalone policies but rather those that are interrelated and inter-connected in a well-functioning entrepreneurial ecosystem (Stam and Van De, 2021). This is because vibrant entrepreneurial ecosystems like the Silicon Valley in USA and Tel Aviv in Israel are well known for their significant contributions to entrepreneurship prosperity and economic growth (Tabas *et al.*, 2022).

6. Study implications

6.1 Theoretical implications

A significant contribution was made to the Resource Dependency Theory by applying the study to a local Ugandan context. The results of the current study confirm that institutional arrangements are very critical and essential entrepreneurial ecosystem pillars if SMEs in the manufacturing sector are to realize their full potential. This is because supportive institutions like reduction in corruption and bureaucratic tendencies, flexible manufacturing regulations and a positive change in the perception of Ugandans about entrepreneurship cultivates a good entrepreneurial culture and provide an enabling environment for SMEs in the manufacturing sector to increase production thus refrain from operating under capacity, increase sales and create more jobs for Ugandans.

6.2 Policy implications

The government needs to take a holistic approach while developing policy interventions. Thus, the government and development partners should refrain from developing and implementing standalone policies as it is currently however good they may seem but rather focus on building a well-functioning entrepreneurial ecosystem with the interconnectedness and interrelatedness of pillars that are critical to the SMEs in the manufacturing sector. In addition, SMEs owner/managers should be involved in policy design, formulation and implementation so as to equip the government agencies with the necessary information on the local manufacturing ecosystem. Also, the institutions should be those that are supportive like reducing tax rates and corruption and developing flexible manufacturing regulations. The government can look at widening the tax base rather than deepening the already burdensome existing taxes. This suffocates the existing firms and hence just look at survival instead of thriving. Relatedly reducing the bureaucracies and corruption will motivate SMEs in the manufacturing sector improve their performance rather than frustrate them.

The government should also take initiatives for developing business friendly and supportive national culture so as to cultivate an entrepreneurial mindset among Ugandans so develop productive entrepreneurship in Uganda.

Similarly, there should be development of policies and strategies that target strictly SMES in the manufacturing sector as these will address the real needs and solve specific problems affecting SMEs in the manufacturing not a “One Size Fits All” for instance developing general policies for all businesses like it is of now. For instance, in 2020, the [National Industrial policy \(2008\)](#) was

developed but it targets the entire industrial sector of which manufacturing is just a component. In the end the incentives do not directly benefit SMEs in the manufacturing sector. A case in point is where the government targets reducing the cost of energy for manufacturing, but much as SMEs make up to 93.5% of firms in that sector, the cost of power for was reduced from 9 and 16 cents to 8 and 9.8 cents per unit for extra-large and large firms, respectively. This is much lower than what is supposed to be paid by SMEs of 15.6 cents per unit. This will continue to affect the SMEs in manufacturing in terms of costs incurred in the manufacturing process. When it comes to skills, there should be harmonization of the skills that are required by the manufacturing SMEs and those imparted into the graduates so that the graduates on the labor market meet the requirements of the manufacturing firms. This will go a long way in improving the quality of goods produced and their efficiency will lead to improvement in the quality of goods produced locally and a reduction in the cost of production. Consequently, locally produced will be highly competitive.

6.3 Managerial implications

The findings of this study provide insights for owner/managers of SMEs in the manufacturing sector in terms of appreciating the value of networking and partnering with other players in the ecosystem both peers and big firms, suppliers, customers, opinion leaders and government which enhances firm performance. This gives a chance to SMEs to access the right information from their partners on what to produce, how to produce, when to produce and for whom to produce for. This active interaction in an ecosystem widens the opportunities for SMEs to enter new markets and increase their sales both locally and internationally.

6.4 Study limitations and areas for further research

Empirical data for this study was collected from owner/managers of SMEs in the manufacturing sector in Uganda. Much as the manufacturing sector is a key sector to Uganda's economic development and transformation, the sector has some unique features like strict laws and regulations to be followed while manufacturing and fragile business environment which may partly hinder the generalization of the findings to other sectors like trade and services. However, it is highly believed that the findings for the current study can offer a good starting point for studies in other sectors. Besides, data collection was cross-sectional in nature whereby it was a one-time shot. So future researchers can opt for longitudinal studies to understand and monitor the dynamics of the studied phenomenon over a longer period given the fact that entrepreneurial ecosystems form, evolve and develop over time. Also, this study took a quantitative approach so future researchers can explore the study phenomenon using other either qualitative or mixed methods.

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Appendix. Questionnaire
Entrepreneurial ecosystem and performance of Small and Medium Enterprises in the Manufacturing Sector in Uganda.

Dear Respondent.

Thank you for accepting to volunteer and complete this questionnaire. Your responses are important and your thoughtful considerations are highly appreciated. I am Birungi Hajira, a Ph.D. student at the College of Business and Management Sciences, School of Business Makerere University conducting a study on “Entrepreneurship ecosystem pillars and Performance of Small and Medium Enterprises in the Manufacturing sector of Uganda.” All responses received will be treated with utmost confidentiality and will solely be used for this research work. Kindly answer these questions as objectively as possible.

Section A: Demographic characteristics of the respondents

DC	Please, for section A, tick on the most appropriate option	
	Item	Response
DC1	Respondents' title	<input type="checkbox"/> 1. Director <input type="checkbox"/> 2. Manager
DC2	Age	<input type="checkbox"/> 1. Below 20 <input type="checkbox"/> 3. 31 – 40 <input type="checkbox"/> 5. 51 - 60 <input type="checkbox"/> 2. 21 - 30 <input type="checkbox"/> 4. 41 – 50 <input type="checkbox"/> 6. 60 and above
DC3	Gender	<input type="checkbox"/> 1. Male <input type="checkbox"/> 2. Female
DC4	Education level	<input type="checkbox"/> 1. Primary <input type="checkbox"/> 6. Post-graduate – Masters <input type="checkbox"/> 2. Secondary <input type="checkbox"/> 7. Post graduate – PhD <input type="checkbox"/> 3. Vocational training <input type="checkbox"/> 8. Others Specify; <input type="checkbox"/> 4. University Education- Diploma <input type="checkbox"/> 5. University Education- Degree
DC5	Years of business Experience	<input type="checkbox"/> 1. Less than one year <input type="checkbox"/> 3. 6 – 10 years <input type="checkbox"/> 2. 1 – 5 years <input type="checkbox"/> 4. 10 years and above

Section B: Enterprise characteristics

EC1	Number of full time employees	<input type="checkbox"/> 1. 5-49 employees <input type="checkbox"/> 2. 50-100 employees
EC2	Total Assets	<input type="checkbox"/> 1. Between 10 to 100 millions <input type="checkbox"/> 2. Between 100 million to 360 millions

EC3	Legal Form	<input type="checkbox"/> 1. Sole Proprietorship <input type="checkbox"/> 2. Private company limited by shares <input type="checkbox"/> 3. Partnership <input type="checkbox"/> 4. Unlimited company <input type="checkbox"/> 5. Private company limited by guarantee
EC4	Manufacturing Sub- sector	<input type="checkbox"/> 1. Food and beverage <input type="checkbox"/> 2. Textiles, clothing and foot wear <input type="checkbox"/> 3. Sawmilling, paper and printing <input type="checkbox"/> 4. Chemicals, paint, soap and foam products <input type="checkbox"/> 5. Bricks and cement <input type="checkbox"/> 6. Metal products, Packaging and label
EC5	Location region	<input type="checkbox"/> 1. Northern Uganda <input type="checkbox"/> 4. Central Uganda <input type="checkbox"/> 2. Western Uganda <input type="checkbox"/> 5. South Western Uganda <input type="checkbox"/> 3. Eastern Uganda
EC6	Firm age	<input type="checkbox"/> 1. Less than one year <input type="checkbox"/> 3. 6 – 10 years <input type="checkbox"/> 2. 1 – 5 years <input type="checkbox"/> 4. 10 years and above

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