

**UNIVERSITY OF PANNONIA**

**Doctoral School of Management Science and Business Administration**



**The Moderating Role of Technological Capabilities in the Relationship  
Between Entrepreneurial Marketing and Firm Performance in SMEs-  
Khartoum Sudan.**

**Ph. D. Research thesis**

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## ABSTRACT

This study contributes new insights into the moderating role of technological capabilities TCPs in shaping the relationship between Entrepreneurial Marketing EM and firm performance FP in Sudanese SMEs. The main objectives of this study were to investigate and explore in depth how Sudanese managers, employees, and entrepreneurs are familiar and educated with the research variables by concentrating on Entrepreneurial Marketing and its dimensions. Similarly, we aimed to explore in depth more information to improve and rebuild our research pre-model. Consequently, a combination of methodologies has been utilized, the study begins with an inductive qualitative phase, employing various techniques such as focus group discussions (FGDs), mini-FGDs, joint interviews, and individual interviews to explore the familiarity and understanding of EM concepts among Sudanese managers, employees, and entrepreneurs. Through purposive sampling, 15 interviewees were selected, Moreover, thematic analysis was employed to analyze the qualitative data, resulting in the identification of new dimensions in the field of EM, including segmentation, networking, and agility besides the existing dimensions. And to verify the findings of thematic analysis we go through several grounded theory criteria (See Appendix 2). Following the qualitative phase, a deductive quantitative approach was adopted to examine the significance of the proposed final model and test, interpret, and describe the relationships between study variables. Thus, an online questionnaire was distributed across various platforms, yielding 255 responses from the SME community. This study utilized several analytical tools such as Frequency Analysis, Principal Component Analysis (PCA), Rotation Matrix, Correlation, ANOVA, and Path analysis to analyze the data. The findings reveal both significant and insignificant relationships among the variables, with partial significant relationships observed between all hypotheses of the study. (See table 29).

**Key word:** Entrepreneurial marketing, SM Enterprises, Customer Intensity, Innovation, AI, Sustainability.

## **Research motivation**

The motivation behind this research stems from the recognition of the pivotal role that small and medium-sized enterprises (SMEs) play in Sudan's economic landscape. As engines of employment and innovation, SMEs contribute significantly to the nation's economic growth. However, these enterprises often operate under resource constraints, necessitating a nuanced understanding of the factors that influence their performance.

In the contemporary business environment, global technological trends are reshaping industries and markets. SMEs in Sudan, like their counterparts worldwide, face the challenges and opportunities brought about by digitalization and technological advancements. Exploring how technological capabilities moderate the relationship between entrepreneurial marketing strategies and firm performance becomes imperative in this context. Hence, the selection of SMEs in Khartoum, Sudan, is justified by the existing gap in the literature, emphasizing the necessity of exploring how these enterprises utilize entrepreneurial marketing strategies. This investigation is particularly significant given the orientation of new businesses in Sudan, shedding light on the role of entrepreneurial marketing in fostering technological capability within the local context.

The research is further motivated by the recognition that resource constraints are a defining characteristic of SMEs. Despite these limitations, understanding how technological capabilities can enhance or moderate the impact of entrepreneurial marketing efforts is essential. This exploration holds the potential to uncover strategies that allow SMEs to navigate digital transformations effectively, gaining a competitive advantage within their resource limitations. Beyond the practical implications for SMEs, the study has broader policy implications. Insights into how technological capabilities interact with entrepreneurial marketing can inform policymakers on crafting initiatives and support mechanisms that foster a conducive environment for SME growth in Sudan. This, in turn, aligns with overarching economic development goals. From an academic standpoint, the research contributes to the existing literature by filling a gap in understanding the nuanced relationships between entrepreneurial marketing, technological capabilities, and firm performance. By focusing on the Sudanese SME context, the study aims to enrich the academic discourse on these dynamics within the framework of emerging markets, offering insights that extend beyond the immediate scope of the research.

# **CHAPTER I**

## **INTRODUCTION**

### **1.0. Chapter overview**

This chapter contains the background of the study, an introduction to the SME sector in Sudan, a statement of the problem, research questions, and research objective, afterwards, we delve to clarify the significance of the study, and a penalization operationalization definition of key variables used in this study and lastly organization of the study.

### **1.1. Background of the study**

Small and Medium Sized Enterprises (SMEs) are more sensitive to changes in the environment than larger businesses. They have fewer resources to face economic downturns, but they also have a special flexibility in the way they operate, allowing them to take swift decisions when these are needed. They also have inner characteristics, such as management style, affecting how their operations are run, which is significantly different from how larger companies run their businesses.

A particularly interesting strand of academic literature on SMEs has been developing in the interface between marketing and entrepreneurship. While considering the unique nature of SMEs, researchers have been actively trying to understand how these characteristics relate to SME marketing practices. Entrepreneurial marketing is therefore a subject of increasing academic interest, particularly as opposed to marketing practices in larger businesses (Cacciolatti & Lee, 2015). Entrepreneurial marketing “EM” is a dynamic and progressing field at the intersection of entrepreneurship and marketing. It represents a mindset, approach, and set of strategies that are distinct from traditional marketing practices. This emerging concept is vital for startups, small businesses, and innovative ventures seeking to navigate the complex and highly competitive business landscape of the 21st century. Thus, considering the great development in technology in the existing era, innovative processes in addition to the role of marketing to meet the needs and desires of consumers, entirely organizations have become required to look ahead and develop long-term strategies, one of these strategies can be realized by implementing entrepreneurial marketing by which we assume it allows to accomplish sustainable competitiveness and gain profits for SMEs in Khartoum-Sudan.

As a concept entrepreneurial marketing was launched in 1982, and many researchers tried to describe this concept. (Morris et al., 2001; Becherer et al., 2012; Westerlund & Leminen, 2018; Whalen et al., 2016). Meanwhile, the word is also associated with marketing activities in small businesses with limited capital and who need to rely on innovative and unsophisticated tactics. Additionally, EM can be seen as a modern paradigm that integrates crucial aspects of marketing and entrepreneurship into an integrated concept in which marketing is a business-based operation.

Though, in the present business environment, with growing dynamics, conditions, and competitions, entrepreneurs and managers must skip traditional management principles and replace them with original innovative thoughts and procedures, this is considered a promising and growing research field at the intersection of the two most important areas of business administration. In the same scope many scholars have been involved in entrepreneurial marketing has a positive effect on performance. (e.g., Becherer et al., 2012; Sadiku-Dushi et al., 2019; Hacıoglu et al., 2012; Hamali et al., 2016).

On the other hand, technological capabilities encompass a firm's ability to leverage technological resources and innovations for competitive advantage. In the context of SMEs in Sudan, the intersection of entrepreneurial marketing and technological capabilities becomes particularly critical, influencing how these businesses adapt to the digital era and navigate global market complexities. This research aims to investigate the moderating role of technological capabilities in shaping the relationship between entrepreneurial marketing and firm performance within SMEs in Sudan. Recent studies highlight the importance of understanding the impact of technology on marketing strategies and firm outcomes in various contexts (Coviello et al., 2017; Morgan et al., 2020). By delving into these dynamics, the study seeks to provide actionable insights that can inform strategic decision-making and policy formulation for SMEs in Sudan. Moreover, the study is aligned with the current discourse on the role of technology in entrepreneurship and marketing practices in emerging economies (Hultman & Shaw, 2017; Miocevic et al., 2017). Through a nuanced exploration of these dynamics, this research contributes to the academic understanding of entrepreneurial marketing, technological capabilities, and firm performance, offering practical implications for SMEs in Sudan's unique business environment.

Hence, the importance of this research is to increase the understanding of how entrepreneurial marketing dimensions affect the performance of SMEs. Moreover, this study explores how certain dimensions of EM correlate with the firm performance dimensions. Thus, the

research focuses on identifying correlations of EM dimensions and their impact on the performance of SMEs in Khartoum-Sudan. Similarly, this research attempts to explore the impacts of technological capabilities as a moderating role in the relationship between entrepreneurial marketing and firm performance in Sudanese small and medium-sized enterprises.

Concerning the scientific methodology this research tends to combine the quantitative descriptive approach and the qualitative exploratory approach to describe and collect data from the respondents and then analyze that data, draw conclusions, and verify hypotheses. Accordingly, the research applies in the first phase the qualitative exploratory approach to collect data from entrepreneurs, managers, and employees of small and medium enterprises, and it was planned to conduct an online multiple qualitative method. These interviews aim to collect information about the extent of respondents' knowledge and understanding of the research pre-model especially the field of EM and to which extent they employ the concepts of this study in their firms.

Based on the final model, which has been built based on qualitative findings, the research moves further to the second phase, the quantitative descriptive approach, to collect data from these enterprises located in Khartoum, which are approximately more than 500 active small and medium enterprises in various types of industries and services.

The expected outcome of the research is to contribute academically to fill the gap in the literature providing a first study that will connect entrepreneurial marketing with the firm performance via technological capabilities in SMEs in Sudan. Moreover, this study will fill the gap similarly in the literature given that there is still a scarcity of quantitative and qualitative studies. The findings will also help managerially the policymakers who are concerned about small and medium-sized enterprises within the country and can thus use the results of a study to formulate better strategies to support these enterprises. Finally, company owners can consequently benefit from the research outcomes by getting to know and considering the ideas incorporated of entrepreneurial marketing in this study. Our study could, lastly, increase the interest in further developing the field of EM of other academics and researchers.

## 1.2. Small and Medium-sized enterprises (SMEs) in Sudan:

Sudan is a lower-middle-income country with a gross domestic product (GDP) per capita income of about \$ 1500 and, in 2015, a total population of 39 million, with an average annual population growth rate of about 3 percent. This high population growth rate has resulted in a relatively young population and a high proportion of the labor force being of a productive working age. An average of about 55 percent of the total population is between the ages of 15 and 64 years, and creating enough jobs for them is a major challenge (Gangi & Mohammed, 2017).

Moreover, about 66 percent of the total population lives in rural areas with little access to quality education and health services. Thus, a large proportion of Sudanese suffer from illiteracy, poverty, unemployment, high mortality at birth, and low life expectancy. These factors have resulted in Sudan being ranked very low in terms of human development indicators. Furthermore, Sudan's economy is characterized by public sector domination of the productive sector, leaving limited room for the private sector to expand. Even the slim private sector is largely dominated by informal sectors, which remain the most important source of production and employment (Country Watch 2015).

Table 1. describes the available data on the total number and density of micro-, small-and medium-sized enterprises (MSMEs) in Sudan in comparison with several African countries. The selection of these countries is governed by the availability of data on these variables. As we observe from the table, the number and density of MSMEs in Sudan lag behind the selected countries. At the time when the density of these firms was only 0.7 in Sudan, it reached 87.4 in neighboring Kenya and 74.6 in Tanzania. Even when we compare Sudan with the other selected countries, we find that it has the lowest number as well as the lowest density of the MSMEs. This reflects an underdeveloped state of entrepreneurship in Sudan in comparison with some other African countries.

**Table 1 Micro-, small-, and medium-sized enterprises in Sudan and other countries**

Micro-, small-, and medium-sized enterprises		
Country	Total number	Per 1000 people (2000–2005)
Sudan	22,460	0.7
Uganda	160,453	6.2
Kenya	2,800,000	87.4

Tanzania	2,700,000	74.6
Ghana	25,679	1.2
Algeria	580,000	18.8
Botswana	14,986	3.8

Source: World Bank, World development Indicators 2007

Small and Medium-sized Enterprises (SMEs) play a pivotal role in the economic landscape of Sudan, contributing significantly to employment generation, economic diversification, and fostering entrepreneurial spirit. Sudan, located in northeastern Africa, faces both challenges and opportunities in the development of its SME sector. As the country undergoes socio-political transitions, the resilience and adaptability of SMEs become crucial for sustainable economic growth.

SMEs in Sudan operate in diverse sectors, including agriculture, services, manufacturing, and technology. Despite facing obstacles such as limited access to finance, infrastructure constraints, and regulatory complexities, SMEs demonstrate a remarkable ability to innovate and drive local economic development. Understanding the dynamics of SMEs in Sudan requires an exploration of their unique challenges, government initiatives, and the potential for fostering a thriving entrepreneurial ecosystem.

### **1.2.1. Definition of small and medium-sized enterprises:**

There is no standard for defining SMEs, as the SME definition differs across countries depending on the specific criteria used. According to European Union (EU) criteria, SMEs are firms having less than 250 employees (OECD 2017) while SMEs in Central Asia are defined differently depending on the size of fixed assets and the number of employees is less than 200 (OECD 2018). SMEs are defined as enterprises that have five to 99 employees. Small firms are firms having five to 19 employees, whereas medium firms are those having 20 to 99 employees (Kijkasiwat & Phuensane, 2020).

The positions of Arab countries differed regarding the definition of small and medium enterprises while several countries have a definition of small and medium enterprises based on a law, including Jordan, Kuwait, Saudi Arabia, UAE, Palestine, Egypt, Bahrain, Tunisia, Mauritania, Sudan, and Morocco. However, other countries are still trying to establish an appropriate definition. For the countries that have a definition of small and medium enterprises, there is a

difference in definitions from one country to another due to the different standards used. Sudan adopts the definition adopted by the International Labor Organization. According to this, SMEs in Sudan can be defined by the number of employees which is defined as 1 to 10 employees as for the small firms, whereas medium firms can be defined by 10 to 50 employees” (AMF, 2017). Even though Sudan's SME sector is growing more rapidly than before, its contribution to the country's GDP is still tiny, Thus, doing research in this area is necessary.

### **1.3. Statement of the problem:**

In Sudan, governments are facing enormous economic slowdowns and unemployment problems. In addition, the forces of globalization and technological advancements are putting pressure and demands on the rate of enhancement in social and economic development. In such situations entrepreneurship is thought of as the main accelerator of economic development, using job creation, utilization of resources, improved production through innovation, value creation, and wealth accumulation. However, due to the challenges that face the success of entrepreneurship (finance, management of business, policies, etc.), there is a pressing need to adopt a holistic approach to this phenomenon to generate high levels of dynamism, innovation, effectiveness, and introduce policies, programs, and initiatives that foster entrepreneurship development (Khattab et al., 2019).

Likewise, business organizations in Sudan are challenged with intense competition in this manner making the survival and growth of any business dependent on their ability to offer superior value to customers (Osman et al., 2018). Similarly, there were a few studies conducted in the field of entrepreneurial marketing in SDN. Thus, this study attempts to address the gaps and limitations in the literature to formulate a problem statement.

Due to a lack of interdisciplinary research, EM still has much to learn. The current state of EM knowledge needs to be improved. Rather than investigating how marketing practices function in the real world, research has become mired in its theory (Holmes & Jorlöv, 2015). Thereby, we found that there is a gap and deficiency in the field of entrepreneurial marketing specifically in SMEs, who operate in Sudan. The insufficiency is that there is not much experimental research about EM. Moreover, there is little or nothing well-known about the EM dimensions and their impact on the firm performance of SMEs in Sudan. The gaps in the literature are considerable; additionally, there is still no commonly accepted definition of EM, or EM dimensions and practices



(Nora Sadiku-Dushi et al., 2019). Particularly in small and medium-sized enterprises, despite the scientific and practical importance of the entrepreneurial marketing field.

The moderating effect of technological capabilities on the relationship between entrepreneurial marketing and firm performance is important because the characteristics of this kind of capabilities (that promote improvement and innovation) can enhance the positive effect of entrepreneurial marketing and firm performance. However, there is previous research that examines only the direct impact of technological capabilities on firm or marketing performance. (e.g., Camisón, & Villar-López 2014; Tzokas et al., 2015). Consequently, this study shows the need for a complementary interaction between (entrepreneurial marketing and firm performance) which will be developed by technological capabilities as a moderator variable.

Therefore, this study attempts to address the above-mentioned research gaps and limitations in the existing entrepreneurial marketing literature. Moreover, we will try to address this gap by presenting scientific solutions and practical contributions with systematic foundations to help these enterprises reach the desired goal. On the other hand, the existence of contemporary technological capabilities indicates the importance of the technological capabilities that SME firms are supposed to implement in Sudan to gain the desired achievement by applying an entrepreneurial marketing strategy.

Thus, this research addresses the gaps and limitations in the literature by investigating the link between entrepreneurial marketing, firm performance, and technological capabilities. Generally, this research will investigate the moderating effect of technological capabilities on the relationship between entrepreneurial marketing and firm performance in the SME sector in Sudan.

#### **1.4. Research Questions**

The main question of this research is: Do technological capabilities moderate the relationship between entrepreneurial marketing and firm performance in Sudanese SMEs? Throughout this study, we also attempt to find out the answers to the following sub-questions:

1. What is the extent level of understanding entrepreneurial marketing in Sudanese SMEs?
2. What is the relationship between entrepreneurial marketing and firm performance in Sudanese SMEs?
3. What are the benefits of employing technological capabilities in Sudanese SMEs?

## **1.5. Research Objectives**

The general objective of this study is to explore and describe the relationship between entrepreneurial marketing and firm performance in Sudanese SMEs by utilizing technological capabilities as a moderate variable.

1. We also intend to explain the extent level of understanding and implementing entrepreneurial marketing (EM) as a strategy in Sudanese SMEs.
2. We aim to find out the benefits of utilizing technological capabilities (TCPs) as moderator variables between EM and MP in Sudanese SMEs.

## **1.6. Significance of the study**

The significance of this study arises from literature review of entrepreneurial marketing and technological capabilities to carry out their role on firm performance. Therefore, the significance of this study can be illustrated through the following two classifications:

### ***1.6.1. Theoretical significance***

- Due to the little agreement in the literature that constitutes entrepreneurial marketing remains conceptualized only at the level of abstraction in existing models, thus, this study will contribute to knowledge about some of the entrepreneurial marketing (innovation orientation, customer intensity, risk management, and networking).
- This study is an attempt to build a conceptual framework that will contribute to theories and practices in the field of entrepreneurial marketing.
- This study can add to the knowledge about how technological capabilities play a moderating role between entrepreneurial marketing and firm performance.
- Enhance the understanding of the phenomenon of EM within the context of Sudanese SMEs.

### ***1.6.2. Practical significance***

Several practical contributions are expected to emerge from the current research represented in the following:

- This study will make managers and entrepreneurs aware of the changes and complexity of the business environment.
- The study can provide managers and entrepreneurs with an appropriate understanding of the importance of entrepreneurial marketing for firm performance in SMEs.

- The study aims to provide a framework for the relationship between entrepreneurial marketing and firm performance, and the moderating effects of technological capabilities of SME firms in Sudan. this framework can assist as a practical guide for managers and entrepreneurs by improving their understanding of the mechanism of entrepreneurial marketing strategy in more adaptability.
- This study offers new insight for Sudanese entrepreneurs, owners, and managers to develop their entrepreneurial behavior and strategies to strive a competitive advantage by addressing the dimensions that improve the performance of their organizations.

### 1.7. Definition of key terms

The definitions of the key variables are detailed as follows:

- **Entrepreneurial Marketing:** Proactive identification and exploitation of opportunities for acquiring and retaining profitable customers through innovative approaches to the risk management, resource leveraging and value creation (Rashad, N. M. 2018).
- **Innovation Orientation:** Innovation orientation involves a proactive organizational mindset that encourages and supports continuous exploration, experimentation, and implementation of novel ideas and practices to enhance competitiveness and create value (Damanpour, 2014).
- **Customer Orientation:** Customer orientation is a strategic approach where organizations prioritize understanding and fulfilling the evolving needs and expectations of customers, aiming for long-term customer satisfaction and loyalty (Baker & Sinkula, 2019).
- **Risk Management:** Risk management involves the systematic identification, assessment, and mitigation of potential risks to achieve organizational objectives, emphasizing a proactive and integrated approach to uncertainty (Hillson, 2019).
- **Networking:** Networking is a strategic and intentional process of building and maintaining relationships to exchange information, resources, and support, leveraging social connections for personal and professional development (Burt, 2017).
- **Technological Capabilities:** Technological capabilities refer to an organization's capacity to use and leverage advanced technologies, including hardware, software, and IT infrastructure, to achieve its strategic goals effectively and efficiently (Tece, (2018).

- **Remote Work Capability:** Remote work capability encompasses an organization's ability to enable and support employees to perform their tasks efficiently and securely from locations outside the traditional office setting, often facilitated by digital technologies and communication tools (Golden & Gajendran, 2021).
- **Artificial Intelligence (AI):** Artificial Intelligence (AI) refers to the development of computer systems that can perform tasks that typically require human intelligence, such as learning, problem-solving, language understanding, and perception. AI technologies include machine learning, natural language processing, and computer vision (Russell & Norvig, 2022).
- **Firm Performance:** Firm performance refers to the overall effectiveness and success of a business, encompassing various dimensions such as financial results, market share, and stakeholder value (Chen, et. al. 2020).
- **Profitability:** Profitability is the ability of a company to generate earnings in relation to its costs and expenses, reflecting the efficiency and effectiveness of its business operations (Saini & Budhwar, 2021).
- **Sustainability:** Sustainability in a business context refers to the integration of economic, environmental, and social considerations to ensure responsible and ethical business practices for long-term success (Arena et al., 2018).
- **Presumed Customer Satisfaction:** Presumed customer satisfaction is the perceived level of contentment or positive evaluation that a company assumes its customers have, often inferred through feedback, surveys, and market analysis (Yi, 2016).

## 1.8. Research novelty

The research novelty in examining the moderating role of technological capabilities in the relationship between entrepreneurial marketing and firm performance in SMEs in Sudan lies in several key aspects:

### ***Contextual Relevance:***

***Novelty:*** Focusing specifically on SMEs in Sudan brings a contextual relevance that acknowledges the unique economic, social, and technological landscape of the region.

***Importance:*** Understanding how the interplay between entrepreneurial marketing, technological

capabilities, and firm performance operates in a Sudanese SME context is crucial for tailoring strategies to the specific challenges and opportunities in the local business environment.

***SME Emphasis:***

**Novelty:** Many studies often concentrate on larger enterprises, and the emphasis on SMEs is novel, given their distinct characteristics, resource constraints, and pivotal role in economic development. **Importance:** SMEs constitute a significant portion of the business landscape in Sudan and studying the **moderating** role of technological capabilities in this segment contributes valuable insights that can be directly applicable and beneficial for smaller businesses.

***Entrepreneurial Marketing Lens:***

**Novelty:** Entrepreneurial marketing is a relatively recent area of study, and applying this lens to SMEs in Sudan adds a novel perspective to the existing literature. **Importance:** SMEs often exhibit entrepreneurial characteristics, and understanding how entrepreneurial marketing practices interact with technological capabilities can provide guidance for fostering innovation and competitiveness in these businesses.

***Technological Capabilities in Sudan:***

**Novelty:** Investigating the role of technological capabilities in a Sudanese SME context is unique, considering the country's evolving technological landscape. **Importance:** Sudan, like many other developing nations, is experiencing technological advancements. Examining how SMEs leverage and develop technological capabilities can shed light on the role of technology in business growth within emerging markets.

***Practical Implications for SMEs:***

**Novelty:** Emphasizing practical implications for SMEs in Sudan differentiates the research by providing actionable insights that can directly benefit the targeted businesses. **Importance:** SMEs often lack extensive resources for technological investments, and understanding how to strategically leverage existing capabilities can guide these businesses toward sustainable growth.

***Contribution to Academic Knowledge:***

**Novelty:** The research contributes to the academic literature by addressing a specific gap in knowledge related to the interaction between entrepreneurial marketing, technological capabilities, and firm performance in the Sudanese SME context. **Importance:** Bridging this gap

not only advances scholarly understanding but also offers a foundation for future research in similar contexts and contributes to the global discourse on entrepreneurship, marketing, and technology in SMEs. To conclude, the research novelty lies in its contextual focus on SMEs in Sudan, the integration of entrepreneurial marketing and technological capabilities, and the practical implications it holds for businesses in the region. This study has the potential to make a meaningful impact by advancing both academic knowledge and providing actionable insights for SMEs in Sudan.

### **1.9. Organization of the research**

The research is divided into six chapters as follows: Chapter One, Introduction: This chapter overview, Background of the study, SME sector in Sudan, Research statement, Research problem, Research questions, The objectives, The significance, Definition of terms, Research novelty and the organization of the study. Chapter Two, Literature Review: presents the theoretical perspectives of research variables. Chapter Three, theoretical framework, and hypotheses development: introduced the theoretical framework, conceptual framework, and hypotheses development. Chapter Four, Research Methodology: Describes the research design and methodology for empirically testing the hypotheses. The methodology includes the unit of analysis, data collection, and statistical techniques. Chapter Five, hypotheses testing and results: including an analysis of the collected data and testing the hypotheses. Chapter Six, discussion and conclusions: including presentations of the results that provide discussion of research implications, the limitations, and directions for future research.

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **2.0. Introduction**

The literature review sheds light on the areas of entrepreneurial marketing (EM), firm performance, and technological capabilities. The discussion of each is conducted by the review of relevant literature to explain the relationship between entrepreneurial marketing and firm performance. It will also explain the moderating effect of technological capabilities on the relationship between entrepreneurial marketing and firm performance.

The fact of its originality means a growing business venture is more likely to face both uncertain market conditions and limited resources for marketing. When pursuing new opportunities with limited resources, the entrepreneur must use innovative approaches in the face of such constraints. While the marketing approaches used by entrepreneurs reflect this innovative orientation, they may vary in their relationship or effect on outcome goals. A new venture must understand which entrepreneurial marketing practices are most effective and therefore important to achieve a variety of successful outcome goals and ultimately for profitability and satisfaction. Therefore, the purpose of this study is to link entrepreneurial marketing practices with firm performance in SMEs in Sudan.

#### **2.1. The concept of entrepreneurial marketing (EM)**

Entrepreneurial Marketing “EM” has gained significant academic legitimacy since its inception in the 1980s, and a sizeable body of various research on it has emerged (Hallbäck & Gabriellson, 2013). Entrepreneurial marketing is a marketing strategy that can be better suited to resource constraints and challenges in SMEs (SMEs). Common to all definitions of EM is the concept that it lies at the nexus between entrepreneurship and marketing. Entrepreneurial marketing has opened the door to many research streams that have led to diverse views and meanings of the EM term. An alternative marketing model was needed to be identified which could also be used among small enterprises.

Entrepreneurial marketing is an initial phenomenon that appeared in small companies or new enterprises. Thus, entrepreneurial marketing can be interpreted as marketing with an entrepreneurial mindset since it is the organizational role of marketing considering innovativeness, risk-taking, pro-activeness, and the pursuit of opportunities without regard for the resources

currently; Effective entrepreneurial marketing creates value for customers "through relationships, particularly through innovation, creativity, sales, and immersion into the market, networking or flexibility. Therefore, this point makes small and medium enterprises establish more focused business conditions to achieve targeted goals through an entrepreneurial marketing approach.

In this study, we have drawn the concept of EM developed by (Zahra & Garvis, 2000; Zahra et al., 2003). argue that EM includes seven dimensions. Five of these dimensions – proactiveness, innovation orientation, taking risk orientation, focusing on opportunity, and leveraging resources– derive and come from the literature on entrepreneurship. While other two dimensions of EM –value creation–and customer satisfaction orientation are derived from the literature on marketing (Hooley, et al., 2001; Kohli & Jaworski, 1990).

According to Alqahtani & Usay, (2020); and Morris et al., (2002) organizations that choose EM as their strategy benefit from interlinking among the underlying dimensions. These interlinking are valuable when pursuing exploratory as well as exploitative innovation. Thus, the interlinking between the EM dimensions offers firms yet a different advantage, allowing them not only to create exploitative or exploratory innovation but to rotate between these innovation types. Its dimensions and their interconnections make EM a unique strategic posture. The researcher agrees that it is theoretically necessary to distinguish EM from other strategic situations such as market orientation (MO) and entrepreneurial orientation (EO) to establish EM as a distinct field of research. In the literature on entrepreneurship, businesses following an EO concentrate on creativity, proactiveness, and risk-taking, according to their school of thinking, although many EO dimensions are shared by EM, such as leveraging resources is not an aspect of EO and autonomy, and competitive aggressiveness is not a feature of EM.

Hills & Hultman, (2011) has contributed to the EM context arguing that traditional marketing that is created in literature may not be completely applied to small and medium enterprises. The company's conduct is another stream of entrepreneurial marketing analysis. This stream found that EM as a more promising opportunity to describe the marketing of companies that are small and resource-limited enterprise-driven entrepreneurial actions. Subsequently, the extent of research has extended from small companies to large companies. Many previous studies illustrate that however limited, entrepreneurial marketing can be used for any size of business (Hisrich & Ramadani, 2017; Kraus et al., 2009).



Crick et al., (2020) suggested that entrepreneurial marketing EM relates to rising innovative products in close interface with customer’s orientation, leveraging resources of partners, and by innovative techniques to attain market acceptance these results are very interesting. In marketing and entrepreneurship literature, the concept of EM has primarily been associated with the need for creativity and innovation in small firms. However, a different stream of literature perceives EM as entrepreneurship in marketing and views it as an entrepreneurial and innovative practice in corporate and large-scale Learning styles businesses Morris et al., 2002).

This research responds to the call by (Webb et al., 2011; Lam and Harker 2015; and Jayawarna et al., 2014) for an EM theoretical base to advance the theory and the relationship between marketing and entrepreneurship and their link with firm performance which can then be used to make clear how small and medium terms enhances EM and other terms development skills. The connection between execution theories, sense-making, implementation, and contextual marketing demonstrates a clear interrelation between entrepreneurship and marketing and provides "a unique framework for advancing the understanding of the process and entrepreneurship and its potential marketing link" (Mpanza, 2016). EM is not only the nexus between marketing and entrepreneurship, but furthermore marketing and entrepreneurship – customer-focused and entrepreneur/innovation-focused.

All EM definitions, however, have something in common; they all include both marketing and entrepreneurial aspects. The most frequently EM definition that can be found in the literature (Rashad, 2018) defines EM as *“proactive identification and exploitation of opportunities for acquiring and retaining profitable customers through innovative approaches to the risk management, resource leveraging and value creation”*. The further definitions of EM that may be frequently found in literature will be chronologically existed in table 2 bellow:

**Table 2 Definitions of entrepreneurial marketing EM.**

Definitions	Author
<b>EM is marketing carried out by entrepreneurs or owner-managers of entrepreneurial ventures.</b>	<u>Stokes (2000, p. 2)</u>
Proactive identification and exploitation of opportunities for acquiring and retaining profitable customers through innovative	Rashad, N. M. (2018).

approaches to the risk management, resource leveraging and value creation.	
<b>“Marketing of small firms growing through entrepreneurship”.</b>	<u>Bjerke and Hultman</u> (2002, p. 15)
EM is the overlapping aspects between entrepreneurship and marketing; therefore, it is the behavior shown by any individual and/or organization that attempts to establish and promote market ideas, while developing new ones in order to create value.	<u>Bäckbrö &amp; Nyström</u> (2006, p. 13)
<b>A particular type of marketing that is innovative, risky, and proactive, focuses on opportunities and can be performed without resources currently controlled.</b>	<u>Kraus et al. (2009, p. 30)</u>
EM is a spirit, an orientation as well as a process of passionately pursuing opportunities and launching and growing ventures that create perceived customer value through relationships by employing innovativeness, creativity, selling, market immersion, networking and flexibility.	<u>Hills and Hultman</u> (2011, p. 6)
<b>EM is a set of processes of creating, communicating and delivering value, guided by effectual logic and used a highly uncertain business environment.</b>	<u>Ionita (2012, p. 147)</u>
The marketing processes of firms pursuing opportunities in uncertain market circumstances often under constrained resource conditions.	<u>Becherer et al. (2012, p. 7)</u>
EM is a combination of innovative, proactive, and risk-taking activities that create, communicate, and deliver value to and by customers, entrepreneurs, marketers, their partners, and society at large.	Whalen, et al. (2016).

Source: Nora Sadiku-Dushia, et al., 2019).

Since the EM sector is generated at the crossroads of entrepreneurship and marketing, neither has a widely accepted concept and having regard to the heterogeneous existence of both

fields, the normative and widely agreed concept of EM is very difficult to arrive at this instance (Stokes & Wilson, 2009).

Entrepreneurial marketing implies intensity and motivation rather than a dispassionate, analytical planning process highlight how the dimensions of entrepreneurial marketing should be considered as “processes to create, network and deliver values”. Thus, these processes which lead to the use of traditional marketing approaches in innovative ways or in green and different ways to leverage resources (Thomas et al., 2013). Thus, based on the overall marketing prospects, entrepreneurial marketing is an extension to current marketing theory. Moreover, both concepts are similar in terms of creating value for business sustainability, but there are several differences in the characteristics of each concept. summarizes in the following table the distinction between traditional marketing and entrepreneurial marketing.

### 2.1.1. Entrepreneurial marketing and traditional marketing

Table 3 Comparison between traditional marketing and entrepreneurial marketing

<b>Principles of marketing</b>	<b>Entrepreneurial Marketing</b>	<b>Traditional Marketing</b>
<i>Concepts</i>	Oriented innovation (encouragement of ideas), assessment of market needs intuitively	Consumer-oriented (market forces), product development through formal assessment
<i>Method</i>	Interactive marketing method, word-of-mouth marketing, and direct selling	Marketing mix, 4Ps/7Ps
<i>Strategy</i>	Bottom-up approaches from consumer and other influenced group	Top-down approaches of segmentation, targeting, and positioning
<i>Market Intelligence</i>	Informal networks and information gathering	Formal research market and intelligence system

Source: Stokes (2000).

In line with four marketing concepts, a more in-depth exposure is described as follows (Stokes, 2000) when contrasting traditional and entrepreneurial marketing:

- On the principle of "concept" that discussed the business orientation, note that contrarily traditional marketing which is defined by the customer orientation, entrepreneurial

marketing defined by entrepreneurship and innovation. Innovation-oriented, innovative concepts, intuitive market ideas or a rigorous evaluation of market needs tend to lead business owners and small enterprises.

- In the "method" or tactical level principle, small companies prefer digital marketing rather than the 4P or 7Ps model. They try to make direct and personal by means of digital marketing customer communication, this is when employees perform personal sales and marketing relationships.
- Traditional marketing at strategic level includes a highly down-to-date approach and a consistent sequence of events such as segmentation, targeting, and positioning. An effective SME entrepreneur, on the other hand, practices the bottom-up approach as opposed to traditional marketing: (1) Identifying and testing market opportunities through trial and error; (2) to address the needs of many customers then to increase direct customer interaction and to consider their needs and preferences; (3) adding to your old customers new customers with identical profiles. This practice also happens by chance, including new clients, who result from the early recommendation of the customer.
- As for market intelligence, small-scale businesses prefer using informal methods, such as monitoring or personal data collection, through their marketing activities and Communication network, not formal research on the market. Rejecting formal methods of research is a reasonable product of the fact that most of them do not believe in forecasting the future.

### **2.1.2 Entrepreneurial marketing dimensions:**

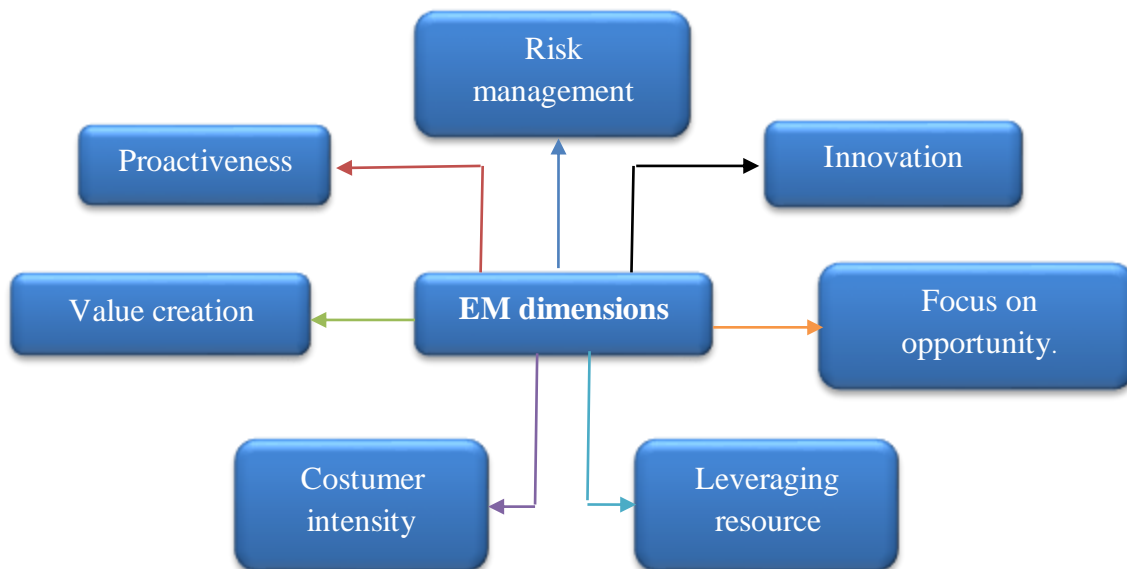
Different researchers have used various classifications in recent years when reviewing the behavior of the business EM. These classifications vary in terms of content but are different in the number of dimensions they are used according to the context of the analysis. Although the behavior of EM is widely studied, no consensus exists on several dimensions of the behavior of EM (Kilenthong et al., 2015).

Previous researchers have recognized a variety of dimensions of EM behaviors like innovation-oriented risk-taking, focus on opportunity, and flexible approaches for markets Hills & Hultman, (2013); furthermore, Miles and Darroch (2006) in their study, analyzed how large companies could exploit entrepreneurial marketing processes to gain and renew a competitive advantage, their study has used previous research on entrepreneurial marketing and

entrepreneurship practices, using examples from a long-term business case study in New Zealand, Sweden, the United Kingdom and the United States, to show how large corporations can strategically use their entrepreneurial marketing processes to build or identify, evaluate and take advantage of entrepreneurial opportunities better and more effectively.

They adopted risk management, pro-activeness, opportunity-driven, innovation, customer intensity, value creation, and resource leveraging as the variables explaining this competitive advantage. Their findings provided insight into the use of entrepreneurial marketing dimensions for large corporations to expand.

**Figure 1 presents EM dimensions.**



*Becherer, et all., (2012).*

### 2.1.2.1 Innovation orientation IO

Entrepreneurial marketing is considered to be suitable for small businesses. Furthermore, innovativeness is a critical instrument that small and medium-sized businesses can use to obtain a competitive edge (Hacioglu et al., 2012). To thrive, corporations need to be able to change and adapt. Companies operate under the awareness that eventually; rivals will enter the market with a product that fundamentally alters the nature of competition. Adaptation and change management skills are critical for survival. Can businesses, however, manage innovation? Yes, without a doubt, as Bill Gates stated in (2008), and (Waples and Rushes 2008).

Christopher Freeman (1982) stated in his well-known paper on the economics of innovation, "... not to innovate is to die." Undoubtedly, businesses that have become industry and technological leaders have demonstrated the capacity to create innovative goods that are successful. The leading businesses have proven their ability to innovate in almost every field, from computers to pharmaceuticals to motor vehicles (see Table 4). Moreover, these same businesses are providing remarkable growth and/or return to their shareholders, according to The Boston Consulting Group's yearly study on the most inventive businesses in the world (P. Trott 2008).

**Table 4 Market leaders in 2015**

<b>Industry</b>	<b>Market leaders</b>	<b>Innovative new products and services</b>
Cell phones	Samsung; Apple	Design and new features
Internet-related industries	Google; Facebook	New services
Pharmaceuticals	Pfizer; GlaxoSmithKline	Impotence; ulcer treatment drug
Motorcars	Toyota; BMW	Car design and associated product developments
Computers and software development	Intel; IBM and Microsoft; SAP	Computer chip technology, computer hardware improvements and software development

*Source: Trott, P. (2008).*

**Table 5 World's most innovative companies**

2014 Rank	Company	Revenue growth 2012–13 % change	R&D spending 2012– 13 % change
<b>1</b>	Apple	9.2	32.4
<b>2</b>	Google	19.2	17.1
<b>3</b>	Samsung	17.0	27.8
<b>4</b>	Microsoft	5.6	6.1 5
<b>5</b>	IBM	–4.6	–1.2
<b>6</b>	Amazon	21.9	43.8

7	Tesla Motors	387.2	-15.3
8	Toyota	-3.9	-6.9
9	Facebook	54.7	1.1
10	Sony	-5.7	-18.8

Source: Trott, P. (2008).

Innovation-oriented companies engage in creative processes and experimentation and strive for a constant flow of novel ideas that have the potential to lead to new products, services, and/or technologies that may be exploratory or maybe improvements of existing offers (Alqahtani & Usay, 2020). An innovation orientation allows companies to turn recognized opportunities into ideas for innovation (Sadiku-Dushi et al., 2019). In this study, we attempt to find out the best method that firms might follow to produce modernity for their process, services, product lines, supply channels, and packaging and how certain firms implement a new idea or a new technology to create a dynamic strategy and last to ensure competitive advantage.

#### 2.1.2.2 Customer intensity CI

Since the perspective has shifted from product and sales to a market orientation, which implies that value originates from solutions that address and satisfy the customers' needs, interest in the creation of customer value has grown and has been the subject of intense discussion. To increase customer happiness and consequently raise revenues, businesses have to recognize and satisfy these consumers' needs (Kotler, 2012).

The marketing process makes a strong point about how important it is to align one's company with the needs of the customer and develop relevant values. Consequently, satisfying the needs of customers by living up to their performance and quality expectations strengthens a successful long-term relationship with them (Hewing, 2013).

**Figure 2 Profit chain of customer orientation**



Hewing, M. (2013).

Customer-satisfaction-oriented firms strive to understand customers voiced and latent needs to develop products and services that the market desires. In this line, companies go to great

lengths to collect and act on market intelligence that allows them to determine customer wishes. In addition, companies aiming for customer satisfaction try to engage in emotionally close relationships with their customers (Morris et al., 2002; Bachmann et al., 2021).

Therefore, participants have come together that a firm or any company should give superlative consideration to its customers/clients and work hard to satisfy their needs, wants, and expectations (Customer-oriented or Customer-intensity) so that firms can reach their advanced objectives and maximize profits. Additionally, a customer intensity strategy can assist the firm to retain and acquire new customers and that positively leads to growth, stability, and sustainability during the firm life cycle.

Here are some quotations of the qualitative discussions that insured the importance of customer intensity as a dimension of EM that can be suitable for the small and medium-sized ventures: *{“I believe that Customer Intensity can rapidly increase customer loyalty and retention and can assist in positive word-of-mouth referrals and PR.” (2nd Mini-FGDs, Male 1)}*.

*{“For me as a customer representative this dimension improve customer satisfaction and NPS scores.” (2nd Mini-FGDs, Female)}*.

*According to my experience in the firm focusing on customer could help to reach higher revenue and profits due to repeat business and cross-selling opportunities this can assist also to get more accurate customer personas and targeted marketing.” (2nd Mini-FGDs, Male 2)}*.

### **2.1.2.3 Risk management RM**

Companies have to deal with numerous risks when making decisions, such as about investments to develop novel products and services. Companies with a risk-taking orientation strive for calculated risk-taking; that is, they are ready to encounter higher risks if potential outcomes promise to lead to higher returns, as long as these risks can be reasonably assessed and potentially be mitigated, such as through intensive product testing, collaborative product development with other companies, or flexible resource commitment (Bachmann et al., 2021).

One of the main contributions that we have gained throughout our qualitative discussions is that one of the participants has insured risk-taking as a dimension of EM, she reasoned that the SM projects are facing many threats during their establishment stages and along with their durability in the market, thus, managing this threats and risks can remind you to be unique from competitors. *{“In entrepreneurial marketing, I see the importance of taking risks as long as you have opportunities, as long as they are small projects, you can see the risks to be unique from*



*competitors outside the framework”*. (2<sup>nd</sup> Interview, Female)}. Another quotation {“*I believe that managing risk can provide a heightened confidence and trust of stakeholders, investors, and customers.*” (2<sup>nd</sup> Mini-FGDs, Female)}.

#### **2.1.2.4 Networking**

In EM the network is viewed from the entrepreneur's perspective. This means that he is the main actor, and the connections are the relations established to conduct marketing activities. Thus, a new concept emerged - the marketing network - which is defined by structural and interactional dimensions (Ionita, 2012).

Networking refers to the actual process of liaison with contacts within the network; it is about individuals and companies working alongside each other and cooperating through the exchange of ideas, knowledge, and technology. SMEs and entrepreneurs will have some kind of network that is likely to encompass all aspects of the network domain (i.e., personal contact, social, business, industry, trade, and marketing networks). The collective definition, intended to encompass all network aspects, is A collection of individuals who may or may not be known to each other and who, in some way, contribute something to the entrepreneur, either passively, reactively, or proactively, whether specifically elicited or not. An entrepreneur's network is represented by people who can help the entrepreneur make decisions for the well-being of the enterprise (Gilmore & Carson, 1999).

Marketing by networking is a naturally inherent aspect of entrepreneurial decision-making in which entrepreneurs exchange and seek ideas, knowledge, and market-related information through their business activities and contacts. This is because entrepreneurs must go outside the firm's physical confines to do business and this business is a market-led activity. Thus, entrepreneurs are doing marketing through all their normal communication activities (e.g., interacting and participating in social, business, and trade activities). Marketing by networking is used by SME entrepreneurs to develop, enhance, and support all aspects of the marketing activity by networking with customers and potential customers and by industry and business networks (specifically about promotions), word-of-mouth communication, and information-gathering activities. (Gilmore & Carson, 1999).

Therefore, based on the above details we can define networking as: “Networking is a “competence” or talent that can be learned, developed, and grown by practice, just like any other competence or skill.” Thus, in this study networking will be implemented as an entrepreneurial marketing source

to help entrepreneurs and managers of SMs in Khartoum to collaborate and employ their business-to-business relationship or even business-to-costumer relationships to ensure sustainability and to maintain extraordinary performance for their firms.

### **2.1.3 The need for entrepreneurial marketing**

Marketing academics asked the adequacy of traditional marketing and introduced a new marketing paradigm; numerous empirical studies indicate that traditional marketing principles do not involve all marketing strategies. This is the case with who found that service companies conduct a range of practices not covered by the traditional concept of the marketing mix. Thought that both customer orientations as well as customer interactivity lacks the traditional marketing mix definition. The other explanation why it was important for a new marketing paradigm is the fact, especially for small and medium-sized enterprises, that today's business environment is very difficult. The competitive environment is characterized by growing risk, instability, chaos, transformation, and contradiction (Nora Sadiku et al., 2019).

Moreover, EM has now emerged as a new marketing paradigm to help businesses reconsider how they do marketing, in order to respond to these shifts in their business environment. EM will help also businesses survive and respond to identified changes.

It is apparent that EM needs most when the traditional marketing practices are no longer sufficient and the world is characterized by uncertainty, Because these characteristics are present on the market today, the implementation of EM would be useful to most today's companies ([Morris et al., 2002](#)).

### **2.1.4 Strategies of entrepreneurial marketing**

In business schools, the idea that the main purpose of an organization is to get a profit while meeting the needs and expectations of customers. Higher output (i.e., profitability) can occur if a business has a competitive advantage over other companies and then explores where the company's advantage has become a critical process in which companies seek to distinguish themselves in the market. Furthermore, companies must be strategic in order to sustain their advantage over a period of time.

Thus, strategic marketing includes an analysis of the market's organizational relationships with 'customers, consumers, rivals, and others, and of the idea of plans for achievement of objectives such as sustainable competitive advantages (Morrish, et, al. 2011).

The strategy concept for EM companies relies on both intended and autonomous strategies to help form the strategic concept of an EM company based on opportunities. A proactive, opportunity-oriented marketing approach phase and cooperates with the EM strategy conceptualization, Moreover the core feature of this definition of EM is that a uniquely cheaper and different or very different positioned product offers give a competitive advantage and perhaps incorporate uniqueness such as branding and production process, which produce new goods that are very different from those of competitors Consequently, companies that practice EM, regardless of whether they are big or small, can be regarded as an entrepreneurial firm (Morrish et al., 2010).

EM is a creating value process, and both marketing and entrepreneurship aims at creating value, Therefore, it is necessary to recognize the value in an exchange phase to maintain contact to sellers' customers, when established value is modified by addition to creativity. A traditional marketing strategy is to overpower a seller in a market and the perceived value of the consumer is defined can be profitable. This can be used if entrepreneurs retain current markets and exchange the same value for the consumer. EM strategy is to discover fresh and unexplored opportunities. When this strategy is being implemented, entrepreneurs can explore new markets but use the same business models in each new market by providing equal value logic (Sadiku-Dushi et al., 2019).

Following the conceptualization of earlier studies there are many previous studies have deals EM with multiple dimensions. Moreover, most of the previous studies, discussed one components of EM. Sadiku-Dushi et al., (2019), Becherer et al., (2012), Kilenthong et al., (2015), Miles and Darroch (2006). Consequences, our research has adopted based on the previous studies and qualitative findings the four main dimensions of EM.

## **2.2 Firm performance (FP) of resource-based view (RBV)**

This part discusses the second concept of this study firm performance which represents the dependent variable, including the concept, the definitions, and the dimensions of firm performance. The firm's internal environment is highlighted as a source of competitive advantage by the resource-based view of the firm (RBV), which also highlights the resources that businesses have built up to compete in the marketplace (Wang, 2014).

The framework of RBV states that the resources forming the bases of one's competitive advantage should be valuable, rare, imperfectly imitable, and sustainable (Madhani, 2010). Argues that it is important that the firm evaluate the contribution to competitive advantage of specific

resources/activities when considering them for outsourcing with the application of RBV in the development of 24 competitive advantage, through either the cost leadership strategy or the differentiation strategy, the nature of the organization as a whole and/or the design of the firm's products and/or services are essential components. Cost leadership is typically achieved through the development of both highly effective and efficiency organization and production processes. Differentiation can be achieved through either the development of a superior organization or through the design of superior products and/or services.

Moreover, the RBV suggests that organizations should deploy assets and resources both internally and externally to create competitive advantage. Logically, the firm would then perform in house only those activities for which it has demonstrated superior performance in comparison to competitors. By outsourcing those tasks that can best be performed by organizations that specialize in that work, the firm may better focus their value-creating activities on core tasks, therefore maximizing their effectiveness.

### **2.2.2 The concept and definitions of FP**

The concept of firm performance needs to be distinguished from the broader construct of organizational effectiveness. FP is an important construct in strategic management research all around the world, and it is regularly employed as a dependent variable. Despite its importance, there is little agreement on its description, dimensionality, or measurement, which limits advances in research. Successful businesses are essential for developing countries. many economists compare them to an engine in terms of determining their economic, social, and political development.

Firms' performances nowadays, is the first to be examined by investors from all over the world, as the world has smaller in the sense that enterprises may now be conducted from anywhere. Globalization enhances commercial operations and high performance, and it allows businesses to expand their opportunities for growth by eliminating barriers to corporate trade and financial investment. The firm's success is mostly explained by its performance during a certain period. Researchers have worked hard to come up with metrics for the concept of performance, which is an important one. The ability to measure a company's performance allows for the comparison of its results throughout various periods. However, no precise metric that can assess every facet of performance has been presented up to date (Al-Matari et al., 2014).

Furthermore, with the greatest generational spread in technology, people who are interested and concerned about attaining their tasks from anywhere are encouraged to look for any company around the world that has a strong track record of investment performance. As a result, the company's performance is the most essential factor that encourages customer to come. consequence, those in charge of running firms must improve their performance by implementing new plans and procedures to update their operations and transactions throughout their life cycle” (Al-Matari et al., 2014).

Any company's management must be able to measure its performance. It is impossible to enhance a process without first measuring the results, consequence, measuring the influence of organizational resources on business performance is necessary for improving organizational performance. Thus, business performance, or firm performance as we refer to it in this study, is a subset of organizational effectiveness that covers operational and financial outcomes.

Taouab, & Issor, (2019). provided a set of definitions to illustrate the concept of organizational performance:

- Performance is a set of financial and nonfinancial indicators that offer information on the level of accomplishment of objectives and results.
- Performance is dynamic, requiring judgment and interpretation.
- Performance may be illustrated by using a causal model that describes how future results can be affected by current actions.
- Performance may be understood differently depending on the person involved in the assessment of the firm performance.
- To define the concept of performance, it is necessary to know its fundamentals characteristics to each area of responsibility.
- To report a firm's performance level, it is necessary to be able to quantify the results.

### **2.2.3 Dimensions of (FP)**

A multidimensional or unidimensional comprehensive construct (model) on firm performance is possible. The list of identified determinants is shown in Figure 2., i.e., possible representations of firm performance. It is to be noted that the identified determining factors for firm performance are *profitability performance*, growth performance, market value performance, *customers” satisfaction*, employees” satisfaction, environmental performance, environmental audit performance, corporate governance performance and social performance. As pointed out

earlier, these determinants were identified, based on the reviews published earlier (Santos, & Brito, 2012).

**Figure 3 List of identified dimensional for firm performance.**



*Source: Selvam, et, al. (2016).*

Based on the above-mentioned dimensions, and according to the recommendations of the participants in the qualitative phase of this study and for an (*explicit reason*), the profitability of the firm, sustainability, and customer satisfaction are selected as a core measurement of a FP to be applied in Sudanese SMEs Thus, our study comes up with De Mendonca, & Zhou, (2019) for the adoption of profitability and customer satisfaction, and with Gupta, & Gupta, (2020) in terms of sustainability and profits.

### **2.2.3.1 Profitability**

Profitability performance refers to a company's ability to make money. After paying all expenses directly linked to the generating of revenue, such as producing a product, and other expenses associated with the conduct of company activities, a profit is what is left of the revenue a business generates (Selvam et al., 2016). An enterprise makes profitability by selling products or services at a lower cost than its competitors, or by selling differentiated items at a premium price that covers the extra cost of differentiation. Firm profitability reflects the financial performance of SMEs. profit will be reinvested in innovative product and service technologies, loyalty programs improved, and customer satisfaction enhanced (Kumar et al., 2009).

An enterprise makes profitability by selling products or services at a lower cost than its competitors, or by selling differentiated items at a premium price that covers the extra cost of differentiation. Therefore, the objective of the firm is to maximize the wealth of the existing shareholders. Meanwhile, there are several ways of measuring profits, from direct measures as reported on financial statements to the financial ratios normally used in the finance literature (e.g., return on assets, return on sales, return on investment, etc.). These latter areas are less commonly used, which is typically a function of the availability of data, but they do occasionally appear in the literature (Josh Siepel & Marcus Dejardin, 2020).

#### **2.2.3.2 Sustainability**

Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Marcuse, 1998).

There are two mechanisms because firms take action towards more sustainability. First, certain external influences such as mandatory legislation may impose pressure upon a firm to kick off sustainability initiatives to prevent disadvantages or penalties. Second, firms see a potential competitive advantage in the realization of sustainability initiatives leading to a voluntary pursuit of sustainability efforts. The generation of new markets for sustainable products, or cost savings realized through reduced resource consumption within the manufacturing process are both examples of opportunities that arise in the context of the sustainability challenge, which can be used to gain a competitive advantage (Schrettle et al., 2014).

#### **2.2.3.3 Presumed Customers satisfaction PCS.**

Customer satisfaction provides a leading indicator of consumer purchase intentions and loyalty. “Customer and employee satisfaction are two more factors to consider at every circumstance. Customers expect businesses to deliver goods and services that meet their needs. The customer is the central focus for business improvement. In a competitive environment, businesses must understand their customers' needs in order to eliminate mistakes and increase the perceived quality of their services. They must also add value to their offers. Customer satisfaction increases willingness to pay, and a company's value is created in the process” (Selvam et al., 2016). The customer's or client's emotional response, combining his/her experiences and feelings after consumption of a product or service, with the expectations and perceived value (Biesok & Wyród-Wróbel, 2011). Thus, all human needs and wants are certain things; this is one of the foundations of marketing. After fulfilling these needs customers expect to be satisfied with their purchase.

According to Kura, (2019) satisfaction is when the customer evaluates whether a product or service has met their needs and expectations.

### **2.3 The concepts of technological capabilities (TCPs)**

Customers nowadays are choice seeking, demanding, and knowledgeable, and the power balance has changed from companies to value seeking customers in today's customer-centered hypercompetitive situations. Consequently, controlling technological innovation capability for greater company performance through the fulfillment of consumer expectations is becoming increasingly important for all businesses. Only forward-thinking businesses that maximize consumer value by utilizing their technological capabilities efficiently will survive and prosper. Likewise, TCPs are part of the research approach which studies the capability concept, this approach analyzes how the capacity of a certain enterprise will promote the use of resources in the functional sector of a certain organization. On the other hand, the competitive advantage of the company therefore would depend on the capability of the company.

As a concept technological capability TCP refers to the ability of an organization to use a wide range of technologies, to develop innovative concepts to produce new products that are accepted by the consumer, and to adopt a rapid process development. This description thus underlines that technological capability not only involves technological mastering, but also investment in research and development, autonomous decision-making, and an innovative emphasis. In the past, technology has been an important source of competitive advantage for innovation (Taghizadeh et al., 2020).

The commonly thought view of technological capability proposes that firms with strong technological capability can rapidly identify technological opportunities and the value of technological resources, obtain the resource and benefit from it, thus success in product innovation. (Wu, (2014); Zhou & Wu, (2010); Srivastava et al., (2015); Blomkvist et al., (2017). The classification of the capability depends on its purpose. Technological capabilities are a core element of information usage and technology as an innovation requirement in the enterprise, Technological capability is the ability to make effective use of technological knowledge in production, engineering, and innovation (Srivastava et al., 2015). By these means capabilities are defined as “a firm’s capacity to deploy resources, using organizational processes, to affect a desired end” (Haeussler, et al., 2012).



The technological capability of a company is high if more technological advances than other companies in service have traditionally been produced. The technology capabilities of a firm are founded on what the firm has done well in the past and will likely keep the firm on the effective road. In addition, strong technical capabilities will make the business look more inward rendering the company's external information less important (Ferna and Garcı, 2012).

According to the theory of dynamic capabilities DC and results in the literature suggest that the TCPs play a significant and positive moderating role. Therefore, few previous studies investigated TCPs as moderate variables such as Wu, (2014) investigated a significant and positive moderate effect of TCPs on the relationship between cooperation with competitors and product innovation, while Haeussler et al., (2012) state that TCPs influence effectively on relationship between Strategic alliances and product development, while Ferna and Garcı, (2012) investigated a significant and positive moderate effect of TCPs. And José and Ortega, (2010) confirmed a significant and positive moderate effect of TCPs on the relationship between Competitive strategies and firm performance.

### **2.3.1 Remote Work Capability RWC**

The idea of remote work has recently received significant importance in practice and academia due to the COVID-19 pandemic (Adamovic, 2022). Gartner surveys reveal 82% of the 127 company leaders prefer remote work initiatives (Baker, 2020).

Firms like Facebook, Microsoft, HP, Amazon, and Intel are allowing employees to work remotely using advanced technology. Nearly 60,000 Facebook staff are likely to work remotely even after the COVID-19 pandemic. Mark Zuckerberg, Facebook's founder, and CEO has been quoted to have said that remote work and being out-of-the-office made him "happier and more productive at work," given "more space for long-term thinking," and empowered him to "spend more time with family" (Motamarri, et al. 2022).

Additionally, in our qualitative discussion a participant has summarized how to be skillful and can do a job and work wherever you are. Throughout this argument, we can assess how it was efficient in real practice during the COVID-19. Therefore, it is considered a technological transformation to keep working constantly. {"*the ability to work remotely so you can optimize like the resources you have, so you get the best of the best. You're not limited to a geographical limit. So, technology starts with the equipment that helps you and the software that help you optimize whatever job you're doing*" (1<sup>st</sup> Interview, Female)}. Lastly, utilizing employees' effort empowerment intensely

in a remote place may accelerate job performance. Therefore, in line with previous studies, this study defines remote work capability (RWC) as an employee's ability to use digital technology, trained to leverage resources and capture opportunities innovatively, to solve customer problems and make effective performance for the firms.

### **2.3.2. Artificial Intelligent AI**

The adoption of emerging technologies has contributed considerably to SMEs' ability to effectively overcome challenges, collaborate, and interact with their business customers, and improve firm performance (Agnihotri, et al. 2016).

Artificial intelligence (AI) is a system's ability to interpret and learn from data mimicking human intelligence, and it is part of a new generation of technologies that introduce novel approaches in the business context. AI applications, such as process automation and optimization, analytics, dynamic pricing, and prediction, can be used in diverse ways across business functions to enable organizations to obtain a variety of benefits in terms of greater revenue, efficiency, agility, productivity, and reliability, as well as better decision making and customer experience (Baabdullah et al., 2021).

In a survey of executives, Ransbotham et al., (2019) found that 90% of respondents agree that AI presents an opportunity for their organization. and Basri (2020) has also argued that the adoption of AI by SMEs can lead to increased market share and higher revenues. We have furthermore obtained a contribution for TCPs throughout FGDs. Respondent contributed that artificial intelligence "AI" will give the firm good engagement, and good interactions especially since we are come up with the technology in everything. *{“Maybe the use of artificial intelligent (AI) will gives you good engagement, good interactions specially we are come up with the technology in everything.” (FGDs, Female 2)}*.

## **2.4 Summary of the chapter**

This chapter indicates the theoretical foundation of aspects related to the research concepts and analyzes the empirical studies related to them. The first part of the chapter presented the foundation, and conceptualization of entrepreneurial marketing. and the constructs of entrepreneurial marketing (innovation orientation, customer intensity, risk management, and networking) that enable a firm to gain a competitive advantage. In section two the chapter conceptualization of firm performance and the constructs of firm performance (profitability,

sustainability, and presumed customer satisfaction). Section four is the chapter conceptualization of technological capabilities and their constructs (remote work capability and Artificial intelligence).

## **CHAPTER III**

### **THEORETICAL FRAMEWORK AND HYPOTHESES**

#### **DEVELOPMENT**

### **3.0. Introduction**

This chapter presents the theoretical framework of the study which describes the relationship between the variables, independent, dependent, and moderating variables. Followed by the hypothesis's development is formulated based on the developed research framework.

### **3.1. Underlying theories of the study**

A theoretical framework is a conceptual model of how one theorizes are make logical sense of the relationships among the several factors that have been identified as important to the problem (Hamad, 2019, Sekeran, 2003). The aim of this study is to examine the impact of the moderating role of technological capabilities on relationship between entrepreneurial marketing on firm performance. The theoretical framework of the study is anchored on the **resource-based view theory and dynamic capabilities theory**. Thus, the concept of entrepreneurial marketing has been addressed by numerous studies such as: (Alqahtani & Uslay, 2020; Hills & Hultman, 2013; Sadiku-Dushi et al., 2019; Ramadani et al., 2014; Rashad, 2018; Zahra & Garvis, 2000). The entrepreneurial marketing concept in this study is represented as a predictor for firm performance. To elaborate on the relationship between study variables, the research focused on the following theories as clarified by numerous researchers:

#### **3.1.1 The resource-based view theory (RBV)**

The resource-based view provides the theoretical foundation for this study regarding the effect of entrepreneurial marketing on firm performance through technological capabilities. The RBV suggests that firms employ their physical, human, and organizational resources to gain an advantage in the marketplace. If these resources are valuable to customers, rare, and difficult to replicate, then these resources give rise to sustainable competitive advantage, enhancing firm performance, thus, the basic premise is that resources increase the efficiency and effectiveness of firms in general and the development of new services (heng & Sheu, 2017).

The resource-based view explains that the identification and possession of internal strategic resources contribute to a firm's ability to create and maintain a competitive advantage and improve

performance thus, the Firm's resources include tangible and intangible resources (Barney, 1991). Resources that are simultaneously valuable, rare, imperfectly imitable, and imperfectly substitutable are an important source of competitive advantage, the unique bundle of resources owned by heterogeneous firms is expected to explain inter-firm performance differences (Hoopes, et, al. 2003). Therefore, firm resources, which can be tangible or intangible, include All assets, capabilities, organizational processes, firm attributes, information, and explicit or tacit knowledge. Controlled by a firm that enables the firm to conceive and important strategies that improve its efficiency and effectiveness (Kellermanns et al., 2016).

Madhani, (2010) recommended that the resource-based view should consider not simply possession of resources/capabilities, but rather "strategic flexibility" concerning decision-makers' ability to pivot their business models within unstable markets. Actually, Chen et al., (2022) offers a readiness index for owner-managers to survive or even thrive in light of environmental circumstances. In this current study, these extensions are considered by exploring how owner-managers engage in TCPs activities to strengthen their performance-enhancing entrepreneurial marketing behaviors.

### **3.1.2. Dynamic capability theory (DCT):**

The dynamic capabilities theory (DCT) explains that to sustain their competitive advantage firms need to renew their stock of valuable resources as their external environment changes. The (DCT) provides the theoretical foundation for this study regarding the effect of entrepreneurial marketing orientation on firm performance through technological capabilities. This means that if a firm possesses Valuable, Rare, Inimitable, and Non-substitutable resources but does not use any dynamic capabilities, its superior returns cannot be sustained without dynamic capabilities and a firm's returns may be short-lived if the environment exhibits any significant (Barney, 1991; Helfat, & Peteraf, 2009).

Dynamic capabilities are derived from the resource-based view of the firm, which suggests that resources are developed through specialized routines that create distinct competencies (Teece et al, 1997). he has also defined dynamic capabilities as the processes and routines used to adapt, and alter, deploy, and protect the firm's resources so to maintain them as a source of competitive advantage. Helfat (2009) simplifies this definition as, the capacity of an organization to purposefully create, extend, or modify the resource base. Dynamic capabilities distinguish themselves from operational processes in that the dynamic capability of a firm influences the

change and reconfiguring of existing operational processes (Ali et al., 2012; Helfat & Peteraf, 2009). These further encourage the renewal and development of operational capabilities to better match the demands of the market environment.

Teece (2007) suggests that dynamic capabilities can be broadly broken down into (i) the capacity to sense and shape opportunities and threats from the external environment, (ii) to seize opportunities by responding and implementing the appropriate changes, and (iii) to provide the environment in which to maintain competitiveness through reconfiguring tangible and intangible resources. Although, Teece, (2007) defined the deployment of dynamic capability as the process of identifying and seizing market chances and reconfiguring the resource base. In the same context, the RBV defines organizational capabilities as the ability to use resources to create a competitive advantage (Hamad, 2019, Ozkaya, et al., 2015). Capabilities are defined as organizational routines that enable firms to perform distinctive activities (Teece et al., 1997).

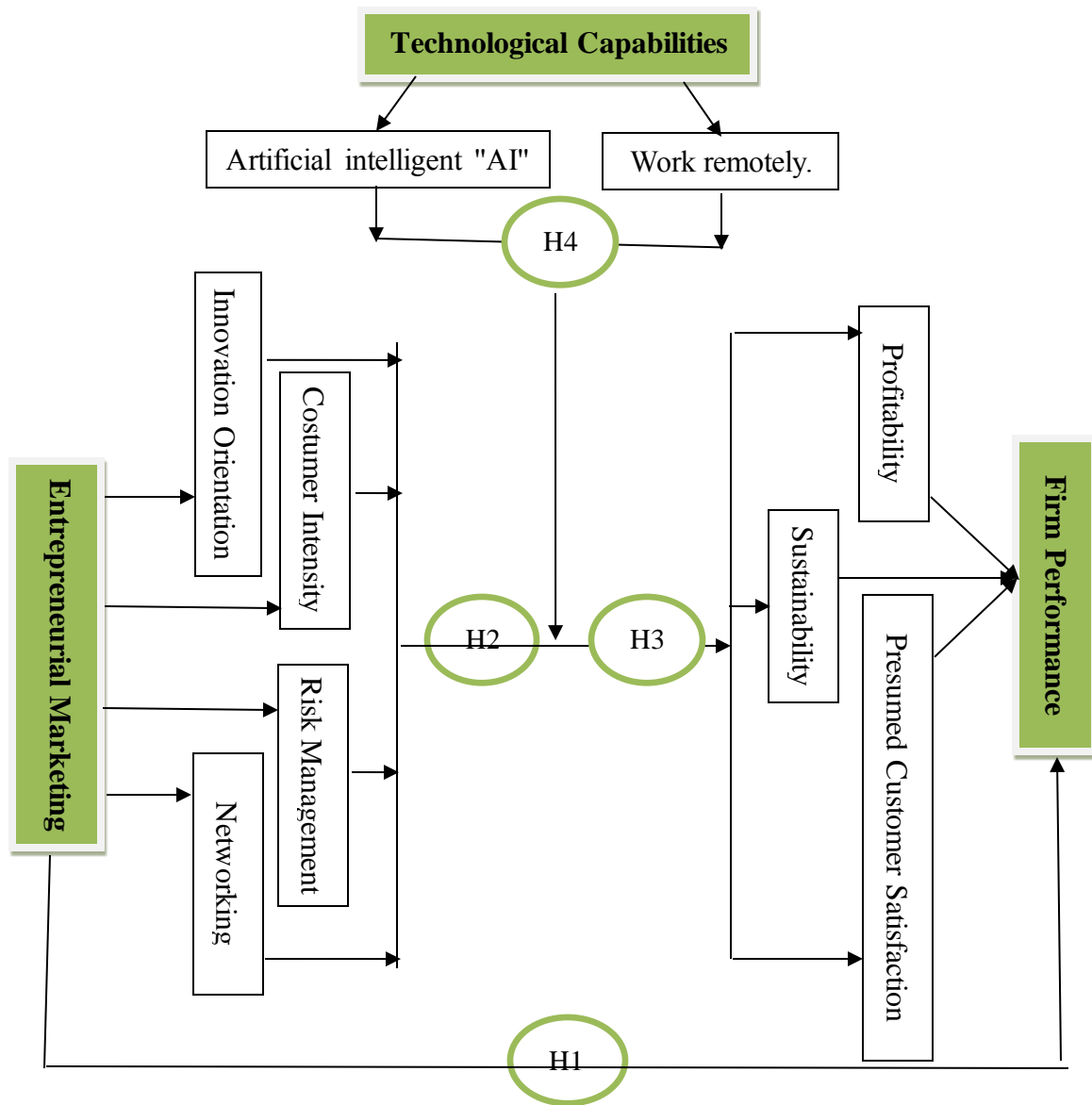
An organizational resource refers to an asset or input to production (tangible or intangible) that the organization owns and controls or has access to on a semipermanent basis, and an organizational capability refers to an organizational ability to perform a coordinated task, utilizing organizational resources, to achieve a particular result. (Helfat, 2009). Marketing and technological capabilities are primary drivers of a firm's performance and thus of central interest to managers. Nevertheless, how these two capabilities align with changing environments to secure superior performance remains unclear.

Thus, and according to the above discussion, the impacts of entrepreneurial marketing on firm performance may not directly be expected; however, within the moderating of technological capabilities where interaction will take place and the technological capabilities transform entrepreneurial marketing into outputs of created value. Thus, technological capabilities represent routines and processes that enable firms to utilize entrepreneurial marketing in firm performance. In other words, entrepreneurial marketing as a resource lead to technological capabilities which influence firm performance (Hamad, 2019). Resource-based view theory of the framework in this research is justifiable as explained before, it provides the theoretical base for understanding the effect of entrepreneurial marketing on technological capabilities and firm performance. Dynamic capability theory provides a base for understanding how technological capabilities can moderate the relationship between entrepreneurial marketing and firm performance.

Thus, the connection between marketing and entrepreneurship presents a challenge since there are too many heterocomplex, too many remote questionnaire studies with single interviewees, and too few qualitative studies according to the comprehensive review of the literature has given a general view of the concepts and variables used in the investigation of the correlation between entrepreneurial marketing EM & firm performance. Underpinned by the resource-based view, the study's conceptual model Figure (3.1) contained four hypothesized paths and 9 control variables. However, Figure (3.1) below presents the conceptual framework for this study which proposes links of entrepreneurial marketing to firm performance and the theoretical approach of this study proposes that technological capabilities as a moderating variable in the relationship between entrepreneurial marketing and firm performance.

### 3.2. The conceptual framework of the study

Figure (4) below presents the conceptual framework for this study which proposes the links of entrepreneurial marketing to firm performance, the theoretical approach of this study proposes that technological capabilities as moderating variable in the relationship between entrepreneurial marketing to firm performance. **Figure 4 Conceptual framework**



Source: own editing based on qualitative-thematic analysis (2024).



### **3.3. Hypotheses development of the study**

In this study, there are four main hypotheses were developed to test the relationship between entrepreneurial marketing variables and firm performance. Moreover, testing the relationship between entrepreneurial marketing dimensions with technological capabilities. Alongside, testing technological capabilities variables with firm performance and finally, testing the moderating effect of technological capabilities between entrepreneurial marketing and firm performance.

#### **3.3.1. The relationship between (EM) and (FP)**

Recent literature highlights the complex interplay between (EM) and FP, emphasizing the dynamic and innovative nature of EM practices. Scholars underscore the proactive orientation of EM in creating value and identifying novel market opportunities (Hultman & Shaw, 2021). The dimensions of EM, such as customer focus, risk-taking, and resource leveraging, are explored in depth, with studies indicating their profound impact on diverse aspects of firm performance (Carr & Lopez, 2020; Matthysee, 2019). For instance, Carr and Lopez (2020) delve into the significance of customer-centric approaches within EM, revealing how a strong customer focus correlates with enhanced customer satisfaction and, consequently, improved financial performance.

Additionally, Matthysee (2019) emphasizes the role of risk-taking in entrepreneurial marketing, arguing that calculated risks contribute to innovation and differentiation, positively influencing a firm's competitive position. Resource leveraging, another key dimension, is explored by Ozkul and Yaprak (2018) who discuss how efficient management of resources, including time, money, and human capital, contributes to heightened firm performance. These studies collectively provide a comprehensive understanding of the nuanced mechanisms through which EM strategies influence and optimize various dimensions of firm performance in contemporary business landscapes. Entrepreneurial marketing is a dynamic concept that encourages firms to adopt an entrepreneurial mindset in their marketing strategies.

It involves characteristics such as resourcefulness, innovation, and a willingness to take calculated risks in identifying and exploiting market opportunities (Morris et al., 2002). The relationship between entrepreneurial marketing and firm performance has been the subject of extensive research. It is generally acknowledged that entrepreneurial marketing positively influences firm performance (Baker & Sinkula, 2019; Hult et al., (2008). Thus, based on the above discussions the following hypotheses are generated:

**H1: There is a positive relationship between entrepreneurial marketing and firm performance.**

H1:1 There is a positive relationship between innovation orientation and profitability.

H1:2 There is a positive relationship between innovation orientation and sustainability.

H1:3 There is a positive relationship between innovation orientation and customer satisfaction.

H1:4 There is a positive relationship between customer intensity and profitability.

H1:5 There is a positive relationship between customer intensity and sustainability.

H1:6 There is a positive relationship between customer intensity and customer satisfaction.

H1:7 There is a positive relationship between risk management and profitability.

H1:8 There is a positive relationship between risk management and sustainability.

H1:9 There is a positive relationship between risk management and customer satisfaction.

H1:10 There is a positive relationship between networking and profitability.

H1:11 There is a positive relationship between networking and sustainability.

H1:12 There is a positive relationship between networking and customer satisfaction.

**3.3.2. The relationship between EM and TCPs**

Entrepreneurial marketing refers to the proactive and innovative marketing strategies adopted by small and medium-sized enterprises (SMEs) to identify and exploit market opportunities. These strategies often involve creative problem-solving, customer-centric approaches, and agility in responding to changing market dynamics. The relationship between entrepreneurial marketing and technological capabilities is a dynamic and evolving area of research. Entrepreneurial marketing is characterized by the proactive and innovative marketing strategies employed by startups and small businesses to gain a competitive advantage. Technological capabilities, on the other hand, refer to a firm's ability to develop, implement, and leverage technology effectively.

Whatever, technological capabilities can provide startups and small businesses with the tools and platforms necessary for innovative marketing strategies. For instance, the use of digital marketing technologies, social media platforms, and data analytics can empower entrepreneurs to target their audience effectively and create unique marketing campaigns (Dholakia et al., 2010).

Sun, & Lee, (2022) examines how entrepreneurial marketing efforts can enhance a firm's technological capability, particularly among small and medium-sized suppliers in South Korea's industrial sector. It suggests that entrepreneurial marketing practices, such as customer

collaboration, market orientation, and agility in responding to market needs, can stimulate innovation and foster the development of technological capabilities within SMEs. Hence, the relationship between EM and TCP can lastly support our second hypothesis as follows:

**H2: There is a positive relationship between entrepreneurial marketing and technological capabilities.**

H2:1 There is a positive relationship between innovation orientation and work remotely capability.

H2:2 There is a positive relationship between innovation orientation and artificial intelligent AI.

H2:3 There is a positive relationship between customer intensity and work remotely capability.

H2:4 There is a positive relationship between customer intensity and artificial intelligent AI.

H2:5 There is a positive relationship between risk management and work remotely capability.

H2:6 There is a positive relationship between risk management and artificial intelligent AI.

H2:7 There is a positive relationship between networking and work remotely capability.

H2:8 There is a positive relationship between networking and artificial intelligent AI.

### **3.3.3. The relationship between TCPs and FP**

Over the past decade, firms' technological capability has been an essential strategic resource allowing them to achieve competitive advantage in their industry, especially in high-tech industries, for example, businesses with greater technological skills are more creative and are consequently performing at a high level. Those firms with superior technology capabilities can protect greater efficiency gains by developing process innovation and can make more distinctions in response to the changing business environment through innovative products.

In technologically competitive marketplaces, technological capability represents a significant potential source of competitive advantage and superior performance. Furthermore, technological capability helps a firm's ability to recognize and use new external knowledge to continue competence development, which may lead to improved performance (Wang, et, al. 2006). Additionally, greater technological capability typically enables firms to create and offer innovative products or services in novel ways that customers appreciate, and so determines a company's overall and new product development performance.

Furthermore, José and Ortega, (2010) indicated technological capabilities improve the relationships between quality orientation and cost orientation respectively and performance. Thus, the stronger a firm's technological capabilities, the more simply it can integrate knowledge from beyond sources, and the greater are the opportunities that such knowledge will prove useful in

creating innovative new products, Moreover, a firm with strong technological capabilities may welling to select trusting, capable partners who not only offer access to desirable resources, but also help the firm avoid technology leakage and opportunistic behavior, and innovation benefits of cooperating with a competitor should therefore be enhanced by a firm's strong technological capabilities (Wu, J. 2014).

Consequences, Despite the conceptual attention dedicated to technological capabilities, scholars have paid less attention to the empirical analysis of its relationship with firm performance. Therefore, from the above arguments our study proposes that technological capabilities have a positive impact on firm performance Etemad, & Lee, 2001, Ortega, 2010).

**H3: There is a positive relationship between technological capabilities and firm performance.**

H3:1 There is a positive relationship between work remotely capability and profitability.

H3:2 There is a positive relationship between work remotely capability and sustainability.

H3:3 There is a positive relationship between work remotely capability and customer satisfaction.

H3:4 There is a positive relationship between artificial intelligent AI and profitability.

H3:5 There is a positive relationship between artificial intelligent AI and sustainability.

H3:6 There is a positive relationship between artificial intelligent AI and customer satisfaction.

#### **3.3.4. Moderating Role of TCPs in the relationship between EM and FP**

The role of technological capabilities in moderating the relationship between entrepreneurial marketing and firm performance has gained significant attention in the field of entrepreneurship and marketing. Technological capabilities refer to a firm's ability to utilize and leverage technology to create competitive advantages. Entrepreneurial marketing, on the other hand, focuses on the proactive and innovative marketing strategies and behaviors employed by entrepreneurs and small firms. The interaction between these two factors can significantly impact firm performance.

Technological capabilities refer to a firm's ability to harness and leverage technology-related resources to enhance competitive advantage (Teece, 2007). Firms with strong technological capabilities are better positioned to innovate, adapt to changing market conditions, and create value for customers. The literature highlights the pivotal role of technological capabilities in driving firm performance (Zahra & George, 2002; Helfat, & Raubitschek, 2000).

The interaction between entrepreneurial marketing and technological capabilities is a topic of growing interest in research. Some studies have suggested that technological capabilities can moderate the relationship between entrepreneurial marketing and firm performance. For instance, (Kordestani et al. 2018) found that firms with strong technological capabilities can enhance the impact of entrepreneurial marketing on firm performance. They argue that technological capabilities enable firms to effectively implement innovative marketing strategies and capitalize on market opportunities.

However, the moderating effect of technological capabilities is not always straightforward. For instance, Gunday et al. (2011) contend that technological capabilities may weaken the relationship between entrepreneurial marketing and firm performance when firms face excessive internal complexity or inertia. In such cases, technology-related resources may not be effectively harnessed to support entrepreneurial marketing efforts.

**H4: We assume that TCPs can positively moderates the relationship between EM and FP.**

H4.1. There is positive moderating effect of technological capabilities on the relationship between innovation orientation and profitability.

H4.2. There is positive moderating effect of technological capabilities on the relationship between innovation orientation and sustainability.

H4.3. There is positive moderating effect of technological capabilities on the relationship between innovation orientation and customer satisfaction.

H4.4. There is positive moderating effect of technological capabilities on the relationship between customer intensity and profitability.

H4.5. There is positive moderating effect of technological capabilities on the relationship between customer intensity and sustainability.

H4.6. There is positive moderating effect of technological capabilities on the relationship between customer intensity and customer satisfaction.

H4.7. There is positive moderating effect of technological capabilities on the relationship between risk management and profitability.

H4.8. There is positive moderating effect of technological capabilities on the relationship between risk management and sustainability.

H4.9. There is positive moderating effect of technological capabilities on the relationship between risk management and customer satisfaction.

H4.10. There is positive moderating effect of technological capabilities on the relationship between networking and profitability.

H4.11. There is positive moderating effect of technological capabilities on the relationship between networking and sustainability.

H4.12. There is positive moderating effect of technological capabilities on the relationship between networking and customer satisfaction.

### **3.3.5. Summary of the Chapter**

This chapter presented the theoretical and conceptual framework that depends on previous studies to propose a direct link between entrepreneurial marketing and firm performance and a direct link between technological capabilities and firm performance, besides clarifying the moderating role of technological capabilities in the relationship between entrepreneurial marketing and firm performance. The following chapter illustrates the research methodology.

## **CHAPTER IV RESEARCH METHODOLOGY**

### **4.0. Introduction**

In this chapter, a discussion of a general research design first, including a combination of qualitative and quantitative approaches, followed by, a discussion on the population of interest, sampling procedures, and sample-size, followed by the development of the questionnaire (study

variable measurements). It also includes the methods used in collecting data, in analyzing the data, and in testing the hypotheses.

#### **4.1. General research design**

##### *4.1.1. First phase: qualitative approach*

The objective of the qualitative phase in this study is to analyze and explore in depth the extended knowledge of entrepreneurial marketing EM and to which extent the Sudanese entrepreneurs, managers, and employees are knowledgeable and familiar with the discipline of EM as a strategy that can be implemented in their enterprises. Thus, we have designed the main question of EM: What are the factors/dimensions that come to your mind when you hear about entrepreneurial marketing? followed by questions about firm performance as well as the technological capabilities TCPs. The purpose was to develop the research pre-model of our study. And to achieve this purpose the study was conducted using a qualitative approach by implementing a thematic analysis.

Since the study adopts an *inductive philosophy* in qualitative methodology, we have applied grounded theory and briefly go over the numerous trustworthiness verification techniques we used to begin thematically analyzing our qualitative data. As a result, the current study and other studies are in line Singh et al., (2021) which may be used as an illustration of how to modify the suggested general framework for trustworthiness verification to fit certain qualitative approaches. (See Appendix 2).

##### *4.1.2. Second phase: quantitative approach*

The objective of the quantitative phase is to examine the application of entrepreneurial marketing EM perceptions on firm performance FP in Sudanese SMEs. The study tries to explain the relationship between entrepreneurial marketing and firm performance by testing technological capabilities as a moderating variable. Based on previous literature, this research attempts to provide some explanation and description of how EM may create positive FP for SMEs in Sudan.

In this manner, our study is quantitative. Reliable with the purpose of this study, the study relied on the "*Positivism philosophy*", *deductive approach* to theory development, quantitative methodological choice, survey strategy, and cross-sectional Time horizon and using a personally administered questionnaire. A cross-sectional description survey research design will be adopted for this study. Cross-sectional is cost and time-effective because data can be gathered just once perhaps over days weeks or months to answer research questions (Abker, 2019, Sekaran, 2003).

In addition to that, a cross-sectional survey design will be conducted to assess the moderating effect of technological capabilities on the relationship between entrepreneurial marketing and firm performance in Sudanese SMEs.

#### **4.2. Population and sampling**

One of the foundations of interpretive research is theoretical sampling, i.e., data gathering that is driven by concepts derived from the evolving theory, going to places, people, or events that will maximize opportunities to discover variations among concepts, (Martin, 2009). This research investigation focuses on various SME enterprises in which the entrepreneur is also a marketing expert. The population is defined as a “set of all objects such as people, events or things that interested researchers studied” (Sekran, 2006). Thus, the Population of this study includes all managers, employees, and entrepreneurs of SME firms located in Khartoum state-Sudan.

The sample frame of this study defined SME firms in Sudan, which includes various sectors such as (Services, industrial...etc.) which were selected since they have great contributions to the Sudan economy in terms of their contributions to output employment. By saying "In an enabling environment, SMEs have a high potential for creating employment and innovation. They can also contribute to reduce poverty and to empower the poor so that they can realize their productive capacities and integration into society”.

The respondent approached should be the most informed and knowledgeable person about the issue of interest in that firm (Hamad, 2019, sekeran, 2003). Consequently, the appropriate persons who were being asked to fill out the questionnaire were ideally managers at the top management levels, employees, and entrepreneurs. Those participants have a good perception of their firm's business strategy as well as they have their methodologies and techniques to be used in environmental scanning and information generating regarding their firms.

#### **4.3. Data collection instruments, process, and sample-size**

##### *4.3.1. From a qualitative perspective*

The data used for this research has been gathered by conducting six (6) interviews and “discussions” employing various instruments of qualitative structure, these instruments were (semi-structured, in-depth FGDs, Mini-FGDs, mutual interviews, and individual interviews) with nascent Sudanese entrepreneurs, managers, and employees whom active in the fields of services



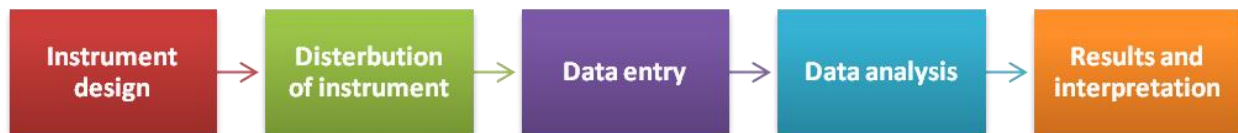
and industries. Moreover, we implemented a subjective sampling to select information-rich cases for this study (Nouri et al., 2018).

Following purposive sampling in qualitative methodology and to address the exact research community of SMEs in Khartoum-Sudan, we have sent out the invitation letter for 28th entrepreneurs male and female alike. First of all, we searched for the right participants through their profiles on the most frequently used platforms in SDN (Facebook and LinkedIn, <https://gs.statcounter.com/social-media-stats/all/sudan>). Therefore, most of the participants were in the middle age between 24 to 40. Meanwhile, participants were from different disciplines of academics, service, and industry. Moreover, after obtaining the participants' permission, all discussions were audio-recorded. The discussions lasted between 40 and 60 min. (see appendix 1). The strategy we have relied on in this methodology is to improve the questions in the scenario throughout the discussions respectively as well as modify the research pre-model for further development. Furthermore, four of these discussions have been conducted in the English language, whereas two discussions were carried out in the Arabic language.

#### 4.3.2. *Sample size from a quantitative approach*

Since our study population is unknown or considered to be fairly large, which makes it difficult to determine the size of the study sample, we therefore resorted to calculating it according to the Cochran equation, On the other hand, there are computer programs for calculating sample size based on the same Cochran equation  $N =$ , such as [www.calculator.net](http://www.calculator.net) program. This calculator computes the minimum number of necessary samples to meet the desired statistical constraints. Thus, the Sample size for this study is: "285" This means 285 or more measurements/surveys are needed to have a confidence level of 95% that the real value is within  $\pm 5\%$  of the measured/surveyed value.

**Figure 5 shows the process of collecting quantitative data using an online questionnaire.**



*Own editing by researcher 2024*

#### **4.4. Measurement of variables:**

A variable is anything that can take on differing or varying values and these values can differ at various times for the same object or person, or at the same time for different objects or persons, there are three main types of variables: the independent variable (entrepreneurial marketing), The dependent variable (firm performance), and the moderating variable (technological capabilities). Measures for all dimensions of constructs were taken from the existing literature.

To measure the dimensions of variables, the study used the five-point Likert scale type scale ranging from strong agreement with the question to strong disagreement (Hamad, 2019, Sekaran, 2003). The Likert scale is designed to examine how strongly subjects agree or disagree with statements on a 5-point scale. Research indicates that a 5-point scale is just as good as any and that an increase from 5 to 7 or 9 points on a rating scale does not improve the reliability of the ratings (Sekaran, 2003). Therefore, the Likert 5-point scale is commonly used in most research. Moreover, the questionnaire items were adopted from different sources to suit the SM firms.

##### **4.4.1. Measurement of entrepreneurial marketing EM**

Entrepreneurial marketing is a “Proactive identification and exploration and exploitation of opportunities for acquiring and retaining profitable customers through innovative approaches to the risk management, resource leveraging and value creation. (Rashad, 2018, Alqahtani & Uslay, 2020, Bandara et al., 2020, Tarigan et al., 2021, Majovski & Davitkovska, 2017, Nwankwo & Kanyangale, 2020). In this part of the study and based on the literature and the discussions of previous qualitative methodology we have adopted four main dimensions for the independent factor “Entrepreneurial marketing” to be addressed and investigated in SMEs. These chosen dimensions were well-focused and most recommended by the participants throughout the discussions. The participants of discussions represent the study community consequently innovation orientation, customer intensity, risk management, and networking were the recommended and undertaken dimensions to be applied to SMEs operating in the Sudan market. The measurement items generated for each dimension are explained in the following:

##### **4.4.1.1. Innovation orientation IO**

The research uses various items considered reflecting the measurement of innovation orientation adopted by (Sadiku-Dushi et al., 2019; Bachmann et al. 2021). A five-point Likert scale will be used for the statements in table (6).

**Table 6 Measurements for innovation orientation IO**

No	Measurements
1	Being innovative is a competitive advantage for my company.
2	My company's top management creates an atmosphere that encourages creativity and innovativeness.
3	We invent new products and services and regularly uses new distribution channels.
4	We frequently utilize new opportunities in new markets.
5	Our unit regularly uses new distribution channels.

*Own editing by researcher (2024)*

**4.4.1.2. Customer intensity CI**

The research used five items considered to reflect the measurement of customer intensity adopted from (Sadiku-Dushi et al., 2019; Becherer, et al., 2012). A five-point Likert scale will be used to measure the statements in table (7):

**Table 7 Measurements for customer intensity CI**

No	Measurements
1	Our business objectives are driven by customer satisfaction.
2	We pay close attention to after-sales service.
3	We ensure that business strategies in our company are driven by the goals of increasing customer value.
4	We make sure that our company's competitive advantage is based on understanding customers' needs.
5	We frequently measure our company's customer satisfaction.

*Own editing by researcher (2024)*

**4.4.1.3. Risk management RM**

The research used four items considered to reflect the measurement of risk-taking adopted by (Niemand et al., 2020; Bachmann et al., 2021, and the researcher 2024). A five-point Likert scale will be used to measure the statements in Table (8).

**Table 8 Measurements for risk management RM**

No	Measurements
1	My business would rather accept a risk to pursue an opportunity than miss it altogether.
2	My business is willing to take risks when we think it will benefit the company.
3	We encourage people in our company to take risks with new ideas.
4	We engage in risky investments (e.g., new employees, facilities, debt, stock options) to stimulate future growth.

*Own editing by researcher (2024)*

**4.4.1.4. Network:**

We have developed the measurements of networking from Ritter et al., (2002). A five-point Likert scale will be used to measure the statements in Table (9).

**Table 9 Measurements of Networking**

No	Measurements
1	I encourage my employees to strive for innovative approaches to creating relationships with customers.
2	Overall, my firm is competent in dealing with inter-organizational relationships and networks.
3	In our firm we have a good relationship with each other and an important people in other firms.
4	We are experienced in dealing with technical partners.

*Own editing by researcher (2023)*

**4.4.2. Measurements of Technological capabilities TCPs**

Technological capabilities are defined as the ability to perform any relevant technical function or volume activity within the firm including the ability to develop new products and processes and to operate facilities effectively (Ortega, 2010).

During the discussions there was quite an interest from participants that the period epidemic Covid-19 that occurred in the world 2020, especially in Sudan has affected negatively the traditional or physical operation firms that needed attendance of employees, thus, the recommendations and suggestions of the discussion were about how to find out a solution and how

to employ technology for a certain issue and similar crisis in future to assist in distance operation and to keep work stability.

Consequently, the dimensions chosen for the current study are to address the technologies uses skills, and capabilities and how firms encourage and train their employees to use technologies' tools and the internet as well to handle the job and duties wherever they are. this contains (Contact methods/techniques, tools/equipment, applications/websites-Language models). In this study, we attempt to encourage firms to develop and use up-to-date technologies to remain competitive in the market and to perceive their market share among competitors. Thus, we have adopted two main elements for achieving these objectives, these dimensions are work remotely capability and artificial intelligence AI. The measurement items generated for each dimension are illustrated in the following:

**4.4.2.1. Remote Work Capability RWC**

The measurements have been modified by the researcher.

**Table 10 Measurements for remote work capability (RWC)**

No	Measurements
1	I have a reliable internet connection at my remote work location.
2	Our company provide a type of devices for remote work (e.g., laptop, desktop, tablet)
3	We have access to the necessary software/tools for remote collaboration and communication (e.g., video conferencing, project management tools)
4	I have a dedicated workspace at home for remote work.
5	How comfortable are you with verbal communication (phone, video calls) for work purposes?

*Own editing by researcher (2024).*

**4.4.2.2. Artificial Intelligent AI**

Measurements of AI have been adopted from Baabdullah et al., (2021).

**Table 11 Measurements for artificial intelligent (AI)**

No	Measurements
1	Our organization employ AI technologies in the operation.
2	We have received enough information about the benefits of using AI technologies.
3	Using AI technologies will generate a high volume of sales and will increase our market share.
4	AI applications will strengthen our relationship and commitment to our business customers.

*Own editing by researcher (2024)*

#### **4.4.3. Firm Performance FP**

The concept of firm performance needs to be distinguished from the broader construct of organizational effectiveness. Firm performance is an important construct in strategic management research all around the world, and it is regularly employed as a dependent variable. “The term "firm performance" refers to a subset of organizational effectiveness that includes both operational and financial outcomes. The operational performance could be best viewed as an antecedent to financial performance, mediating the effect of resources, while customer satisfaction may be an antecedent to financial performance, is it not a performance outcome as well? This depends on how a researcher defines firm performance for his/her studies.

Based, on today’s highly competitive environment, organizations need to protect the long-term interests of customers” (Selvam et al., 2016). Hence, the adopted dimensions for this study in terms of FP have been chosen to assist SMs in Khartoum to satisfy their owner goals by maximizing their profit margins and at the same time to keep their operations stable in a very complex market environment through sustainability objectives. Being sustainable leads to improving various aspects in the internal and external environment and certainly improves society's empathy towards the firm, moreover, sustainability gives the firm a unique image and respectable reputation as well as optimizing its brand identity and market share.

On the other hand, firms should improve their products and services to meet their customer/client needs and expectations. thus, our study concentrates on customer satisfaction as a core dimension of FP to be addressed in SMs in Khartoum and how firms meet their customers' needs or wants. The questionnaire of this component will be directed to the firm’s owners,

managers, and employees. The questionnaire statements well answer the question of how firms acquire and retain their customers.

#### 4.4.3.1. Profitability

The measurements of firm profitability for our study have been adopted from Yee et al., (2008). The last two measure was generated by the researcher.

**Table 12 Measurements for firm profitability**

No	Measurements
1	Our company invest in return on assets as a main resource to maximize profitability.
2	Our company invest in return of sales as a main resource to maximize profitability.
3	Our company invest in return on investment as a key resource to maximize profitability.
4	Our company invest in numerous activities to maximize overall profitability.
5	Maximizing profitability of the firm encourages shareholder to expand the investments.

*Own editing by researcher (2024)*

#### 4.4.3.2. Sustainability

Three of the measurements have been adopted from Schrette et al., (2014). And the last measure was generated by the researcher.

**Table 13 Measurements for Sustainability**

No	Measurements
1	We deploy new manufacturing technologies to make manufacturing processes more sustainable,
2	We give extraordinary importance to the development of green products
3	We give an attention the integration of green practices in the supply chain.
4	We regularly dispose of production waste to reduce environmental pollution.

*Own editing by researcher (2024)*

#### 4.4.3.3. Presumed Customers satisfaction PCS.

Measurement of customer satisfaction has been adopted from Yee et al., (2008). And Fourie, (2015).

**Table 14 Measurements of presumed customers satisfaction. (PCS)**

No	Measurements
	<u>Our customers are satisfied with...</u>
1	The price of their purchased product(s) in this company.
2	The enquiry service provided by this company.
3	The customer service in transactions.
4	The service of handling customer dissatisfaction in this company.
5	We analyze and respond to feedback and comments from customers.

*Own editing by researcher (2024)*

#### **4.5. Development of questionnaire**

In this research, the questionnaire method has been used as an instrument technique for gathering the primary data. A questionnaire is a reformulated written set of questions to which the respondent records the answers, usually within rather closely delineated alternatives. According to sekeran, (2003) questionnaires are an efficient data collection mechanism when the researcher knows exactly what is required and how to measure the variable of interest. The questionnaire was originally prepared and shared in the English language.

The survey questions were designed precisely to give clear ideas about the problems for the target respondents to answer. In this phase of the research, we used an online questionnaire as the main tool to collect the data from the respondents. The questionnaire for this study consisted of four main sections, (1) The demographical and firm data include “Age, Gender, Qualification, Position, Firm size, and Sector”. (2) questions covered entrepreneurial marketing variables namely, (Innovation orientation, Customer intensity, Risk management, and Networking) (3) questions covered technological capabilities namely; (Remote work capability and Artificial intelligence) (4) questions covered firm performance variables namely; (Profitability, Sustainability, and Presumed customer satisfaction) Furthermore, we use a five–point scale as a unit of measurement ranging from “strongly disagree” to “strongly agree and worse to better for (quality and cost).

#### **4.6. Pre-testing of the questionnaire and Cronbach’s alpha reliability**

The researcher used pre-testing for the questionnaire to ensure that the questions were understood by the respondents with no ambiguities, an exploratory sample of (31) service and



industry firms was selected, and there were no problems with the wording or measurement to eliminate confusing statements.

We have established our primary questionnaire and allocated it widely with the community of SMEs in Khartoum in the period between June and September 2023, the objective of collecting primary data is to analyze the “Pilot sample” to examine the reliability and internal consistency of our questionnaire. Consequently, we analyzed the pilot sample, and we got the overall result of alpha Cronbach for the whole research dimensions (0.94), which is considered an excellent estimation value of the research axis. Therefore, the instrument is considered to be of high reliability because the value of the reliability scale was close to one.

Hair et al. (2010) defined reliability as an assessment of the degree of consistency between multiple measurements of a variable. This study assesses the consistency of the entire scale with Cronbach’s alpha and its overall reliability of each factor of productivity values. All values generated alpha coefficient exceeded the values of 0.70 suggested by Hair et al., (2010). See table (15). From this result of Cronbach’s alpha coefficient value, this questionnaire was accepted and admissible. In short, it proved to be reliable.

**Table 15 Explain the reliability coefficient of Cronbach's Alpha for the questionnaire items (sample size 31)**

<b>Nature of the factors</b>	<b>Dimensions</b>	<b>Number of items</b>	<b>Alpha Cronbach</b>
Independent factor Entrepreneurial Marketing EM	Innovation orientation	8	.85
	Costumer intensity	6	.88
	Risk management	5	.78
	Network	4	.70
Moderating factor Technological Capabilities TCPs	Remote work capability	7	.75
	Artificial intelligence	6	.60
	Profitability	5	.67
Dependent Factor Firm Performance FP	Sustainability	6	.70
	Presumed customer satisfaction	5	.70

<b>Overall reliability of the study measurements</b>	<b>61</b>	<b>.94</b>
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*Own creation by researcher using spss (2024)*

#### **4.7. Data analysis techniques**

The application of Statistical Package for Social Science (SPSS) version 23 and Analysis of Moments of Structure (SEM AMOS) version 25 were used. The data analysis techniques used in this study are described below as following:

##### **4.7.1. Descriptive statistics**

Descriptive statistics are used to summarize and describe the key feature of the sample data such as frequency, percentage, means, standard deviations, and range. Measuring Customer-Based Brand Equity of Selected Television Channels in Addis Ababa: The Media Service Buyer's Perspective (Doctoral dissertation, Thesis Paper, Addis Ababa University School of Commerce) (Akuma, 2017). In this study, descriptive statistics were used to describe the SME firms in Sudan and respondents beside all the variables of the main four constructs that shaped the model of this study (entrepreneurial marketing, technological capabilities, and firm performance).

##### **4.7.2. Reliability analysis**

Reliability analysis was conducted to test the consistency and stability of the measurement instrument and help to assess the goodness of the measure Hair et al., (2010). The internal consistency and stability can be determined by the coefficient value of Cronbach's alpha. The closer Cronbach's alpha is to (1.0) the higher the internal consistency reliability while Cronbach's alpha of less than (0.6) is generally considered as poor, and (0.70) is considered to be acceptable, and those higher than (0.80) are to be good Sekran, (2003). Therefore, in this study reliability analysis was done on all study variables.

##### **4.7.3. Principle component analysis PCA**

Within the implementation of Exploratory factor analysis EFA, various techniques can be utilized for factor extraction, with **Principal Component Analysis (PCA)** being the most employed method, according to Hair et al. (2019). PCA primarily serves as a means of reducing dimensionality, transforming the original variables into a smaller set of uncorrelated variables known as principal components.

##### **4.7.4. Correlation analysis**

Correlation analysis has been used to establish a correlation matrix between study variables. The correlation coefficients of (0.10, 0.30, and 0.50), irrespective of sign, are interpreted as low, medium, and strong respectively (Hair et al., 2010). In this study person correlation was used to find the degrees of correlation between the main variables. That is to determine the relationship between entrepreneurial marketing and firm performance, and the moderating effect of technological capabilities between entrepreneurial marketing and firm performance.

#### **4.7.5. Path analysis**

The research utilized path analysis with AMOS v26 to examine the proposed model and validate the hypotheses of the study.

#### **4.7.6. Anova analysis**

The Independent T test ANOVA was utilized to investigate the significant effect of the characteristics of the firm (Sector and Firm size) on entrepreneurial marketing, technological capabilities, and firm Performance.

### **4.8. Summary of the chapter**

This chapter discusses the general research design described. It is followed by the justification for choosing the SMEs as the research targeted population. After that, a discussion on the interested population, sampling procedures, survey design and survey method are explained. It includes a discussion on the modification of scale items and an explanation of the different measurement scales being used followed by questionnaire design. Finally described the methods used in collecting and analyzing data and testing the hypotheses.

## **CHAPTER V**

### **DATA ANALYSIS AND FINDINGS**

#### **5.0. Introduction**

This chapter shows the process through which the data that was collected from SME firms in Sudan was analyzed to present the findings. The chapter was organized into two main parts: Firstly: Qualitative methodology divided into three sections as following (Data analysis process and criteria, thematic analysis, and the result of thematic analysis). Secondly: Quantitative methodology contains three sections. The first section includes data cleaning, factor loading, missing data, unengaged responses, outliers, frequencies of SMEs and respondents, and reliability analysis. the second section is the goodness of the measure to shows the descriptive analysis of the study variables includes principal component analysis PCA, Correlation, and Independent T test analysis (Anova). The last section focuses on the results of path analysis and hypothesis testing.

#### **5.1. Firstly: Qualitative methodology**

##### **5.1.1. Data analysis process**

Thematic analysis has used because of its ability to provide useful perspectives to capture additional dimensions for the study in helping, confirm theories and develop the pre-model to explain certain phenomena. Meanwhile, the inductive approach has been applied because of its ability to offer flexibility and the Let-it-flow approach to provide some novelty for the research.

Thematic analysis was conducted to create an in-depth analysis to recognize the specific themes researched during the discussions. Furthermore, we utilized thematic analysis, as a method for identifying, analyzing, and interpreting patterns within data, to examine the data that was gathered (Nouri, et al. 2018).

Following the six phases of thematic analysis, we employed Clarke and Braun's (2013) approach as following:

- I. Familiarization with the data: we thoroughly investigated the data collected from discussions from entrepreneurs. This was accomplished by repeatedly evaluating the data that had been acquired. Thus, we were able to become as familiar with the data as feasible by repeatedly listening to the recorded data and writing down the recorded discussions.
- II. Coding: We have created an initial coding list for the main and intersections dimensions.
- III. Searching for themes: Building themes and gathering all the coded data relevant to each sub-theme involved an active process that we engaged in.

- IV. Reviewing themes: We considered if the created themes provide a compelling and convincing narrative regarding the collected data. This was a crucial stage in building the underlying themes.
- V. Defining and naming themes: Each theme was thoroughly examined, and the "essence" of each was determined. We then created a clear and informative name for each theme.
- VI. Writing up: To provide the reader a coherent and persuasive narrative about the data, we finally integrated the analytic narrative and data extracts together.

#### 5.1.2. **Thematic analysis**

##### 5.1.2.1. ***First theme: Entrepreneurial marketing (EM)***

- What are the factors/dimensions that come to your mind when you hear about entrepreneurial marketing?

The first question has been designed to assist the researcher in exploring and investigating in depth the boundaries of “EM.” Thus, most of the respondents started their speech that when it comes to the EM aspect you should consider innovative thinking to generate and promote new ideas, products, processes, or new services to be implemented in the market. This finding is in line with some previous studies (Crick, et al. 2020, Whalen, et al. 2016). And here some quotes of the discussions

*{“It’s a way of your thinking first of all, thinking innovationaly. This is the main aspect for entrepreneurial marketing. Yeah, the very most important word is innovation. You implement innovation in your marketing, even in the marketing disciplines and even in the entrepreneurship.” (Mini-FGD, female 1)}.*

Likewise, another participant has given quite interesting questions about EM, she thought about new and innovative ideas regarding the problems that may face entrepreneur and how it helps them to solve them and to enhance people life. And another participant has also explained that new ideas or what we can call innovation is the first aspect of EM and this can help produce new platforms and bring excellent achievements for the firm.

*{“The first aspect is supposed to be new ideas in the field of marketing so that we can produce a new platform or pursue a strategy and achieve excellence for the company.” (3<sup>rd</sup> Interview, Male)}.*

One of the participants has contributed that EM has connection with blue ocean whereas entrepreneurs always seek to invest in a market where there are no competitors or entering a new market to cover or to fulfill utilizing a specific methods or strategy.

*{“If I may contribute, I think entrepreneurial marketing is more related to the Blue Ocean investments. Where we consider all entrepreneurs are only investing in the areas that's not actually covered by other businessmen or other investors. Then they will need specific marketing tactics so they can survive in their Blue Oceans before the competition join them.” (Mini-FGDs, Male)}*

On the other hand, we observed that one of the participants has come up with a new dimension for EM which is “Segmentation” she has asked the following question how to segment various fields to distribute and contribute the firm's products and services?

*{“The second idea is on what context do they segment the market? The segmentation processes. Before we found a product or a service, we assigned a certain segment in the market to be served by our service or product. What are the criteria that will be, and this depends on what is the area we are going to contribute our product or service? Is it an education or health or social context or even industry?” (Mini-FGDs, Female 2)}*

The first participant has Clearfield his view by saying: although they encounter numerous uncertainties and difficulties along the way, entrepreneurs must be flexible and ready to adjust to shifting market conditions. By this sense he also came up with the main dimension of EM which is (Customer intensity) saying that entrepreneurs are skilled at listening to their consumers and acting on their input. Entrepreneurial marketing is all about understanding and meeting client needs.

*{“Agility: Entrepreneurs need to be agile and adaptable to changing market conditions, as they face many uncertainties and challenges along the way. Customer Focus: Entrepreneurial marketing is all about identifying and satisfying customer needs, and entrepreneurs are adept at listening to their customers and responding to their feedback.” (2nd Mini-FGDs, Male 1)}*

Likewise, the second respondent has stating and confirm the core two elements of EM he said that entrepreneurial marketing implies introducing fresh, cutting-edge goods or services to the marketplace, which calls for both innovation and creativity. And he added to his speech saying that (Taking risk) is a key component of entrepreneurial marketing, therefore entrepreneurs are recognized for taking risks and are frequently prepared to invest in novel and unproven concepts.

*{“Innovation and Creativity: Entrepreneurial marketing involves bringing new and innovative products or services to the market, which requires creativity and innovation. Risk-taking: Entrepreneurs are known for taking risks and are often willing to invest in new and unproven ideas, which is an important dimension of entrepreneurial marketing.” (2nd Mini-FGDs, Male 2)}*

Based on the literature we mentioned earlier that (leveraging resource) is the main dimension for EM. The participant has also come up with the same view saying: entrepreneurs must manage their resources, including time, money, and human capital, effectively and efficiently. Participant added (Networking) as a new term for EM and she discussed that networking is important for entrepreneurs to expand their businesses and find success, entrepreneurs must have a strong network of partners and contacts.

*{“Resource leveraging: Entrepreneurs need to be efficient and effective in managing their resources, including time, money, and human capital. Networking: Entrepreneurs need to create a strong network of connections and partners to help them grow their business and accomplish success.” (2nd Mini-FGDs, Female)}*

In order to examine the feasibility of customer intensity and leveraging resource we found that all the participants have come together and approved that customer intensity is more important and more feasibility for SMEs, one of the participants described in detail that the main focus for any firm is firm-based customers and to fulfill their needs, wants, and desires. And how to manage and leverage your resources to meet customer or client expectations. Likewise, another participant has also explained why customer intensity is needed for the firm? because a customer is the center of every successful firm that works innovatively to create or deliver products or services to satisfy their needs and wants.

Following some opinion’s quotation respectively:

*{“As a marketing specialist, the first step we start with and go forward is the customer. Without the customer, there is no product, there is no market, there's no anything. What your customer need and then think about how to leverage your resources to meet the needs of the customer and to make profit at the same time”. (Mini-FGDs, Female 2)}*

*{“I think customer intensity because I think when you become a customer center, I think you will be more effective than other way of marketing. Because sometimes when we talk about entrepreneurship that creative or innovative way in doing business, or creative way of creating*

*products or services you offer, unless it satisfies the customer needs, I think it will not succeed.”* (Mutual Interview, Female 2)}.

Based the literature an according to Rashad, (2018) proactive identification considers one of the EM core dimensions, this view has come together with what the participant has said in this discussion.

*{“I am thinking entrepreneurial marketing is about proactive. So, I think this will be the main factor. So, I'm not sure about definite factors, but this is what comes to my mind.”* (Mutual Interview, Female 2)}.

We can summarize that a participant has stated that SMEs should scale, enhance, or optimize the resources they have to avoid the market challenges and to keep their work process in continual volume and this will lead you to understand and optimize your budget boundaries.

*{“So, for me, the major factors for that would be the resources, the scale. Because when we talk about small and medium sized enterprises, that becomes sometimes a challenge because maybe you don't have the capacity to have a full team running your marketing. So, you need to think about how you optimize the resources you have and how you can scale it without maybe the need of hiring more people”.* (1<sup>st</sup> Interview, female)}.

One of the main contributions that we have gained is that one of the Participants has added risk-taking as a dimension of EM, she argued that the SM projects are facing many threats during their establishment stages and along with their durability in the market, thus, managing this threats and risks can remind you to be unique from competitors.

*{“In entrepreneurial marketing, I see the importance of taking risks as long as you have opportunities, as long as they are small projects, you can see the risks to be unique from competitors outside the framework”.* (2<sup>nd</sup> Interview, Female)}.

According to the FGDs, this time all participants has come up with an additional dimension "Value creation" which is initially consider core dimension according to the literature see (Sadiku-Dushi, et al. 2019, Becherer, et al. 2012). they clarified that every firm should offer a specific value to be transferred to the customers.

*{“Also, a good factor that you should bring with you is a value creation that your business should have a value to represent”.* (FGDs, Female2)}.

*{“In my opinion when you are entering a new market, or you are entering a new business as an entrepreneur I think one of the most important think that you need to know about how to sell your*



*product and also you need to know your target market and the value that you will provide to your costumers” (FGDs, Male 2)}.*

Based on the same question, we found two interviewees have explained that EM is based on opportunities and how you can get the advantage of it and the entrepreneur should be skillful to create new opportunities.

*{“The second thing is how can we take advantage of opportunities in modern fields, especially through the process of marketing and change, and relying on quality. It can be according to the skills. These can be the foundations.” (3<sup>rd</sup> Interview, M)}.*

Based on the ongoing development for the scenario question consequences, the following are some potential advantages and benefits generated throughout the discussion for each of these three dimensions:

***Customer Intensity:***

*{“I believe that Customer Intensity can rapidly increase customer loyalty and retention and can assist in positive word-of-mouth referrals and PR.” (2nd Mini-FGDs, Male 1)}.*

*{“For me as a customer representative this dimension improve customer satisfaction and NPS scores.” (2nd Mini-FGDs, Female)}.*

*According to my experience in the firm focusing on customer could help to reach higher revenue and profits due to repeat business and cross-selling opportunities this can assist also to get more accurate customer personas and targeted marketing.” (2nd Mini-FGDs, Male 2)}.*

***Focusing on Opportunities:***

*I think it increase innovation and agility in response to market changes and can explore new idea and new market.” (2nd Mini-FGDs, Female)}.*

*For me focusing on opportunity can improve scalability and diversification of products or services. (2nd Mini-FGDs, Male 2)}.*

*I think there are many benefits for focusing on opportunity I can mention for example Improve competitiveness and market share, higher rate of ROI, profitability, enhance reputation and brand image. (2nd Mini-FGDs, Male 1)}.*

***Risk Management:***

*{“I think managing any risk for the firm can minimizing potential losses or damages to the company, moreover, can represent a protection of company assets and resources.” (2nd Mini-FGDs, Male 1)}.*

*{“Risk management in the firm is important to Improve compliance with legal and regulatory requirements also a creation of a more stable and predictable business environment.” (2nd Mini-FGDs, Male 2)}.*

*{“I believe that managing risk can provide a heighten confidence and trust of stakeholders, investors, and customers.” (2nd Mini-FGDs, Female)}.*

Overall, each of these measures can support a business in thriving and succeeding in its sector. A corporation can develop a more sustainable business model and lay a better foundation for long-term growth and profitability by modifying consumer intensity, focusing on opportunities, and managing risks effectively.

#### **5.1.2.2. Second Theme: Technological capabilities (TCPs)**

- Do you think that technological capabilities can play the moderator role between entrepreneurial marketing and firm performance? If yes, why do you think it is important?

Throughout the discussions, we have observed that all participants unanimously agreed that TCPs are important to play the moderating role between entrepreneurial marketing and firm performance, one of the participants said it is important to control and likely to make a positive impact on the relationship between two factors. while another participant has compromised that TCPs can play a moderating role since it is based on innovation when it comes to EM.

Likewise, a third participant has said that utilizing TCPs is highly essential for SMEs which helps you to optimize the firm performance and assist you to achieve your work efficiently instead of doing it manually. It can also help measure the firms track and standardize the firm process as well. Following some quotations from the discussions:

*{“it’s highly important because maybe something I mentioned in the first point is when you have limited resources because of the scale of the business and the corporate year and even it’s important in a corporate level, but for SMEs, it’s highly important that you would know what you are doing and how it’s performing for you”.* (1<sup>st</sup> Interview, Female)

*{“I think technology and co-innovation can help the firm so you can come up with technology solution and its benefits you so you can grow up and evaluate and develop your firm process, and this will lead you to efficiency in the work in the outputs and so on therefore, TCPs is very beneficial”* (FGDs, Female 2)}.

*{“Definitely yes, using technology, gathering data or information will be easy to sort them out, analyzing them in the basic stages, it will be more accurate and easier than the traditional way” (Mini-FGDs, Female 2)}.*

*{“Based on my knowledge, I think that technological capabilities can play a moderate role in linking entrepreneurial marketing with firm performance. Because technological capabilities can help firms to develop new products, enhance existing ones, and improve processes, which can result in increased performance. Entrepreneurial marketing, on the other hand, can help firms to identify new market opportunities and create customer value. Therefore, combining these two factors through technological capabilities can lead to better firm performance.” (2nd Mini-FGDs, Male 1)}.*

*{“I agree, because TCPs are important to explore and utilize new models and new opportunities for the firm.” (2nd Mini-FGDs, Female)}.*

- If you had to pick one factor which is most important to you, what is the other dimensions of TCPs you think can give best interactions and effectiveness beside innovation.

By asking this question we intend to investigate, generate, and explore more dimensions of TCPs that can assist extend adaptation from the new dimensions. Thus, a respondent explained that utilizing technology in business can provide more security to keep your resources and information safe and away from your competitors.

*{“Other factors like security and maybe enjoyment and the risk you can face if you are using a technology” (Mutual Interview, Female 2)}.*

Another participant addressed about how to be skillful and can do a job and work wherever you are, and this argument we can see how it was efficient in real practice during the COVID-19 period. Therefore, it considers as technologies transformation to keep works constantly.

*{“the ability to work remotely so you can optimize like the resources you have, so you get the best of the best. You're not limited to a geographical limit. So, technology starts with the equipment that helps you and the software that help you optimize whatever job you're doing” (1<sup>st</sup> Interview, Female)}.*

With the same line, another respondent has assumed that communicating technologically can be one of TCPs dimensions because periodically you need to keep in contact with your customer to know his extended needs and wants.

{“Communication. Because we are talking about the technological aspect, whenever he is in contact with the customer and knows the extent of his needs, this affects entrepreneurial marketing. According to what we are talking about small companies.” (2<sup>nd</sup> Interview, Female)}.

We have also obtained a new dimension for TCPs throughout FGDs. Respondent contributed that artificial intelligence "AI" will give the firm good engagement, and good interactions especially since we are come up with the technology in everything.

{“Maybe the use of artificial intelligent (AI) will gives you good engagement, good interactions specially we are come up with the technology in everything.” (FGDs, Female 2)}.

{“I can contribute that Research and Development Capability: This dimension focuses on an organization's ability to develop new technologies and improve existing ones through research and development activities. Also, Technological Acquisition: This dimension focuses on an organization's ability to acquire external technologies through partnerships, licensing, or unions and purchases.” (2<sup>nd</sup> Mini-FGDs, Female)}.

{“I think the other dimensions for TCPs are the ability of an organization to generate new business models that take advantage of technical advancements and add value for consumers and shareholders. Other dimensions can be the ability of the firm to quickly adjust to shifting market conditions, customer wants, and technology improvements by saying the focus of the agility and flexibility dimension.” (Mini-FGDs, Male 1)}.

### 5.1.2.3. **Third theme: Firm performance (FP):**

- What are the main dimensions or measurements of the firm performance that you can suggest being adapted by this study?

In this context we designed to explore in depth the FP elements, Thus, most of the participants have agreed that financial performance is most important measurement that firms strive to achieve, and this can help firms evaluate their progress and the proceed levels they reached in certain time.

{“I think when we had to measure his performance. I think the most important one or the most important factor is the financial performance. Because this the only way he can measure is not the only way or maybe the important one in measuring his success as a new or established company or firm. So, I think the financial performance will be the factor”. (Mutual Interview, Female 2)}.

{“One of the most important measurements is financial performance this includes metrics such as revenue, profit, return on investment (ROI), and shareholder value. The second important

*measurement is: Customer satisfaction this measure shows how well the company meets the needs and expectations of its customers.” (2nd Mini-FGDs, Male 2)}.*

*{“I think Operational efficiency: This let the firm to know the effectiveness and efficiency of internal processes and operations. I can also add employee satisfaction: This can measure how satisfied and engaged employees are with their work and the company.” (Mini-FGDs, Female)}.*

- Based on the previous discussion we have developed the questions sicario to adopt revenue and sustainability as a measurement for FP, one of the participants has agreed that revenue and sustainability can be an appropriate measurement for FP.

*{“I think yes because as I said before revenue or profits one of the business establishment reasons. And obviously this business logic will be followed by sustainability in order to keep growth and to preserve a reliable market share among competitors. This can lastly extend the firm’s life cycle.” (FGDs, M1)}.*

whereas to of respondent has accepted revenue to be adopted by SMEs in Sudan but in terms of sustainability they do not feel the same way.

*{“Absolutely, specially here in Sudan if you are not generating revenue first of all you cannot be sustain in the market by the way, the sustainability related to revenue here in Sudan. If you do not get a revenue, you cannot sustain in the market and you fail so I think it’s an important dimension for measuring FP.” (FGDs, Male 2)}.*

One of the participants has argued that sustainability is not an appropriate measurement for SMEs due to their small operations and they are still in the risk line, so they are not aware of being sustained as a large company.

*{“Actually, sustainability I do not think can be an appropriate dimension for SME due to their small enterprise, but revenue maybe an appropriate dimension for measuring FP defiantly it will be.” (FGDs, Female2)}.*

Furthermore, one of the respondents have indicated that growth can be one of the FP measurements because every entrepreneur spends some expenses and invest in growing his firm in the future.

*{“I think if I can express myself well, I think the growth that they are. Because sometimes he can invest his returns on in growing his company”. (Mutual Interview, Female 2)}.*

The other dimension that has been generated throughout the discussions is customer satisfaction. In this context more than two participants have accepted that customer satisfaction

can be an accurate measurement for FP, they expressed that any business opposed to getting a considerable market share among competitors, this logic can be achieved by beginning with customer acquisition and customer retention to keep them for a long term and then gain their loyalty for a firm.

*{“It starts with customer acquisition because that's the main goal of any business that that needs to be tracked with the right tools as well. Customer retention. How long is the customer staying with you and why they're leaving if in case they left, then you mean here customer satisfaction. Yeah, it's a work as customer satisfaction as well”.*

*{“the second measurement should be satisfaction in the two sides in the costumer side and in the employee side and this all will complete the picture of your vision.” (FGDs, Female 2)}.*

### 5.1.3. Summary of thematic analysis

**Table 16 Presents the generated multidimensional findings for entrepreneurial marketing, technological capabilities, and firm performance.**

First theme	Dimensions	Second theme	Dimensions	Third Theme	Dimensions
<b>Entrepreneurial marketing</b>	Innovation orientation	<b>Technological capabilities "TCPs"</b>	Security	<b>Firm Performance "FP"</b>	Financial performance: Revenue/profits. return on investment (ROI), and shareholder value
	Focus on opportunities		Digital communication capability		Sustainability
	Segmentation		Digital tools		Customer satisfaction
	Customer intensity		Ability to work remotely		Growth
	Proactiveness identification		Artificial intelligent "AI"		Operational efficiency
	Leveraging resource		Research and Development Capability R&D		Employee satisfaction
	Risk management		Technological Acquisition		
	Value creation		New business models		
	Agility		Agility and Flexibility		
	Networking				

*Own editing, based on thematic analysis (2024).*

## 5.2. Secondly: Quantitative methodology

### 5.2.1. Data cleaning

Data cleaning deals with detecting and removing errors and inconsistencies from data to improve the quality of data. The need for data cleaning is centered on improving the quality of data to make them “fit for use” by users by reducing errors in the data and improving their

documentation and presentation (Chapman, 2005). Data quality problems are present in single data collections due to misspellings during data entry, missing information, or other invalid data. When multiple data sources need to be integrated, or analysis programs need to be used, the need for data cleaning increases significantly. Thus, in this study data cleaning is used to manipulate missing data, unengaged responses, and outliers.

### 5.2.2. Missing Data

Missing data is common and always expected in the process of collecting and entering data due to lack of concentration and/or misunderstanding among respondents, and missing information or other invalid data during the entry of data. Missing data can cause several problems.

The most apparent problem is that there simply won't be enough data points to run the analysis, particularly in the structural equation model (SEM). Both exploratory and confirmatory factor analysis and path models require a certain number of data points to compute estimates. Additionally, missing data might represent bias issues. Some people may not have answered particular questions in the survey because of some common issue. If missing data is more than 10% of the responses on a particular variable, or from a particular 65 respondents, that variable or respondent may be problematic Abker, A. Y. (2019). In this study the proportion of missing data is lower than 10%. Therefore, there is no need to remove any of the responses.

### 5.2.3. Unengaged responses

Unengaged responses mean some responses give the same answer for all the questionnaires it seems to be random answers, in this case, we use standard deviation to find out any unengaged response, this means that any standard deviation of responses less than 0.5 when Likert's five-point scale is used just deleted. Therefore, in this study, 7 questionnaires were found to have a standard deviation of less than 0.5 and they were excluded from data analysis, table (17) shows the unengaged response.

**Table 17 Unengaged responses**

Total Questionnaires	255
Unengaged responses	9
Unengaged responses Rate	3%

*Own editing by researcher (2024).*

### 5.2.4. Outliers



It is very important to check outliers in the dataset. Outliers can influence the results of the analysis. If there is a high sample size, the need for removing the outliers is wanted. If the analysis runs with a smaller dataset, you may want to be less liberal about deleting records. However, outliers will influence smaller datasets more than the largest ones. However, after checking outliers the results of the dataset show that no outliers, everything in the dataset is logical and acceptable.

#### 5.2.5. SMEs and respondent's frequencies

Based on the descriptive statistics using the frequency analysis this part clarifies the presence of respondents who participated in the survey in the light of six characteristics.

**Table 18 Presents frequencies and percentages of SMEs and respondents.**

<b>Firm characteristics</b>		<b>Frequencies</b>	<b>Percentage</b>
<b>Age</b>	Less than 21	48	18.8%
	21 to 30	76	29.8%
	31 to 40	74	29.0%
	More than 40	57	22.4%
<b>Gender</b>	Male	139	54.5%
	Female	116	45.5%
<b>Qualifications</b>	Primary school	21	8.2%
	Secondary school	64	25.1%
	Undergraduate	100	39.2%
	Postgraduate	70	27.5%
<b>Position</b>	An entrepreneur /business owner	70	27.5%
	Manager	68	26.7%
	Employee	117	45.9%
<b>Firm size</b>	Small firm (1 to 5 employees)	108	42.4%
	Medium firm (6 to 49 employees)	147	57.6%
<b>Sector</b>	Services	149	58.4%
	Industrial	106	41.6%
<b>Total</b>		<b>255</b>	<b>100%</b>

*Own editing by researcher (2024).*

### 5.2.6. Reliability of Scales Using Cronbach's Alfa

The analysis of reliability using Cronbach's Alpha indicates satisfactory internal consistency for the scales utilized in the study, as recommended by Hair et al. (2019). An acceptable level of reliability is achieved when Cronbach's alpha exceeds 0.50. Specifically, the Entrepreneurial Marketing scale, comprising 14 items, demonstrates a Cronbach's Alpha of 0.731, indicating good reliability. The Technological Capabilities scale, which consists of 6 items, shows a slightly lower but still acceptable Cronbach's Alpha of 0.538. Similarly, the Firm Performance scale, comprising 9 items, exhibits a Cronbach's Alpha of 0.615, suggesting moderate internal consistency.

Overall, the combined scales, consisting of 28 items, yield a Cronbach's Alpha of 0.815, indicating strong reliability across the comprehensive set of measures used in the study.

**Table 19 Reliability of scales using Cronbach's Alfa**

<b>Variable</b>	<b>Number of items</b>	<b>Cronbach's Alfa</b>
Entrepreneurial marketing	14	0.731
Technological capabilities	6	0.538
Firm Performance	9	0.615
<b>Overall</b>	<b>28</b>	<b>0.815</b>

*Own editing by researcher (2024).*

### 5.2.7. Goodness of measures

This section reports the results of validity and reliability tests as a means to assess the goodness of measure in this study constructs (Sekaran, 2003). The study used Principal Component Analysis (PCA) The following is the detailed information of (PCA).

### 5.2.8. Exploratory Factor Analysis: Utilizing (PCA)

The evaluation of the construct validity of the scales involved assessing the Kaiser-Meyer-Olkin (KMO) coefficient and conducting the Bartlett Sphericity test, which determined the necessity of employing factor analysis (Hair et al., 2019). Exploratory Factor Analysis (EFA) was then utilized to examine the validity structure of the scale. Within the implementation of EFA, various techniques can be utilized for factor extraction, with **Principal Component Analysis (PCA)** being the most employed method, according to Hair et al. (2019). PCA primarily serves as a means of reducing dimensionality, transforming the original variables into a smaller set of uncorrelated variables known as principal components.

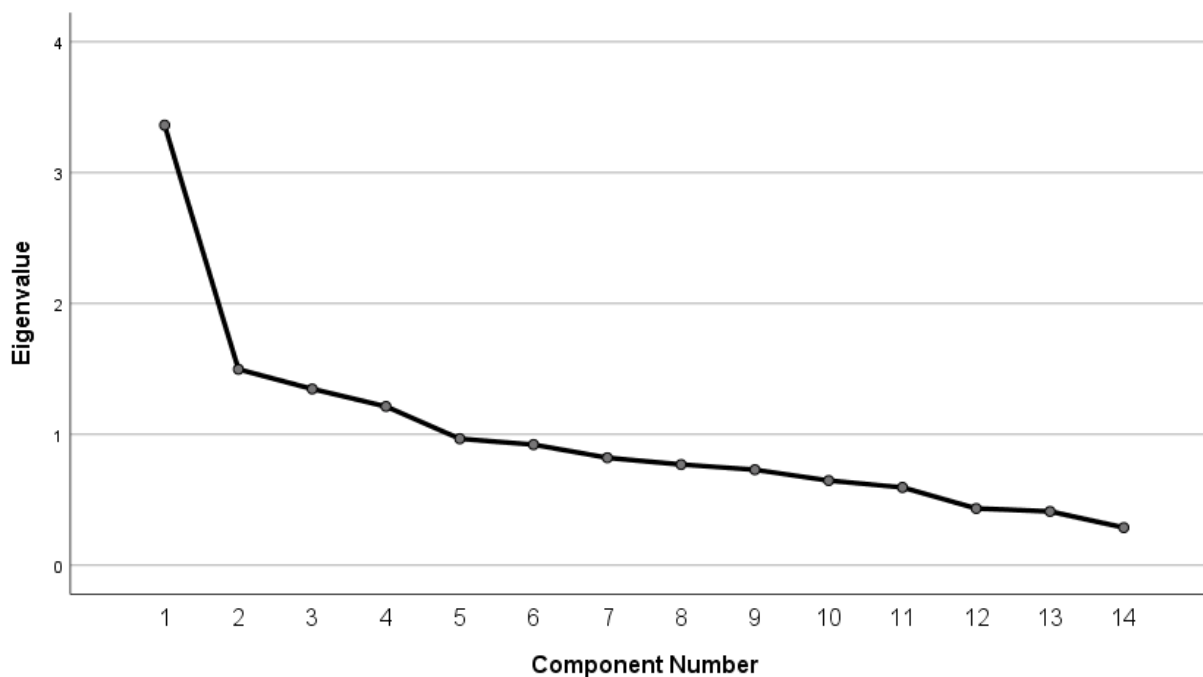
This process facilitates simplifying the data structure and identifying underlying factors, as emphasized by Abdi and Williams (2010). Additionally, factor rotation is employed in EFA to determine variable groupings, with Varimax rotation being a widely used method. Varimax rotation is considered an orthogonal rotation technique aimed at maximizing the variance of squared loadings within each factor while ensuring distinct loadings for each variable, as elucidated by Tabachnick, et al., (2007).

#### **5.2.8.1 Entrepreneurial marketing dimensions (Independent variable)**

Kaiser-Meyer-Olkin (KMO) and Bartlett's Test were used to find out about the suitability and accuracy of factors within a provided sample (Hair et al., 2019). The results presented in table 5.4 show that KMO = 0.686, Bartlett test value  $\chi^2 = 673.7$ ,  $p = .000$ . To conduct item factor analysis, it is recommended to ensure a Kaiser-Meyer-Olkin (KMO) value of at least 0.50. Additionally, it is crucial for the Bartlett test to yield significant results, as indicated by Abdi and Williams (2010). The results obtained from the scale indicate the suitability of the data for factor analysis.

The factor analysis employed principal components analysis and varimax vertical rotation to eliminate items with factor loading values below .30, as well as items with loading values across different factors, as outlined by Abdi and Williams (2010). Hence, 4 items were excluded from the measurement since they were not determinative of which factor is measured.

**Figure 6 scree plot of Entrepreneurial marketing dimensions**



*Own editing by researcher (2024).*

Based on the analysis conducted using principal components analysis and Varimax rotation, four factors were identified, each with eigenvalues exceeding 1 as it seen in figure 6. The results presented in table 20 show these factors explain a cumulative variance of 52.99%, with the first factor explaining 24.01%, the second 10.69%, the third 9.61%, and the fourth 8.66%. This suggests that the identified factors account for a significant portion of the variance within the scale. Further examination reveals that out of the 14 items on the scale, 5 items align with the first factor, while 3 items align with each of the remaining three factors. This distribution of items across factors provides insight into the underlying structure of the scale and helps in understanding the dimensions it measures.

Additionally, the factor loadings of all items fall within the range of 0.761 to 0.305, indicating their contribution to the respective factors. Moreover, all items exhibit Item-total Correlation Coefficients above 0.30, indicating their discriminative power in assessing the constructs measured by the scale.

Overall, the findings suggest a robust four-factor structure consisting of 14 items, with each factor capturing distinct dimensions of entrepreneurial marketing. The high Item-total Correlation

Coefficients further validate the reliability and validity of the scale in assessing the intended constructs.

**Table 20 EFA utilizing (PCA) for Entrepreneurial marketing EM dimensions.**

Items	Scale Item No	Factor Loading Values			
		Factor 1	Factor 2	Factor 3	Factor 4
CI1	1	.761			
IO1	2	.761			
CI4	3	.664			
Net3	4	.658			
Net1	5	.493			
CI5	6		.766		
Net4	7		.666		
CI2	8		.516		
IO3	9			.824	
RM1	10			.545	
RM2	11			.443	
IO2	12				.747
IO5	13				.718
IO4	14				.305
Variance (%)		24.01%	10.69%	9.61%	8.66%
Total Variance		52.99%			
KMO		.684			
Bartlett test value $\chi^2$		673.7			
Bartlett's test of p-value		0.000			

*Own editing by researcher (2024).*

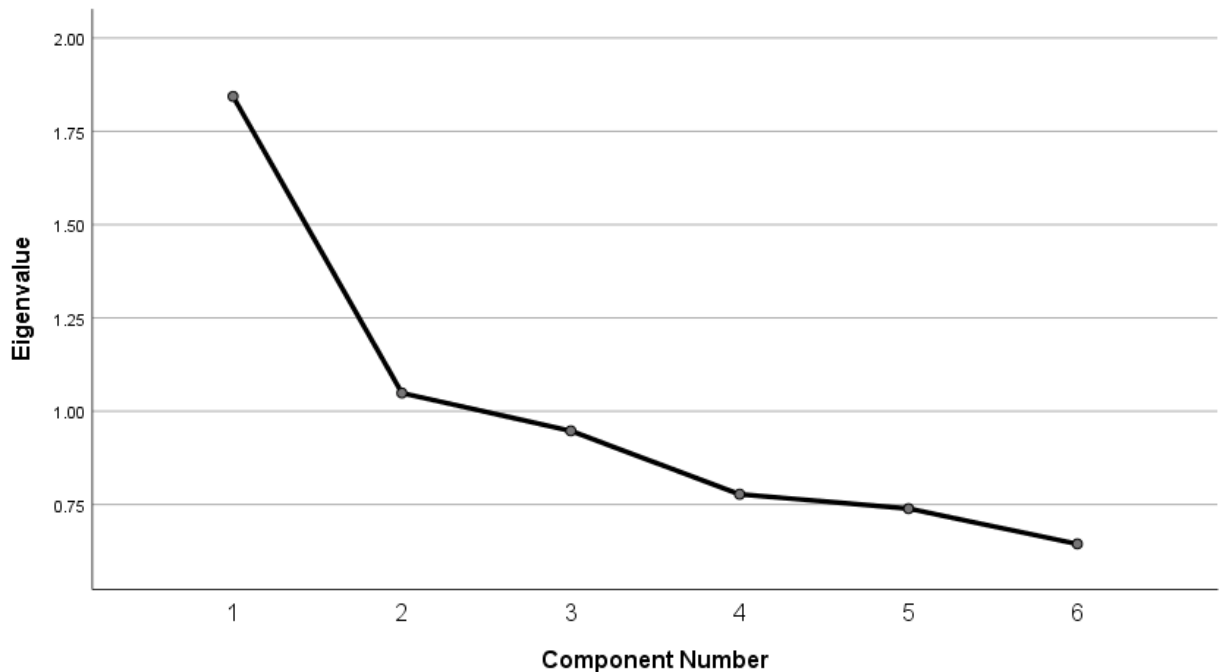
### 5.2.8.2 Technological capabilities dimensions (Moderator variable)

The findings presented in Table 21 demonstrate that the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.665, indicating a moderate level of suitability for factor

analysis. Additionally, the Bartlett test yielded a significant result with a chi-square value of 97.7 and a p-value of .000, further supporting the appropriateness of the data for factor analysis.

For the factor analysis procedure, principal components analysis was utilized in conjunction with varimax rotation to enhance interpretability by maximizing the variance of factor loadings. Items with factor loading values below .30 were excluded, as were items exhibiting loadings across multiple factors. Consequently, four items were removed from the measurement scale due to their inability to distinctly represent a particular factor.

**Figure 7 scree plot of Technological capabilities dimension**



*Own editing by researcher (2024)*

Based on the analysis conducted using principal components analysis and Varimax rotation, two factors were identified, each with eigenvalues exceeding 1 as shown in Figure 7. These factors account for a cumulative variance of 48.2%, with the first factor explaining 30.72% and the second 17.47% as shown in table 2. This indicates that the identified factors explain a significant portion of the variance within the scale. Further examination reveals that out of the 6 items on the scale, 3 items align with each factor. This distribution of items across factors provides insight into the underlying structure of the scale and helps in understanding the dimensions it measures. Additionally, the factor loadings of all items fall within the range of 0.816 to 0.568, indicating their contribution to the respective factor.

Moreover, all items exhibit Item-total Correlation Coefficients above 0.30, suggesting their discriminative power in assessing the constructs measured by the scale. Overall, the findings suggest a robust two-factor structure consisting of 6 items, with each factor capturing distinct dimensions of technological capabilities.

**Table 21 EFA utilizing (PCA) for Technological capabilities dimensions.**

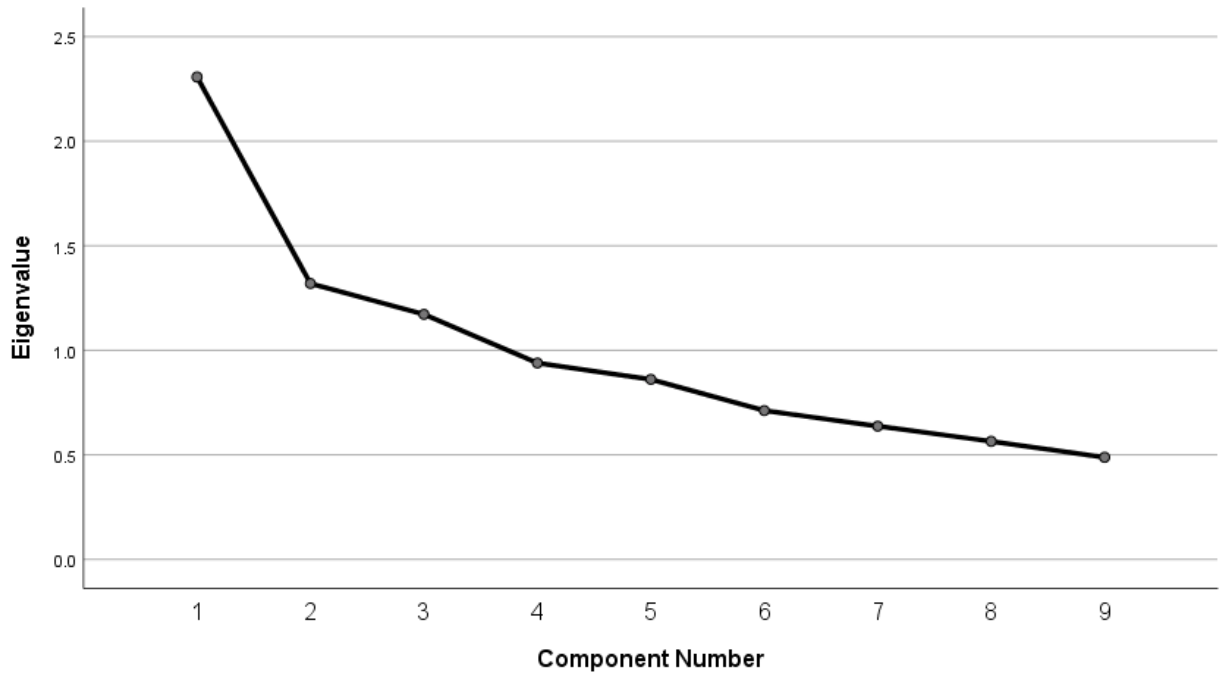
Items	Scale Item No	Factor Loading Values	
		Factor 1	Factor 2
RWC1	1	.816	
RWC2	2	.599	
RWC3	3	.583	
AI1	4		.802
AI5	5		.627
AI3	6		.568
Variance (%)		30.72%	17.47%
Total Variance		48.20%	
KMO		.665	
Bartlett test value $\chi^2$		97.70	
Bartlett's test of p-value		0.000	

*Own editing by researcher (2024).*

### 5.2.8.3 Firm Performance FP dimensions (Dependent variable)

The findings presented in Table 22 demonstrate that the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is 0.662, indicating a moderate level of suitability for factor analysis. Additionally, the Bartlett test yielded a significant result with a chi-square value of 255.23 and a p-value of .000, further supporting the appropriateness of the data for factor analysis. Consequently, 5 items were removed from the measurement scale due to their inability to distinctly represent a particular factor.

**Figure 8 scree plot of Firm Performance FP dimensions**



*Own editing by researcher (2024)*

Based on the analysis conducted using principal components analysis and Varimax rotation, a three-factor structure was identified for assessing Firm Performance. These factors collectively account for a significant portion (53.31%) of the variance within the scale. The first factor explains 25.63% of the variance, the second factor 14.65%, and the third factor 13.03%.

Further examination reveals that out of the 9 items on the scale, 3 items align with each factor. This distribution provides insight into the underlying structure of the scale and helps in understanding the dimensions it measures. Additionally, the factor loadings of all items fall within the range of 0.736 - 0.436, indicating their contribution to their respective factors.

Moreover, all items exhibit Item-total Correlation Coefficients above 0.30, indicating their discriminative power in assessing the constructs measured by the scale. Overall, these findings suggest a robust three-factor structure consisting of 9 items, with each factor capturing distinct dimensions of Firm Performance.

**Table 22 EFA utilizing (PCA) for Firm Performance FP dimensions.**

Items	Scale Item No	Factor Loading Values		
		Factor 1	Factor 2	Factor 3



PCS5	1	.736		
PCS2	2	.709		
Su4	3	.666		
Su3	4		.693	
P5	5		.691	
P1	6		.597	
PCS4	7			.436
PCS1	8			.766
PCS3	9			.679
Variance (%)		25.63%	14.65%	13.02%
Total Variance		53.31%		
KMO		.662		
Bartlett test value $\chi^2$		255.23		
Bartlett's test of p-value		0.000		

*Own editing by researcher (2024).*

Following the execution of principal component analysis and rotation matrix, numerous items within the original questionnaire were omitted due to their lack of statistical significance, while several items underwent rotation across dimensions to better align with the underlying factor structure. Subsequently, we conducted correlation matrix analysis, ANOVA testing, and path analysis to further explore the relationships among variables, assess group differences, and elucidate the causal pathways within the study model.

**Table 23 presents the Final measurements for each dimension after the execution of principal component analysis and rotation matrix.**

Entrepreneurial marketing measurements		
Dimension	Measurements Code	Measurements after execution of PCA & rotation matrix
Innovation Orientation	CI1	Our business objectives are driven by customer satisfaction.
	IO1	Being innovative is a competitive advantage for my company.
	CI4	We make sure that our company's competitive advantage is based on understanding customers' needs.

<i>See (table 5.4)</i>	Net3	In our firm we have a good relationship with each other and an important people in other firms.
	Net1	I encourage my team to strive for innovative approaches to creating relationships with customers.
Customer intensity	CI5	We frequently measure our company's customer satisfaction.
	Net4	We are experienced in dealing with technical partners.
<i>See (table 5.4)</i>	CI2	We pay close attention to after-sales service.
Risk management	IO3	We invent new products and services and regularly uses new distribution channels.
	RM1	My business would rather accept a risk to pursue an opportunity than miss it altogether.
<i>See (table 5.4)</i>	RM2	My business is willing to take risks when we think it will benefit the company.
Networking	IO2	My company's top management creates an atmosphere that encourages creativity and innovativeness.
	IO5	Our unit regularly uses new distribution channels.
<i>See (table 5.4)</i>	IO4	We frequently utilize new opportunities in new markets.
<b>Technological capabilities measurements</b>		
Remote work capability	RWC1	I have a reliable internet connection at my remote work location.
	RWC2	Our company provide a type of devices for remote work (e.g., laptop, desktop, tablet)
	RWC3	We have access to the necessary software/tools for remote collaboration and communication (e.g., video conferencing, project management tools)
<i>Table (5.5)</i>		
Artificial intelligence	AI1	Our organization employ AI technologies in the operation.
	AI5	Using AI applications will generate a high volume of sales and will increase our market share.
<i>Table (5.5)</i>	AI3	Using AI technologies will generate a high volume of sales and will increase our market share.
<b>Firm performance measurements</b>		
Profitability	PCS5	Our customers are satisfied with...We analyze and respond to feedback and comments from customers.
	PCS2	Our customers are satisfied with the enquiry service provided by this company.
<i>Table (5.6)</i>	Su4	We regularly dispose of production waste to reduce environmental pollution.
Sustainability	Su3	We give an attention the integration of green practices in the supply chain.
	P5	Maximizing profitability of the firm encourages shareholder to expand the investments.
<i>Table (5.6)</i>	P1	Our company invest in return on assets as a main resource to maximize profitability.

Presumed customer satisfaction. <i>Table (5.5)</i>	PCS4	Our customers are satisfied with the service of handling customer dissatisfaction in this company.
	PCS1	Our customers are satisfied with the price of their purchased product(s) or services in this company.
	PCS3	Our customers are satisfied with the customer service in transactions.

*Own editing by researcher (2024)*

Codes: CI: customer intensity, IO: innovation orientation, RM: risk management, Net: networking, RWK: remote work capability, AI: artificial intelligence, P: profitability, SU: sustainability, PCS: presumed customer satisfaction

### 5.2.9 Correlation matrix

Pearson's correlation analysis was employed to examine the relationships between variables. The results displayed in Table 5.7 indicate significant correlations among all the independent, moderator, and dependent variables. However, Remote Work Capability exhibited no significant correlation with innovation orientation, profitability, and Presumed Customer Satisfaction ( $p > 0.05$ ). Furthermore, the correlation coefficients ranging between 0.570 and 0.127 confirm the absence of multicollinearity issues. Multicollinearity is identified when there is a high correlation (0.9 or greater) between any independent variable and another set of independent variables (Tabachnick and Fidell, 2007).

**Table 24 correlation matrix of the variables**

	IO	CI	RM	Net	RWC	P	PCS	SU
IO	1							
CI	0.314**	1						
RM	0.219**	0.292**	1					
Net	0.317**	0.404**	0.188**	1				
RWC	0.106	0.378**	0.165**	0.200**	1			
AI	0.203**	0.363**	0.127*	0.346**	0.326**			
P	0.088	0.312**	0.129*	0.261**	0.03	1		
PCS	0.391**	0.347**	0.211**	0.311**	0.08	0.189**	1	
SU	0.308**	0.341**	0.130*	0.570**	0.158*	0.273**	0.251**	1

\* Correlation is significant at the 0.05 level and \*\*Correlation is significant at the 0.01 level

*IO= innovation orientation, CI= Customer intensity, RM= Risk management, Net= Networks, RWC= Remote Work Capability, AI= Artificial Intelligent, P= profitability, PCS= Presumed Customers Satisfaction, and SU= Sustainability.*

### 5.2.10 The Independent T test (ANOVA)

*The significant effect of sector and Firm size on entrepreneurial marketing, technological capabilities, and firm Performance*

The Independent T test was utilized to investigate the significant effect of Sector and Firm size on entrepreneurial marketing, technological capabilities, and firm Performance. The results presented in table 25 indicate that there are no significant differences between sectors (services and industrial) in terms of entrepreneurial marketing ( $p = 0.183$ ), technological capabilities ( $p = 0.888$ ), or firm performance ( $p = 0.278$ ).

**Table 25 The Independent T test of the effect of sector on entrepreneurial marketing, technological capabilities, and firm Performance.**

Variables	Sector	N	Mean	Std. Deviation	t value	P value
<b>Entrepreneurial marketing</b>	Services	149	3.883	0.5178	1.263	0.183
	Industrial	106	3.809	0.3670		
<b>Technological capabilities</b>	Services	149	3.739	0.588	0.141	0.888
	Industrial	106	3.729	0.483		
<b>Firm Performance</b>	Services	149	3.800	0.492	1.088	0.278
	Industrial	106	3.735	0.437		

*Own editing by researcher (2024).*

Regarding the firm size, the results presented in table 26 reveal no significant differences in entrepreneurial marketing, technological capabilities, and firm Performance between small firms (1 to 5 employees) and medium firms (6 to 49 employees), as indicated by non-significant t-values ( $p > 0.05$ ).

**Table 26 Independent t test of the effect of firm size on entrepreneurial marketing, technological capabilities, and firm Performance**

Variables	Firm size	N	Mean	Std. Deviation	T value	P value
<b>Entrepreneurial marketing</b>	Small firm (1 to 5 employees)	107	3.843	0.352	-0.343	0.732
	Medium firm (6 to 49 employees)	147	3.863	0.527		
<b>Technological capabilities</b>	Small firm (1 to 5 employees)	107	3.786	0.531	1.239	0.217
	Medium firm (6 to 49 employees)	147	3.700	0.556		
<b>Firm Performance</b>	Small firm (1 to 5 employees)	107	3.891	0.432	1.248	0.213
	Medium firm (6 to 49 employees)	147	3.687	0.481		

*Own editing by researcher (2024).*

### 5.2.11 Path analysis

The research utilized path analysis with AMOS v26 to examine the proposed model and validate the hypotheses. Structural Equation Modeling (SEM) path analysis is a powerful statistical technique used in various fields, due to its ability to model complex relationships among multiple variables. Unlike simpler methods like regression analysis, SEM allows for the simultaneous estimation of multiple relationships, including those involving latent variables, while also correcting for measurement error in observed variables (Hair et al., 2019). The study aimed to explore the intricate relationships between innovation orientation, customer intensity, risk management, networking, remote work capability, artificial intelligence, and key organizational outcomes such as profitability, sustainability, and presumed customer satisfaction.

The results presented in table 27 indicate that innovation orientation significantly influences sustainability and customer satisfaction, with a positive ( $\beta = 0.116$ ,  $p = 0.024$ ) and ( $\beta = 0.284$ ,  $p = 0.000$ ) respectively, supporting H1:2 and H1:3. Customer intensity also positively affects profitability and customer satisfaction, as evidenced by ( $\beta = 0.254$ ,  $p = 0.000$ ) and ( $\beta = 0.209$ ,  $p = 0.001$ ) respectively, confirming H1:4 and H1:6. Networking exhibits a strong positive association with sustainability ( $\beta = 0.463$ ,  $p = 0.000$ ) and customer satisfaction ( $\beta = 0.138$ ,  $p = 0.021$ ), supporting H1:11 and H1:12. However, innovation orientation, risk management, and

networking do not significantly influence profitability, as indicated by rejected hypotheses H1:1, H1:7, and H1:10 respectively. Similarly, risk management does not significantly impact sustainability or customer satisfaction, with estimates ( $\beta = -0.020$ ,  $p = 0.698$ ) and ( $\beta = 0.080$ ,  $p = 0.168$ ) respectively, leading to the rejection of H1:8 and H1:9. Overall, the results highlight the differential effects of various factors on different organizational outcomes, underscoring the complexity of strategic management dynamics.

In other hand, the results show that innovation orientation does not significantly influence work remotely capability ( $\beta = -0.035$ ,  $p = 0.548$ ) or artificial intelligence adoption ( $\beta = 0.053$ ,  $p = 0.365$ ), rejecting hypotheses H2:1 and H2:2, respectively. However, customer intensity positively affects both work remotely capability ( $\beta = 0.351$ ,  $p = 0.000$ ) and artificial intelligence adoption ( $\beta = 0.264$ ,  $p = 0.000$ ), supporting hypotheses H2:3 and H2:4. Conversely, risk management and networking do not significantly impact work remotely capability or artificial intelligence adoption, rejecting hypotheses H2:5, H2:6, H2:7, and supporting H2:8, where networking positively influences artificial intelligence adoption ( $\beta = 0.234$ ,  $p = 0.000$ ). Moreover, work remotely capability negatively influences profitability ( $\beta = -0.200$ ,  $p = 0.000$ ), confirming hypothesis H3:1.

Furthermore, the findings indicate that there is a significant positive relationship between the implementation of artificial intelligence (AI) and both profitability ( $\beta = 0.251$ ,  $p = 0.000$ ) and sustainability ( $\beta = 0.217$ ,  $p = 0.000$ ), as hypotheses H3:4 and H3:5 were accepted. However, the hypothesis suggesting a relationship between the capability to work remotely and sustainability (H3:2) as well as customer satisfaction (H3:3) were rejected ( $p > 0.05$ ). Similarly, the hypothesis regarding the impact of AI on customer satisfaction (H3:6) was also rejected ( $p > 0.05$ ). These findings suggest that while AI implementation positively influences profitability and sustainability, the capability to work remotely does not significantly affect sustainability or customer satisfaction.

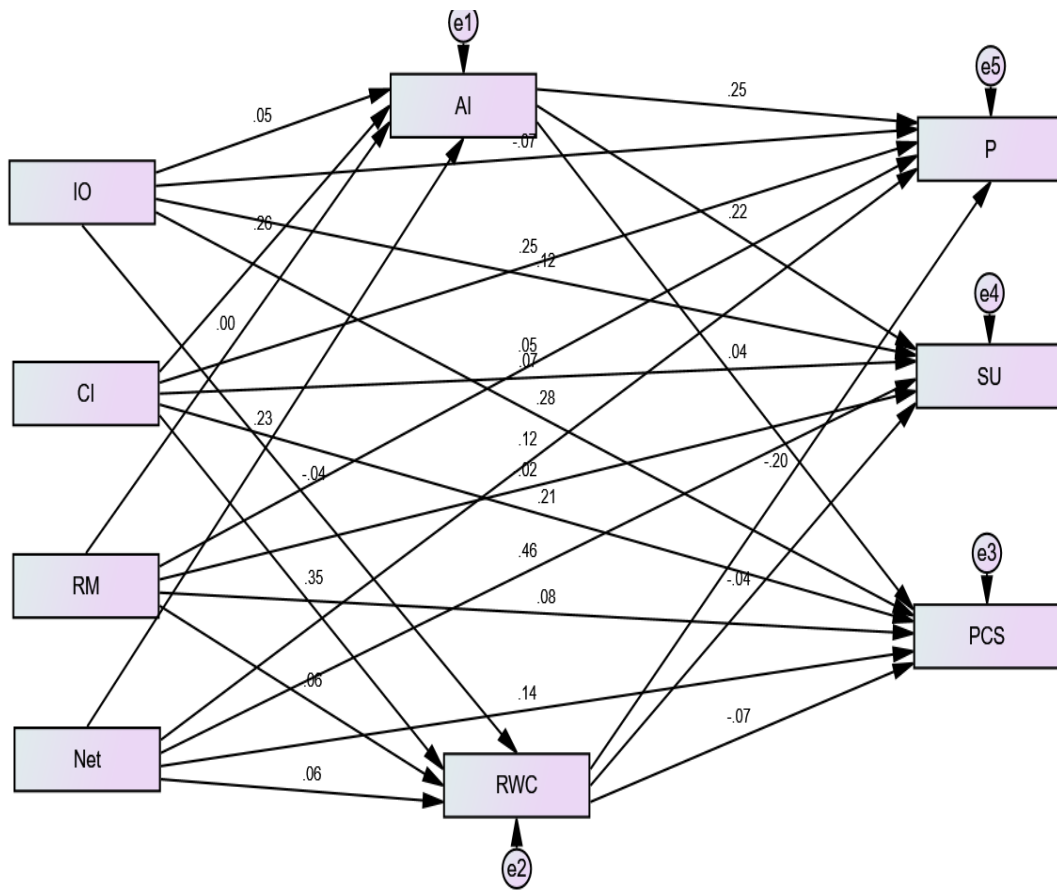
**Table 27 Path analysis**

No. of hypotheses is	Path	Estimate	P	Results
H1:1	Innovation orientation → Profitability	-0.072	0.205	Rejected

H1:2	Innovation orientation → Sustainability	0.116	0.024	Accepted
H1:3	Innovation orientation → Customer satisfaction	0.284	0.000	Accepted
H1:4	Customer intensity → Profitability	0.254	0.000	Accepted
H1:5	Customer intensity → Sustainability	0.070	0.216	Rejected
H1:6	Customer intensity → Customer satisfaction	0.209	0.001	Accepted
H1:7	Risk management → Profitability	0.048	0.401	Rejected
H1:8	Risk management → Sustainability	-0.020	0.698	Rejected
H1:9	Risk management → Customer satisfaction	0.080	0.168	Rejected
H1:10	Networking → Profitability	0.123	0.035	Accepted
H1:11	Networking → Sustainability	0.463	0.000	Accepted
H1:12	Networking → Customer satisfaction	0.138	0.021	Accepted
H2:1	Innovation orientation → Work remotely capability	-0.035	0.548	Rejected
H2:2	Innovation orientation → Artificial intelligent	0.053	0.365	Rejected
H2:3	Customer intensity → Work remotely capability	0.351	0.000	Accepted
H2:4	Customer intensity → Artificial intelligent	0.264	0.000	Accepted
H2:5	Risk management → Work remotely capability	0.060	0.302	Rejected
H2:6	Risk management → Artificial intelligent	-0.002	0.975	Rejected
H2:7	Networking → Work remotely capability	0.060	0.305	Rejected
H2:8	Networking → Artificial intelligent	0.234	0.000	Accepted
H3:1	Work remotely capability → Profitability	-0.200	0.000	Accepted
H3:2	Work remotely capability → Sustainability	0.036	0.516	Rejected
H3:3	Work remotely capability → Customer satisfaction	0.070	0.259	Rejected
H3:4	Artificial intelligent → Profitability	0.251	0.000	Accepted
H3:5	Artificial intelligent → Sustainability	0.217	0.000	Accepted
H3:6	Artificial intelligent → Customer satisfaction	0.037	0.551	Rejected

*Own editing by researcher (2024).*

**Figure 9 Path analysis**



*Own editing by researcher (2024)*

In testing the moderation effect of technological capabilities on the relationship between entrepreneurial marketing and firm performance, **interaction effects** were employed. This approach allowed for a clearer examination of how technological capabilities influence the strength or direction of the relationship between entrepreneurial marketing efforts and firm performance outcomes.

The results presented in table 28 suggest that the technological capabilities positively moderate the relationship between innovation orientation and sustainability ( $\beta = 0.175, p = 0.000$ ) and customer satisfaction ( $\beta = 0.315, p = 0.000$ ) supporting H4:2, and H4:3. Additionally, technological capabilities positively moderate the relationship between Customer intensity and profitability ( $\beta = 0.274, p = 0.000$ ), sustainability ( $\beta = 0.106, p = 0.007$ ), and customer satisfaction ( $\beta = 0.253, p = 0.000$ ) that supporting H4:4, H4:5, and H4:6. However, technological capabilities



had no significant moderating effect on the relationship between innovation orientation and profitability ( $\beta = -0.07$ ,  $p = 0.208$ ), leading to rejection H4:1.

Moreover, the results show that technological capabilities do not significantly moderate the relationship between risk management and profitability ( $\beta = 0.08$ ,  $P = 0.159$ ), and sustainability ( $\beta = -0.014$ ,  $P = 0.720$ ), resulting in the rejection of both hypotheses (H4:7 and H4:8). However, the technological capabilities significantly moderate relationship between risk management and customer satisfaction ( $\beta = 0.110$ ,  $P = 0.013$ ), indicating its acceptance of (H4:9). Moreover, the technological capabilities significantly moderate the relationship between networking and profitability ( $\beta = 0.195$ ,  $P = 0.000$ ), sustainability ( $\beta = 0.605$ ,  $P = 0.000$ ), and customer satisfaction ( $\beta = 0.196$ ,  $P = 0.000$ ), leading to the acceptance of hypotheses H4:10, H4:11, and H4:12, respectively. These findings highlight the nuanced interplay between risk management, technological capabilities, networking, and key firm outcomes, emphasizing the multifaceted nature of organizational success in the contemporary business landscape.

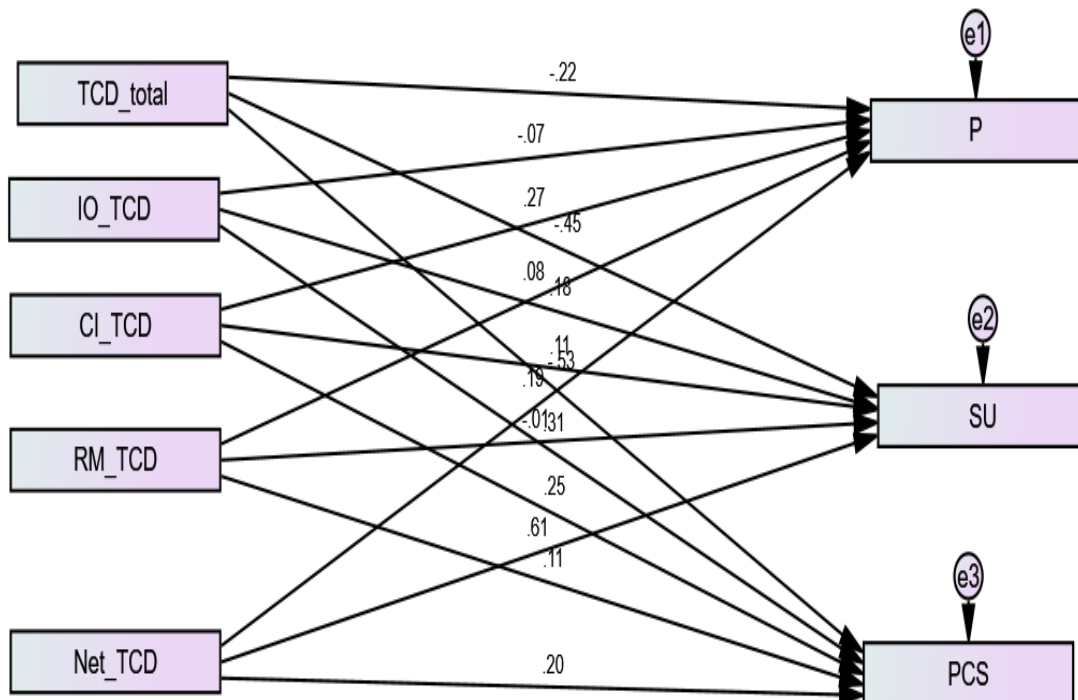
**Table 28 Path analysis of moderation effect (TCPs)**

No. of hypothesis	Path	Estimate	P	Results
H4:1	Int. (Innovation orientation x Technological capabilities) → Profitability	-0.07	0.208	Rejected
H4:2	Int. (Innovation orientation x Technological capabilities) → Sustainability	0.175	0.000	Accepted
H4:3	Int. (Innovation orientation x Technological capabilities) → Customer satisfaction	0.315	0.000	Accepted
H4:4	Int. (Customer intensity x Technological capabilities) → Profitability	0.274	0.000	Accepted
H4:5	Int. (Customer intensity x Technological capabilities) → Sustainability	0.106	0.007	Accepted
H4:6	Int. (Customer intensity x Technological capabilities) → Customer satisfaction	0.253	0.000	Accepted

H4:7	Int. (Risk management x Technological capabilities) → Profitability	0.08	0.159	Rejected
H4:8	Int. (Risk management x Technological capabilities) → Sustainability	-0.014	0.720	Rejected
H4:9	Int. (Risk management x Technological capabilities) → Customer satisfaction	0.110	0.013	Accepted
H4:10	Int. (Networking x Technological capabilities) → Profitability	0.195	0.000	Accepted
H4:11	Int. (Networking x Technological capabilities) → Sustainability	0.605	0.000	Accepted
H4:12	Int. (Networking x Technological capabilities) → Customer satisfaction	0.196	0.000	Accepted

*Own editing by researcher (2024).*

**Figure 10 Path analysis of moderation role of TCPs**



*Own editing by researcher (2024)*

**Table 29 summary of the final results**

<b>Hypotheses One: The relationship between entrepreneurial marketing and firm performance.</b>	<b>Partially supported</b>
H1:1 There is a positive relationship between innovation orientation and profitability.	Rejected
H1:2 There is a positive relationship between innovation orientation and sustainability.	Accepted
H1:3 There is a positive relationship between innovation orientation and customer satisfaction.	Accepted
H1:4 There is a positive relationship between customer intensity and profitability.	Accepted
H1:5 There is a positive relationship between customer intensity and sustainability.	Rejected
H1:6 There is a positive relationship between customer intensity and customer satisfaction.	Accepted
H1:7 There is a positive relationship between risk management and profitability.	Rejected
H1:8 There is a positive relationship between risk management and sustainability.	Rejected
H1:9 There is a positive relationship between risk management and customer satisfaction.	Rejected
H1:10 There is a positive relationship between networking and profitability.	Accepted
H1:11 There is a positive relationship between networking and sustainability.	Accepted
H1:12 There is a positive relationship between networking and customer satisfaction.	Accepted
<b>Second hypothesis: The relationship between entrepreneurial marketing and technological capabilities.</b>	<b>Partially supported</b>
H2:1 There is a positive relationship between innovation orientation and work remotely capability.	Rejected
H2:2 There is a positive relationship between innovation orientation and artificial intelligent AI.	Rejected
H2:3 There is a positive relationship between customer intensity and work remotely capability.	Accepted
H2:4 There is a positive relationship between customer intensity and artificial intelligent AI.	Accepted
H2:5 There is a positive relationship between risk management and work remotely capability.	Rejected
H2:6 There is a positive relationship between risk management and artificial intelligent AI.	Rejected
H2:7 There is a positive relationship between networking and work remotely capability.	Rejected
H2:8 There is a positive relationship between networking and artificial intelligent AI.	Accepted
<b>Third hypothesis: The relationship between technological capabilities and firm performance.</b>	<b>Partially supported</b>

H3:1 There is a positive relationship between work remotely capability and profitability.	Accepted
H3:2 There is a positive relationship between work remotely capability and sustainability.	Rejected
H3:3 There is a positive relationship between work remotely capability and customer satisfaction.	Rejected
H3:4 There is a positive relationship between artificial intelligent AI and profitability.	Accepted
H3:5 There is a positive relationship between artificial intelligent AI and sustainability.	Accepted
H3:6 There is a positive relationship between artificial intelligent AI and customer satisfaction.	Rejected
<b>Fourth hypothesis: We assume that TCPs can positively moderates the relationship between EM and FP.</b>	<b>Partially supported</b>
H4.1. There is positive moderating effect of technological capabilities on the relationship between innovation orientation and profitability.	Rejected
H4.2. There is positive moderating effect of technological capabilities on the relationship between innovation orientation and sustainability.	Accepted
H4.3. There is positive moderating effect of technological capabilities on the relationship between innovation orientation and customer satisfaction.	Accepted
H4.4. There is positive moderating effect of technological capabilities on the relationship between customer intensity and profitability.	Accepted
H4.5. There is positive moderating effect of technological capabilities on the relationship between customer intensity and sustainability.	Accepted
H4.6. There is positive moderating effect of technological capabilities on the relationship between customer intensity and customer satisfaction.	Accepted
H4.7. There is positive moderating effect of technological capabilities on the relationship between risk management and profitability.	Rejected
H4.8. There is positive moderating effect of technological capabilities on the relationship between risk management and sustainability.	Rejected
H4.9. There is positive moderating effect of technological capabilities on the relationship between risk management and customer satisfaction.	Accepted
H4.10. There is positive moderating effect of technological capabilities on the relationship between networking and profitability.	Accepted
H4.11. There is positive moderating effect of technological capabilities on the relationship between networking and sustainability.	Accepted
H4.12. There is positive moderating effect of technological capabilities on the relationship between networking and customer satisfaction.	Accepted

*Own editing by researcher (2024).*

### **5.2.12 Summary of the chapter**

This chapter is concerned with data analysis generated from SME firms operating in Sudan to show the findings for testing the study's hypotheses. For analyzing data different statistical systems and techniques were used in addition to other techniques like data cleaning which was used for detecting and removing errors and inconsistencies to improve the quality of data followed by the validity and reliability to ensure the goodness of measures for the study variables. Then, to identify the characteristics of all variables under study besides, responding firms and respondents' descriptive statistical techniques were used. Furthermore, Person's correlations were also implemented to identify the variables' interrelationships. Finally, path analysis in AMOS v26 was used to test the direct and indirect effects of testing the hypotheses. The coming chapter presents a discussion and conclusion which includes the results, implications, and limitations of the study.

## CHAPTER VI

### DISCUSSION AND CONCLUSION

#### **6.0. Introduction**

In this final chapter, the findings are discussed concerning previous studies, followed by theoretical and managerial implications of findings, followed by limitations and suggestions for future research, and finally an overall conclusion of the study.

#### **6.1 . Discussion**

This section is a discussion of the major findings of the study and relates to the findings of previous studies when possible and will discuss each finding in the next section. This study aimed to investigate the relationship between entrepreneurial marketing and firm performance in SM firms in Sudan. Moreover, our study tries to investigate the moderating effect of technological capabilities on the relationship between entrepreneurial marketing and firm performance.

#### **6.2. The relationship between EM and FP.**

The first objective of this study was to investigate the direct effects of the four components of entrepreneurial marketing (innovation orientation, customer intensity, risk management, and networking) on firm performance of Sudanese SM firms.

Firstly, the findings we have outlined regarding the relationship between innovation orientation and various firm outcomes align with existing research in the field of innovation management and organizational behavior. the following is the discussion of these findings in light of previous studies:

##### **6.2.1. Innovation orientation and firm performance:**

Innovation orientation was found to have a direct positive impact on firm performance. Therefore, confirming that the results of path analysis showed that innovation orientation has positive effect on (sustainability and presumed customer satisfaction), accepting both hypothesis *H1:2*, *H1:3* nonetheless it has negative impact on (profitability) rejecting hypothesis *H1:1* when ( $p>0.05$ ). Similarly, several studies have suggested that there can be a negative relationship between innovation orientation and short-term profitability for instance, research by Hult et al. (2004) found that firms emphasizing innovation may initially experience lower profitability due to the high costs associated with research and development (R&D) and uncertain returns on investment. On the other hand, the positive association between innovation orientation and sustainability has been documented in various studies. Research by Prahalad & Hammond (2002)

emphasized the role of innovation in driving sustainable business practices, such as the development of eco-friendly products and processes. Moreover, studies by Christmann & Taylor (2006) and Hart (1995) have highlighted how firms that prioritize innovation can achieve competitive advantages by integrating sustainability into their business strategies.

Additionally, the positive impact of innovation orientation on customer satisfaction is well-supported in the literature. Numerous studies have highlighted the importance of continuous innovation in meeting evolving customer needs and preferences (Danneels, 2002; Narver & Slater, 1990). For instance, firms that innovate in product design, service delivery, or customer engagement methods are often better positioned to enhance customer satisfaction and loyalty (Lichtenthaler, 2011). However, these significant findings have a strong association with the *qualitative findings* in which the participants have clarified that Innovation orientation is crucial for SMEs in Sudan and is more likely to be incorporated into the EM. Nonetheless, it is beneficial for new ventures to create innovation, and it is particularly valuable to adopt EM as a strategic posture. (Bachmann, et, al. 2021; R. Jones, J. Rowley 2011). Innovation orientation is also recognized as an important success factor for new ventures (Rosenbusch et al., 2011). In conclusion, the findings of our analysis align with previous research, emphasizing the complex and multifaceted nature of the relationship between innovation orientation and various business outcomes. While innovation may initially impact profitability negatively, its positive effects on sustainability and customer satisfaction can contribute to long-term organizational success and competitiveness.

### **6.2.2. Customer intensity and firm performance**

The outcomes in this study showed that customer intensity has a positive and significant effect on firm profitability and presumed customer satisfaction supporting the following hypothesis *H1:4, H1,6* nevertheless it has no effect on sustainability rejecting *H1:5* when ( $p>0.05$ ). Thus, customer intensity indicates partial support to firm performance. Moreover, Rust, et, al. (2004) and Reichheld and Sasser (1990) have demonstrated that loyal customers tend to generate higher revenues over their lifetime, contribute positively to word-of-mouth marketing, and require lower acquisition costs, all of which positively impact profitability. Similarly, one of the *qualitative* participants has supported the above result by saying: *Customer Focus: Entrepreneurial marketing is all about identifying and satisfying customer needs, and*

*entrepreneurs are skilled at listening to their customers and responding to their feedback.” (2nd Mini-FGDs, Male 1)}*

On the other side, while less studied compared to other aspects of customer relationships, some research suggests that high customer intensity may have negative implications for sustainability, particularly if it leads to unsustainable consumption patterns or reliance on environmentally harmful products or practices. Studies by Peattie and Peattie (2003) and Elkington (1997) have highlighted the potential conflict between short-term customer demands and long-term sustainability goals, underscoring the need for businesses to balance customer intensity with sustainable practices. Furthermore, the positive association between customer intensity and customer satisfaction is well-documented in the literature. Higher levels of customer intensity often signify greater engagement, loyalty, and personalized service, which are key drivers of customer satisfaction. Research by Fornell (1992) and Anderson and Sullivan (1993) have emphasized the importance of building strong relationships with customers to enhance satisfaction and foster long-term loyalty, leading to positive business outcomes.

In our *qualitative discussions* and in order to examine the feasibility of customer intensity and leveraging resource we found that all the participants have come together and approved that customer intensity is more important and more feasibility for SMEs, one of the participants described in detail that the main focus for any firm is firm-based customers and to fulfill their needs, wants, and desires. And how to manage and leverage your resources to meet customer or client expectations. Likewise, another participant has also explained why customer intensity is needed for the firm? because a customer is the center of every successful firm that works innovatively to create or deliver products or services to satisfy their needs and wants.

Following some opinion’s quotation respectively: {“*As a marketing specialist, the first step we start with and go forward is the customer. Without the customer, there is no product, there is no market, there's no anything. What your customer need and then think about how to leverage your resources to meet the needs of the customer and to make profit at the same time*”. (Mini-FGDs, Female 2)}, {“*I think customer intensity because I think when you become a customer center, I think you will be more effective than other way of marketing. Because sometimes when we talk about entrepreneurship that creative or innovative way in doing business, or creative way of creating products or services you offer, unless it satisfies the customer needs, I think it will not succeed.*” (Mutual Interview, Female 2)}. In summary, our findings regarding customer intensity



align with previous research, highlighting its significant impact on profitability and customer satisfaction, while also raising concerns about its potential implications for sustainability.

### **6.2.3. Risk management and firm performance**

The outcomes in this study showed that risk management has a negative and no significant effect on (profitability nor sustainability, and nor presumed customer satisfaction), ( $p > 0.05$ ). While the negative relationship between risk management and profitability might seem counterintuitive at first glance, some research suggests that overly conservative risk management strategies can stifle innovation and growth opportunities, thereby impacting profitability. Simkins and Menon (2009) and Dowd (2002) have highlighted the potential trade-offs between risk-taking and profitability, indicating that excessively risk-averse strategies can limit a firm's ability to capitalize on market opportunities and generate higher returns.

The negative association between risk management and sustainability can stem from several factors. Overly cautious risk management practices may hinder organizations from making strategic investments in sustainability initiatives, such as renewable energy adoption or waste reduction programs. Additionally, research by Bansal (2005) and Christmann and Taylor (2001) has suggested that a myopic focus on short-term risk mitigation may detract from long-term sustainability goals, such as environmental stewardship and social responsibility. Finally, the negative impact of risk management on customer satisfaction could arise from the implementation of overly restrictive policies or procedures that impede responsiveness and flexibility in addressing customer needs. Sainaghi and Phillips (2014) and Anderson and Narus (1990) has emphasized the importance of balancing risk management with customer-centric approaches to enhance satisfaction and loyalty. Excessive risk aversion may lead to missed opportunities for innovation and service improvement, ultimately detracting from the overall customer experience.

### **6.2.4. Networking and firm performance**

Networking was found to be a significant determinant of firm performance. The findings from our data analysis regarding the positive and significant relationship between networking as an entrepreneurial marketing dimension and profitability, sustainability, and customer satisfaction supporting the following hypothesis: *H1:10 H1:11, H1:12* align with existing research on the importance of networking in entrepreneurial ventures. Overall, these results consistent with previous studies such as: Research by Johannisson (1988) and Jack et al. (2011) highlights how networking enables entrepreneurs to build strategic alliances, access new markets, and attract

potential customers, ultimately leading to increased sales and profitability. Networking plays a crucial role in driving profitability for entrepreneurial ventures by facilitating access to resources, information, and opportunities. Nonetheless, effective networking can also enhance the visibility and credibility of the venture, leading to stronger customer relationships and higher profitability over time.

For instance, Nahapiet and Ghoshal (1998) and Hite and Hesterly (2001) emphasize the role of social networks in facilitating learning, innovation, and adaptation, which are essential for long-term sustainability. By cultivating strong networks, entrepreneurs can access diverse perspectives, expertise, and support systems that help navigate challenges and sustain growth over the long term. Finally, networking enhances customer satisfaction by enabling entrepreneurs to better understand and meet customer needs through personalized relationships and tailored offerings. Research by Füller et al. (2009) and Kuckertz and Wagner (2010) demonstrates how networking facilitates customer engagement, feedback collection, and co-creation of value, leading to higher levels of satisfaction and loyalty.

This significant of networking on SMEs in Sudan has been supported by one of our participants in *qualitative phase* by saying networking is important for entrepreneurs to expand their businesses and find success, entrepreneurs must have a strong network of partners and contacts. {“*Networking: Entrepreneurs need to create a strong network of connections and partners to help them grow their business and accomplish success.*” (2ndMini-FGDs, Female1)}. Entrepreneurial marketing by networking is used by SME entrepreneurs to develop, enhance, and support all aspects of the marketing activity by networking with customers and potential customers and by industry and business networks (specifically in relation to promotions), word-of-mouth communication, and information-gathering activities (Gilmore, & Carson, 1999). To conclude, our findings emphasize the importance of networking as an entrepreneurial marketing dimension in driving profitability, sustainability, and customer satisfaction. By leveraging networks effectively, entrepreneurs can tap into valuable resources, enhance resilience, and create value for both their ventures and their customers.

### **6.3. The relationship between EM & TCPs**

The second objective in this study was to examine the direct effects of the four components of entrepreneurial marketing components: (innovation orientation, customer intensity, risk management, and networking) on technological capabilities in Sudanese SM firms.

### **6.3.1. Innovation orientation and technological capabilities**

The findings from your data analysis indicating a negative relationship between innovation orientation as an entrepreneurial marketing dimension and remote work capability, as well as artificial intelligence (AI), rejecting both hypothesis H2:1, H2:2 suggest interesting implications for entrepreneurial ventures navigating technological advancements. However, the negative relationship between innovation orientation and remote work capability may stem from several factors. Research by Bloom et al. (2015) and Davenport and Pearlson (1998) suggests that highly innovative organizations often prioritize face-to-face collaboration and serendipitous interactions to foster creativity and idea generation. In such contexts, remote work capabilities, which rely heavily on digital communication and collaboration tools, may be perceived as less conducive to innovation due to potential challenges in maintaining spontaneous exchanges and building cohesive team dynamics.

Similarly, the negative relationship between innovation orientation and AI could reflect concerns about the disruptive impact of AI technologies on traditional innovation processes and business models. Brynjolfsson and McAfee (2014) and Teece (2018) have highlighted the transformative potential of AI in automating routine tasks, optimizing operations, and accelerating decision-making. However, for organizations deeply rooted in innovation, there may be apprehensions about AI's potential to substitute human creativity and intuition, thereby undermining the distinctive value proposition derived from innovative thinking and experimentation.

### **6.3.2. Customer intensity and technological capabilities**

The findings from our data analysis, indicating a positive relationship between customer intensity as an entrepreneurial marketing dimension and remote work capability, as well as artificial intelligence (AI), accepting both hypothesis H2:3, H2:4 suggest intriguing implications for entrepreneurial ventures leveraging customer-centric strategies in the digital age. Thus, the positive relationship between customer intensity and remote work capability may reflect the growing importance of digital communication and collaboration tools in facilitating customer-centric approaches. However, Golden and Veiga (2005) and Allen et al. (2015) suggests that customer-centric organizations often prioritize flexibility and agility in responding to customer needs, which can be facilitated by remote work arrangements. By empowering employees to work

remotely, organizations can enhance responsiveness, accessibility, and efficiency in engaging with customers, leading to improved satisfaction and loyalty.

Likewise, the positive relationship between customer intensity and AI underscores the potential of AI technologies to augment customer-centric practices and enhance business outcomes. Studies by Lee and See (2004) and Parasuraman and Grewal (2000) highlight how AI-powered analytics, chatbots, and personalized recommendation systems can enable organizations to gain deeper insights into customer preferences, anticipate needs, and deliver tailored solutions. These relationships underscore the importance of embracing technological advancements and customer-centric strategies to thrive in today's dynamic business landscape.

### **6.3.3. Risk management and technological capabilities**

The findings from our data analysis, indicating a negative relationship between risk management and remote work capability, as well as artificial intelligence (AI), stating rejection for both hypothesis *H2:5*, *H2:6* suggest interesting implications for SMEs operate in Khartoum that navigating risk and technological advancements. However, overall discussion we found that research by Webster and Martocchio (1992) and Hertel et al. (2005) suggests that risk-averse organizations may perceive remote work arrangements as posing challenges in monitoring and ensuring compliance with organizational policies and procedures. Moreover, uncertainties related to data privacy, information security, and employee productivity may deter risk-averse organizations from embracing remote work, despite its potential benefits for flexibility and cost savings. Moreover, Bughin et al. (2017) and Brynjolfsson and McAfee (2017) highlight how AI-driven automation and decision-making systems can introduce new risks related to algorithmic bias, data integrity, and ethical implications.

### **6.3.4. Networking and technological capabilities**

The results of this study reveal a negative relationship between networking and remote work capability rejecting hypothesis *H2:7* ( $p > 0.05$ ). On the other side, networking has a positive effect on artificial intelligence (AI), accepting hypothesis *H2:8*. The negative relationship between networking and remote work capability may reflect the inherent challenges of maintaining interpersonal connections and collaboration in virtual environments. Research by Golden and Veiga (2005) and Hertel et al. (2005) suggests that networking often relies on face-to-face interactions and social cues to establish trust, rapport, and mutual understanding among stakeholders.

Furthermore, Obstfeld (2005) highlight how networking enables entrepreneurs to access diverse expertise, resources, and opportunities that can drive AI adoption and integration. By fostering connections with experts, mentors, and industry peers, entrepreneurs can gain insights into emerging AI technologies, identify potential applications, and overcome barriers to implementation, ultimately enhancing competitive advantages and organizational capabilities.

#### **6.4. The relationship between technological capabilities and firm performance.**

The third research objectives intent to explain the relationship between the two components of technological capabilities, remote work capability and artificial intelligence and firm performance dimensions, profitability, sustainability and presumed customer satisfaction.

##### **6.4.1 Remote work capability and firm performance**

As first sub-hypothesis of the main relationship between technological capabilities and firm performance. The findings show that there is a significant relationship between remote work capability and profitability accepting hypothesis *H3:1*, and we found that there is no statistical relationship between remote work capability and sustainability as well as presumed customer satisfaction ( $p > 0.05$ ), rejecting both hypothesis *H3:2*, *H3:3*. This indicate that there is no Sudanese SMEs adopt remote work capability to gain sustainability and customer satisfaction. These findings in line with numerous of research, for instance, Bloom et al. (2015) has demonstrated that remote work arrangements enable organizations to save on expenses related to office space, utilities, and commuting allowances, leading to improved financial performance.

The negative effect of remote work capability on unsustainability may stem from potential challenges in managing environmental impacts associated with remote work practices. Houdmont and Kerr (2017) and Hsu et al. (2017) suggests that remote work arrangements, while offering environmental benefits such as reduced commuting emissions, may also lead to increased energy consumption, paper usage, and electronic waste generation in home offices. Relatedly, Allen et al. (2015) highlighted potential drawbacks of remote work arrangements, such as limited face-to-face interactions, delayed response times, and challenges in coordinating team efforts. As a result, customers may perceive decreased responsiveness and quality of service, leading to lower satisfaction levels and potentially impacting long-term loyalty and retention.

##### **6.4.2 Artificial intelligence and firm performance**

The findings of the study, indicate a significant and positive relationship between artificial intelligence (AI) and profitability and sustainability alike, supporting our following hypothesis

*H3:4, H3:5* while the insignificant relationship with customer satisfaction has been discovered to reject the last hypothesis *H3:6* ( $p > 0.05$ ). In the overall relationship between technological capabilities and firm performance, these results offer an interesting insight into the multifaceted impacts of AI on firm performance specially for SMEs operate in Khartoum. Research has shown that AI adoption can positively impact profitability by enhancing operational efficiency, reducing costs, and enabling data-driven decision-making. Whatever, Brynjolfsson and McAfee (2017) and Bughin et al. (2017) have highlighted how AI technologies, such as machine learning algorithms and predictive analytics, can optimize processes, identify revenue opportunities, and drive innovation, ultimately leading to improved financial performance for organizations across various industries. Likewise, researchers have demonstrated how AI applications, such as smart energy management systems, precision agriculture, and supply chain optimization, can contribute to resource efficiency, waste reduction, and environmental conservation (Silva et al. 2020, PwC 2017)

Thus, the insignificant relationship that our study has discover between AI and customer satisfaction come up with number of results in the literature, for instance Acquisti et al. (2015) highlighted potential ethical implications and unintended consequences of AI-driven customer interactions, such as algorithmic biases, privacy breaches, and loss of human touch.

#### **6.5. The moderating effect of TCs on the relationship between EM and FP**

The fourth main objective of this study assumes that technological capabilities moderate the relationship between entrepreneurial marketing and firm performance. However, partial acceptance results have been found for the moderating effect of technological capabilities. The moderating test of technological capabilities for the relationship between entrepreneurial marketing components, innovation orientation, customer intensity, risk management and networking with firm performance dimensions, profitability, sustainability, and presumed customer satisfaction indicates that there was a partially moderating effect of technological capabilities on this relationship. Whatever, the detailed results shows that most of the dimensions in the relationship between entrepreneurial marketing and firm performance have witnessed significant moderating role of technological capabilities. Details clarified as following:

While the majority of studies suggest a positive moderating effect of technological capabilities on the relationship between innovation orientation and profitability, but our study has negative moderating effect in this manner by rejecting hypothesis *H4:1*, when ( $p > 0.05$ ) similarly,

Chesbrough (2010) discusses the concept of "innovation dilemmas," where firms with strong technological capabilities may struggle to adapt to disruptive innovations due to organizational inertia or entrenched business models. Also, Lichtenthaler and Lichtenthaler (2009) found that firms with extensive technological capabilities may face challenges in exploiting radical innovations, as they may be too focused on incremental improvements or constrained by existing processes.

On the other hand, our study has found a significant moderating role of TCPs between innovation orientation and sustainability as well as presumed customer satisfaction declaring the acceptance of two hypothesis *H4:2*, *H4:3*. Moreover, the prevailing view suggests a positive moderating effect of technological capabilities on the relationship between innovation orientation and outcomes such as sustainability and customer satisfaction. For instance, Lichtenthaler and Lichtenthaler (2009) indicate that firms with strong technological capabilities are better equipped to implement and leverage innovative practices to enhance sustainability performance and meet customer expectations. In addition, this result is in line with some quotations in the qualitative discussions: *{“I think technology and co-innovation can help the firm so you can come up with technology solution and its benefits you so you can grow up and evaluate and develop your firm process, and this will lead you to efficiency in the work in the outputs and so on therefore, TCPs is very beneficial” (FGDs, Female 2)}*.

Regarding the moderate effect of technological capabilities between customer intensity and firm performance (profitability, sustainability, and presumed customer satisfaction) the overall result shows that technological capabilities fully moderate the relationship above with full acceptance to the hypothesis *H4:4*, *H4:5*, *H4:6* respectively these results argued the literature which suggests that technological capabilities have a positive moderating effect on the relationship between customer intensity and organizational outcomes such as profitability, sustainability, and customer satisfaction. Ritala et al. (2010) and Zhu et al. (2016) in their Studies demonstrate that firms with strong technological capabilities are better positioned to leverage customer intensity to achieve superior financial performance, environmental stewardship, and customer relationship management.

This study indicate the insignificant moderating role of TCPs between risk management and sustainability rejecting both hypothesis *H4:7*, *H4:8* respectively when ( $p > 0.05$ ) however, our results come up in line with different studies for instance, Chen et al. (2015) and Linnenluecke and

Griffiths (2010) shows that firms with advanced technological capabilities may be less sensitive to certain types of risks or may adopt risk management practices less effectively, leading to reduced profitability and sustainability outcomes. Furthermore, we found that TCPs has significant moderating role between risk management and presumed customer satisfaction SMEs in Sudan supporting the following hypothesis *H4:9*, likewise, LaBrie et al. (2014) show that firms with robust technological resources are better equipped to implement risk management strategies that enhance customer satisfaction by improving service quality, reliability, and responsiveness.

Lastly, Rosenbusch et al. (2011) emphasizes the importance of technological resources in moderating the impact of different organizational activities on firm performance. In the current study we found that TCPs fully support the moderating role between networking and firm performance (profitability, sustainability, and presumed customer satisfaction) in SMEs stating the acceptance of all hypothesis *H4:10*, *H4:11*, *H4: 12* respectively. The qualitative phase of this study has also supported the moderating role of TCPs by saying: *{“Based on my knowledge, I think that technological capabilities can play a moderate role in linking entrepreneurial marketing with firm performance. Because technological capabilities can help firms to develop new products, enhance existing ones, and improve processes, which can result in increased performance. Entrepreneurial marketing, on the other hand, can help firms to identify new market opportunities and create customer value. Therefore, combining these two factors through technological capabilities can lead to better firm performance.” (2nd Mini-FGDs, Male 1)}*.

Furthermore, many researchers have come up with the same significant of moderating role of TCPs, for example, Akter et al. (2019) demonstrate that firms with strong technological capabilities are better positioned to capitalize on networking opportunities to enhance financial performance, environmental issues, and customer relationship management. Finally, we can declare that the positive moderating effect of technological capabilities on the relationship between networking and profitability, sustainability, and customer satisfaction highlights the pivotal role of technology in increasing the benefits of networking activities for organizational success.

## **6.6. Theoretical implications**

The current study has supported the present knowledge on entrepreneurial marketing in SM sectors. Although this study was conducted in Sudan, some general implications can be derived from theoretical literature on this topic that is not localized to the context of the study. From a theoretical perspective, this research provides an understanding of how firms can gain



superior performance with the proposed components of entrepreneurial marketing under the moderating effect of technological capabilities. The first theoretical contribution of this study is the development of a dimension of entrepreneurial marketing constructs through a comprehensive combination perspective; based on survey data of 255 SM firms operating in Sudan, this study carries more weight especially for generalization purposes due to the limited quantitative approach in the existing literature. As a whole, entrepreneurial marketing has important implications for firm performance.

This study contributes to the literature by examining the moderating effect of technological capabilities on the relationship between all four constructs of entrepreneurial marketing (innovation orientation, customer intensity, risk management, and networking) and firm performance, in addition, this study contributes to the literature about the technological capabilities concept based on resource-based view theory. The findings of this study also lead to a better understanding of how technological capabilities moderate the relationship between entrepreneurial marketing strategies and firm performance and can provide insights into the mechanisms through which technology influences organizational outcomes in dynamic market environments. Moreover, we provide a platform for further studies by addressing the field of EM with an integrated insight into research methodology by implementing both qualitative and quantitative approaches.

Furthermore, this implication underscores the importance of contextual factors, such as the unique socio-economic landscape of Sudanese SMEs, in shaping the application and effectiveness of entrepreneurial marketing strategies, contributing to a more nuanced understanding of entrepreneurial behavior in emerging markets.

### **6.7. Managerial implications**

This study offers several managerial implications. First, this study will help decision-makers in Sudanese SMEs to know the importance of entrepreneurial marketing and how entrepreneurial marketing influences the firm performance. Thus, decision-makers should focus on improving their entrepreneurial marketing strategy. Furthermore, this finding emphasizes the significance of integrating entrepreneurial marketing approaches into managerial strategies for SMEs, highlighting its potential to enhance overall firm performance and competitiveness in dynamic market environments.

The current study also aims to provide a framework for the relationship between entrepreneurial marketing and firm performance, and the moderating effects of technological capabilities of SM firms in Sudan. this framework can assist as a practical guide for managers and entrepreneurs by improving their understanding of the mechanism of entrepreneurial marketing strategy in more adaptability. The study underlines the importance for Sudanese entrepreneurs, owners, and managers to focus on developing entrepreneurial behavior and strategic initiatives tailored to their specific context, aiming to bolster organizational performance and gain a sustainable competitive edge in the market.

#### **6.8. Limitations of the study**

Despite the contributions mentioned above, this study encountered several limitations that should be taken to be a path for future study. *Firstly*, this study tests the role of entrepreneurial marketing in SMEs context. *Secondly*, several potential limitations were pertinented to this study which imposes some clarification. One of the limitations is that we faced during the qualitative discussions that the reality of the field of entrepreneurial marketing is still not widely known and still unknown to many managers and entrepreneurs in Sudan, therefore the participants do not have much information or an integrated idea about the field of EM. Moreover, due to personal and technical reasons, some participants were unable to attend and complete the discussions in several interviews so that is why we have implemented multi-qualitative methods such as (Mini focus group discussions, mutual interviews, individual interviews, and focus group discussions).

like the majority of the studies in entrepreneurial marketing literature, this study is cross-sectional. Thus, the limitation could be the potential for common method bias due to the use of cross-sectional data, which may affect the accuracy of the relationships observed among the variables studied. While Rindfleisch et al, (2008) provide conclusive evidence that a cross-sectional design does not necessarily suffer from issues such as common method variance and causal inference. Finally, regarding the ongoing war situation in Sudan, especially in Khartoum, we encountered difficulties reaching the target community of the study to get the sufficient sample size.

## **6.9. Conclusion**

In conclusion, this study has explored the dynamics of entrepreneurial marketing and its impact on firm performance within the context of Sudanese SMEs. Through comprehensive data analysis and discussion, several key findings have emerged. Our analysis revealed significant relationships between various dimensions of entrepreneurial marketing, technological capabilities, and firm performance's indicators such as profitability, sustainability, and customer satisfaction. Notably, we found that technological capabilities play a crucial moderating role in enhancing the effects of entrepreneurial marketing strategies on firm performance, underscoring the importance of integrating technology-driven approaches into marketing initiatives for SMEs in Sudan.

Furthermore, the study highlighted the importance of contextual factors, such as the unique socio-economic landscape of Sudanese SMEs, in shaping the effectiveness of entrepreneurial marketing practices. By addressing these contextual dimensions and leveraging technological resources effectively, entrepreneurs, owners, and managers can develop tailored strategies to enhance organizational performance and gain a competitive advantage in the market.

Furthermore, our analysis explained the complex relationship between the study variables and dimensions/components of entrepreneurial marketing, revealing how each component interacts with technological capabilities to influence firm performance. Specifically, we found that certain dimensions of entrepreneurial marketing, such as networking and innovation orientation, exhibit varying degrees of dependence on technological capabilities, underscoring the importance of aligning technological investments with specific marketing strategies to maximize their impact on organizational outcomes.

Moreover, our findings underline the pivotal role of technological capabilities as a moderator for enhancing the effectiveness of entrepreneurial marketing strategies, serving as a cornerstone for innovation-driven growth and sustainable competitive advantage in Sudanese SMEs. Overall, this study contributes to the growing body of literature on entrepreneurial marketing and provides valuable insights for practitioners, policymakers, and academics seeking to understand and support the development of SMEs in Sudan and similar emerging market contexts.

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**Appendix 1. The profile of the respondents from different Sudanese SMEs.**

<b>No</b>	<b>Participants</b>	<b>Position</b>	<b>Field</b>	<b>Location</b>
1	Mini-FGDs, Female 2	Executive manager	Industry	Khartoum-SDN
<b>2</b>	<b>Mini-FGDs, Male</b>	<b>Marketing Consultant</b>	<b>Industry-Giad motors</b>	<b>Khartoum-SDN</b>
3	Mini-FGDs, Female 1	Associate professor	Service-University of Khartoum	Khartoum-SDN
<b>4</b>	<b>Mutual interview Female 1</b>	<b>Associate professor</b>	<b>Service University of Khartoum</b>	<b>Khartoum-SDN</b>
5	Mutual interview Female 2	Associate professor	Service University of Khartoum	Khartoum-SDN
<b>6</b>	<b>1<sup>st</sup> Interview</b>	<b>An entrepreneur</b>	<b>Service Marketing Agency</b>	<b>Khartoum-SDN</b>
7	2 <sup>nd</sup> Interview	A lecturer	Service University of Kordofan	Khartoum-SDN
<b>8</b>	<b>3<sup>rd</sup> Interview</b>	<b>Associate professor</b>	<b>Service University of Kordofan</b>	<b>Khartoum-SDN</b>
9	FGDs, Female 1	An entrepreneur	Service Delivery	Khartoum-SDN
<b>10</b>	<b>GGDs, Male 1</b>	<b>An entrepreneur</b>	<b>Industry- soap manufactory</b>	<b>Khartoum-SDN</b>
11	FGDs, Male 2	Head of marketing	Service-Sudanese post company	Khartoum-SDN
<b>12</b>	<b>FGDs, Female 2</b>	<b>Brand communication and professional</b>	<b>Service Sudani-telecom</b>	<b>Khartoum-SDN</b>
13	2 <sup>nd</sup> Mini-FGDs, Male 1	Representative of marketing and Sale Unit	Industry Giad motors	Khartoum-SDN
<b>14</b>	<b>2<sup>nd</sup> Mini-FGDs, Female</b>	<b>Customer representative</b>	<b>Matiz factory For groceries</b>	<b>Khartoum-SDN</b>
15	2 <sup>nd</sup> Mini-FGDs, Male 2	Sales manager	Mhameed's furniture, décor and building supplies	Khartoum-SND

## Appendix 2. Trustworthiness Verification: Qualitative Validity.

Measures of Trustworthiness	Methods and verification strategies
<p><b>1. Credibility:</b></p> <ul style="list-style-type: none"> <li>• Adequacy of the research methods and its components.</li>   <li>• Triangulation of data method</li>   <li>• Triangulation of respondent</li>   <li>• Reflective explanation</li> </ul>	<p>The justification for choosing a qualitative approach is explained along with the research's objective and background.  The research methods have investigated what they claim to.  The study explained the general research strategy that was designed to accomplish the study's objectives.  The sampling approach was wisely chosen.</p> <p>The researcher utilized multiple methods for collecting the data.</p> <p>The study employed respondents from different disciplines.</p> <p>The researcher considered the respondents' emergent thinking and impressions during the discussions.</p>
<p><b>2. Transferability:</b></p> <ul style="list-style-type: none"> <li>• How effectively a single study's outcomes from one context will transfer to other contexts</li> </ul>	<p>To broaden the findings' applicability, data were gathered across a variety of contexts and times.  Data from each respondent was used to represent theoretical concepts.</p>
<p><b>3. Dependability:</b></p>	<p>We highlighted the numerous processes outlined in our methodology section and explicitly described our research processes to create an audit trail.  We further increase the transparency of our research process by including tables that explain how the coding scheme was theoretically derived, how it was operationalized, and how it performed.</p>
<p><b>4. Confirmability:</b></p> <ul style="list-style-type: none"> <li>• Reflexive analysis</li> </ul>	<p>The goal is to make sure that the results are independent from the researcher's biases.  The researcher attempted to accurately record our concerns and biases throughout the study process as part of the reflective analysis.</p>

**Appendix 3: Original questionnaire items/statements BEFORE rotation matrix**

<b>Demographics/primary data</b>	
Age, Gender, Qualification, Position, Firm size, and Sector	
<b>Entrepreneurial marketing dimensions (Independent variable)</b>	
<b>1. innovation orientation IO</b>	<ul style="list-style-type: none"> <li>• Being innovative is a competitive advantage for my company.</li> <li>• My company's top management creates an atmosphere that encourages creativity and innovativeness.</li> <li>• We invent new products and services and regularly uses new distribution channels.</li> <li>• We frequently utilize new opportunities in new markets.</li> <li>• Our unit regularly uses new distribution channels.</li> </ul>
<b>2. Customer intensity CI</b>	<ul style="list-style-type: none"> <li>• Our business objectives are driven by customer satisfaction.</li> <li>• We pay close attention to after-sales service.</li> <li>• We ensure that business strategies in our company are driven by the goals of increasing customer value.</li> <li>• We make sure that our company's competitive advantage is based on understanding customers' needs.</li> <li>• We frequently measure our company's customer satisfaction.</li> </ul>
<b>3. Risk management RM</b>	<ul style="list-style-type: none"> <li>• My business would rather accept a risk to pursue an opportunity than miss it altogether.</li> <li>• My business is willing to take risks when we think it will benefit the company.</li> <li>• We encourage people in our company to take risks with new ideas.</li> <li>• We engage in risky investments (e.g., new 3s, facilities, debt, stock options) to stimulate future growth.</li> </ul>
<b>4. Networks</b>	<ul style="list-style-type: none"> <li>• I encourage my team to strive for innovative approaches to creating relationships with customers.</li> <li>• Overall, my firm is competent in dealing with inter-organizational relationships and networks.</li> <li>• In our firm we have a good relationship with each other and an important people in other firms.</li> <li>• We are experienced in dealing with technical partners.</li> </ul>
<b>Technological capabilities dimension (Moderator variable)</b>	
	<ul style="list-style-type: none"> <li>• I have a reliable internet connection at my remote work location.</li> <li>• Our company provide a type of devices for remote work (e.g., laptop, desktop, tablet)</li> </ul>

<p><b>1. Remote Work Capability RWC</b></p>	<ul style="list-style-type: none"> <li>• We have access to the necessary software/tools for remote collaboration and communication (e.g., video conferencing, project management tools)</li> <li>• I have a dedicated workspace at home for remote work.</li> <li>• How comfortable are you with verbal communication (phone, video calls) for work purposes?</li> </ul>
<p><b>2. Artificial Intelligent AI</b></p>	<ul style="list-style-type: none"> <li>• Our organization employ AI technologies in the operation.</li> <li>• We have received enough information about the benefits of using AI technologies.</li> <li>• Using AI technologies will generate a high volume of sales and will increase our market share.</li> <li>• AI technologies will strengthen our relationship and commitment to our business customers.</li> <li>• Using AI applications will generate a high volume of sales and will increase our market share.</li> <li>•</li> </ul>
<p><b>Firm Performance FP dimensions (Dependent variable)</b></p>	
<p><b>1. profitability</b></p>	<ul style="list-style-type: none"> <li>• Our company invest in return on assets as a main resource to maximize profitability.</li> <li>• Our company invest in return of sales as a main resource to maximize profitability.</li> <li>• Our company invest in return on investment as a key resource to maximize profitability.</li> <li>• Our company invest in numerous activities to maximize overall profitability.</li> <li>• Maximizing profitability of the firm encourages shareholder to expand the investments.</li> <li>•</li> </ul>
<p><b>2. Sustainability:</b></p>	<ul style="list-style-type: none"> <li>• We deploy new manufacturing technologies to make manufacturing processes more sustainable,</li> <li>• We give extraordinary importance to the development of green products.</li> <li>• We give an attention the integration of green practices in the supply chain.</li> <li>• We regularly dispose of production waste to reduce environmental pollution.</li> </ul>
<p><b>3. Presumed Customers Satisfaction PCS</b></p>	<ul style="list-style-type: none"> <li>• Our customers are satisfied with the price of their purchased product(s) or services in this company.</li> <li>• Our customers are satisfied with the enquiry service provided by this company.</li> <li>• Our customers are satisfied with the customer service in transactions.</li> <li>• Our customers are satisfied with the service of handling customer dissatisfaction in this company.</li> </ul>

	<ul style="list-style-type: none"><li>• Our customers are satisfied with...We analyze and respond to feedback and comments from customers.</li></ul>
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**Appendix 4. Questionnaire items/statements AFTER rotation matrix**

<b>Entrepreneurial marketing measurements</b>		
<b>Dimension</b>	<b>Measurements Code</b>	<b>Measurements after execution of PCA &amp; rotation matrix</b>
Innovation Orientation <i>See (table 5.4)</i>	CI1	Our business objectives are driven by customer satisfaction.
	IO1	Being innovative is a competitive advantage for my company.
	CI4	We make sure that our company's competitive advantage is based on understanding customers' needs.
	Net3	In our firm we have a good relationship with each other and an important people in other firms.
	Net1	I encourage my team to strive for innovative approaches to creating relationships with customers.
Customer intensity <i>See (table 5.4)</i>	CI5	We frequently measure our company's customer satisfaction.
	Net4	We are experienced in dealing with technical partners.
	CI2	We pay close attention to after-sales service.
Risk management <i>See (table 5.4)</i>	IO3	We invent new products and services and regularly uses new distribution channels.
	RM1	My business would rather accept a risk to pursue an opportunity than miss it altogether.
	RM2	My business is willing to take risks when we think it will benefit the company.
Networking <i>See (table 5.4)</i>	IO2	My company's top management creates an atmosphere that encourages creativity and innovativeness.
	IO5	Our unit regularly uses new distribution channels.
	IO4	We frequently utilize new opportunities in new markets.
<b>Technological capabilities measurements</b>		
Remote work capability <i>Table (5.5)</i>	RWC1	I have a reliable internet connection at my remote work location.
	RWC2	Our company provide a type of devices for remote work (e.g., laptop, desktop, tablet)
	RWC3	We have access to the necessary software/tools for remote collaboration and communication (e.g., video conferencing, project management tools)
Artificial intelligence <i>Table (5.5)</i>	AI1	Our organization employ AI technologies in the operation.
	AI5	Using AI applications will generate a high volume of sales and will increase our market share.
	AI3	Using AI technologies will generate a high volume of sales and will increase our market share.
<b>Firm performance measurements</b>		



Profitability <i>Table (5.6)</i>	PCS5	Our customers are satisfied with... We analyze and respond to feedback and comments from customers.
	PCS2	Our customers are satisfied with the enquiry service provided by this company.
	Su4	We regularly dispose of production waste to reduce environmental pollution.
Sustainability <i>Table (5.6)</i>	Su3	We give an attention the integration of green practices in the supply chain.
	P5	Maximizing profitability of the firm encourages shareholder to expand the investments.
	P1	Our company invest in return on assets as a main resource to maximize profitability.
Presumed customer satisfaction. <i>Table (5.5)</i>	PCS4	Our customers are satisfied with the service of handling customer dissatisfaction in this company.
	PCS1	Our customers are satisfied with the price of their purchased product(s) or services in this company.
	PCS3	Our customers are satisfied with the customer service in transactions.