

**FIRM CHARACTERISTICS, EXTERNAL ENVIRONMENT AND
ORGANISATIONAL PERFORMANCE OF TECHNOLOGY
STARTUPS IN KENYA.**

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DECLARATION.

I declare this project is my original work and has not been submitted to any university or other learning institution for examination.

Signature.....

Date: 21st November 2023.

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The research has been submitted for examination with my approval as the university supervisor.

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DEDICATION.

I dedicate this research project to my mother Jane Kariuki for her emphasis on education and father Elvis Kariuki for his support, guidance and encouragement throughout my academic pursuits, this was only possible because of decades of your input in the background.

The research is further dedicated to my siblings Sam, Eve and most of all Kelvin, may this be a good example in your academic pursuits.

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Praise be to the heavens for getting me to this point.

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LIST OF ABBREVIATIONS AND ACRONYMS.

EU	European Union.
OECD	Organization for Economic Cooperation and Development
ROA	Return on assets.
ROE	Return on equity.
ROS	Return on sales.
R&D	Research and Development.
SME	Small and medium enterprises.
SWOT	Strengths, weaknesses, opportunities and threats.
Tech	Technology.
FCBI	Firm characteristics: business incubation question 1
FCBI	Firm characteristics: business incubation question 2
FCEO	Firm characteristics: Entrepreneurial traits and Ownership structure question 1
FCEO	Firm characteristics: Entrepreneurial traits and Ownership structure question 2
FCEO	Firm characteristics: Entrepreneurial traits and Ownership structure

	question 3
FCOS	Firm characteristics: Organization Structure question 1
FCOS	Firm characteristics: Organization Structure question 2
FCIS	Firm characteristics: Innovation and Size question 1
FCIS	Firm characteristics: Innovation and Size question 2
FCIS	Firm characteristics: Innovation and Size question 3
FCIS	Firm characteristics: Innovation and Size question 4
FCBM	Firm characteristics: Business model question 1
FCBM	Firm characteristics: Business model question 2
FCMO	Firm characteristics: Market Orientation question 1
FCMO	Firm characteristics: Market Orientation question 2
EEC	External environment: Competition question 1
EEC	External environment: Competition question 2
EEC	External environment: Competition question 3
EENE	External environment: New Entry question 1
EENE	External environment: New Entry question 2.
EENE	External environment: New Entry question 3.

EESBS	External environment: New Entry question 1
EESBS	External environment: Substitution, buyer power and seller power question 2.
EESBS	External environment: Substitution, buyer power and seller power question 3.
EESBS	External environment: Substitution, buyer power and seller power question 4.
EEMD	External environment: Market dynamics question 1.
EEMD	External environment: Market dynamics question 2.
EEGP	External environment: Government policies question 1
EEGP	External environment: Government policies question 2
EEGP	External environment: Government policies question 3
EEPE	External environment: Political and Economic factors question 1.
EEPE	External environment: Political and Economic factors question 2.
EEPE	External environment: Political and Economic factors question 3.
EEPE	External environment: Political and Economic factors question 4.
OPC	Organization performance: Customer satisfaction question 1
OPC	Organization performance: Customer satisfaction question 2

OPC	Organization performance: Customer satisfaction question 3
OPQW	Organization performance: Quality, delivery and waste question 1
OPQW	Organization performance: Quality, delivery and waste question 2.
OPQW	Organization performance: Quality, delivery and waste question 3.
OPEP	Organization performance: Employee satisfaction and productivity question 1.
OPEP	Organization performance: Employee satisfaction and productivity question 2.
OPEP	Organization performance: Employee satisfaction and productivity question 3.
OPF	Organization performance: Financial viability question 1
OPF	Organization performance: Financial viability question 2

ABSTRACT

The purpose of the study was to determine factors influencing the organizational performance of technology startups in Kenya. The overall objective of the study was to determine the effect of firm characteristics and external environment on the organizational performance of technology startups in Kenya. Anchoring the study were two theories namely, the resource-based theory and the contingency theory. The study used stratified sampling to obtain a sample of 150 tech startups in Kenya. Descriptive and inferential statistics were used to analyze data from the 67 respondents in the study. Research findings showed a moderate effect of firm characteristics and the external environment on organizational performance and a moderate effect between the joint effect of firm characteristics and external environment on organizational performance. The study recommends comparative studies, studies on medium and large enterprises, industry specific studies and the use of a longitudinal approach to establish causal relations between firm characteristics, external environment and organizational performance. The study recommends a series of measures to management and policy makers including; regular environmental assessments, diversification of funding sources, bridging of the disconnect between policy, policy makers and tech startups, clustering for collective bargaining and lobbying, choosing incubation services based on needs or intended outcome, establishment of a conducive business climate by the government and the use of government networks vis a-vis other actors to shore up the capacity of Kenyan incubation centers and providers. The study had several limitations including survival bias, unwillingness to divulge information by micro sized and small sized organizations which led to the use of more time convincing and following up on data collection, time and resource constraints that led to the utilization of a cross sectional study which could only establish a snapshot of the relationships between studied variables .

CHAPTER ONE: INTRODUCTION.

1.1 Background of the study.

Technology startups have in the past been commended for their role in the creation of quality jobs and economic growth. Economic growth in recent years has been attributed majorly to improvements and efficiencies brought about by development and adoption of new technologies. Foreign direct investment flows in developing countries can partly be attributed to investments in technology startups (Disrupt Africa Report, 2023a). These advancements have also been at the core of solving societal issues such as lack of access to banking services and post-harvest losses.

Firm characteristics make up part of a firm's internal environment and includes elements such as firm size and managerial experience among others (Islam, Khan, Obaidullah & Alam, 2011). These characteristics have been noted to influence various aspects of an organization i.e., size of an organization and compliance with regulatory policies in place (Balasubramanian, Shukla, Mangla, & Chanchaichujit, 2020). The external environment consists of factors such as but not limited to fiscal policy, national debt and rate of urbanization (Yuksel, 2012). These factors have been directly linked to influence performance for instance market openness creates a competitive environment which in turn enhances creativity (Okrah, Nepp & Agbozo, 2017).

Technology startups operate in such an environment made up of both internal influences including firm characteristics as well as external influences that affect performance (Luthans & Stewarts, 1978) defined as the level with which an aim is achieved (Dwight, 1995, as cited in Dwight, 1999). Theory and literature show a relationship between the

environment and performance as is illustrated in the work by Lockett (2005). This inquiry will utilize two theories in its analysis of the study variables namely resource-based theory and contingency theory where prior literature reviewed showed a correlation between the environment and performance (Madhani, 2010; Hussain, Haque & Baloch, 2019).

Technology firms across the world have had a tumultuous year and Kenyan technology startup firms have not been spared. The period has seen the closure of several technology startups citing different reasons for closure (Omondi, 2022) but at the heart of the possible explanations provided firm characteristics and external factors have been theorized to be affecting the technology startups and leading to massive layoffs witnessed (Mwangi, 2022) in one of Kenya's key industries that are coming after a period of record-breaking investments into African technology startups and Kenyan technology startups making headlines that indicated confidence in the firms (Disrupt Africa, 2023a). This study sought to determine which firm characteristics and external environmental factors are affecting the performance of technology startups in Kenya and to what extent they do.

1.1.1 Firm Characteristics.

Firm characteristics play an important role in business success and include demographic and managerial features which are part of the internal setting of a firm (Zou & Stan, 1998, as cited in Egbunike & Okerekeoti, 2018). These firm characteristics include size, age of a firm, ownership structure (Egbunike & Okerekeoti, 2018), organizational structure (Donaldson, 2001), innovation, human capital, market orientation and internationalization (Dubitskaya & Tcunova, 2018) among others.

Firm characteristics have been noted to correlate with performance. Organizations with decentralized structures were noted to be more responsive to environmental changes than centralized ones (Donaldson, 2001) while internationalization had a positive effect on performance (Dubitskaya & Tcunova, 2018). Egbunike & Okerekeoti (2018) in their work note that firm size is a significant variable with mixed results on performance; some studies show a positive relationship, while others show mixed results or no effect while age has no significant effect. Kaitai (2020) shows that younger firms are more innovative, that a positive association between innovation and performance exists and goes on to link employee education levels and performance and the location of a firm and performance. Financial flexibility was also significantly correlated to success with external investment positively affecting success (Islam et al., 2011).

1.1.2 External Environment.

Literature on the concept can be traced back to attempts to study an organization's macro environment. An earlier attempt at this was by Aguilar in the 1960's in his ETPS (Economic, Technical, Political and Social traits) conceptualization later reorganized to STEP and modified for the scanning of the external environment as STEPE before adding a legal dimension making it PESTEL. Analysis of business environments has evolved and covers multiple topics and elements of a firm with the external environment being measured using unstructured and structured tools such as Michael Porter's 5 forces model and PESTEL analysis (Paul, Yeates & Cadle, 2010).

These environmental assessment's tools are essential in addressing differentials between expected and actualized outcomes (Porter, 1980, as cited in Barney, 1991). External analysis using PESTEL looks at the effect of political, economic, social, technological,

ecological and legal factors on the performance of an enterprise (Yuksel, 2012). Porter's 5 forces model is a tool used for external environment analysis of an organization by looking at five forces namely rivalry in terms of industry competition, threat of substitution with another product, entry barriers inhibiting new entry, bargaining power of buyers and their influence on the industry and that of supplier power to negotiate terms and their effect on a firm's competitive advantage (Grundy, 2006).

The effect of the external factors can be seen in Okrah et al., (2017) where competition affected both performance and firm innovation, Dubitskaya & Tcunova (2018) where both economic factors and tech advancements, positively affect business processes on one hand while government regulation had a negative effect on the other. In Mugo (2022) market dynamics such as underdevelopment are noted to impede growth and performance. Deena & Gupta (2021) note that when the barriers to entry are low the number of competitors increases and buyers gain in strength thus undercutting profits and affecting performance. Criticism of the environmental approach has been mainly on the analysis methods used with Porter's five forces model being criticized for oversimplifying value chains and failing to link the forces to management action which can be remediated by the use of unstructured methods or a combination of the two.

1.1.3 Organizational Performance.

The concept of performance has been an integral part of modern organization management and has therefore been there longer than its conceptualization in academic literature. Definitions of performance can be traced back as early as the 1950s in the definition of performance as the ability to achieve objectives (Tannnbaum, 1957, as cited in Gavrea, Ilies, & Stegorean, 2011). Performance can also be distinguished as the ability

of an enterprise to obtain and apply available resources in the environment (Yuchtman & Seashore, 1967, as cited in Gavrea et al., 2011) or the ability of an organization to meet objectives using the least amount of resources (Gavrea et al., 2011). As evident in the variety of definitions, there is no consensus on the term despite volumes of literature in the field (Venkatraman & Ramanujam, 1986). The concept is multidimensional and characterized by two terms, efficiency and effectiveness with efficiency as a measure of levels of goal realization and efficiency as a measure of resource consumption for a certain outcome (Ghalem, Okar, Chroqui & Semma, 2016).

There are two ways to measure organizational performance that is by using financial and non-financial organization performance measures with a recommendation to use both measures to establish performance levels (Gavrea et al., 2011). Financial measures are the most commonly used means of measuring organizational performance and are centered on accounting principles such as profitability, ROA, ROE, ROS as well as stock market measures (Hult et al., 2008; Sethibe & Steyn, 2016). Non-financial indicators used include market share, quality, customer satisfaction, reputation, customer retention, organization productivity, branding and operational effectiveness among others (Sethibe & Steyn, 2016).

Tools such as the balanced scorecard have a financial and non-financial component to them capturing different measures such as learning and growth, financial, internal business processes and customer-related measures. Organizational performance measures have been criticized especially where financial and non-financial data from secondary sources has been noted to be not useful for strategic business level decision making among others (Venkatraman & Ramanujam, 1986).

1.1.4 Technology Startups in Kenya.

The concept of technology startups can neither be traced to a singular origin or definition nor is its evolution well documented. The concept also changes with its use being interchangeable with other terms such as clean technology startups and high technology enterprises among others. Deena & Gupta (2021) define a startup using maturity i.e., a growing organization in the first stages of operation with an uncertain business model, using a financing model i.e., self-financing or through a group and with a focus on innovation. A tech startup is a new firm with a business model based on technological innovation (Krejci et al., 2015 as cited in Mugo, 2022). Clean technology startups are firms delivering value-adding products or services utilizing lesser amounts of, or zero non-renewable resources while producing considerably less waste than other existing entities (Pernick & Wilder, 2007, as cited in Bjornali & Ellingsen, 2014). A high-tech enterprise is an organization that uses highly advanced technology and has tech know-how, commercializes R&D, has close ties to the academic environment alongside a high rate of changes, product improvement and focuses on new research (Dubitskaya & Tcukanova, 2018).

As of November 2022, the technology startup industry in Kenya was estimated to employ 11000 people and had raised approximately Ksh 153 billion between January 2015 and November 2022 with Ksh 62.4 billion being raised in 2022 alone. Fintech startups are the dominant tech startups in Africa raising approximately 43% of the total investment made into Kenyan and African startups, in terms of the number of startups financed representing 28% of studied startups while in terms of volume of investment, they come third after e-commerce and retail sector and energy sector (Disrupt Africa Report 2023a).

Globally and in Kenya technology startups have shed their workforce as a result of several factors including problems in financing, parent company issues, pandemic-related factors and a difficult economic environment among others (Omondi, 2022). Of the factors affecting technology startups in Kenya financing was noted to be a key challenge with a majority seeking external financing. However, the cost of borrowing has made access to credit highly unlikely (Munene, 2018).

1.2 Research Problem.

Organizations do not operate in a void rather they function in an environment made up of internal and external factors. The environment in which organizations operate affects both structure and cost (Luthans & Stewart, 1978) among other aspects of the organization. There is consensus among researchers that the environment has a direct influence on organization performance in general and on additional aspects such as structure (Tosi & Slocum, 1984). Effectiveness as a measure of performance is contingent on the interactions between management and situations showing a clear link between the environment and performance (Hussain et al., 2019). The evidence that the environment affects performance is indisputable and supported by multiple theories and literature works that are time-tested.

According to the United Nations (n.d.), economic recovery following the COVID-19 pandemic was overturned by the war in Ukraine and the resulting fallout from the war. A crisis has emerged with higher prices devastating energy markets and taking a toll on the economies of central Asia and Europe and heavy inflation in developing countries. Academic literature on technology startups has focused primarily on developed countries with little research being done in developing countries specifically Africa (Bjornali &

Ellingsen, 2014). Context of a study was seen to influence findings with differences found based on context as is the case of political intervention being of positive influence in Israel (Deena & Gupta, 2021) while at the same time being negative in Russia (Dubitskaya & Tcukanova, 2018).

According to Cantamessa, Gatteschi, Perboli & Rosano (2018) unfeasible business models, lack of business development, resource crunch, product fit issues and organizational environment pressures are the main reasons for organization collapse. This is reinforced by similar findings in Mugo (2022) where access to financing and market accessibility have a significant correlation to the growth of technology startups in Kenya. In Kenya 7 technology startups have closed their operations in the year 2022 citing a difficult market and funding hitches while the hypothesis put out seems to confirm wrong business models as a challenge facing Kenyan technology startups among other issues (Mwangi, 2022).

Considerable attention on African and Kenyan tech startups has been missing with a few studies focusing on the subject in general (Munene, 2018) leading to a situation where the Kenyan startup environment is not as clearly understood. This is of concern given that the subsector employs thousands in quality jobs and contributing to local revenue. (Disrupt Africa Report, 2022). The technology startup environment has in recent years seen massive investment while in the last half of 2022 and the first quarter of 2023 seen massive layoffs, funding crisis and organization turmoil a phenomenon also seen in international markets (Mwangi, 2023). A changing environment coupled with an unstable economic environment in international markets and disruptions have created a harsh environment for technology startups in Kenya that has not been adequately researched or

understood leading to the research question, how has the firm characteristics and external environment affected the organizational performance of technology startups in Kenya?

1.3 Research Objective.

The objective of the study is to investigate the influence of firm characteristics and external environment on the organizational performance of technology startups in Kenya.

1.4 Value of study.

Researchers will benefit from an analysis and theorization of the environment which tech startups in Kenya operate in. The research will build on the existing literature on firm characteristics, external environment and organizational performance. The research will also build on a few studies done on technology startups in developing countries and provide directions for further research.

Technology company managers will benefit from an enhanced understanding of the external forces impacting their organizations and the sector in a Kenyan context. This will enable further planning and a better understanding of the industry in general.

Policymakers will benefit from a better understanding of how the legal framework they develop has a practical effect or lack of in the sector. The government will gain a clear understanding of what outcome execution of policies has on the industry as well as recommendations on policy issues.

CHAPTER TWO: LITERATURE REVIEW.

2.1 Introduction.

This chapter reviews the theories used in the study namely the resource-based approach and the contingency theory. It moreover reviews existing literature on firm characteristics, external environment and performance. In addition, the chapter provides a summary of the literature reviewed and gaps. A conceptual framework showing relationships between variables is also presented.

2.2 Theoretical foundations.

This section presents theories used to underpin the study. The theories are the resource-based approach/theory and contingency theory. The section covers the origins, assumptions, postulations and criticism of the two theories. In addition, the research establishes the utility of the theories in the study.

2.2.1 Resource based theory.

Resource based theory posits that an enterprise's competitiveness is based on the resources they possess describing the characteristics that the resources should have to gain sustainable competitive advantage and is a link between resources and performance. The theory aims to explain why some organizations perform better than others (Olavarrieta & Ellinger, 1996). The importance of resources has always been recognized in management literature but the term resource-based view only came to shape in the 1980's. The root of the theory can be tracked back to the work of Edith Penrose in the 1950's though the extent of contribution to the view is debatable (Lockett, 2005).

Following that initial publication, other studies followed such as the works of Birger Wernerfelt in 1984 and Jay Barney in 1991 among others (Madhani, 2010).

The firm is defined as a collection of productive resources (Wernerfelt, 1984, as cited in Lockett, 2005). These firms are rent-seeking and rent-maximizing in nature with rents being generated from capabilities and enabling translation into superior performance. Resources are seen to be causally related to performance and affect competitive advantage (Olavarrieta & Ellinger, 1996). Resource based theory stipulates that it is impossible to obtain competitive advantage when resources are similar and perfectly mobile due to even distribution across competing firms. Therefore, under these conditions, no strategy can be developed or implemented that cannot be replicated by another firm unless when a first mover's strategy is employed or strong barriers to entry exist that allow for sustained competitive advantage (Barney, 1991). A firm's resources potentially generate competitive advantage if they are rare, not easy to imitate, are valuable and have no strategic equivalent for a substitute therefore enabling strategy implementation to improve efficiency and effectiveness (Barney 1991 as cited in Madhani, 2010). If a firm's resource's meet the criteria stipulated then they can generate competitive advantage for the firm.

Heterogeneity and immobility are unlikely; however competitive advantage is possible under homogenous and mobile conditions (Barney, 1991). A firm that is ahead of others may use barriers to protect itself through a resource protection barrier where if its lead is technological, it can hire the best personnel in the industry or stay protected by higher customer acquisition costs for new entrants hence enjoying competitive advantage

through first movers' strategy (Wernerfelt, 1984). Resource based view has been criticized for assuming what it hopes to study (Hoopes et al., 2003, as cited in Madhani, 2010) and the use of vague terminologies that make it difficult to compare studies (Madhani, 2010). The study will utilize the theory and adopt clear definitions of vague terms. The research will attempt to complement the assumptions of the theory and strengthen the assumptions made by prior researchers.

2.2.2 Contingency theory.

Contingency theory can be tracked back to the works of Stalker in 1961, Woodward in 1965 and Lawrence & Lorch in 1967 with earlier scholars producing convergent results (Tosi & Slocum, 1984). The theory assumes that the effect of one variables on another is dependent on another variable with organization effectiveness resulting from fitting organization characteristics to reflect the organization's situation. Key to organization performance is adapting to changes in the environment and hence organizations are shaped by the environment (Donaldson, 2001).

Contingency theory is made up of several variables namely the environment, management and performance variables as the primary variables where management acts as a mediator of an uncertain environment and the organization. The secondary variables in contingency theory are situational variables; an interaction between the environment and resources, organizational variables; an intersection between management and resource variables and the final variable performance criteria; an intersection between the environment and management. Performance is interpreted as a function of interactions

between management, the environment and resources taking into account both human and non-human resources (Luthans & Stewart, 1978).

The theory recognizes that modern organizations are complex where one strategy cannot address all issues hence the need for a contingent approach with each situation needing its individual approach (Sridar, 2017 as cited in Hussain et al., 2019) and awareness of contingent factors on organization design and functionality. Proponents of the theory call for a review of each situation, assessing both the internal and external environment to administer context specific approaches (Hussain et al., 2019). The environment has a contingent effect on organization structure determining rigidity and flexibility (Donaldson, 2001).

Critiques of the theory assert that concepts are not clearly defined for instance a simplistic definition of effectiveness as profitability ignoring other measures as well as failing to account for the role of cultural variations in an organization's operating environment (Tosi & Slocum, 1984). Despite these shortcomings, the theory will be essential in the study with the research accounting for the shortcomings in the study through the definition of performance and researching the role of culture. The study will seek to complement the findings of the theory strengthening its assumptions.

2.3 Empirical studies and research gaps.

The section covers prior literature examined by the research. This includes literature review on firm characteristics and organization performance, external environment and organization performance and the joint effect of firm characteristics, external

environment and organization performance. The subsection also entails a summary of research gaps and a conceptual framework used by the study to establish hypotheses.

2.3.1 Firm Characteristics and the external environment.

An organization's ecosystem includes firm characteristics that interact with other aspects of the ecosystem to produce either a specific impact or no results on the organization's output or systems. In an instance, firm characteristics are seen to influence the competitive advantage of firms. Innovation for example can be seen to improve an organization's capability to compete with peers and other organizations in the same field or a substitute for their products (Okrah, et al., 2017).

Firms can accumulate specific benefits based on their specific features. These benefits include the accumulation of knowledge and expertise overtime of operations, less bureaucratic and can ease in innovating by smaller firms in comparison to larger firms. Large firms have been noted to have greater visibility that influences their actions and performance while enjoying economies of scale and are better positioned to recoup their investment compared to smaller firms (Balasubramanian, et al., 2020).

Like firm characteristics, the external environment is part of the organization's ecosystem interacting with other aspects. A mutually influential relationship is observable between the external environment and other aspects of the organization. A competitive environment influences managerial response to prioritize innovation in an organization as a means for survival while the firm's innovations influence its competitiveness in a mutually reinforcing loop of influence over each other (Okrah et al., 2017).

2.3.2 Firm Characteristics and organizational performance.

Ayatse, Kwahar & Iyortsuun (2017) affirm that firms are subject to evolutionary forces where uncompetitive firms are subject to the forces of selection however, young firms are more likely to be negatively affected by this with business incubation improving their chances of survival. Firm performance has been noted to improve when an organization is incubated and incubation is seen as a cost-effective tool for promoting entrepreneurship. However, overstaying in an incubation service was seen to reduce the chances of survival for a firm.

Specific external environment features have a greater impact on firms with specific characteristics. According to Balasubramanian et al. (2020), government regulation of the business environment has a greater impact on foreign-owned firms compared to locally-owned ones on ecological CSR. On the other hand, they are also likely to receive technical and know-how support from the parent company boosting their ability to comply with ecological policies. A firm with limited capital reserves is less likely to use them in political resistance while also being more likely to receive technical and financial support from governments to perform their CSR.

2.3.3 External environment and organizational performance.

Dubitskaya & Tcunova (2018) noted that economic and social factors in Russia such as taxation and economic growth for the former and salaries and vocational training for the latter have a strong impact on the business process of high-tech enterprises with improvements in economic conditions leading to improvements in R&D. State support through grants, state research centers and industrial parks as well as other factors such as

R&D, internationalization and commercialization had a high effect that was positive in nature while government regulation had the opposite effect.

In an analysis of technology startups in both Israel and India using the five forces model approach Deena & Gupta (2021) determined that the threat to new entry in software and information startups was significantly low which contributed to increased intensity of competition and price wars. The threat of product substitution significantly affected the profitability of the startups with buyer power being quite strong and driving competition on the industry. Performance measured as profitability or turnover is therefore affected.

2.3.4 Firm characteristics, external environment and organizational performance.

Bjornali & Ellingsen, (2014) in a study on cleantech startups divided factors affecting these startups into three subcategories namely firm specific factors, individual factors and external factors with all three being important to the growth of startups. Regulations and policy were determined to be a double-edged sword positively impacting and enhancing competitiveness while negatively affecting innovation with clean tech-based startups being heavily regulated. The qualitative study found few studies on individual factors. The findings showed that higher commercial risk amplified the odds of obtaining research financing.

Cantamessa et al (2018) in a study on startup failure examines at 214 failure reports in a qualitative study that looks at why startups fail utilizing the aviation industry failure diagnosis tool SHELL customized for a business assessment. The findings show that business model issues at 37% of cases are the key reason for the negative performance of startups. This is closely followed in second place by organizational issues at 30%,

environmental issues interpreted through competition at 15%, product issues at 10% while customer/user issues come in last at 9%. A positive correlation between an increase in risk and funding was also reported. The results show an emphasis on internal factors as the major issue for the negative performance of the technology startups that were studied, a departure from other reviewed studies that emphasized the impact of the external environment. The correlation between risk and funding was also a contradiction to the entrenched risk-averse profile of investors.

Mugo (2022) in the study of factors affecting the growth of technology startups in Kenya, looked at startups incubated at Nailab and Ihub reporting that funding and access to funding are key impediments to the business growth of technology startups with inadequate financing resulting in stagnation. Access and the cost of obtaining capital negatively affected the ability of startups to acquire adequate resources while product potential remained depressed due to market deficiencies. Growth was noted to be dependent on customer perception, access to finance, innovation and the business environment with the relationship being statistically significant. The results have resemblances with the findings of similar studies in Kenya.

2.3.5 Summary of Research gaps.

The findings of this study's literature review clearly show a contradictory evidence gap in Cantamessa et al. (2018) where the findings particularly differ from prior research in the field. The researcher's findings on investor approach to risk differ from those identified in other research including Okrah et al. (2017) who describe the risk approach of investors to be cautious, vigorous and risk avoidant. An empirical gap also emerges as no study has emerged to address the contradictions. Some of the research reviewed failed to

utilize theories in their study or justification of findings including Dubitskaya & Tcunova (2018), Cantamessa et al., (2017) and Ayatse et al. (2017) among others leading to a theory application void gap. A research and context gap were present in all studies evaluated with none looking at the influence of gender in the financing of tech startups despite the demographic element being hypothesized as an influencing variable.

The review also uncovered that several studies had utilized secondary data in the evaluation of their study variable with Deena & Gupta (2021), Ayatse, et al. (2017) and others all utilizing secondary data in their research. The majority of research efforts are also concentrated in developed countries with few focusing on non-OECD countries a factor noted in Bjornali & Ellingsen, (2014) work on tech startups. In Africa, few studies have been conducted with the majority also focusing on certain aspects of the startup ecosystem such as growth leading to inadequate representation. The current study will bridge the contextual gap identified in several studies, compare the results of the study with those of reviewed works including contradictions and attempt to understand the attitudes to risk by investors in Kenyan startups as well as advance current literature on technology startups in Kenya by researching some of the recommendations by prior researchers.

2.4 Conceptual framework.

The study's conceptual framework is presented in the figure below was developed from an empirical review. The framework links the independent, moderating variables to the dependent variable. The framework explains the relationship between firm characteristics and organizational performance. The dependent variable for the study was organizational performance, firm characteristics as the independent variable for the study while the

external environment was the moderating variable. The examined firm characteristics include incubation, entrepreneurial traits, ownership structure, organization structure, innovation and size, business model and market orientation. The examined external environment traits include competition, threat of new entry, threat of substitution, buyer power, seller power, market dynamics, government policy, political and economic factors. Elements of organization performance assessed include financial measures and non-financial measures. The financial measures include profitability and return on equity. The non-financial measures examined include customer satisfaction, quality, delivery and waste, employee satisfaction and productivity. The relationship between firm characteristics and organizational performance was postulated to be moderated by the external environment.

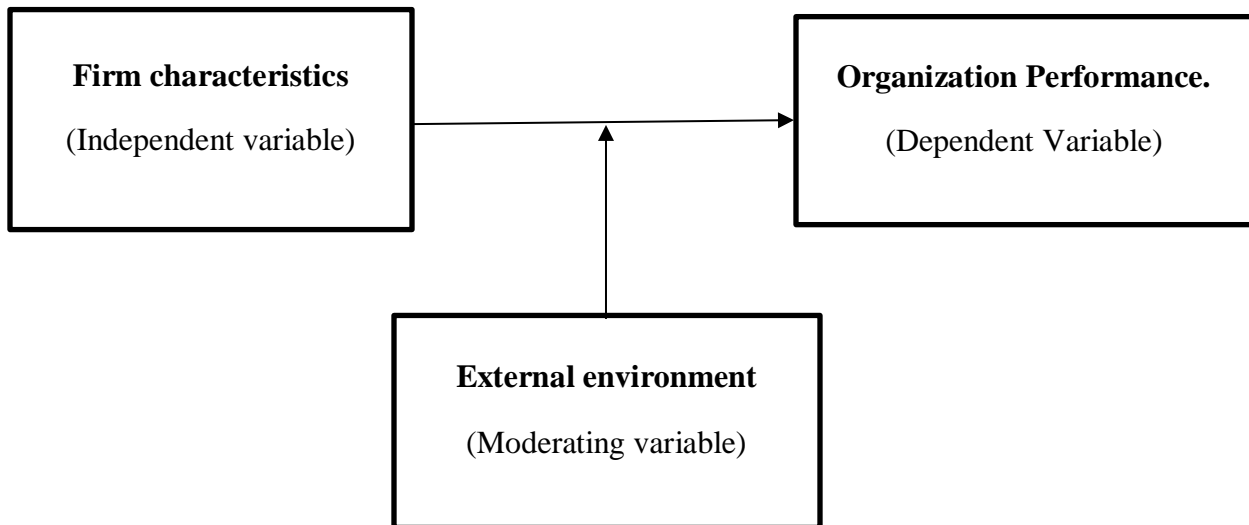


Figure 2.1 conceptual model

The framework was employed to generate hypotheses tested in the study. Two hypotheses were generated to test the relationship between variables. The hypothesis tested include:

H1: Firm characteristics have a significant influence on the organizational performance of technology startups in Kenya.

H2: Firm characteristics and external environment have a significant joint influence on the organizational performance of technology startups in Kenya.

The hypotheses were tested and their result presented and discussed in the subsequent chapters of the study.

CHAPTER THREE: RESEARCH METHODOLOGY.

3.1 Introduction.

This chapter entails details on the research methodology at the core of the study. It is a deliberation on the research design, research population, sampling, data collection and data analysis approaches undertaken by the study and how they were arrived at. The section also entails reliability test results of the pilot study and that of the main study.

3.1 Research design.

According to Zikmund (2003), a research design is a master blueprint detailing methods and procedures used to collect data and analyze required information. It is an outline for the gathering, measurement and analysis of data based on research questions of the study (Sekaran & Bougie, 2013). A cross sectional research design was utilized as it would be appropriate for the study as the study seeks to define and explain a situation or phenomena within a set industry.

This research utilized a cross sectional research design approach to obtain objectivity while allowing for generalization and replication of the research. The research design is appropriate due to the need to make a generalization of the factors that affect technology startups in Kenya and to identify the factors.

3.2 Research Population.

A population refers to an entire group of people, events or things of interest that a researcher looks to study (Sekaran & Bougie, 2013). To establish a target population for this research, an evaluation of prior studies by Munene (2018) was undertaken generating a list of 30 technology startups that met the study's definition of technology startups and

another by Disrupt Kenya report (2022) generating a list of 341 technology startups that fit the study's definition of tech startups. All 30 organizations in Munene (2018) were present in Disrupt Kenya report (2022).

The study adopted the following definition of technology startups, tech startups are organizations in their early stages of operation and commercialization, utilizing new technology and have the tech know-how. The study also defined Kenyan startups as those that meet the definition described above and are headquartered in Kenya or have Kenya as a primary market.

The researcher pruned the list removing all startups that did not have at least one avenue in which they could be contacted. This resulted in a population of 240 startups. Technology startup companies were determined as the unit of analysis/observation for the study with each startup expected to potentially provide one response. The study population is highlighted in Table 3.1.

Table 3.1: Distribution of the Startup Population.

Sector	Number of startups.	Number of respondents
Fintech	73	73
Ed-tech	16	16
Agri-tech	26	26
E-health	24	24
Logistics	12	12
Emobility	6	6
Energy	5	5
E-commerce and retail	21	21
Recruitment and HR	15	15
Marketing	7	7
Others	35	35
Total	240	240

Source: Author (2023).

The study population therefore consists of 240 Kenyan technology startup companies in different sectors as shown in the table above. The study population was used in the sampling process to determine respondents in the study.

3.3 Sample design.

The process of coming up with a sample design involves several decisions with an ideal sampling design producing minimal standard error of estimate (Cooper & Schindler, 2006). A sample is a subset of a general population with sampling being undertaken due to the prohibitive nature of studying a large population (Sekaran & Bougie, 2013).

Mugenda & Mugenda (2003) postulated that to choose a representative sample a researcher needs a sampling frame defined as a list of all elements from which a sample will be generated (Zikmund, 2003). The sampling design used in the study was arrived at by evaluating the Sekran & Bougie (2013) model shown in Figure 3.1 and Figure 3.2

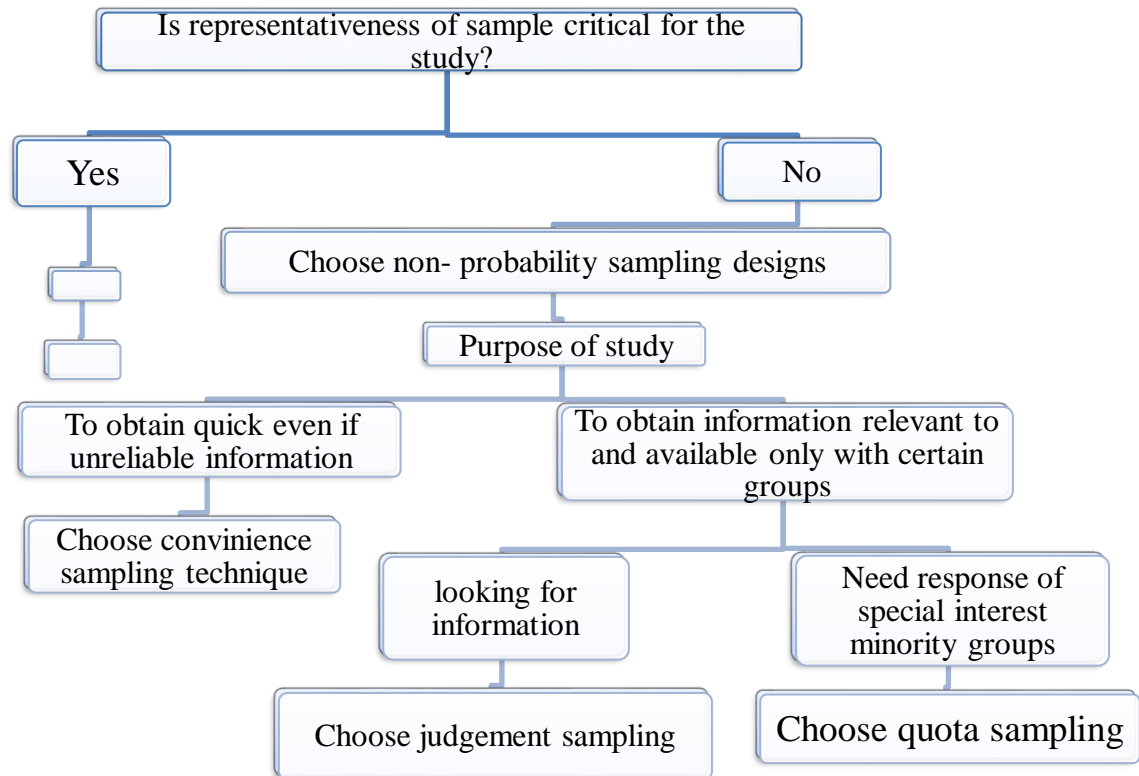


Figure 3.1: Choice points in sampling design.

Source: Sekaran & Bougie (2013).

Figure 3.1 was evaluated to establish the appropriate sampling method for use in the study. The representation of different sample groups was determined to be a critical element of the study. This resulted in moving down into the Yes side and the discarding of figure 3. The other components of the No category are presented purely to holistically

presenting the entire table. The evaluation moved forward to Figure 3.2 for further evaluation of the Yes side of the table flow.

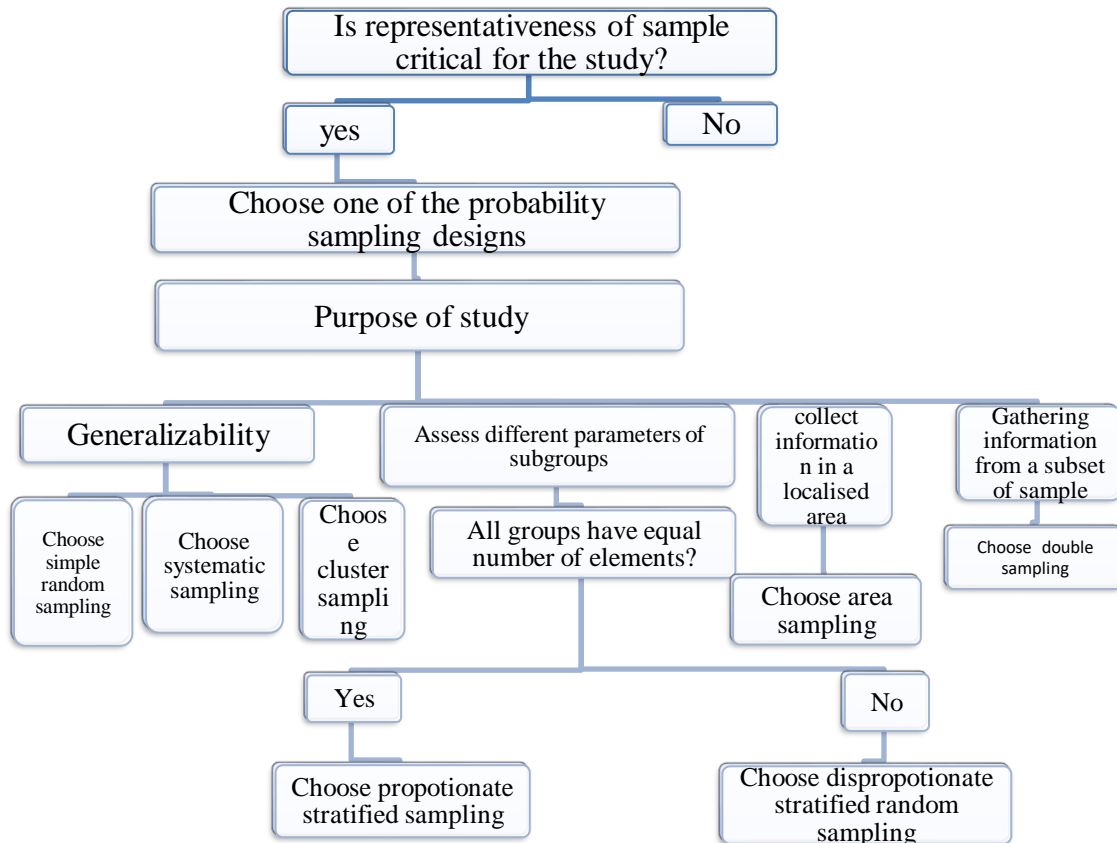


Figure 3.2: Choice points in sampling design ii.

Source: Sekaran & Bougie (2013).

Evaluation of Figure 3.2 from the Yes option was conducted down until the determination of the purpose of the study. The generalization of results for industry analysis with a proportionate sample in order to sample each group adequately were

determined to be the purpose of the study. This led to the selection of proportionate stratified sampling as the sampling design.

Stratified random sampling was used for its suitability of use when the objectives of the study are a generalization of the results of varying groups to fit an industry analysis and the ability to sample each group adequately. This was aimed at achieving the preferred depiction of the various subcategories of the population in line with the recommendations of Mugenda & Mugenda (2003) reproducing population subgroups in the sample. The study utilized Yamane (1967) statistical formula to come up with a sample. The results of the sampling formula and the sampling calculations are illustrated below and a further breakdown in Table 3.2.

$$n = \frac{N}{(1 + Ne^2)} \qquad n = \frac{240}{1+240(0.05^2)} = 150$$

Where;

n = Numerical sample,

N = Study Population in numeric

N_x = Study population per subcategory

e = maximum percentage error necessary (At 5% giving a 95% confidence level).

The execution of the statistical formula generated a sample of 150 startups. To get a representative population, the various subgroups were equally represented based on their

percentage of the general population. Table 3.2 shows the sectoral distribution of the study sample.

Table 3.2 Sectoral distribution of the study sample.

Sector	Number of startups.	Sample proportion ((N_x/240*100)=n%)	Sample size (n%/100*150)
Fintech & Blockchain	73	30%	45
Ed-tech	16	7%	11
Ag-tech	26	11%	16
E-health	24	10%	15
Logistics	12	5%	8
E-mobility	6	2%	3
Energy	5	2%	3
E-commerce& retail	21	9%	13
Recruitment and HR	15	6%	9
Marketing	7	3%	5
Others	35	15%	22
TOTAL	240	100%	150

Source: Author (2023).

The final proportionate sample was made up of 150 respondents. The sample consisted of 45 respondents in block chain and fintech, 11 in Ed-tech, 16 in Ag-tech, 15 in E-health, 8 in Logistics, 3 in mobility, 3 in energy, 13 in E-commerce and retail, 9 in recruitment and HR, 5 in Marketing and 22 in the others subcategory.

3.4 Data collection.

A survey was applied in the gathering of data describing the characteristics of the tech startup environment. Using a questionnaire is a common way to generate primary data as recommended by Zikmund (2003). In the survey, a selected sample answered questions from a standardized questionnaire that was administered by face-to-face method, drop and collect method and web-assisted admissions method. Questionnaires were picked as the preferred tool for data collection due to their convenience and appropriateness for the data to be collected. This was to provide valid and reliable results especially when using a large sample as recommended by (Kothari, 2004).

The questionnaire was partitioned into two parts, one focusing on collecting demographic data and another focusing on collecting data relevant to the study objectives identified. Closed-ended questions were utilized in the to obtain consistency of results. The questionnaires were double-checked to ensure minimalism, checked for relevance and timed before it was presented to respondents during office hours using the methods established earlier and picked a week later giving ample time to fill in responses. The respondents were assured anonymity of information provided in the questionnaires through an introductory letter and the purpose of the study clearly expressed alongside the provision of authorization letters from relevant institutions such as the university and the local government.

The questionnaires were issued to CEOs of technology startups through drop-and-pick method and online surveys using online forms. In the unavailability of a CEO, a top management executive was to replace and fill in for the CEO. Expert opinion from the supervisor and industry practitioners were sought to ensure the validity of the

questionnaire. A pilot study was conducted between 31st July and 11th August 2023 intended to examine the questionnaire's reliability using a Cronbach alpha test to establish the internal reliability of the questionnaire.

Data collection was carried out between 28th August and 30th September 2023 following authorization by the examining institution through a letter. Authorization for data collection was also obtained from NACOSTI with the NACOSTI license and the letter by the University being used in data collection. Web-administered surveys were sent on the first week of data collection introducing the researcher, the research topic and the intended use of the data that would be collected from the organizations that would participate in the study. Emails were the preferred method with a Google Forms link attached containing the questionnaire, an introduction message and a letter from the university as well as a letter from NACOSTI once it was ready. A total number of four email reminders were sent out during the data collection period which lasted approximately one month. In addition to email reminders, a call was placed to selected organizations reintroducing the researcher and the research to improve the response rate given a low response rate in the pilot study phase and prior literature indicating a low response rate for data collection on management staff (Holtom, Baruch, Aguinis & Ballinger, 2022).

The questionnaires were also administered using a face-to-face method where the researcher would ask the questions in the questionnaire and tick the responses provided. In addition, the researcher also used "drop and collect" method leaving the questionnaires at the organization's offices and picking them up a week later giving adequate time for respondents to respond. On certain occasions more time was provided as required with

lost questionnaires provided again and on certain occasions as requested the questionnaires were administered using email and a Google Forms questionnaire following a visit to the organization where necessary.

Several challenges were observed during the data collection stage from sampled organizations such as company policy against participating in research requests, perceived sensitivity of survey questions, a lack of understanding as to the purpose of academic research undertakings and failure to transmit study results by prior researchers leading to organizations declining to respond to the survey. To counteract this, the researcher utilized organization visits to explain the benefits of participating in the study and reassured respondents that the results would be shared after the examination of the project.

3.5 Reliability.

According to Ursachi, Horodnic & Zait (2015) a Cronbach alpha scale of 0.6 to 0.7 is considered acceptable while 0.8 and above is considered a good level of reliability. A generally accepted rule of thumb is a recommended Cronbach alpha cut-off of 0.7. Any value higher than 0.95 is not necessarily good as it indicates redundancy (Hulin, Netemeyer & Cudek, 2001, as cited in Ursachi et al., 2013).

A pilot study of 10 organizations was conducted to test the questionnaires appropriateness, cleaning and amendment. The results of the Cronbach alpha test showed a consistency level of 0.666 indicating that the questionnaire was reliable. Following the pilot study, recommendations to adjust the Linkert scale to allow for a response where the respondents can take up a neutral stand were considered and adopted. The Linkert scale

therefore changed from a Strongly Agree-Agree-Disagree- Strongly Disagree-Not at all scale to a Strongly Agree-Agree-Neutral-Disagree- Strongly Disagree scale. The new scale was borrowed from Kothari (2004) writings on summated scales.

In addition, a secondary analysis of post-pilot study data collection was conducted to evaluate the results to raise reliability levels to a minimum threshold of 0.7. The reliability results of the data analyzed and presented showed a Cronbach alpha of 0.65 for firm characteristics as a variable, 0.757 for the external environment and 0.846 for organizational performance as a variable. Subsections that did not meet the 0.7 threshold adopted in post pilot study had items deleted until the threshold was met. This led to the deletion of three items FCBI questions 1 and 2 and FCBO question 2 improving the reliability of firm characteristics to 0.722. The results of FCBI1, FCBI2 and FCBO2 are presented in the descriptive measures of responses of firm characteristics but are exempted in the testing of the model and correlation analysis in Chapter 4.

3.6 Data analysis.

Before the processing of responses, an analysis was undertaken to ensure that all questions were answered and that the collected data was primed for statistical analysis. Validation and checking were done after the questionnaires had been collected from the field. The questionnaires responses were checked for clarity, legibility, relevance and appropriateness (Kothari, 2004). Statistical package for social sciences (SPSS version 20.3) was used as a data analysis tool.

Data provided in the questionnaire was analyzed and coded as recommended by (Cooper & Schindler, 2014). Descriptive and inferential statistics were utilized to infer

conclusions. Descriptive statistics methods such as standard deviation and mean were used and the findings presented using tables and figures. A person correlation analysis was undertaken alongside a regression analysis utilizing the regression models to test the significance between the dependent and the independent variable. The regression models are shown below.

$$OP = \beta_0 + \beta_1 FC + \varepsilon \quad \dots\dots\dots \text{model 1}$$

$$OP = \beta_2 + \beta_3 FC + \beta_4 EE + \beta_5 FCEE + \varepsilon \quad \dots\dots\dots \text{model 2}$$

Where;

OP = organizational performance.

$\beta_0 \beta_1 \beta_2 \beta_3 \beta_4 \beta_5$ = beta coefficients.

FC = Firm characteristics.

EE = External environment.

The study was in line with ethical research standards and acquired all relevant authorizations needed to conduct the study. The study also ensured the confidentiality of responses as well as the anonymity of the respondents by numerically coding questionnaires. The study recognized all used sources and endeavored to cause no harm in line with ethical issues raised by Mugenda & Mugenda (2003).

CHAPTER 4: PRESENTATION AND DISCUSSION OF FINDINGS.

4.1 Introduction.

Chapter four details the research findings established by the study and the subsequent discussion around these findings. It is a deliberation and presentation of the findings of this research inquiry with data presented in tables. The chapter comprises of the respondent's and organization profiles, distribution of responses, linear relationships between variables and inferential influence between variables. A discussion on responses follows the presentation of responses on each subsection.

4.2 Respondent Profile.

This section presents descriptive data on response rates and the individual profiles of respondents. The individual profile includes role in the organization, gender and age. In addition, the section also contains a profile of the firms they represent. The firm profiles consist of two elements; time spent in incubation and primary source of financing.

4.2.1 Response rate.

The study sample of 150 was drawn from technology startups in Kenya. All organizations in the sample were contacted and provided with a questionnaire. The responses rate obtained was compared against previous trends and publications. Table 4.1 provides a detailed view of the response rate for each category.

Table 4.1 Breakdown of the study's response rate

Tech startup Category	Administered questionnaires	Received questionnaires	Percentage
Fintech & Blockchain	45	20	44.44
Ed-tech	11	3	27.27
Ag-tech	16	4	25
E-health	15	7	46.67
Logistics	8	2	25
E-Mobility	3	3	100
Energy	3	2	66.67
Ecommerce & retail	13	1	7.69
Recruitment & HR	9	4	44.44
Marketing	5	3	60
Others	22	18	81.82
Total	150	67	44.7

Source: Survey Data (2023)

The results presented in Table 4.1 show that of the 150 administered questionnaires from the 11 categories, a total of 67 provided a response bringing the overall response rate to 44.7%. The highest response rate was from the e-mobility category with a 100% response rate. This can be explained by the fewer number of responses needed to obtain such a high response rate. The same trend was observed in the other categories (marketing and energy) that had a low number sampled.

The study had an average response rate of 44.7%. This was above the response rate

average of top management surveys reported at 32.19% as well as a higher response rate than the Journal of International Business Studies records in America with an average response rate of 40.5%, 21% in Europe while other regions had a 38.5% response rate (Holtom et. al, 2022). While studies with a low response rate do not indicate low validity, there is a greater risk of this (Morton, Bandara, Robinson & Carr, 2012).

Some studies showed that low response rates (20%) can produce more accurate results than studies with higher response rates (60% to 70%) in some instances (Viser, Krosnick, Marquette & Curtin, 1996, as cited in Morton, et al.,2012). With only one category of the eleven falling below the 20% mark and a general response rate higher than that of publication trends as noted in the Journal of International Business Studies, the inquiries response rate was acceptable in the inference of conclusions on the variables.

4.2.2 Descriptive profile of respondent firms.

The study established the demographic profile of the respondent representing the organizations based on the role of the respondent in the organizations, their gender and age. The results are presented in table 4.2. This is followed by a discussion on the responses provided against previous findings where possible.

Table 4.2: Demographic profile of respondents

Respondent traits	Frequency	Percentage
Role in the organization		
Manager	49	73.1
CEO	18	26.9
Total	67	100
Gender		
Male	46	68.7
Female	21	31.3
Total	67	100
Age		
Below 30 years	28	41.8
30-39 years	29	43.3
40-49 years	7	10.4
Above 50	3	4.5
Total	67	100

Source: Survey Data 2023.

Analysis of the demographic data of respondents showed that a majority (73.1%) of respondents were managers while the rest (26.9%) were chief executive officers of the organizations sampled with data being collected only from management staff. The gender distribution between the two groups showed that a majority of the respondents were male (68.7%) and the rest (31.3%) were female showing a possible trend of female underrepresentation in top-tier management of technology startups. Male dominance in

tech startups has been documented by Salamzadeh & Kwamorita (2017) who studied 65 startups in Iran with a majority (65%) of the founders being male as well as by Seo & Lee (2019) with a focus on CEOs and founders of tech startups in Korea where a majority were male. A similar trend is seen in the Disrupt Africa (2023b) report titled Diversity Dividend which looks into gender equality in the African tech startup ecosystem noting that less than 10% of CEOs of the sampled organizations had female CEOs. The results are also in line with a venture capital report that shows female startup entrepreneurs are rare (AVCA, 2023).

The top band of the age distribution consisted of management staff above the age of 50 while the lowest band included all management staff below the age of 30 years. The analysis uncovered a higher representation in the age bands below 30 years (41.8%) and 30 to 39 years (43.3%). The highest age band had the lowest representation (4.5%) for the age above 50 years followed by those of the age 40 to 49 years (10.4%). The analysis showed that management staff in the sample population were younger similar to Salamzadeh & Kwamorita (2017) where a majority (90.5%) of founders in Iran were below 30 years. This might be explained by several factors including a higher cost associated with older management staff as well as the nascent fields in which these organizations operate in that are new with fewer older management staff being competent in the fields compared to their competence in older and mature industries and hence such positions are filled by younger staff.

The study also analyzed the descriptive profile of the organization looking at two aspects incubation and financing. The results are presented in table 4.3 followed by a discussion of the findings.

Table 4.3 Responses on incubation and primary source financing.

Organization profiling traits	Frequency	Percentage
Time spent in incubation		
0 months	19	28.4
1-12 months	20	29.9
1-2 years	15	22.4
2-3 years	4	6
Above 3 years	9	13.4
Total	67	100
Primary source of financing		
Venture capital	27	40.3
Venture debt	0	0
Loans	1	1.5
Shareholder Equity	16	23.9
Other	19	28.4
Venture capital + Venture debt	2	3
Loans + Shareholder equity	1	1.5
Venture capital + others	1	1.5
Total	67	100

Source: Survey Data (2023)

The study established that a majority of tech startups sampled had spent time under an incubation service with only a few (28.4%) of the organization having no experience in incubation. An observation was made that a clear majority spent at least between 1 month

and 2 years in an incubation service. More than a quarter (29.9%) spent between 1 month and 12 months in an incubation while another group spent between 1 and 2 years (22.4%). The lowest time spent in an incubation service was between 2 years and 3 years (6%) while a final group (13.4%) spent above 3 years in an incubation service. The results differ from Salamzadeh & Kwamorita, (2017) where slightly below half (46%) of startups were in incubation or part of an accelerator program while the remaining startups (54%) were enrolled in science parks. The higher rates of incubation can be associated to the improved chances at financing in particular venture capital financing and visibility to venture capitalist that incubation and accelerator programs offer to new ventures.

The primary source of financing for most startups was venture capital (40.3%) followed by “other sources” category (28.4%) and shareholder equity (23.9%). Loans were the primary source of financing for a small minority (1.5%) of the organizations sampled while no organization reported to have used venture debt as a primary source of financing. Several organizations provided a combination of two sources as the primary source of financing with a combination of venture capital and venture debt being the primary source of financing for a minority (3%) of respondents while a combination of loans and shareholder equity made up an even smaller margin (1.5%) alongside a combination of venture capital and other categories as the primary sources of financing (1.5%). The results differed from Munene (2018) where the primary source of financing was savings and friends. However, the results confirm the findings of Ghosh (2020) who concludes that venture capital is the most important source of financing for startups.

The study also analyzed data on the demographic profile scrutinizing remote working and size of the organization. The results are presented in table 4.4.

Table 4.4 Responses on remote working and employees.

Organization profiling traits	Frequency	Percentage
Utilization of remote working		
Yes	59	86.6
No	9	13.4
Total	67	100
Number of employees		
1-9 employees	17	25.4
10-49 employees	36	53.7
50-249 employees	12	17.9
Above 249 employees	2	3
Total	67	100

Source: Survey Data (2023)

A majority of sampled organizations utilized remote working as part of the workflow environment mix while the rest did not (*86.6% and 13.4% respectively*). The study utilized the European Union’s classification of organization size based on the number of employees. The classification classifies organization’s with less than 10 employees as micro enterprises, those with 10 to 49 employees as small enterprises, those with between 50 and 249 employees as mid-sized enterprises and those with above 249 employee’s as large enterprises. The inquiry uncovered that a quarter (*25.4%*) of the sampled organizations had between 1 and 9 employees’, half (*53.7%*) had between 10 and 49 employees’, another slightly below a fifth (*17.9%*) had 50 to 249 employees while the organizations with more than 249 employees were a minority (*3%*). The sample

population differed to Munene (2018) where a majority (80.3%) of respondents were micro sized organizations and the rest (8%) being small sized organizations.

4.3 Distribution of responses.

The study sought to measure responses on firm characteristics, external environment and organization performance of technology startups in Kenya. The presentation and discussion on the descriptive statistics for firm characteristics, external environment and organization performance can be found in the subsequent sub sections.

4.3.1 Distribution of responses on firm characteristics.

The study sought to measure elements of the variable firm characteristics. This was measured by looking at the elements; entrepreneurial traits and ownership structure, organization structure, innovation and size, business model and market orientation. Table 4.5 presents the findings for responses on business incubation.

Table 4.5 Responses on business incubation.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
Business incubation							
FCBI1	18	21	19	7	2	3.69	1.076
FCBI2	9	26	21	8	3	3.45	1.019
Average						3.57	1.0475

Source: Survey Data (2023)

The cumulative mean for business incubation measures showed weak agreement with the two statements ($M= 3.57$, $SD= 1.0475$). Both statements had low variations in the responses provided ($SD FCBI1= 1.076$, $SD FCBI2= 1.091$). The results showed a weak

agreement with the statement implying that businesses that have undergone incubation have better performance than those that have not ($M= 3.69$). This are parrallel with Ayatse et al., (2017) where incubation boosted the performance of incubated organizations in comparison with unincubated enterprises. A weak disagreement was observed in the assessment of whether the incubation services offered in Kenya offered holistic and practical mentorship enabling startups to compete with peers ($M= 3.45$). The results reaffirm the findings of Wambeti (2016) where mixed results on the adequacy of incubation services offered in Kenya was the case. The results are also consistent with a report establishing services at the core of startup entrepreneurship were not available in African incubators indicating inadequacy in some areas including lacking services core to startup entrepreneurship (David-West, Umukoro & Onuoha, 2018).

The study also sought to establish the distribution of responses on entrepreneurial traits. The results are presented in table 4.6 with a discussion of the findings following.

Table 4.6 Responses on entrepreneurial traits.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
Entrepreneurial traits							
FCEO1	11	20	22	13	1	3.40	1.031
FCEO2	22	34	5	6	0	4.07	0.876
FCEO3	9	26	22	9	1	3.49	0.943
Average						3.653	0.95

Source: Survey Data (2023)

Weak agreement on the effect of entrepreneurship traits and ownership structure was observable ($M=3.65$, $SD=0.95$). The results of individual components of entrepreneurship traits and ownership structure showed weak disagreement ($M=3.4$, $SD=1.031$) for FCEO1 “gender bias affects financing”. The results support the findings of Ghosh (2020) who noted that gender had no significant effect on startup financing. This was in disagreement with the Disrupt Africa report (2023b) where female-founded or led startups reported being discriminated against based on gender when accessing financing. These findings can be explained by several factors including; the demographic data of the study with an over-representation of male respondents in the study, a context gap where Ghosh (2020) was conducted in India on general startups and a possible lack of unawareness of the challenges faced by female startup founders and executives by their male counterparts.

Respondents were in strong agreement to FCEO2 “expatriate led startups having an easier time raising capital through venture capital financing” ($M= 4.07$, $SD= 0.876$). The results are in line with reports on a significant majority (90.5%) of raised venture capital financing going to expatriate-founded organizations (Village Capital Report, 2017 as cited in Matranga, 2017). Weak disagreement on FCEO3 “dilution of ownership by venture capital financing positively influences shareholder value” was evident ($M= 3.49$, $SD=0.943$). The results of the standard deviation indicate a lower level of variation among respondents. The results are against the findings of (Kariuki, Jagongo & Muniu, 2019) who noted that equity financing had a positive impact on shareholder value. The findings can be possibly explained by share ownership erosion by venture capital through subsequent shareholder equity financing rounds.

The study also sought to establish the distribution of responses on organization structure. The results are presented in table 4.7 with a discussion of the findings following.

Table 4.7 Responses on organization structure.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
Organization structure							
FCOS1	37	21	9	0	0	4.42	0.721
FCOS2	34	26	5	2	0	4.37	0.756
Average						4.395	0.7385

Source: Survey Data (2023)

A strong agreement was observed on FCOS1 with the organizations having an open structure with easy communication between top management and the rest of the organization ($M= 4.42$, $SD= 0.721$) as well as FCOS2 affirming that the organization structure allows for closer interdepartmental collaboration ($M= 4.37$, $SD= 0.756$). The high levels of agreement between the two are likewise reflected in the general high level of agreement on the measures of organization structure ($M= 4.395$, $SD= 0.7385$). The findings may be supported by the size of the organizations with a majority of sampled organizations being micro or small sized organizations where such a structure is more likely the norm by default allowing for closer interdepartmental collaboration. The size and structure may also account for the common use of innovation to compete in line with Okrah et al. (2017) who account for the use of innovation as an instrument of competition.

The study also sought to establish the distribution of responses on innovation and size. The results are presented in table 4.8 followed by a discussion of the findings.

Table 4.8 Responses on innovation and size.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
Innovation and size.							
FCIS1	34	21	4	3	1	4.37	0.902
FCIS2	7	31	25	3	1	3.60	0.799
FCIS3	14	27	18	7	1	3.69	0.972
FCIS4	13	16	23	11	4	3.34	1.149
Average						3.75	0.956

Source: Survey Data (2023)

Relative agreement between respondents on measures of innovation and size was visibly clear following analysis of the individual component ($M=3.75$, $SD=0.956$) with a low variation of responses. The results of the individual component showed strong agreement ($M=4.37$, $SD= 0.956$) for FCIS1, “we use innovation to counter competition as a strategy” echoing (Okrah et al., 2017) who reports on the use of innovation to compete. Weak agreement ($M=3.60$, $SD=0.799$) for FCIS2, “firm size measured through working capital/revenue affects innovation measured through new products and patents”. The results are similar to the findings in Nigeria that show firm size had a positive impact on performance (Egbunike & Okerekeoti, 2018).

Weak agreement ($M=3.69$, $SD=0.972$) on FCIS3, “smaller organizations are better at innovation than larger ones” alongside weak disagreement ($M=3.34$, $SD=1.149$) on

“raising smaller amounts (below \$100,000) through venture capital financing is harder compared to larger ones” were also postulated. The results on FCIS3 are consistent with the finding that smaller firms are more innovative compared to large ones (Kaitai, 2020; Balasubramanian, et al., 2020). The time taken to bring a product to market might play a role in smaller organizations being better at innovating compared to larger ones with bureaucracy plaguing and hindering the fast roll out of innovations in larger organizations.

The study also sought to establish the distribution of responses on business model. The results are presented in table 4.9 followed by subsequent discussions of the findings.

Table 4.9 Responses on business model.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
Business model.							
FCBM1	4	26	15	19	3	3.13	1.043
FCBM2	11	25	19	11	1	3.51	1.006
Average						3.32	1.0245

Source: Survey Data (2023)

A weak disagreement can be observed on business model elements tested in the study ($M=3.32$, $SD=1.0245$). However, individual elements show mixed results when looked at separately with relative disagreement on FCBM1 ($M= 3.13$, $SD= 1.043$) “business model challenges have affected our business”. On the other hand, there was weak agreement on FCBM2 ($M=3.51$, $SD=1.006$) “ease of business model replication has led to an increase in competition in the industry”. The results contradict Cantamessa et al., (2018) whose

findings show that business model challenges were the key concern of studied startups. The findings also vary from Ghosh (2020) who concludes that failure to appreciate competing products and bring a minimum viable product to market within months of operations as the main reason for startup failure. The findings also support Deena & Gupta (2021) who found that the threat to entry and competition is high due to ease of business model replication. The results on business model challenges can be explained by either sampled startups having strong business models that were proving so or a miscalculated view or overconfidence in their business model.

The study also established the distribution of responses on market orientation of products, services and competitive strategy. The results are presented in table 4.10 followed by a discussion of the findings.

Table 4.10 Responses on market orientation.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
Market orientation							
FCMO1	28	34	5	0	0	4.34	0.617
FCBMO2	44	20	2	1	0	4.6	0.629
Average						4.47	0.623

Source: Survey Data (2023)

A strong agreement can be observed on the market orientation of tech startups in Kenya ($M= 4.47, SD= 0.623$). Individual elements showed a similar consistency with FCMO1 ($M= 4.34, SD= 0.617$) “our products and services reflect changing environment and feedback” indicating strong agreement with the statement while FCMO2 had a very

strong agreement ($M= 4.6$, $SD= 0.629$) on the statement “our competitive strategy is based on a clear understanding of our customer needs”. All elements had a low standard deviation indicating low variability of responses. The responses show that by large most organizations see themselves as market oriented. The outcome is in line with the recommendations made to SMEs to adopt market orientation for improved performance (Kimani, 2016).

The results presented show differing levels of agreement and disagreement on the different components of firm characteristics with general agreement that firm characteristics affect organizational performance. The results show management awareness of the role played by firm characteristics on organizational performance.

4.3.2 Distribution of responses on External Environment

The study sought to measure elements of the variable external environment. The results of the descriptive measures of competition are presented in table 4.11.

Table 4.11 Responses on measures of competition.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
Competition.							
EEC1	17	23	12	10	5	3.55	1.234
EEC2	1	28	10	22	3	3.12	1.08
EEC3	13	27	12	12	3	3.52	1.133
Average						3.397	1.149

Source: Survey Data (2023)

Table 4.11 shows a report of the research’s findings on measures of competition with a general weak disagreement on the collective elements assessed ($M=3.397$, $SD=1.149$) with low variation of responses. Individual results however show a weak level of agreement in EEC1 “we face intense competition for qualified personnel in our industry” ($M=3.55$, $SD=1.234$).

Relative disagreement was observed in EEC2 ($M=3.12$, $SD=1.08$) “we face stiff competition from traditional industry peers for new business”. Relative agreement on EEC3 ($M=3.52$, $SD=1.133$) “we face intense competition from technology industry peers for new business” was recorded. All three elements have low standard deviations indicating a low level of variation in the responses provided. The findings reflect Deena & Gupta (2021) and Salamzadeh & Kwamorita (2017) pointing to a generally high level of competition in the tech industry for the former and intense competition for the later.

The study also sought to establish the distribution of responses on new entry. The results are presented in table 4.12 followed by subsequent discussions of the findings

Table 4.12 Responses on new entry.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
New entry.							
EENE1	8	25	18	16	0	3.37	0.982
EENE2	12	26	22	7	0	3.64	0.9
EENE3	1	18	18	20	10	2.7	1.073
Average						3.237	0.985

Source: Survey Data (2023)

The threat of new entry was measured using three questions EENE1, “our organization’s technological know-how acts as a barrier to new entrants” with weak disagreement to the statement ($M=3.37$, $SD=0.982$). Weak agreement was also observed on EENE2, “raising capital needed for new entry acts as a barrier to new players in our industry” ($M=3.63$, $SD=0.9$). EENE3 sought to establish if the industry had low barriers to entry with respondents reporting that the industry did not have a low barrier to entry ($M=2.7$, $SD=1.073$). All statements had low standard deviations that indicated low levels of response variation. The findings contradict Deena & Gupta (2021) who note that the barriers to entry in ICT are low.

Borrowing from Porter’s 5 forces model the study sought to establish the influence of buyer power and seller power as well as evaluate the threat of substitution on Kenyan startups. The results are presented in table 4.13

Table 4.13 Responses on substitution, buyer power and seller power.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
Substitution, buyer power and seller power.							
EESBS1	6	25	23	9	4	3.3	1.015
EESBS2	5	15	15	27	5	2.82	1.1
EESBS3	2	28	22	14	1	3.24	0.872
EESBS4	6	25	20	12	4	3.25	1.049
Average						3.153	1.01

Source: Survey Data (2023)

The joint results on product substitution, buyer power and seller power show relative disagreement ($M=3.153$, $SD=1.01$) on the effect of the three factors on the performance of sampled tech startups. The results show weak agreement on EESBS1 ($M=3.3$, $SD=1.015$) “availability of substitutes have affected potential returns” while EESBS2 “the need satisfied by our products is easily satisfied by another source” had a strong level of disagreement ($M=2.82$, $SD=1.1$) indicating agreement on their products are not easily substituted. Both EESBS3 “buyers of our products have considerable power to demand concessions” and EESBS4 “our suppliers have considerable power to raise prices” had relative disagreement ($M=3.24$, $SD=0.872$) and ($M=3.25$, $SD=1.049$) indicating buyer and seller power are not a strong factor affecting sampled tech startups. The standard deviation of the four statements indicated a low level of variation in responses. The results contradict the findings of Deena & Gupta (2021) where the threat of substitution was noted to be high, buyer power to be strong and a force driving competition while agreeing with the findings that supplier power was low. The results showing that organizational products were not easily substituted while at the same time reporting that substitution affected potential returns are contradictory with the findings either showing a lack of understanding on product substitution or misrepresentation of responses on the two by respondents or a further explanation reconciling the two.

The study also sought to establish the distribution of responses on market dynamics. The results of the findings are presented in table 4.14 followed by a discussion of the findings.

Table 4.14 Responses on market dynamics.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
Market dynamics.							
EEMD1	7	26	22	8	4	3.36	1.025
EEMD2	17	21	16	10	3	3.58	1.157
Average						3.47	1.091

Source: Survey Data (2023)

Tech startups sampled indicated that the market dynamics factors chosen did not affect the performance of technology startups ($M= 3.47$, $SD= 1.091$). The findings on individual statements showed a weak disagreement on EEMD1 ($M= 3.36$, $SD= 1.025$) “market underdevelopment and deficiencies have affected our performance i.e., few customers”. The results contradict Mugo (2022) who notes that market deficiencies have affected the performance of tech startups in Kenya. A possible explanation for the discrepancy in the findings could be in the size of the organizations with larger organizations more likely to notice limitations on performance posed by market underdevelopments compared to micro-sized and small-sized organizations that made up the majority of the study’s population. However, the discrepancy could not be sufficiently accounted for with certainty despite both studies being conducted in the same field and in the same location.

A weak agreement was observed on EEMD2, “funding uncertainties are a key concern affecting future organization performance” ($M=3.58$, $SD=1.157$). Low standard deviations for the two elements observed indicated a low variation of responses. The

findings of EEMD2 complement the observation that financing challenges are a key challenge facing tech startups (Salamzadeh & Kwamorita, 2017; Cantamessa et al., 2018; Munene, 2018). The results can be partially explained by the over-reliance on venture capital financing by startups in Kenya as well as an indication on the financial viability of some of the startups that are unable to meet their recurrent financing needs through business operations.

The study sought to analyze and establish the effect of government policy and political and economic factors. The results of the findings are presented in table 4.15.

Table 4.15 Responses on government policy, political and economic factors.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
Government policy							
EEGP1	12	25	19	11	0	3.57	0.973
EEGP2	9	12	24	13	0	3.39	0.953
EEGP3	8	18	19	16	6	3.09	1.164
Average						3.35	0.7381
Political and Economic factors							
EEPE1	28	26	6	6	1	4.1	1.002
EEPE2	21	26	13	5	2	3.88	1.038
EEPE3	10	25	21	10	1	3.49	0.975
EEPE4	21	26	11	7	2	3.85	1.077
Average						3.83	1.023

Source: Survey Data (2023)

Collective results on government policy show weak disagreement on the negative effect of government policy ($M=3.35$, $SD=0.7381$) indicating mixed results on individual components measured. On EEGP1, respondents were in weak agreement that “government policies in the past have negatively affected their firm” ($M=3.57$, $SD=0.973$) and weak disagreement on EEGP2 ($M= 3.39$, $SD =0.953$) “stalled industry policy has held us back from enjoying proposed benefits” indicating a perceived lack of benefit from stalled policies or unawareness of stalled policies. The study established that the finance bill 2023 would not negatively affect the organization performance of individual startups (EEGP3; $M=3.09$, $SD=1.164$) possibly due to the structuring of personnel contracts or lower cost implications due to the low number of employees associated with small. The findings are partially in line with those of Bjornali & Elingsen (2014) in Russia who view policy as a double-edged sword potentially affecting high-tech startups either positively or negatively. The results support Salamzadeh & Kwamorita (2017) who note a lack of regulatory support for startups in Iran. The results of individual components show consistency with the findings of Ghosh (2020) who notes that some policies had negative effects on startups.

The outcome on political and economic factors showed that responding startups indicated relative agreement on the negative impact of political and economic factors ($M=3.83$, $SD=1.023$). Strong agreement to the statement EEPE1 ($M=4.1$, $SD=1.002$), “the Kenyan macroeconomic environment has negatively affected performance” was evident. The results are similar to the findings of Sitharam & Hoque (2016) positing that the South African macro environment had a negative impact on SMEs in Kwazulu-Natal as well as Egbunike & Okerekeoti (2018) on macro-economic factors negative influence on the

financial performance of listed manufacturers in Nigeria. The results of the study and those of the comparative studies indicate a possible trend in African macroeconomics in relation to the organization performance.

Relative agreement was observed on EEPE2, ($M=3.88$, $SD=1.038$) “the global macroeconomic environment has negatively affected tech startups in Kenya” with the results agreeing with the United Nations (n.d.) report that observes the negative effect of the changes in the global macro-economic environment. In addition, weak disagreement on EEPE3 was detected ($M=3.49$, $SD=0.975$) on the statement “the global macroeconomic environment has a greater impact on our organization compared to the local macro environment”.

Relative agreement was observed on EEPE4 “occasional protest and political instability have affected investor confidence and/or led to reduction in funding” ($M=3.85$, $SD=1.077$) underscoring the importance of political stability as a factor promoting success. This is noted by Dubitskaya & Tcukanova (2018) as well as Okrah et al., (2017) who establish that investors were risk averse and a negative correlation between risk and funding. Cantamessa et al., (2018) on the other hand for an association between increase in risk and funding. The discrepancy between the results of the study and Cantamessa et al., (2018) can be accounted for by the context gap in the studies with the former investigating tech startups in a developing country while the later focused on developed countries where the higher risk is matched by higher potential rewards. A low level of response variance was present in EEPE1, EEPE2, EEPE3 and EEPE4.

The observed mean of different aspects of external environment shows a varying degree of influence of elements of the external environment with varying responses. Based on

the outcomes observed; competition for personnel and with tech peers, government policy, funding uncertainty, political factors and economic factors were observed to affect the performance of tech startups in Kenya.

4.3.3 Distribution of responses on Organizational Performance.

This subsection presents the findings and discussions on the variable organizational performance. The study sought to analyze and measure elements of performance including customer satisfaction, quality, delivery and waste, employee satisfaction and productivity and financial viability. The findings of this assessment can be found in subsequent subsections. The results of the findings on customer satisfaction are presented in table 4.16.

Table 4.16 Responses on customer satisfaction.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
Customer satisfaction							
OPC1	39	22	5	1	0	4.48	0.704
OPC2	37	23	6	0	1	4.42	0.781
OPC3	37	24	5	1	0	4.45	0.702
Average						4.45	0.729

Source: Survey Data (2023)

Table 4.15 shows the mean and standard deviations of responses on customer satisfaction as a measure of organizational performance of technology startups. Strong agreement can be seen in the measures of customer satisfaction ($M=4.45$, $SD=0.729$) indicating great performance by tech startups in Kenya on this measure. Strong agreement can be

observed for all components used to measure customer satisfaction, that is, OPC1, “we often get complementary feedback from our customers on our products” ($M=4.48$, $SD=0.704$), OPC2 “we regularly generate new customers based on recommendations by our clients” ($M=4.42$, $SD=0.781$) and OPC3 “we promptly respond to customer needs” ($M=4.45$, $SD=0.702$). The results validate the results on business model challenges were not a key challenge affecting sampled tech startups and explain why the results of the study differed from previous studies by Cantamessa et.al., (2018) and Ghosh (2020).

The study also analyzed the responses on quality and waste as a measure of performance. The results of the findings are presented in table 4.17 followed by subsequent discussions of the findings.

Table 4.17 Findings on responses on quality and waste.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
Quality and waste							
OPQW1	31	26	9	1	0	4.3	0.759
OPQW2	23	35	7	2	0	4.18	0.737
OPQW3	29	32	4	2	0	4.31	0.722
Average						4.26	0.739

Source: Survey Data (2023)

Tech startups also reported great performance on measures of quality and waste ($M=4.26$, $SD=0.739$) as a measure of performance. Both OPQW1, “our products are superior to that of our competitors” and OPQW2, “our products have a low defect rate of less than 5%” saw strong agreement to the responses ($M=4.3$, $SD=0.759$) and ($M=4.18$,

$SD=0.737$) respectively. Strong agreement was also evident in the responses provided with most organizations agreeing that they deliver their products on time, OPQW3 ($M=4.31$, $SD=0.722$). The variation of responses for all questions was also low demonstrated by low standard deviations. The results partially explain why a contradiction on product substitution where study findings showed that startups reported their product as not easily substitutable while product substitution affected potential returns a contradiction in itself. The prevalence of superior products, low defect rate and on-time delivery may have affected the potential returns while at the same time having organizations claiming that their products were not easily substitutable.

The study also analyzed the distribution of responses on employee satisfaction and productivity as measures of performance. The results of the findings are presented in table 4.18 followed by a discussion of the findings.

Table 4.18 Responses on employee satisfaction and productivity.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
Employee satisfaction and productivity.							
OPEP1	25	32	8	1	1	4.18	0.815
OPEP2	19	33	9	4	2	3.94	0.967
OPEP3	11	26	21	8	1	3.54	0.974
Average						3.89	0.918

Source: Survey Data (2023)

Measures of employee satisfaction and productivity as measures of performance had relatively good performance ($M=3.89$, $SD=0.918$). The individual components of this

category however had varying levels of agreement with the statement “our employees are committed to the firm and feel their future is linked to the firm” (OPEP1) having the best response ($M=4.18$, $SD=0.815$) with strong agreement to the statement. This was followed by relative agreement to OPEP2 “employee ownership plans in technology startups increases performance in comparison with peers who do not have such plans” ($M=3.94$, $SD=0.967$). OPEP3 had the lowest level of agreement with weak agreement on “the adoption of remote working has led to increases in employee productivity” ($M=3.54$, $SD=0.974$).

The study also analyzed the distribution of responses on financial viability. The results of the findings are presented in table 4.19 followed by subsequent discussions of the findings.

Table 4.19 Responses on financial viability

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
Financial viability							
OPF1	11	26	21	8	1	3.57	0.957
OPF2	12	25	21	8	1	3.57	1.003
Average						3.57	0.98

Source: Survey Data (2023)

The final measure of organizational performance was on financial measures OPF1 “we consistently have more revenue than expenses” and OPF2 “we regularly achieve shareholder ROE demands” with both having similar mean scores ($M=3.57$, $SD=0.957$) but differing standard deviations ($M=3.57$, $SD=1.003$). OPF2 was observed to have a

higher variation of responses than OPF1 despite both measures having a similar mean and both measuring financial measures of performance. The results show a weak agreement to both statements and are the lowest performing aspect of organizational performance measured. The results on financial measures of performance support earlier arguments based on results of funding uncertainty as a key concern affecting future performance where the research predicted financial viability challenges based on that assessment.

The results presented show an agreement between respondents in different measures of performance. Non-financial measures of performance were deduced to be the strongest performing measures of performance while financial measures lagged behind. Subsequently, the sampled organizations need to improve on financial performance and ensure equal performance on both non-financial measures and financial measures.

4.4 Relationship between firm characteristics, external environment and organizational performance.

The study assessed the relationship between firm characteristics, external environment and organizational performance. This section presents the findings of the correlation and regression model analysis.

4.4.1 Influence of firm characteristics, external environment and organizational performance.

The study sought to establish the relationship between firm characteristics and organizational performance and external environment on organizational performance using correlation analysis. The findings are presented in Table 4.20.

Table 4.20 Correlation between firm characteristics, external environment and organizational performance.

Profile	N	Tests	Organizational Performance
Firm Characteristics	67	Pearson correlation	0.401**
		Sig. (2-tailed)	<0.01
External Environment	67	Pearson correlation	0.379**
		Sig. (2-tailed)	0.02
Firm characteristic and External environment.	67	Pearson correlation	0.461**
		Sig. (2-tailed)	<0.01

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

Source: Survey Data (2023)

The correlation between Firm characteristics and Organizational performance was found to be present and moderately strong ($r=0.401$). The correlation was also statistically significant ($p<0.01$) with the p value being below the acceptable value ($p=0.05$). The study therefore found a correlation between Firm characteristics and Organizational Performance. This is in line with Balasubramanian et al. (2020) who observe a correlation between firm characteristics and organizational performance.

The correlation between the external environment and organizational performance was found to be present and moderately strong ($r=0.379$). The correlation was also statistically significant ($p=0.02$). The study therefore found a correlation between the external environment and organizational performance. This is in line Egbunike &

Ekerekeoti (2018) who note a correlation between the external environment and organizational performance.

The correlation between Firm characteristics and External environment combined on the organizational performance was found to be present and moderately strong ($r=0.465$).

The correlation was also statistically significant with a ($p<0.01$). The study therefore found a correlation between External environment and Organizational performance. The findings bear similarity with Cantamessa et al. (2017) who note a joint correlation between aspects of firm characteristics, the external environment and organizational performance.

4.4.2 Influence of firm characteristics on organizational performance.

The study sought to investigate the influence of firm characteristics on the organizational performance of technology startups in Kenya. The following hypothesis was tested:

H₀: Firm characteristics do not have significant influence on the organizational performance of technology startups in Kenya

H₁: Firm characteristics have significant influence on the organizational performance of technology startups in Kenya

In line with this, the study sought to model the relationship between the firm characteristics and organizational performance using the regression model $OP = \beta_0 + \beta_1 FC + \epsilon$. The results were interpreted using R value at $P < 0.05$ and R square values. The results of the findings of the model are presented in table 4.21 and 4.22.

Table 4.21 Effect of firm characteristics on organizational performance.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.401 ^a	.161	.148	.48453

a. Dependent Variable: OP, b. Predictor: (Constant), FC

Source: Survey Data (2023).

The model showed that a moderate relationship between firm characteristics and organizational performance ($R=0.401$). The R square value ($R^2=0.161$) insinuated that 16.1% of discrepancies in organizational performance can be explained by the selected firm characteristics. The adjusted R square value ($R^2=0.148$) pointed to the model being a weak fit with limited explanation of variations on organizational performance by firm characteristics. The standard error ($SE=0.48453$) shows that the model projected an average level of precision in predicting organizational performance. The ANOVA values are presented in table 4.22.

Table 4.22 ANOVA Table; firm characteristics and organization performance.

Model		Sum of squares	Df	Mean square	F	Sig
	Regression	2.927	1	2.927	12.467	<.001 ^b
1	Residue	15.260	65	.235		
	Total	18.187	66			

a. Dependent Variable: OP, b. Predictor: (Constant), FC

Source: Survey Data (2023).

The ANOVA table showed that the model was statistically significant with the model explaining 2.927 of variations in organizational performance while failing to explain for 15.260 of the variations in the dependent variable reinforcing that the model while acceptable, weakly explained variations in organizational performance. The variables were modelled into a linear regression equation. The outcomes of the coefficients resulting from the model presented in table 4.23.

Table 4.23 Coefficients of effect; firm characteristics on organizational performance

Model		Unstandardized		Standardized		
		Coefficients		Coefficients		
	B	Std. Error	Beta	t	Sig.	
1	(constant)	2.214	.533		4.153	<0.01
	FC	.479	.136	.401	3.531	<0.01

a. Dependent variable: OP

Source: Survey Data (2023).

The findings of table 4.22 show that holistically firm characteristics affect organizational performance. It also confirms that there are other factors that affect the organizational performance of tech startups in Kenya. The resulting equation of the model is shown below as;

$$OP=2.214 + 0.479X$$

Where X = firm characteristics.

The model shows that changes in firm characteristics result in changes in performance. The table shows that when all variables are zero organizational performance would be at 2.214 and therefore any changes in the variable firm characteristics would lead to change in performance conclusively indicating that firm characteristics affect organizational performance. The model was adopted as its significance level ($P < 0.01$) was below the threshold ($P < 0.05$). The results lead to the rejection of the null hypothesis, H_0 and the adoption of the alternative hypothesis, H_1 . The results are in line with the findings of Balasubramanian et al. (2020) and Okrah et al. (2017) who show a link between firm characteristics and performance.

4.4.3 Influence between firm characteristics, external environment and organizational performance.

The inquiry sought to examine the influence of firm characteristics and the external environment on the organizational performance of technology startups in Kenya using the regression model $OP = \beta_2 + \beta_3 FC + \beta_4 EE + \beta_5 FCEE + \varepsilon$. The results were interpreted using R value at $P < 0.05$ and R square values. The results of the findings of the model are presented in table 4.23. The following hypotheses were tested:

H_0 : Firm characteristics and external environment do not have a significant joint influence on the organizational performance of technology startups in Kenya

H_2 : Firm characteristics and external environment have significant joint influence on the organizational performance of technology startups in Kenya.

Table 4.24 presents the findings of the joint effect of firm characteristics and external environment on organizational performance. A subsequent interpretation of the findings follows.

Table 4.24 Effect of firm characteristics and external environment on organizational performance.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.473 ^a	.223	.199	.46979

a. Dependent Variable, b. Predictors (constant), EE, FC

Source: Survey Data (2023).

The model disclosed a moderate relationship between the joint influence of firm characteristics, external environment and organizational performance ($R=0.473$). The R square value ($R^2=0.223$) insinuated that 22.3% of discrepancies in organizational performance were explained by the selected firm characteristics and external environment variables. The adjusted R square value ($R^2a=0.199$) showed that the model was a weak fit with a low explanation on variations on organizational performance by firm characteristics and external environment factors jointly. The standard error ($SE=0.46979$) showed that the model projected an average level of precision in predicting organizational performance. The ANOVA table for the model is presented in table 4.25.

Table 4.25 ANOVA Table; firm characteristics and external environment on organizational performance.

Model		Sum of Df	Mean	F	Sig	
		squares	square			
1	Regression	4.062	2	2.031	9.203	<.001 _b
	Residue	14.125	64	.221		
	Total	18.187	66			

a. Dependent Variable, b. Predictors (constant), EE, FC

Source: Survey Data (2023).

The ANOVA table showed that the model was statistically significant with the model explaining 4.062 of variations in organizational performance while failing to explain for 14.125 of the variations in the dependent variable reinforcing that the model while acceptable was weak in explaining the variations in organizational performance. The variables were modelled into a linear regression equation. The outcomes of the coefficients resulting from the model are presented in table 4.26

Table 4.26 Coefficients of effect; firm characteristics and external environment on organizational performance

Model	Unstandardized		Standardized		
	coefficients		coefficients		
	B	Std. Error	Beta	T	Sig.
1 (constant)	1.720	.573		3.002	.004
FC	.349	.147	.292	2.372	.021
EE	2.94	.143	.253	2.052	.044

a Dependent variable: Organizational Performance

Source: Survey Data (2023).

The findings of Table 4.26 show that jointly firm characteristics and the external environment influence organizational performance. It also confirmed additional factors not accounted for in the study affect the organizational performance of tech startups in Kenya outside the examined factors. The resulting equation of the model is shown below as;

$$OP=1.720 + 0.349X_1 + 2.94X_2$$

Where X_1 = score for firm characteristics.

X_2 = score for external environment.

The model shows that changes in either firm characteristics or external environment result in changes in performance. The table shows that when all variables are at zero organizational performance would be at 1.720 and therefore any change in any of the

variables would lead to changes in performance conclusively indicating that firm characteristics and external environment affect performance. The model was adopted as all variables had significance levels that were within the acceptable range ($P < 0.05$). The results led to the rejection of the null hypothesis H_0 and the adoption of alternative hypothesis H_2 . The results are in line with the findings of other studies that firm characteristics and external environment have a joint effect on performance (Cantamessa et al., 2018; Mugo, 2022).

CHAPTER 5: SUMMARY CONCLUSIONS AND RECOMMENDATIONS OF FINDINGS.

5.1 Introduction.

Chapter five is a summary of qualitative and quantitative findings of the study. It constitutes the summary of descriptive and inferential results. The section covers a summary of findings on firm characteristics, external environment and organizational performance and a summary of the relationship between firm characteristics, external environment and organizational performance. Conclusions on findings, recommendations to researchers, management and policy makers and limitations of the study are also presented in the consequent subsections.

5.2 Summary of findings.

The subsequent subsections provide summaries of data collected and analyzed including a summary of findings on firm characteristics, external environment and organizational performance. In addition, a summary of the relationship between firm characteristics, external environment and organizational performance are presented.

5.2.1 Summary of findings on firm characteristics and organizational performance.

Findings from the study illustrated that business incubation affected organizational performance. The findings also indicated that incubated organizations perform better compared to unincubated organizations similar to Ayatse et al., (2017) where incubation was noted to boost the performance of incubated enterprises in comparison to unincubated enterprises. However, incubation services offered in Kenya were determined to be inadequate in mentoring and enabling tech startups to compete with peers. The

results reaffirm the findings of Wambeti (2016) where Kenyan startups were described to be inadequate and lagging in some areas as well as similar reports on African startups that showed inadequacy in some areas such as lacking services at the core of startup entrepreneurship (David-West, Umukoro & Onuoha, 2018).

Collectively, entrepreneurial traits were determined to have mixed results. A distortion of the collective results by the strong agreement on expatriate financing and disagreement on the other two components assessed impacted the general results of the components. The results showed that expatriate-founded/led startups had an easier time in venture capital financing compared to peers agreeing with similar postulations indicating that most of startup venture capital financing in Africa went to expatriate-owned or led startups (Village Capital Report, 2017 as cited in Matranga, 2017).

The study revealed that gender bias did not affect tech startup financing while dilution of ownership by venture capital financing did not lead to a positive effect on shareholder value. The results support the findings by Ghosh (2020) in India where gender bias did not affect startup financing but disagreed with the Disrupt Africa report (2023b) where female-founded or led startups reported discrimination in financing. These findings can be explained by several factors including; the demographic data of the study with an over-representation of male respondents in the study, a context gap where Ghosh (2020) was conducted in India on general startups and a possible lack of unawareness of the challenges faced by female startup founders and executives by their male counterparts. The results on dilution of ownership contradict the findings by Kariuki, Jagongo & Muniu (2019) that showed equity financing had a positive impact on shareholder value.

The findings can be possibly explained by share ownership erosion by venture capital through subsequent shareholder equity financing rounds.

Similarities in organization structure were observed in the organization structure across the sampled startups. The findings showed that the startups had an open structure with ease of communication between top management and staff being evident. The findings may be supported by the size of the organizations with a majority of sampled organizations being micro or small sized organizations where such a structure is more likely the norm by default allowing for closer interdepartmental collaboration. The size and structure may also account for the common use of innovation to compete in line with Okrah et al. (2017) who account for the use of innovation as an instrument of competition.

A strong showing for employee satisfaction and productivity as measures of performance by Kenyan startups was observed. Employees were noted to be committed to the firm and saw their futures were linked to it. Employee ownership plans were seen to increase employee performance while remote working measures were seen to improve employee productivity.

The study showed that size affected how innovative firms are. The findings showed agreement that firm size played a role in how innovative firms were measured through new products and patents with smaller organizations being better at innovation than larger ones. The findings support Egbunike & Okerekeoti (2018) findings on the positive effect of size on performance and the findings by Kaitai (2020) and Balasubramanian et al, (2020) who report on smaller firms being more innovative compared to large ones.

The time taken to bring a product to market might play a role in smaller organizations being better at innovating compared to larger ones. The study showed that it was not harder to raise smaller amounts i.e., below \$100,000 through venture capital financing compared to larger ones.

Mixed results on business model challenges were established with on one hand disagreement on business model challenges having affected the performance of sampled startups while ease of business replication led to increased competition. The results contradict the findings by Cantamessa et al., (2018) where business model challenges were a concern for startups and the reason for startup failure. The results also contradicted the findings of Ghosh (2020) where failure to consider competition by other products and bring a viable product to market within a few months was a key reason for startup failure. The results on business model challenges can be explained by either sampled startups having strong business models that were proving so or a miscalculated view or overconfidence in their business model.

Findings from the study show that the sampled startups had robust performance in customer satisfaction often receiving complementary feedback from customers on their product offerings, generating new customers based on recommendations along with being highly responsive to customer needs. These results partially validate the results on business model challenges and explain the difference between the findings of the study and those of Cantamessa et al., (2018) and Ghosh (2020) on business model challenges.

The study showed that sampled organizations were market-oriented with products that reflected the changing environment and competitive strategies based on a clear

understanding of customer needs. The outcome of the study is in line with the recommendations made to SMEs to adopt market orientation for improved performance (Kimani, 2016).

The joint influence of firm characteristics such as market orientation, an organization structure that allows for interdepartmental collaboration, open and easy communication as well as the use of innovation as a competitive strategy alongside other external environmental factors addressed in the subsequent section have affected the non-financial and financial performance of the tech startups in Kenya. The results of non-financial measures of performance showed robust performance while those on financial measures were weaker.

5.2.3 Summary of findings on external environment and organizational performance.

The results of the study demonstrated that competition was a factor in tech startup performance. The results showed mixed results on different measures of competition. The results showed agreement between respondents that they faced intense competition for qualified personnel and intense competition from tech industry peers. However, the findings showed that competition from traditional industry peers was not intense. The findings agree with Deena & Gupta (2021) who point to a generally high level of competition in the tech startup industry as well as Salamzadeh & Kwamorita (2017) who report tech startups face intense competition in general.

The study results showed that barriers to new entry were not low. The results showed that the technological know-how of tech startups was not a barrier to new entry. The results

showed that the industry the tech startups operated in did not have low barriers for entry with raising capital needed to new entry as one of the barriers. The findings contradict Deena & Gupta (2021) who note that the barriers to entry in ICT are low.

The threat of substitution was observed to affect performance while both buyer and seller power were weak. The results show that substitutes affected potential returns despite reporting that the needs satisfied by organization products were not easily substituted by other products. In addition, both buyers and suppliers did not have the power to either raise prices or demand concessions. The results contradict Deena & Gupta (2021) where the threat of substitution was noted to be high, buyer power to be strong and a force driving competition while supplier power was low.

The results showing that substitution affected potential returns and that the needs satisfied by the organizations products were not easily substituted by other products warrant further evaluation and supportive evidence to establish how such a contradiction is possible. Findings on organizational performance show strong performance in measures of quality and waste with reports of superior products compared to those of competitors, lower defect rates on products and services as well as on-time delivery. These results may help explain how the threat of substitution affected potential returns while at the same time having products that are not easily substituted.

Mixed results can be found in the research findings on market dynamics. Analysis of the findings showed that market under development did not affect performance while funding uncertainties were a key concern affecting future organizational performance of tech startups in Kenya. The findings contradict Mugo (2022) who notes that market under

development and deficiencies have affected the performance of tech startups in Kenya. The discrepancies between the two findings conducted in the same industry and same location could not be accounted for with absolute certainty. A possible explanation for this could be in the size of the organizations with larger organizations more likely to notice limitations on performance posed by market underdevelopments compared to micro-sized and small-sized organizations that made up the majority of the study's population. The results on funding uncertainties affecting future organization performance complemented Salamzadeh & Kwamorita (2017), Cantamessa et al., (2018) and Munene, (2018) observations that financing challenges are a key challenge facing tech startups. This is can be partially explained by the over-reliance on venture capital financing by startups in Kenya as well as an indication of the financial viability of some of the startups that are unable to meet their recurrent financing needs through business operations.

The study shows that government policy as an external environment element had mixed results. The outcome of the analysis on government policy showed that government policies have in the past affected tech startups in Kenya negatively. Analysis of stalled policy showed that organizations did not perceive to have lost out on enjoying proposed benefits proposed by stalled policies possibly indicating a perceived lack of benefit from stalled policies or unawareness of stalled industry policies. The results disclosed that the finance bill 2023 would not negatively affect tech startups in Kenya indicating that management views on the bill was one that did not perceive significant cost implications on the startups possibly due to the structuring of personnel contracts or the number of employees.

The findings on government policy were partially in line with those of Bjornali & Elingsen (2014) in Russia who viewed government policy as a double edge sword potentially affecting organizations either positively or negatively as well as Salamzadeh & Kwamorita (2017) who documents a lack of regulatory support for tech startups in Iran. The results of some individual components showed consistency with the findings of Ghosh (2020) who notes that some policies in India had negative effect on startups.

Political and economic factors were determined to have negatively affected tech startups in Kenya. The Kenyan macroeconomic environment and the global macroeconomic environment were noted to negatively affected tech startups indicating a possible trend in African macroeconomic environments. The results were in line with the findings of Sitharam & Hoque (2016) that showed that the South African macroeconomic environment had a negative impact on SMEs in Kwazulu-Natal region as well as those of Egbunike & Okerekeoti (2018) on the effect of macro-economic factors in Nigeria on the financial performance of listed manufacturers.

The global macro-economic environment was however not as important as the Kenyan macro-economic environment. Occasional protests and political stability in Kenya were revealed to affect investor confidence and/or led to a reduction in funding. The results reiterated risk aversion by investors as is demonstrated by Dubitskaya & Tcukanova (2018) as well as Okrah et al., (2017) who note a negative correlation between risk and funding.

The combined effect of the external environmental factors partially accounts for the differentials in the performance metrics and more so on financial measures of

performance. The study's findings show that tech startups performed much more poorly on financial measures of performance (with weak agreement on the financial measures) compared with (strong agreement on) non-financial measures of performance.

5.2.4 Summary of findings on relationships between firm characteristics, external environment and organizational performance.

The study found a moderately strong correlation between firm characteristics and organizational performance, a moderately strong correlation between external environment and organizational performance and a moderately strong correlation between the joint effect of firm characteristics and external environment on organizational performance. The correlation between firm characteristics and external environment jointly on organizational performance found in the study is similar to the findings of Cantamessa et al. (2017) who opined a joint correlation between aspects of firm characteristics, the external environment and organizational performance.

The correlation between external environment and organizational performance determined in the study corresponded with the findings of Egbunike & Ekerekeoti (2018) who point to a correlation between the external environment and organizational performance. The correlation between firm characteristics and organizational performance found in the study was also akin with the findings of Balasubramanian et al. (2020) who argue a correlation between firm characteristics and organizational performance.

The study established a moderate relationship between firm characteristics and organizational performance with 16.1% of discrepancies to organizational performance

explained by the selected firm characteristics. The model showed that any changes on firm characteristics resulted in changes on organizational performance. The model was however, a weak fit with limited explanation on variations on organizational performance with the ANOVA table showing the model explained 2.927 of variations in organizational performance while failing to explain for 15.260 of the variations in the dependent variable. The standard error shows that the model projected an averagely level of precision in predicting organizational performance.

The results confirm that other factors not assessed by the study affect the organizational performance of tech startups in Kenya other than the examined factors. The model testing the relationship between the two variables was statistically significant and was adopted leading to the rejection of the null hypothesis and the adoption of the first alternative hypothesis (H₁: Firm characteristics have a significant influence on the organization performance of technology startups in Kenya). The results are similar to the findings of Balasubramanian et al. (2020) and Okrah et al. (2017) who show a link between firm characteristics and performance.

The model disclosed a moderate relationship between the joint influence of firm characteristics, external environment and organizational performance with the model explaining 22.3% of differences to organizational performance. The model was a weak fit with a low explanation of variations on organizational performance by the joint factors (ANOVA table regression and residual values of 4.062 and 14.125) and the model being averagely precise (SE=0.46979). The model was statistically significant and can be summarized as any changes on either independent variable's led to a change in the dependent variable leading to the rejection of the null hypothesis and adoption of the

second alternate hypothesis (H2: Firm characteristics and external environment have significant joint influence on the organizational performance of technology startups in Kenya). The results are in line with the findings of other studies that firm characteristics and external environment have a joint effect on performance (Cantamessa et al., 2018; Mugo, 2022).

5.3 Conclusion on findings.

This section presents conclusions on findings of the study. The conclusions on firm characteristics and organizational performance, external environment and organizational performance. In addition, the section presents conclusions on the joint effect of firm characteristics and the external environment on organizational performance.

5.3.1 Conclusion on findings on firm characteristics and organizational performance.

The results of the research showed that business incubation affected performance. Incubated businesses were noted to perform better than unincubated startups. The incubation services offered were noted to be inadequate in offering realistic and practical mentorship to compete with peers. Mixed results were observed on entrepreneurial traits with gender bias not affecting financing, dilution of ownership through venture capital financing did not have a positive role on shareholder value while expatriates had an easier time gaining venture capital financing.

Employee satisfaction was observed to be high with employees being committed and seeing their futures as linked to those of the firm. Employee ownership plans were also determined to improve performance. Similarities in the organization structure of sampled

startups were evident with an open structure with ease of communication between top management and staff. The organization structure adopted also allowed for closer interdepartmental collaboration. Firm size affected innovation with smaller organizations being better at innovating in comparison to larger ones. Raising lower amounts through venture capital financing was proven not to be harder in comparison with larger amounts.

Mixed results on business model were also observed with business model issues not being a challenge to the tech startups while ease of business model replication fueled competition. Customer satisfaction was documented to be robust with regular complimentary feedback, new client acquisition through recommendations and a high degree of customer responsiveness. The startups were also market-oriented with products that reflected the changing environment and competitive strategies that were based on customer needs. Firm characteristics were found to contribute to the financial and non-financial performance of tech startups in Kenya.

5.3.2 Conclusion on findings on external environment and organizational performance.

The findings of the study showed that competition affected the performance of tech startups in Kenya with intense competition with tech industry peers and competition for qualified personnel in the industry. Competition from traditional industry was however not intense or a key factor. The industries tech startups operated in did not have low barrier to entry with capital for new entry acting as one of the barriers. The organization's tech know how was however not considered a barrier to new entry. Both buyer and seller power were found to be weak, unable to demand concessions for the former and unable to raise prices for the latter. Substitutes were noted to affect performance despite products

being not easily substitutable. The products/services were delivered on time, were superior in quality to those of the competitors and had low defect rates.

Mixed findings on market dynamics were demonstrated. Market underdevelopment and deficiencies did not affect the performance of tech startups in Kenya while funding uncertainties were a key concern affecting future organizational performance. Government policies had mixed results with past policies affecting tech startups negatively whereas the finance bill 2023 not negatively affecting tech startups in Kenya. The findings showed that the management team of tech startups in Kenya did not perceive to have lost out on proposed benefits posited by stalled policies. External environment factors were observed to have affected measures of organizational performance and more so financial measures of performance as well as non-financial measures.

5.3.5 Conclusions on relationships between firm characteristics, external environment and organizational performance.

The study concluded that there was a moderately strong correlation between firm characteristics and organizational performance. The study also observed a moderately strong correlation between the external environment and organizational performance as well as a moderately strong correlation between the joint effect of firm characteristics and the external environment on organizational performance.

The study concluded that the regression models testing the relationships between firm characteristics and organizational performance and the model testing the joint relationship between firm characteristics and external environment on organizational

performance were significant with moderate influence. However, both models were found to be weak fits and only accounted for a proportion of the discrepancies in performance.

5.4 Summary of recommendations.

This section presents recommendations to various groups identified as benefiting from the study. This includes recommendations to researchers, tech startup managers and policy makers in Kenya.

5.4.1 Recommendation to researchers

Literature review on tech startups showed an underrepresentation of research on tech startups in developing countries. The focus was mainly on developed countries making it hard to gain a clear picture of the operational environment in which these tech startups operate. While this study sought to fill in this gap and expand the literature analyzing tech startup environment in Africa it covers only one aspect and therefore more studies are needed. Comparative studies and studies establishing the causal relationship between the individual components of the organizational environment and performance are needed to establish a much clearer picture of the tech startup environment in Kenya.

The study also sought to enable a more accurate understanding of the environment. Prior studies on technology startups in Kenya showed the primary source of financing for technology startups in Kenya was savings and contributions from friends and family (Munene, 2018). The differentials in findings between Munene (2018) and the study were attributed to the size of the sampled organizations in the two studies where a majority were micro-sized in the former and small-sized for the latter. With a majority of the

organizations in the study being small-sized there is a need to undertake more studies on medium and large enterprises to gain a clearer picture of attributes of these enterprises as well as provide comparative points of measure between micro-sized, small sized, medium and large sized tech startups in Kenya. Likewise, industry specific studies are needed to paint a clear depiction of the Kenyan tech startup ecosystem and environment.

5.4.2 Recommendation to tech startup management

The findings of the study demonstrate that both firm characteristics and the external environment affect the performance of tech startups in Kenya. Understanding and predicting environmental trends is key to the survival and growth of startups. Managers need to be on the lookout for trends and changes in the environment and their impact on their organization. Managers should add regular environmental scans and assessments as part of their managerial tasks, identifying both threats and opportunities in the environment. This is particularly true for small-sized organizations where members of the managerial team take on different roles and are often busy navigating different managerial roles with environmental scanning taking a back seat. A regular reporting system for such scans would easily help incorporate this into the organization.

At the core of business environment scans is the identification of threats and opportunities to organizational performance. Such scans may enable the organizations to shore up their financial performance noted to be trailing behind those of non-financial measures. Organizations must take significant steps to leverage the unique features and exemplary performance of non-financial measures into tangible sales and profits. Improvements in financial measures should help ease funding uncertainties that plague tech startups and ease dependence on venture capital as a primary source of financing.

A disconnect between policy and impact on organizational performance can be alleged from the findings of the study. Bridging the gap can have monumental impact on organizations. However small and micro-sized organizations may not have such access, resources and expertise individually to ensure that their voices are heard. It is therefore important for tech startups to group together to advance their collective interest and advocate for a conducive environment for their organizations either by forming industry-specific groups for startups specializing in specific fields or join existing ones such as the Fintech Association of Kenya while collectively bringing such associations together to form a larger and collective group under umbrella organizations such as the Kenya national chamber of commerce and industry and utilize their expertise.

With the inadequacy of incubation centers observed across Africa and Kenya and the established significance of such services on competitiveness and access to financing, tech startups must choose an appropriate incubator. The appropriate incubator meets the specific needs of the organization joining such a program. It is therefore also significant that startups identify why they require an incubation center's services and choose one that meets such needs.

5.4.3 Recommendation to policymakers.

Assessment of government policy effect was determined to be negative while neither seeing any loss from stalled policies nor benefiting from them. This shows a disconnect between policymakers and the potential beneficiaries in the sector that is of strategic importance to the economy. Policymakers must draft policies with the intended beneficiaries in mind and consultation with the proposed beneficiaries to come up with policies that best suit the industry and promote industry-wide development.

Government policies and actions that are targeted at the wider economy have significant effects on the startups as well, this includes macro-economic policies and actions. To meet its social contract with the electorate, the government needs to prioritize a macroeconomic environment and business climate that promotes enterprise growth, job creation and skill development. There is also a need to rehabilitate the government's image vis a-vis enterprises and promote a climate of cooperation and trust. In addition, more needs to be done to incorporate industry participation in the drafting of proposed laws and communicate enacted policies and the targeted impact more effectively. The communication should utilize user friendly graphical presentations that allow for ease of understanding in a short period of review of such policies.

With the inadequacy of incubation services offered in both Kenya and Africa being established by this study and confirmed by other reports, there is a need to bridge the gap between the needs of tech startups and the services offered by incubators. A quick way to bridge this issue would be cooperation between the government and incubation centers in Kenya. The government can shore up the capabilities of these centers by leveraging its vast network of ties to countries at times referred to as "startup nations" for their ability to churn out commercially viable technology startups to "unicorn status". The government can enhance the capabilities of local incubation centers by intervening and negotiating between governments with holistic incubation centers and Kenyan centers and help build up their capacity.

5.5 Limitations of the study.

The research faced several challenges and limitations. With a majority of the enterprises sampled being either micro or small-sized enterprises accessing information proved to be

a challenge with a significant amount of effort being spent in convincing and following up with the sampled tech startups to divulge information. Survival bias was also a challenge observed in the undertaking of the research with organizations that were part of the sample population being struck off following their collapse, the study therefore could not benefit from the input of such organizations.

The study was limited in the amount of time and resources that could be spent on the study leading to the choice of a cross-sectional research design. While cross-sectional studies are an exceptional choice where a researcher is bound by time and resources, the design only looks at the variables at one single point in time and therefore only provides a snapshot of the variables at that specific point in time. A longitudinal is therefore necessary to establish the impact of the environmental variables on organization performance over an extended period of time.

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APPENDIXES

Appendix I: Questionnaire.

This questionnaire is designed to collect data on “**Firm Characteristics, External Environment and Organization Performance of Technology Startups in Kenya.**”

SECTION A: DEMOGRAPHIC AND GENERAL INFORMATION.

1. Organization code provided by the interviewer (eg 001, 010, 119 etc)

— — —

2. Role in the organization

Manager { } *CEO { }*

3. Gender of respondent

Male { } *Female { }*

4. Age

Below 29 years { } 30-39 years { } 40-49 years { } Above 50 years { }

5. Our organization has benefitted from business incubation services (in years)

0 months{ } 1-12 months{ } 1-2 years{ } 2-3 Years{ } Above 3 Years { }

6. Primary source of financing.

Venture capital { } Venture debt { } Loans { } Shareholder Equity { }

Others { }

7. We utilize remote working

Yes { } No { }

8. Approximate number of employees in the firm.

0-9 employees { } 10-49 employees { } 50-249 employees { } Above 249 { }

SECTION B: FIRM CHARACTERISTICS.

The following statements represent features of firm characteristics, please indicate the

extent to which you agree with the following statements.

(Use the scale Strongly disagree=1, Disagree=2, Neutral=3, Agree=4, Strongly agree =5)

	Business incubation	1	2	3	4	5
1	Tech startups that have undergone incubation have better performance than those that do not					
2	Incubation services offered by incubation centers in Kenya offer realistic and practical mentorship to compete with peers					
	Entrepreneurial traits and Ownership structure					
1	Gender bias on female led technology startups affects financing					
2	Expatriate led startups have easier time in Venture Capital financing compared to non-expatriate led organizations.					
3	Dilution of ownership by Venture capital investment has a positive impact on growth in shareholder value					
	Organization structure.					
1	Our organization structure closely resembles one with open and easy communication between top management and the rest of the organization.					
2	Our organization structure allows for closer Interdepartmental collaboration					
	Innovation and size					
1	We use innovation to counter competition as a strategy					
2	Firm size measured through working capital/revenue affects innovation measured through new products/patents.					
3	Smaller organizations are better at innovating than large ones					
4	Raising small amounts (below USD\$ 100,000) through venture capital					

	financing is harder compared to larger ones					
	Business model					
1	Business model challenges have affected our performance					
2	Ease of business model replication has increased competition in our industry					
	Market Orientation.					
1	Our product and services reflect changing environment and feedback					
2	Our competitive strategy is based on a clear understanding of our customer's needs.					

SECTION C: EXTERNAL ENVIRONMENT.

The following statements represent features of the external environment, please indicate the extent to which you agree with the following statements.

(Use the scale Strongly disagree=1, Disagree=2, Neutral=3, Agree=4, Strongly agree =5)

	Competition.	1	2	3	4	5
1	We face intense competition for qualified personnel in our industry					
2	We face stiff competition with traditional industry peers for new business					
3	We face intense competition with technology industry peers for new business					
	New entry.					
1	Our organizations technological “know how” acts as a barrier to new entrants					
2	Raising capital needed for new entry act as a barrier to new players in our industry					
3	Our industry has low barriers to entry					
	Substitution, buyer power and seller power.					
1	Availability of substitutes has affected potential returns/profits					

2	The need satisfied by our product is easily satisfied from another source				
3	Our buyers of our product have considerable power to demand concessions.				
4	Our suppliers have considerable power to raise prices				
	Market dynamics.				
1	Market under-development and deficiencies has affected performance i.e. few customers				
2	Funding uncertainty is a key concern affecting future organization performance				
	Government policy				
1	Government policies on industry have negatively affected our firm in the past				
2	Stalled industry policy has held back our firm from enjoying benefits proposed.				
3	The finance bill 2023 will negatively influence our organizations performance				
	Political and Economic factors				
1	The Kenyan macroeconomic environment/ economic slowdown has negatively affected tech startups in Kenya				
2	The global macroeconomic environment has negatively affected tech startups in Kenya				
3	The global macro-economic environment has a greater impact on our organization compared to the local macro environment				
4	Occasional protest and political instability have affected investor confidence and/or led to reduction in funding				

SECTION D: ORGANIZATION PERFORMANCE.

The following statements represent features of organization performance, please indicate the extent to which you agree with the following statements.

(Use the scale Strongly disagree=1, Disagree=2, Neutral=3, Agree=4, Strongly agree =5)

-		1	2	3	4	5
	Customer satisfaction					
1	We often get complementary feedback from our customers on our products					
2	We regularly generate new customers based on recommendations by our clients					
3	We promptly respond to customer needs					
	Quality, delivery and waste					
1	Our products are of superior quality to our competitors					
2	Our products have a low defect rate (less than 5% defects/downtime)					
3	We deliver our products in time					
	Employee satisfaction and productivity.					
1	Employees are committed to the firm and feel their future is linked to the firm					
2	Employee ownership plans in technology startups increases performance in comparison to peers without such plans					
3	Adoption of remote working has led to increases in employee productivity.					
	Financial viability					
1	Consistently have more revenue (income) than expenses					
2	We regularly achieve shareholder Return On Equity demands					

Thank you for your responses.

Appendix II: University of Nairobi Research Authorization.



UNIVERSITY OF NAIROBI
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Our Ref: **D61/10527/2018**

August 29, 2023

National Commission for Science, Technology and Innovation
NACOSTI Headquarters
Upper Kabete, Off Waiyaki Way
P. O. Box 30623- 00100
NAIROBI

RE: INTRODUCTION LETTER: KEN NDIHO KARIUKI

The above named is a registered Masters of Business Administration candidate at the University of Nairobi, Faculty of Business and Management Sciences. He is conducting research on "***Firm Characteristics, External Environment and Organisational Performance of Technology Startups in Kenya.***"

The purpose of this letter is to kindly request you to assist and facilitate the student with necessary data which forms an integral part of the Project.

The information and data required is needed for academic purposes only and will be treated in **Strict-Confidence**.

Your co-operation will be highly appreciated.




PROF. JAMES NJIHIA
DEAN, FACULTY OF BUSINESS AND MANAGEMENT SCIENCES

JN/jkm

Appendix III: Research License.

 <p>REPUBLIC OF KENYA</p>	 <p>NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION</p>
<p>Ref No: 702731</p>	<p>Date of Issue: 27/September/2023</p>
<p>RESEARCH LICENSE</p>	
	
<p>This is to Certify that Mr. ken Kariuki of University of Nairobi, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Baringo, Bomet, Bungoma, Busia, Elgeyo-Marakwet, Embu, Garissa, Homabay, Isiolo, Kajiado, Kakamega, Kericho, Kiambu, Kilifi, Kirinyaga, Kisii, Kisumu, Kitui, Kwale, Laikipia, Lamu, Machakos, Makueni, Mandera, Marsabit, Meru, Migori, Mombasa, Muranga, Nairobi, Nakuru, Nandi, Narok, Nyamira, Nyandarua, Nyeri, Samburu, Siaya, Taita-Taveta, Tanariver, Tharaka-Nithi, Transzoia, Turkana, Uasin-Gishu, Vihiga, Wajir, Westpokot on the topic: Firm characteristics, external environment and the organisation performance of technology startups in Kenya for the period ending : 27/September/2024.</p>	
<p>License No: NACOSTI/P/23/29816</p>	
<p>Applicant Identification Number: 702731</p>	 <p>Director General NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION</p>
<p>Verification QR Code</p>  <p>NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.</p>	
<p>See overleaf for conditions</p>	

Appendix IV: List of tech startups in Kenya.

Fintech

1. Abacus
2. Alvin
3. Araka
4. Asante
5. Asilimia
6. AZA Finance
7. Bimaleo
8. zanifu
9. Cashlet
10. Chamasoft
11. Cherehani Africa
12. Chumz
13. Chura
14. Crediation
15. DukaPOS
16. EastPesa
17. Ed Partners
18. Fanaka Hybrid
19. Finplus
20. Flexpay
21. Hakki Africa
22. Hisa
23. Jumuisha
24. Kakbima
25. Klientele
26. Koa
27. Kopo Kopo
28. Kwara
29. Kyanda
30. Lami
31. LipaLater
32. Lipana
33. Lipisha
34. M-Changa
35. M-Payer
36. Mobi-Remit
37. mTek
38. Ndovu
39. Nouveta
40. Odibooks
41. Patika
42. Paylend
43. PesaBazaar

44. PesaKit
45. PesaPal
46. Power Financial Wellness
47. RePay Africa
48. SafePay
49. SaveKubwa
50. SimbaPay
51. simplePOS
52. String Analytics
53. Tanda
54. Transcode
55. Tulix
56. Turaco
57. Ujuzi
58. UzaPoint
59. Vooli
60. WapiPay
61. Watu Credit
62. Wingubox
63. Zanifu
64. KiotaPay

Blockchain.

65. AZA Finance
66. Bismart
67. Crypsense
68. Pesabase
69. Pezeshu
70. M-Post
71. RippleNami
72. UTU
73. Vibranium ID

E-health.

74. Access Afya
75. Afya Plan
76. Afya Rekod
77. Afya Research Africa
78. Baobab Circle
79. Damu Sasa
80. Deaf Elimu Plus
81. Flare
82. Ilara Health
83. Lily.Health
84. Medbook
85. Medixus

86. MumsVillage
87. myDAWA
88. Neural Labs Africa
89. Nurse In Hand
90. Snark Health
91. Tambua
92. The Pathology Network
93. TIBU
94. Totohealth
95. Ujuzi Fursa
96. Usalama Tech
97. Zuri Health

Agri-tech.

98. Afriagrimark
99. Apollo Agriculture
100. Aqua Rech
101. Arinifu
102. Cinch
103. eProd Solutions
104. Farm IT
105. Farmers Pride
106. Farmingtech
107. Farmshine
108. GrowAgric
109. iProcure Africa
110. Kuza
111. Lentera
112. Mkulima Young Soko
113. Pula
114. Radava Mercentile
115. Raino Tech4Impact
116. Selina Wamucii
117. Shamba Pride
118. Shamba Records
119. SolarFreeze
120. Synnefa
121. Taimba
122. Twiga Foods
123. Ujuzi Kilimo

E-commerce and retail-tech.

124. AfricaSokoni
125. ANDO
126. Badili
127. Bamba

- 128. Cartnshop
- 129. CashBackApp
- 130. Copia
- 131. DohYangu
- 132. Dukapepe
- 133. MarketForce
- 134. Mawu Africa
- 135. Mobiticket
- 136. Side
- 137. Olivinetech
- 138. Soko
- 139. Sukhiba
- 140. Tushop
- 141. Twiva
- 142. Uncover Skincare
- 143. Wasoko
- 144. Yum

Recruitment & HR.

- 145. FaidiHR
- 146. Fundis
- 147. Fuzu
- 148. KaziNow
- 149. Kazi Remote
- 150. Kisafi
- 151. Kuhustle
- 152. Onesha
- 153. Peleza
- 154. SapamaERP
- 155. SwiftAide
- 156. TalentBoard
- 157. Tiny Titos
- 158. WorkPay
- 159. Ziada

Ed-tech.

- 160. African Management Institute
- 161. Angaza Elimu
- 162. Arifu
- 163. Craydel
- 164. Dawati
- 165. Elewa
- 166. Eneza Education
- 167. Kidato
- 168. Kytabu
- 169. M-Lugha

- 170. Moringa School
- 171. mSwali
- 172. Sunrise
- 173. Tustawi
- 174. Yusudi
- 175. Zydii

Logistics.

- 176. Amitruck
- 177. Fleetsimplify
- 178. GoBeba
- 179. Logistify AI
- 180. Lori Systems
- 181. M-Post
- 182. OkHi
- 183. Sendy
- 184. Senga
- 185. Sinbad
- 186. Sote
- 187. Buypass

Mobility.

- 188. BasiGo
- 189. Data Integrated
- 190. Kiri EV
- 191. Komboa
- 192. Mazi Mobility
- 193. Roam

Marketing.

- 194. AdLink
- 195. Afluence
- 196. Ajua
- 197. Synatech
- 198. Swifttdial
- 199. Teleeza
- 200. Wowzi

Energy.

- 201. Agsol
- 202. HydroIQ
- 203. M-Paya
- 204. PayGo Energy
- 205. SunCulture

Other.

- 206. Kijenzi
- 207. Flint Home Integrators
- 208. Gro Intelligence
- 209. Angani
- 210. Node Africa
- 211. Africa's Talking
- 212. BRCK
- 213. Internet of Elephants
- 214. Komaza
- 215. Jumba
- 216. ManPro
- 217. JabJab
- 218. Astral Aerial
- 219. Imara TV
- 220. Optimetriks
- 221. Enfinite Solutions
- 222. Sheria Soft
- 223. EasyHouse Africa
- 224. Silqu
- 225. Alternative Circle
- 226. AmTech
- 227. Bunifu
- 228. Farwell Innovations
- 229. HydraTech
- 230. Masterclass
- 231. Osta Tech
- 232. Studia Labs
- 233. Nomad Africa
- 234. Sauti
- 235. Solutech
- 236. BlackRhino VR
- 237. Mr Green Africa
- 238. MobiTech
- 239. Gjenge
- 240. Brance