

CHAPTER I

INTRODUCTION

1.0 Chapter overview

This chapter contains the background of the study, service sector in Sudan, Statement of the Problem, research questions, research objective, then the significance of the study, Moreover the chapter contains a section on the penalization operationalization definitions of key variables used in this study and organization of the study.

1.1. Background of the study

Companies worldwide of different sizes and sectors are operating in an increasingly dynamic, complex and unpredictable environment. This suggests many firms would seek new ways of conducting their business through some kind of innovation to make a profit and stay ahead of the competition. In particular, the new services environment is characterised by intense global competition, rapid technology changes and product variety proliferation. While large services firms can often invest in new technologies and equipment, providing world-class skills, training to their workforce and winning new markets this is hardly the case for small companies (Modgil and Sharma, 2016).

Continuously increasing and complex change in technology innovations, liberalization of markets and increase in consumer's awareness and preferences have introduced new conditions in the market place (Osman & Balal, 2016) . Moreover, the market place is becoming instability and complex competition in the business environment, organizations have only one way to survive must cut out their wasteful and unproductive activities and concentrate resources in their areas of core competence to achieve superior performance. Thus, business firms in continuously searching to increase productivity via reduced process time and cost, and flexibility while satisfying the needs of the customers by fundamentally rethinking the way they do business (Yu *et al.*, 2014).

Strategic orientation is commonly recognized as valuable resource that facilitates the achievement of competitive advantage and greater operational performance (Ho, 2014) while there is a large body of studier on more prominent strategic orientation such as market, service, interaction and learning orientations (Ho, 2014; Cheng ja Sheu, 2017) there is limited knowledge on the extent to which multiple strategic orientations

may simultaneously drive operational performance (Cadogan 2011; Hakala 2011; Laukkanen *et al.*, 2013; Mu and Di Benedetto 2011).

Indeed, multiple evidence from the strategic orientation literature indicates that theoretical development on the adoption of multiple strategic orientations has failed to change up with contemporary business practices. Firstly, Kumar *et al.* (2011) analysis longitudinal data and report that organizations focusing exclusively on a single strategic orientation tend to have poor performance in the long turn. Secondly, Cheng ja Sheu, (2017) demonstrate that market, service, interaction and learning orientations are important and strongest effect on collaborative service innovation performance. Thirdly, Hortinha et al, (2011) demonstrate that market and technology orientations are equally important for exploratory innovation, which in turn leads to superior performance. Furthermore, Benson-Rea *et al.*, (2013) show that increasingly dynamic business environment and strong financial pressure have driven firms to employ multiple business models simultaneously to maximize value creation. This findings is echoed by Laukkanen et al, (2013) who suggest that the multifaceted nature of most markets of today may require that strategies are built on strategic orientations other than market orientation or, more likely, on multiple strategic orientations.

As result, there have been continuous calls from empirical studies to investigate multiple strategic orientations simultaneously (Laukkanen *et al.*, 2013; Kumar Panda, 2014; Tutar, Nart and Bingöl, 2015; Amirkhani and Reza, 2015; Ho, Plewa and Lu, 2016; Deutscher *et al.*, 2016) In particular, there is a further need to investigate the potential interaction effects of different strategic orientations on business performance. According to the resource-based view theory market-based resource such as strategic orientations is often complementary, suggesting that they may interact and produce synergistic effects on operational performance (Ho, 2014; Kozlenkova et al, 2014). In order words, knowing how to harness the synergy between complementary resources can be an important source of competitive advantage. Therefore, this research is exploring the mediating role of service innovation in the relationship between strategic orientation and operational performance as well as explaining the moderating effect of technological capabilities on the relationship between strategic orientation and service innovation in Sudanese services firms. This study attempt to develop a valid and reliable a model and measurement instrument for the study objectives

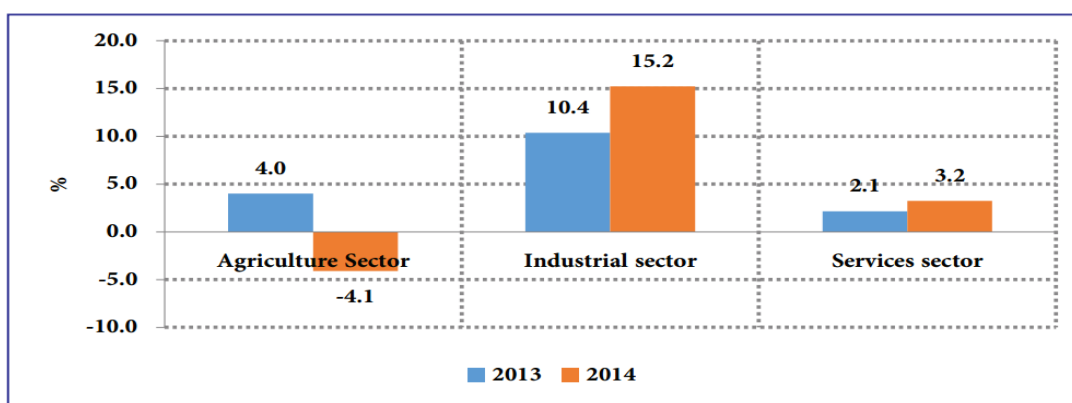
1.2. Service sector in Sudan

The service sector in Sudan consists of health, education, freight, transport, roads and bridges, buildings and construction, communications, and other services. The contribution of this sector to the Gross Domestic Product dropped slightly from 47.9% in 2013 to 47.8% in 2014. These sectors reviewed from annual report of central bank of Sudan 2014 as follows:

Health, institutions comprise local hospitals, family health centers, health clinics, dressing points and primary health units. The education sector in Sudan includes general education and higher education. Transport and Communications, the means of transport in Sudan includes land, sea, river and air, Telecommunication, the quality of services provided is considered as one of the most important means supporting the development and modernization of the telecommunication sector the clear indications is to what extent the network operators meet the required specifications for this reason, a higher degree of competitiveness dominated the telecommunication services market in Sudan, in respect of the supply of the service and its quality, using for this purpose, state of the arts technologies in the area of mobile and fixed telephone services, internet and various banking services. Hotels and Tourism, tourism is considered one of the most important economic sectors, on the global level as general and Sudan in particular. In Sudan, tourism is a foreign exchange source, due to its geographical location and the availability of numerous and diverse touristy and archaeological sites, this reflect the depth and distinctive nature of Sudan culture over the years, which makes it an attractive destination to tourists from all over the world (Annuals report of central bank of Sudan ,2014).

Gross Domestic Product (GDP) is the sum of the market values of final goods and services produced in a country during a specific time period (usually one year), the System of National Accounts (SNA) uses three methods. (1) The product method or value added. According to this method, GDP is the sum of values added in all sectors of the economy within a specific period. It computes the values of final goods and services at current prices excluding the values of intermediate goods and services involved in the production process (Sudan adopts this method). (2) The expenditure method in which GDP is the sum of expenditure for buying final goods and services produced in a country within a specific period of time. (3) The income method, in which GDP is defined as the sum of all incomes derived from providing the factors of production in a country within a specific period of time.

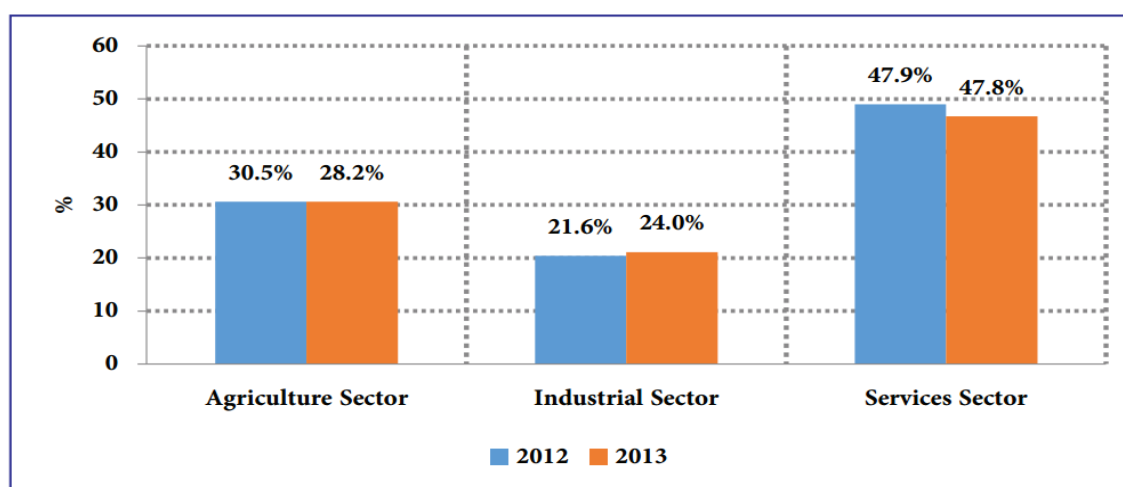
Figure (1.1) Sectors Growth Rate for the years 2013 and 2014



Source: prepared by Annual report of central bank of Sudan (2014)

The service sector growth rate increased from 2.1% in 2013 to 3.2% in 2014. This was due to the increase in the growth rate of its subsectors including building and constructions from 2.0% in 2013 to 5.8% in 2014, according to the subsidy given to the reconstruction and housing fund. The increase growth rate in finance to construction materials, community and social services increased from 1.5% in 2013 to 5.0% in 2014, financial institutions services from 1.1% in 2013 to 4.8% in 2014, government services from 1.1% in 2013 to 4.5% in 2014, tariffs on imports from 0.8% in 2013 to 4.9% in 2014, the remaining sectors have grown by different rates. Except transport and communication which its growth rate dropped from 2.7% in 2013 down to 0.3% in 2014.

Figure (1.2): Contribution of the Economic Sectors to GDP for (2012 - 2013)



Source: prepared by Annual report of central bank of Sudan (2014)

The average contribution of the services sector to GDP in real terms decreased slightly from 47.9% in 2013 to 47.8% in 2014, due to the decreases in size contribution of some sub-sectors in 2014 compared to 2013, The contribution of transport and communications decreased from 10.7% in 2013 to 10.4% in 2014, finance, insurance, real estate and business services from 12.2% in 2013 to 12.1% in 2014, financial institutions from -1.9% in 2013 to -2.0% in 2014, while the contribution of trade, hotels and restaurants increased from 8.7% in 2013 to 8.8% in 2014, government services from 11.3% in 2013 to 11.4% in 2014, The growth rate of building and construction, community and social services, private non-profit services, and import tariffs, remained constant at 3.4%, 1.2%, 0.8% and 1.6% respectively in 2013 and 2014.

In spite of increased growth rate of service sector, but its contribution to gross domestic product is decreasing, therefore, necessitate to studying this sector.

1.3. Statement of the problem

The services companies have underwent significant changes in the last three decades, these changes inculcate the top management approach, and customer anticipates supplier's capabilities and technologies used in process and service development, today global environment and competition put numerous pressures on services companies to achieve world class performance (Modgil and Sharma, 2016). However, there were meager studies in the developing countries in general and in Sudan particularly concerning operational performance in the service sector, therefore, the present investigation was conducted on the operational performance in the Sudanese services sector.

Business organizations in Sudan are faced with intensity competition thereby making their surviving and growth of any organization dependent on their ability to offer greater value to customers (Osman & Balal, 2016).

Furthermore, there were many studies conducted in the field of strategic marketing. Thus, this study addressed the gaps and limitations in the literature to formulate problem statement.

Previous studies regarding strategic orientation, service innovation and operational performance have focused mainly on a specific sector, such as banking (Cheng and Krumwiede 2012, hotel (Zhou et al., 2009), or insurance sectors (Lado and Maydeu Olivares, 2001). This study covers multiple service sectors including hotel,

post, banking, education, communication and insurance but the technological capabilities applied in two sectors communications and banking.

This study will examine the operational performance on service sector, Most of the previous researches related to the operational performance such as (Bruque-Cámara, Moyano-Fuentes and Maqueira-Marín, 2016; Modgil and Sharma, 2016 ; Yu et al., 2014) investigated the constructs, flexibility, delivery, quality and cost) as dependent variables on manufacturing firms, while the current study applies this variables on service firms, which represents a gap between this study and the previous studies.

This study will explore the relationship between strategic orientation and operational performance, most of the previous researches have studied the components of strategic orientation on performance, as a customer orientation, competitor orientation, entrepreneurial orientation and technology orientation, (Laukkanen et al., 2013; Kumar Panda, 2014; Tutar, Nart and Bingöl, 2015; Amirkhani and Reza, 2015; Ho, Plewa and Lu, 2016; Deutscher et al., 2016) this study focuses on four types of strategic orientation namely, market orientation, service orientation, interaction orientation and learning orientation as dimension of strategic orientation. Market orientation is considered because it is an important and involves obtaining and using market information, thus, should be important for operational performance (Cheng & Sheu, 2017).Service orientation is examined because it applicable in service-related business activities and focus on synergistic effects that are important in operational performance (Oliveira and Roth, 2012).Interaction orientation is studied because it is creating and sustaining business partner loyalty through building partner satisfaction, which should be important for operational performance (Foss, Laursen, & Pedersen, 2011). Learning orientation deserves consideration because it attempts to create and use new knowledge to develop new products/services, which should also be critical for operational performance (Melton and Hartline, 2013).

Besides exploring the relationships between strategic orientation and operational performance, this study also investigates the relationships between strategic orientation dimensions and service innovation namely; incremental innovation and radical innovation. few studies have looking at the relationship between strategic orientation and service innovation (Cheng and Krumwiede 2012) studied the impact of market orientation and service innovation (Obeidat, 2016) examined the relationship between strategic orientation and innovation, this study difference from the previous studies on the several ways, previous studies only analyse the direct effect of strategic orientation

with one dimension to investigation service innovation while this study investigates four strategic orientations simultaneously, namely market, service, interaction and learning orientations.

Besides exploring the relationships between strategic orientation and service innovation, this study will examine the relationships between service innovation and operational performance. on the other hand, there are some previous studies which investigated the relationship between service innovation and performance, such as (Engen and Holen, 2014) investigated the relationship between service innovation and competences in service firms, in addition (Roach, Ryman and White, 2014) examined the relationship between service innovation and market orientation. There are little known previous studies that investigated the relationship between service innovation (incremental innovation and radical innovation) and operational performance (flexibility, quality, delivery and cost). Hence, this study was designed to address the relationships between service innovation and operational performance in service sector in Sudan because service innovation is creating new idea to developing product/services that should be important to operational performance (Cheng and Krumwiede 2012).

Besides exploring the relationship between service innovation and operational performance, this study will examining the mediating role of service innovation between strategic orientation and operational performance in Sudanese service firms, because the resource based view theory (RBV) indicated that the service innovation is intangible resource achieving superior performance (Cheng and Krumwiede 2012) and there are few previous studies considered the service innovation as a mediating variables such as (Mahmoud et al., 2016) considered that the positive mediating role of innovation on relationship between market orientation, learning orientation and business performance. Products with a higher degree of innovation are approved to have higher sales and financial performance, leading to greater overall business performance (Zhou et al., 2005). service firms could also achieve greater business performance even through less innovative services (Cheng and Krumwiede 2012).In this way, different types of service innovation should be studied in greater depth to see how they mediate the strategic orientation operational performance relationship. To our knowledge, there have been few, if any, attempts to examine how different types of service innovations play this mediating role in the service context.

Besides investigating the mediating role of service innovation between strategic orientation and operational performance, this study will examine the

moderating effect of technological capabilities in relationship between strategic orientation and service innovation because technological capabilities are a key elements in the use of knowledge and technology as requirements to achieve innovations within the firm (Business, 2014). The moderating effect of technological capabilities on the relationship between strategic orientation and innovation is important because the characteristics of this kind of capabilities (that promote improvement and innovation) can enhance the positive effect of the strategic orientation on firm innovation. This study highlights the need for a complementary interaction between these technological capabilities and the strategic orientation firm (José and Ortega, 2010).

Scantly, previous studies have taken the technological capabilities as a moderating variable (José and Ortega, 2010; Ferna and Garcí, 2012; Haeussler, Patzelt and Zahra, 2012; Srivastava, Gnyawali and Hat, 2015) who were investigated the moderating effect of technological capabilities on the relationship between strategic orientation components in separate constructions and buildings, there is no previous research which investigated the technological capabilities as a moderator of the relationship between strategic orientation constructions (market orientation, service orientation, interaction orientation and learning orientation) and service innovation, in addition (Wu, 2014) pointed out that various variables may moderate the links between strategic orientation and innovation.

Thus, this research addresses the gaps and limitations in the literature by investigating the link between strategic orientation, operational performance, service innovation and technological capabilities. Generally this research will examine the mediating role of service innovation between strategic orientation and operational performance. In addition, the research will investigate the moderating effect of technological capabilities on the relationship between strategic orientation and service innovation in the service sector in Sudan.

1.4. Research Questions

The main question of this research is: Does technological capabilities moderates the exchange of strategic orientation and service innovation to enhance operational performance in Sudanese services firms? This question generated seven research questions to attain the aims of the study as follows:

1. What is the extent of strategic orientation among the service firms?

2. What is the extent of operational performance among the service firms?
3. To what extent strategic orientation can contribute to operational performance?
4. What is the relationship between strategic orientation and service innovation?
5. To what extent service innovation can contribute to operational performance?
6. Does service innovation mediate the relationship between strategic orientation and operational performance?
7. Do technological capabilities moderate the relationship between strategic orientation and service innovation?

1.5. Research Objectives

The general objective of this research is to provide specific answers about the question of whether technological capabilities moderate the exchange of strategic orientation and service innovation to enhance operational performance in Sudanese services firms?

The specific objectives are:

1. To explain the extent level of strategic orientation components.
2. To explain the extent level of operational performance components.
3. To examine the relationship between strategic orientation and operational performance.
4. To investigate the relationship between strategic orientation and service innovation.
5. To identify the relationship between service innovation and operational performance.
6. To assess the effect of service innovation as a mediate variable between strategic orientation and operational performance.
7. Find out the possibility of technological capabilities as a moderator variable between strategic orientation and service innovation.

1.6. Significance of the study

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

1.6.1. Theoretical significance

1. Due to the little agreement in literature which constitute strategic orientation remains conceptualized only at the level of abstraction in existing models, thus, this study will

contribute to knowledge about some of strategic orientation (market, service, interaction and learning orientations).

2. This study is trying to fill the gap through the process of mediating service innovation between strategic orientation and operational performance dimensions.

3. This study is an attempt to build a conceptual framework that will contribute to theories and practice in the field of strategic management.

4. The study will provide scientific guidelines and advices through which the services firms operating in Sudan to achieve the efficiency and the effectiveness.

5. The research will investigate the mediating role of service innovation on relationship between strategic orientation and operational performance. This will contribute to the theory of resource based view about how attitudes can mediate the relationship between strategic orientation and operational performance by which converted into competitive advantages for the service firms.

6. The research will investigate the moderating effect of technological capabilities on relationship between strategic orientation and service innovation. This study can add to the knowledge about how the technological capabilities play a moderating role between strategic orientation and service innovation.

1.6.2. Practical significance

Several practical contributions are expected to emerge from the current research representing in.

1. This study will make the managers aware about the change and complexity of business environment.

2. The study can advance manager's understanding about the importance of strategic orientation to operational performance.

3. The results of this study are expected to help managers of services firms to recognize the importance of service innovation enhancing operational performance.

4. The study aim to provide a framework for the relationship of strategic orientation, operational performance, service innovation, and mediating role of service innovation and moderating effects of technological capabilities of service firms in Sudan this framework can help as a practical guide for managers by enhancing their understanding of the mechanism of strategic orientation to result in more adaptability.

1.7. Scope of the Study

This study focuses on large Sudanese services firms. The choice of the large services firms based on many logical reasons; firstly, this sector has a major impact on Sudan economy. This study limits itself to strategic orientation of service sector in Sudan and operational performance during the period of 2015-2018. It focused on the service innovation (incremental and radical) variables and the impact of technological capabilities on the relationship between strategic orientation and operational performance.

1.8. Definition of key terms

The definitions of the key variables are detailed as follows:

- 1. Strategic orientation:** Is the principle underlying the activities, processes, and strategic directions that a firm undertakes to create behaviors necessary for achieving superior performance, including market orientation, service orientation, interaction orientation and learning orientation (Ho, Plewa and Lu, 2016).
- 2. Market orientation:** Refers to ‘the organizational culture that most effectively and efficiently creates the necessary behavior for the creation of superior value for buyers and thus, continuous superior performance for the business, (Cheng & Sheu, 2017).
- 3. Service orientation:** Refers to ‘an organization-wide embracement of a basic set of relatively enduring organizational policies, practices, and procedures intended to support and reward service-giving behaviors that create and deliver service excellence, (Cheng & Sheu, 2017)
- 4. Interaction orientation:** Refers to ‘a firm’s ability to interact with its individual customers and to take advantage of information obtained from them through successive interactions to achieve profitable customer relationships, (Cheng & Sheu, 2017).
- 5. Learning orientation:** Refers to ‘organization-wide activity of creating and using knowledge to enhance competitive advantage (Cheng & Sheu, 2017).
- 6. Operational performance:** Operational performance is a source of competitive advantage for the enterprise to differentiate itself in the eyes of the customers from its competitors by operating at a lower cost and hence at a greater profit, including flexibility, delivery, duality and cost (Chavez et al., 2015).
- 7. Flexibility:** Is the ability of the company to adopt and respond to delivery or change, to give customers individual treatment, or to introduce new services, (Chavez et al., 2015)

8. Delivery: Defined as the ability to deliver services at the specified time, (Chavez et al., 2015).

9. Quality: Is the degree to which products and services meet service specifications, (Chavez et al., 2015).

10. Cost: Defined as doing things cheaply, producing goods at a cost that enables them to be priced appropriately for the market while still allowing a return to the organization, (Chavez et al., 2015).

11. Service innovation: Defined as a new idea set of services, procedures or changes that influences or alters a routine, including incremental innovation and radical innovation(Lai, Yusof and Kamal, 2016).

12. Incremental innovation: Incremental service innovation is related to customer-led strategies that focus on manifest needs, (Cheng and Krumwiede, 2012).

13. Radical innovation: Radical service innovation is fundamental changes in new services that represent revolutionary changes in service benefits, (Cheng and Krumwiede, 2012).

14. Technological capabilities: Is the ability to perform any relevant technical function or volume activity within the firm including the ability to develop new products/services and processes and to operate facilities effectively (José and Ortega, 2010).

1.9. Organization of the Study

The research is divided into six chapters as following: **Chapter One**, Introduction: This chapter overview, Background of the study, the research problem, research questions, the objectives, the significance, and definition of terms and the organization of the study. **Chapter Two**, Literature Review: presents the theoretical perspectives of study 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 provides discussion of research implications, the limitations, and directions for future research.

CHAPTER II

LITRATURE REVIEW

2.0. Introduction

The literature review sheds light on the areas of strategic orientation, operational performance, service innovation and technological capabilities. The discussion of each is conducted by the review of relevant literature and by presenting the theory of resource based view that will be used to explain the relationship between strategic orientation, operational performance and service innovation. It will also explain the mediating role of service innovation on the relationship between strategic orientation and operational performance in addition to testing the moderating effect of technological capabilities on the relationship between strategic orientation and service innovation.

2.1. Strategic orientation (SO)

This section explains the first concept of this study strategic orientation (SO) which represents the independent variable, including the definitions and the dimensions of SO.

SO is related to the decisions that businesses make to achieve superior performance. Strategic orientation is an organization's direction for reaching a suitable behavior in order to attain superior performance (Al and Province, 2016). SO is a broad concept that is used in the field of strategic management research, entrepreneurship and marketing. An organization's strategic orientation reflects implemented strategic direction by the organization in order to create better behavior and more optimized business performance. On the other hand, some research indicates that strategic orientations do not automatically lead to better performance, but following certain behaviors them influence on firm performance (Al and Province, 2016).

There exist different strategic orientations that reflect the focus of the firm's value creating activities and prior research suggests that market orientation is important ones (Deutscher et al., 2016). Despite of previous studies have tested how strategic orientation can be aligned with factors either outside the firm or inside the firm to obtain superior performance, but limited research has focused on both external factors and internal factors that affect strategic orientation on performance.

Al and Province, (2016) discuss that strategic orientation as an critical component of profitability for both manufacturing and service companies, such that an orientation influences business, While, (Scott-Kennel and Giroud, 2015) argue that strategic orientation refers to how an organization uses strategy to adapt and/or change aspects of its environment for a more favorable alignment. In other words, it is how an organization uses strategy to adapt or change aspects of its environment for a more favorable alignment SO is also known as strategic fit.

Therefore the organizational alignment can be achieved through the right strategic orientation so that “it reflects the competitive strategy implemented by a firm to create adapted performance.

Ho, Plewa and Lu (2016). Defined SO as a principle underlying the activities, processes, and strategic directions that a firm undertakes to create behaviors necessary for achieving superior performance.

In literature a number of studies were defined the strategic orientation concept, the table (2-1) below show that.

Table (2-1) SO definition

Authors	Definitions
Mu & Di Benedetto (2011).	Is the strategic directions implemented by a firm to create the proper behaviors for the continuous superior performance of the business it reflects a firm's perspective or the way of how to do the business; on other hand it is the firm philosophy about the business.
Liu and Fu, (2011).	Define strategic orientation is an integrative concept which integrates marketing orientation, entrepreneurial orientation and learning orientation.
Menguc and Auh, (2005)	Describes strategic orientation as directions to firms to plan and implement strategies to achieve superior firm performance.
(Kiiru, (2015)	Refers to the processes, practices, principles and decision making styles that guide enterprises' activities, especially in the context of the external environment and corporate development to substantially influence competitive advantage and competitive advantage of enterprises.
Deshpande et al, (2013)	Reflects it as direction of firm's strategy that performed by the firm to create a good behavior for better and a permanent performance of the business.
Hakala, (2011)	Definition which is the strategic directions implemented by a firm to create the proper behaviors for the continuous superior performance of the business.
Gatignon & Xuereb, (1997)	Reverse strategic orientations are principles that direct and influence the activities of a firm and generate the behaviors intended to ensure its viability and performance.
Noble, Sinha, & Kumar, (2002)	Describes strategic orientation as the firm's philosophy of how to conduct business through a deeply rooted set of values and beliefs that guide the firm's attempts to achieve superior performance by specifying marketplace priorities that, in turn, drive a firm's marketing and strategy-making activities.
Kumar et al., (2011).	Strategic orientation of the firm portrays its operational, marketing and entrepreneurial posture. That is how a firm achieves its goals in markets by taking risk, investing in innovation, becoming proactive and developing future-oriented foresight.
Amirkhani and Reza, (2015).	Strategic orientations are principles that affect the firm's marketing activities and strategies composition and can be used to establish appropriate behavior that leads to better performance,
Kim et al., (2013).	Strategic orientation is critical to the management of the firms since it helps a firm determine the "focus of value creation, and how value is to become a resource from which to develop and adapt products.

Source: by researcher from the previous studies 2018

2.1.1. Dimensions of SO

Previous studies used different approaches to specifying and classifying strategic orientation which basically used to identify the firm's opportunities and threats and to understanding the business environmental changes of the firms.

Many empirical studies proposed and tested dimensions of SO but some studies have focused predominantly on the relationship between a single strategic orientation and firm performance (e.g., Griffith, Kiessling and Dabic, 2012; Storey and Hughes, 2013; Fernández • Pérez, José Verdú • Jóver and Benitez • Amado, 2013; Aghajari and Senin, 2014) . However, scholars recently suggest that organizations focusing exclusively on a single strategic orientation tend to have poor performance in the long run (Kumar et al., 2011). Therefore, firms should strive for a balanced mix of strategic orientations (Hakala and Kohtmaki 2011). Moreover, recent evidence suggests that firms rarely focus on a single strategic orientation (Hortinha et al. 2011). In fact, firms employ multi dimensions simultaneously to maximize value creation (Benson-Rea et al. 2013). This approach of applying multi dimensions and strategies may be captured in the firm's emphasis on a mix of strategic orientations. These empirical observations are supported by resource-based view, which suggests that firms with limited resources may derive competitive advantage from combining certain resource (Yang and Kang 2008) such as strategic orientations. Despite several calls from scholars to investigate multiple strategic orientations simultaneously (Cadogan 2012; Grinstein 2008; Mu and Di Benedetto 2011), this study understanding of how strategic orientations affect operational performance (when multiple strategic orientations are present) is still incomplete.

The result is of high relevance to managers, as an understanding of the relative importance of strategic orientations helps to priorities which strategic orientations to invest in, especially for firms with limited resources.

Research on multiple strategic orientations is fragmented. Although more studies examining multiple strategic orientations have emerged in recent years, researchers still have not reached an agreement on which strategic orientations firms should focus on. Furthermore, Hakala (2011) emphasizes the need to study the interplay and effects of three or more orientations simultaneously.

The resource-based view (RBV) postulates the importance of resources and capabilities to obtain competitive advantages as an end to a greater performance

(Barney, 1991). The RBV holds that competitive advantage comes from the firm's own resources and capabilities, rather than from product market activities and, as a result, RBV is able to account for differences in firm performance not explained by industry factors. At its core the RBV focuses on identifying and determining the value of firm resources and capabilities.

In literature the RBV approach defines resources as firm-specific assets, capabilities and organizational processes used by the firm to apply its strategy. From Dynamic capability point of view Teece, (1997) suggests that resources are developed through specialized routines that create different competencies. Therefore within these theories a summary of several researchers on SO have been suggested and presented in table (2.2).

Table (2.2): Dimensions of SO

Authors	SO dimensions
Cheng & Sheu, (2017)	Market orientation, service orientation, interaction orientation, and learning orientation.
Brower and Rowe, (2017)	Customer orientation, competitor orientation, interfunctional coordination orientation, and shareholder orientation.
Mu et al., (2016),	Market Orientation and Entrepreneurial Orientation.
Ho, Plewa and Lu, (2016)	Market orientation, Entrepreneurial orientation, Relationship orientation, and Technology orientation.
Campbell and Park, (2017)	Social capital, Entrepreneurial Orientation, Intellectual Capital, Enlightened Self-interest, Stakeholder Saliency, In-group Tie, and Corporate Social Responsibility
Deutscher et al. (2016)	Entrepreneurial orientation, market orientation, and learning orientation.
Amirkhani and Reza (2015)	Market Orientation, Technology Orientation, and Orientation to reduce the cost.
Kiiru (2015)	Customer-orientation, Competitor-orientation.
Mardanlo (2015)	Competitor orientation, Cost-orientation, and Innovation orientation.
Farati (2015)	Customer Orientation, Technological Orientation, Inter-functional Orientation and Competitor Orientation.
Al-Ansaari, Bederr and Chen (2015)	Technology orientation, alliance orientation and market orientation.
Hermawati et al. (2017)	Market orientation and innovation orientation.
Ejdys (2015)	Marketing orientation, learning orientation, and entrepreneurial orientation.
Tutar, Nart and Bingöl, (2015)	Market Orientation, Entrepreneurial Orientation, Technology Orientation.
Scott-Kennel and Giroud, (2015)	Global orientation and local orientation.
(Kumar Panda, 2014)	Market orientation, technology orientation, and entrepreneurial orientation.
Laukkanen et al. (2013)	Learning orientation, Entrepreneurial orientation, Market orientation, and Brand orientation.
Ritala et al. (2013)	Customer relationship orientation, entrepreneurial orientation, and technology orientation.
Sørensen and Madsen, (2012)	International orientation and market orientation.
Theodosiou, Kehagias and Katsikea, (2012)	Customer orientation, Competitor orientation, Internal/cost orientation and Innovation orientation.

Source: by researcher from the previous studies 2018

Based on the table (2.2) above, scholars have generally operationalized strategic orientation as a multi-component construct. Therefore in arranging to develop an integrative strategic orientation, this research follows the construct of strategic orientation that developed by (Oliveira and Roth, 2012 ; Cheng and Krumwiede, 2012) have strongly built on this original work. In addition this study focuses on resources and capabilities which are systematic, thoughtful, in strategic-oriented firms. Thus this study proposed four components; market, service, interaction, and learning orientations for strategic orientation construct as adopted by (Cheng and Sheu, 2017) .

A combination that is rarely investigated in previous literature. These are chosen because they represent a comprehensive set of strategic orientations crucial to the success of the firm. Market orientation is considered because it is an important and involves obtaining and using market information, thus, should be important for operational performance (Cheng & Sheu, 2017).Service orientation is examined because it applicable in service-related business activities and focus on synergistic effects that are important in operational performance (Oliveira and Roth, 2012).Interaction orientation is important because it is creating and sustaining business partner loyalty through building partner satisfaction, which should be important for firms operational performance (Foss, Laursen, & Pedersen, 2011). Finally, Learning orientation is attempts to create and use new knowledge to develop new products/services, which should also be critical for operational performance (Melton and Hartline, 2013). The following sections will briefly describe each strategic orientation used in this study.

2.1.1.1 Market orientation (MO)

For organizations to achieve superior competitive advantage, organizations must provide customers with products and services with superior value in comparison with its competitors. Market orientation (MO) is defined as “the organization culture that most effectively and efficiently creates the necessary behaviors for the creation of superior value for buyers and, thus, continuous superior performance for the business (Al and Province, 2016) It requires a company to continually adapt its business system to changing factors of the environment and new market opportunities.

Market orientation is a centrally important idea on marketing in a growing number of fields. Although the concept of market orientation has received considerable attention, the way organizations can develop greater market orientation has received little

attention. Research in strategic management has identified the characteristics of market-oriented organizations, so the market orientation is a foundation of marketing and is increasingly important in other fields such as strategic management. However, how organizations change to become more market-oriented has received less attention (Altindag & Zehir, 2012).

MO is a well-established construct in the strategic orientation literature which has been studied extensively in terms of its nature, structure and outcomes (Wan, 2013). Market orientation construct is at the heart of modern marketing and a frequently studied research subject. MO is defined as a culture that first, places top priority on the profitable creation and maintenance of superior customer value while being mindful of the interests of other key stakeholders; and second, provides norms for behavior regarding the organizational development of and responsiveness to market information (Hermawati et al., 2017). Furthermore, as Narver and Slater (2004) argue, because of its external emphasis on developing information about customers and competitors, the market-driven business is well positioned to anticipate the evolving needs of its customers and respond to these through the introduction of innovative products and services. Market orientation exists on a continuum characterized by the degree to which firms acquire, disseminate and respond to information collected from customers, channels and competitors (Jaworski and Kohli, 1993). Market orientation enhances a firm's capacity to adjust its operations to its target markets. By gathering relevant information from the environment and disseminating it, the firm increases its chances of developing and implementing strategies that are adapted to the opportunities and threats in the markets (Amirkhani and Reza, 2015). Narver & Slater, (2004) also refers market orientation to 'the organizational culture that most effectively and efficiently creates the necessary behavior for the creation of superior value for buyers and thus, continuous superior performance for the business. Market orientation embodies the classic marketing principle that states that firms need to stay close to their customers. It emphasizes the need for the entire organization to generate, disseminate, and respond to information related to customer needs, preferences, and the competition (Jaworski & Kohli, 1993). More specifically, it is defined as "the degree to which the business unit obtains and uses information from customers, develops a strategy which will meet customer needs, and implements that strategy by being responsive to customers' needs and wants (Al-Ansaari, Bederr and Chen, 2015).

2.1.1.2. Services orientation

The definition of services is not fully consistent among operations and service management scholars; there are a number of attributes of services that are agreed upon by much of the academic community. These include intangibility, inseparability of production and consumption, heterogeneity, perishability, and inability to be stored in inventory. according to (Oliveira and Roth, 2012) A service is a time-perishable, intangible experience performed for a customer acting in the role of a co-producer. Vargo and Lusch (2004) define services as the application of specialized competencies (knowledge and skills) through deeds, processes, and performances for the benefit of another entity or the entity itself.

Cheng & Sheu, (2017) defined service orientation as an organization-wide embracement of a basic set of relatively enduring organizational policies, practices, and procedures intended to support and reward service-giving behaviors that create and deliver service excellence.

Yoon et al. (2007) have conceptualized service orientation as employees' attitudes and actions that highly value the creation and delivery of excellent services. Fitzsimmons and Fitzsimmons (2001) refer service orientation to individual predispositions and an inclination to provide service. Service orientation also is conceptualized as a contextual feature that would have top-down influences on employee service performance and service quality, which will ultimately impact customer satisfaction (Crespi et al. 2006).

2.1.1.3. Interaction orientation

Interaction orientation refers to a firm's ability to interact with its individual customers and to take advantage of information obtained from them through successive interactions to achieve profitable customer relationships (Cheng & Sheu, 2017). There is a consistent focus on customers in the entrepreneurship and marketing literature stressing that satisfied customers and improved customer service can lead to superior firm performance. The 'customer' concept is concerned with the realization of superior customer value starting with the individual customer. (Wan, 2013) argue that the customer is an indispensable entity and interaction orientation is based on "the belief that prescribes the unit of analysis of every marketing action and reaction to be the individual customer". With this in mind, this thesis chose to utilize this relatively new

concept introduced by (Wan, 2013) who argue that interaction orientation has a strong relationship with customer performance. Interaction orientation is supposed to reflect the goodwill and value generated in one-to-one interaction between the customer and firm that can lead to superior firm performance.

Interaction orientation is a composite construct, and includes four dimensions:

Customer concept: the belief that take individual customer as the unit of analysis of every marketing action and reaction.

Interaction response capacity: the degree that the firm offers successive products, services, and experiences to each customer by dynamically incorporating feedback from previous behavioral responses of that specific customer and of other customers collectively (Cheng & Sheu, 2017).

Customer empowerment: the extent that a firm provides its customers avenues to connect with the firm and actively shape the nature of transactions ,or to connect and collaborate with the other customers by sharing information and ideas about its products and policies. Customer value management: the extent that the firm can define and dynamically measure individual customer value and use it as its guiding metric for marketing resource allocation decisions (Foss, Laursen, & Pedersen, 2011).

2.1.1.4. Learning orientation (LO)

Learning orientation (LO) refers to organization-wide activity of creating and using knowledge to enhance competitive advantage (Cheng & Sheu, 2017).

LO is the creation and utilization of knowledge and adaptation of organization for learning processes (Rhee, Park, Lee, 2010). One of the most important features of learning oriented firms is their ability to predict environmental and market changes and perform the necessary changes if required (Ejdys, 2015). Learning orientation influences the inclination of a firm to create and utilize all kinds of knowledge. It moreover affects the degree to which firms are likely to promote generative learning as a core competence (Sinkula et al., 1997). Firms with an enhanced learning orientation are more willing to question deep-rooted assumptions about their fundamental operating philosophies (Slater and Narver, 1995) and encourage, or even require, employees to constantly question the organizational norms that guide their market information processing activities and organizational actions (Laukkanen et al., 2013) defines organizational learning as the development of knowledge or insights that have the potential to influence behavior. One of the most important characteristics of learning

oriented firms is that they are able to predict environmental and market changes and perform the necessary changes if required (Calantone et al., 2002). Firms with a strong inclination toward learning are often willing to fundamentally change the operating philosophies guiding the behaviors of their employees. Such firms, in effect, drive the market rather than being driven by it (Day, 1994). This in turn is expected to facilitate higher order learning leading to technologically driven shifts in product paradigms and ultimately superior performance (in the long run). Firms with strong learning orientation are more likely to engage in a much broader array of innovative activities. This increases the productivity of all employees and functions within the organization, enhancing the creation of more effective organizational structures and the improved use of technology to lower administrative costs (Laukkanen et al., 2013).

Performance is a crucial issue for all individuals and organizations. Concerning business performance, a handful of empirical research in strategic orientation have emphasized that the role of strategic orientation on different type of business performance such as organizational performance, competitive advantages, operational performance, marketing relationship, effectiveness and efficiency. This study focus on operational performance which is discuss in following part.

2.2. Operational performances (OP) of resource-based view (RBV)

This part discusses the second concept of this study operational performance which represents the dependent variable, including the concept, the definitions and the dimensions of operational performance.

Competition is at the core of the success or failure of firms, competition determines the appropriateness of a firm's activities that can contribute to its performance, competitive advantage grows fundamentally out of value a firm is able to create for its buyers that exceeds the firm's cost of creating it. Value is what buyers are willing to pay, and superior value stems from offering lower prices than competitors for equivalent benefits or providing unique benefits that more than offset a higher price. There are two basic types of competitive advantage: cost leadership and differentiation (Kenyon, Meixell and Westfall, 2016). The framework of RBV states that the resources forming the bases of one's competitive advantage should be valuable, rare, imperfectly imitable and sustainable (Barney, 1991). 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

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.

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.

2.2.1. OP Definition

Operational performance is a source of competitive advantage for the enterprise to differentiate itself in the eyes of the customers from its competitors by operating at a lower cost and hence at a greater profit (Chavez *et al.*, 2015).

OP is a strategic objective of firms which is difficult to achieve due to the competitive challenges in the knowledge economy. OP helps in achieving the added value of the organization and also is guarantees its survival and sustainability. Some characteristics that include uncommonness, invaluable and indispensable human resources, cordial customer relationships and system, are what give organization competitive advantage that result in sustainable competitive position (Tarek *et al*, 2017).

2.2.2. OP dimensions

Following the conceptualization of earlier studies, there are many previous studies have deals operational performance with multiple dimensions. Moreover , most of the previous studies, discussed one components of operational performance (e.g., Mohan and Sequeira, 2016; Cheng, Chaudhuri and Farooq, 2016; Feng et al., 2013; Prajogo, Huo and Han, 2012;Peng, Schroeder and Shah, 2011; Iyer, 2011). While, many empirical studies proposed and tested multi dimensions of OP table (2.3) provides a brief overview the operational performance dimensions.

Table (2.3): OP dimensions

Authors	Operational performance
Bruque-Cámara, Moyano-Fuentes and Maqueira-Marín (2016)	Flexibility, Delivery.
Kenyon, Meixell and Westfall (2016)	Customer Order lead time, Manufacturing cycle time, On – time delivery rate, Operational equipment effectiveness.
Cheng, Chaudhuri and Farooq (2016)	networked plant
Chavez et al. (2015)	Flexibility, Delivery, quality, Cost.
Modgil and Sharma (2016)	Cargo Safety, Supply Chain Visibility, Supply Chain Efficiency, Supply Chain Resilience.
Yu et al. (2014)	Flexibility, Delivery, Product Quality, Production Cost.
Modgil and Sharma (2016)	Delivery, quality, Cost, Reduced defects/scrap, Innovation, Minimum Work in Progress, Capacity utilization.

Source: by researcher from the previous studies 2018

Research has indicated that successful organizations engage in multiple performance objectives with companies more interested in aggregate performance measures. This research, test multiple operational performance objectives, namely quality, delivery, flexibility and cost, that used by (Chavez *et al.*, 2015).

With regards to flexibility is transmission of coordination information with little distortion, prioritizing the quality of the information shared, was associated positively with the ability to cope with product changes, this can be exemplified by Dell's effective strategy to improve flexibility (Gosain, 2004). Quality is considered because it was related to information quality, including aspects such as information timeliness, accuracy, adequacy, completeness and credibility, was positively associated with quality improvement (Chavez *et al.*, 2015). With regards to delivery operational performance required suppliers to provide credible and timely information in order to reduce delivery measures such as product cycle time (Chavez *et al.*, 2015). With regards to cost Fawcett *et al.* (2000) demonstrated that the relevance of the information shared was critical for cost improvement.

2.2.2.1. Flexibility

Flexibility is the company ability to offer a variety of products in a timely manner and the company ability to develop existing services, products and improve its

operations to offer new products that meet the needs and desires of customers (Chse Aqilano Jacobs& Robert, 2001).

It's the company ability to change operations to other methods whether in performance or time product that includes products flexibility, mix, volume and delivery and flexibility is usually related to different operations in the company that enable it to respond rapidly to the needs and desires of customers (Saunila, 2014).

William, (2007). points that flexibility is the ability of the organization to responds quickly to changes on the characteristics of the products design or changes related to the size of customers' orders and the multiplicity of their desires, (Iyer, 2011) defined flexibility as the ability to respond effectively to changing circumstances, work has been extended and supported by a number of authors (Upton, 1994) who agree on the importance of flexibility in coping with uncertainty. However, the similarities of the definitions of flexibility refer to its main job which is mastering changes and meeting uncertainty resulting from the internal and external business environment. Nakan & Hall, (1991) define flexibility as a quick response to change production volume, changed of product mix, customization of product (e.g. provide each customers with what they want), introduction of new products and adoption of new technology (Upton, 1994).

2.2.2.2. Delivery

The delivery is considered as the basic rule of competition between companies in the market by focusing on reducing the time and increasing the speed of the design of new products and presenting them to customers in the shortest possible time (Altaweel& Ragheed, 2008).

(Chavez *et al.*, 2015) defined delivery as the ability to deliver services at the specified time. Delivery usually refers to both speed and dependability. Delivery is a competitive priority via which customer are interested in satisfying their needs and wants in the right quality at the right time. In this context, state that delivery of the required function means ensuring that the right product (meeting the requirements of quality, reliability and maintainability) is delivered in the right quantity, at the right time in the right place, from the right source (a vendor who is reliable and will meet commitments in a timely fashion), with the right service (both before and after sale), and finally at the right price (Awwad, 2010).

Delivery of the required function means ensuring that the right product (meeting the requirements of quality, reliability and maintainability) is delivered in the right quantity, at the right time, in the right place, from the right source (a vendor who is reliable and will meet commitments in a timely fashion), with the right service (both before and after sale), and, finally, at the right price". In the same vein (Abdulkareem *et al*, 2013).

The speed of service and response to customer demand has become one of the factors of competitions between organizations, this is linked to the customer's willingness to pay higher cost for the services or products he\she needs in a timely. Whenever the organization was able to respond to the needs and requirements of the customer quickly and shortest time over competitors whenever organization received a larger market share and charging higher prices for their services, at least until the arrival of competitors to the market say that the organizations can produced (product or services) faster delivery than its competitors whenever achieved a reduction in costs and managed to get a large market share, speed delivery can be measured as a time taken between receipt of customer demand and meet the needs by that request on time (Salah,2014). The delivery or time dimension is considered as the basic rule of competition between companies in the market by focusing on reducing the time and increasing the speed of the design of new products and presenting them to customers in the shortest possible time (Abdulraheem, 2016).

2.2.2.3 Quality

Paladini (2011) understands that the fact that the term quality is commonly used may result from the considerable efforts made in the recent past to popularize the term. In his understanding, this cannot be said to be a bad thing. The problem lies in the frequent use of incorrect concepts. This is because something that is already widely known cannot be intuitively redefined; nor can the term be restricted to specific situations, as it is in the public domain. Service quality management involved highly subjective assessment processes. The appreciation of variables in service provision requires measurement scales and tools capable of measuring perceptions and expectations with a reasonable degree of objectivity. An accurate evaluation of an external service aids companies to reposition themselves in the market and redirect their resources to achieve service quality levels compatible with customers' needs (Fabiano *et al*, 2016).

Quality defined as the degree to which products and services meet service specifications (Chavez *et al.*, 2015). the ability to offer products and services at the lowest cost and free of defects, and to ensure the achievement of discrimination to the organization under the existing competition in the market and represent the overall attributes and characteristics of the product and the service that meets the needs of customers (Gupta, Garg& Kumar, 2014) quality is known as one of the most important factors for the survival and growth of the organization and to maintain its competitiveness.

Quality was the outcome of the evaluation process where the perceived service and the expected service were compared. Service quality has also been described as a form of attitude, as it is a global judgement on the superiority of the service provided by an organization. Service quality has been the focus of numerous studies since its early conceptualizations, as delivering positive levels of service quality creates a competitive advantage for an organization (Authors, 2017).

2.2.2.4. Cost

Cost is one of the important variables in achieving competitive advantage by reducing the cost of production in a percentage that achieves the desires of a wide range of customers by reducing the total cost of service products, with the need to realize that the strategic goal of reducing cost is not absolute, but according to the governed conditions and regulations (Abdulraheem, 2016). Therefore, the organization that adopts the least cost should focus on the production process, starting from the supplier and the ending with the arrival of the product to customers and control overall products and costs associated with production and provide new value-inexpensive services.

The company can reach the cost leadership strategy through:

1. Improve the activities and create added value
2. The elimination of unnecessary costs.

(Chavez *et al.*, 2015) defined cost doing things cheaply producing goods at a cost that enables them to be priced appropriately for the market while still allowing a return to the organization.

Cost is one of the most basic dimensions for competition and that many organization tried to rely on reducing their product cost to achieve competitive advantage, which means that the organization carry on the product and marketing of

products at the lowest possible cost compared to its competitors enabling it to sell at a lower price (Chavez *et al.*, 2015).

2.3. Service innovation (SI)

This part discusses the third concept of this study service innovation which represents the mediate variable, including the concept, the definitions and the dimensions of service innovation.

Service innovation can be defined as making changes to something established by introducing something new (Lai, Yusof and Kamal, 2016). This definition does not suggest that ideas behind change need to be radical or that they need to happen exclusively to products. Ideas are often mundane and incremental and can affect products processes and services at every level within an organization. Service innovation is the successful implementation of creative ideas within the firms. It is a mechanism to adapt the company in a dynamic environment (Cheng & Krumwiede, 2012). Therefore the firms are required to create the assessment as well as new ideas and offer innovative services.

(Kingdom and Syafarudin, 2016) said that service innovation as the successful implementation of creative ideas within the company. It is a mechanism to adapt the company in a dynamic environment. Therefore the company is required to create the assessment as well as new ideas and offer innovative services. Innovation is a complex process related to changes in production functions and process whereby firms seek to acquire and build upon their distinctive technological competence. Understood as the set of resources a firm possesses and the way in which these are transformed by innovative capabilities. Innovation at firm level refers to a firm" receptivity and propensity to adopt new ideas that leads to development and launch of new products (Perin, 2016). Service innovation can be defined accepting a device, system, policy, program process, new product or service that can be created within the organization or be bought out and the new for organization, this definition of innovation is very comprehensive and can say that it includes many dimensions. Innovation through increased organizational flexibility, willingness to change and introduce new product and services and reduce waste organization positively affects the organization long-term success.

2.3.1. SI Dimensions

Most of the previous studies, discussed one components of innovation, number of earlier studies tested one components of service innovation (e.g., Campo *et al.* 2014; Moon 2013; Authors 2012). Moreover, there are many previous studies have deals service innovation with multiple dimensions, table (2.4) provides a brief overview the concept of service innovation dimensions.

Table (2.4): SI Dimensions

Authors	Service innovation
Isada and Isada (2017)	Radical innovation, incremental innovation.
Abdi and AmatSenin (2014)	Incremental innovation, radical innovation, product innovation, process innovation, and Administrative innovation.
Engen and Holen (2014)	Radical innovation, incremental innovation.
Cheng and Krumwiede (2012)	Incremental innovation, Radical innovation.
Zhang (2017)	Product innovation , process innovation
Mcdermott, Prajogo and Mcdermott (2012)	Exploration innovation, Exploitation innovation
Obeidat (2016)	Radical innovation, incremental innovation.

Source: by researcher from the previous studies 2018

In the above table (2.4) researchers is operationalized service innovation as a multidimensional constructing, therefore, in order to develop an integrative service innovation, this research chooses two dimensions of the service innovation construct namely, incremental service innovation and radical service innovation as adopted by (Cheng and Krumwiede, 2012).

Incremental innovation considered because is related to customer-led strategies that focus on manifest needs and is posited to be the most common form of innovation (Bell *et al.*, 2002). In addition, the development of incremental service innovation tends to limit the range of potential service innovation, because it relies on customers' current view of the service market (Becheikh *et al.*, 2006). On the other hand, radical service innovation examined because is fundamental changes in new services that represent

revolutionary changes in service benefits (Cheng and Krumwiede 2012). In the following are the subsections of the service innovation construct.

2.3.1.1. Incremental innovation

Incremental innovation is basically a modification in service which also called line extension or market pull innovation (Cheng & Krumwiede, 2012). Incremental innovation does not need to significantly diversify from current business. That is why this type of innovation enhances the skills and competencies of the organizational employees. Exploitative innovations are based on the existing companies' resources and are represented by small improvements in methods, technologies or products. This type feed on best practices and routines generated in the past. This type of innovation is called incremental innovation which is designed for existing customers or markets (Huhtala *et al.*, 2014).

Incremental innovation is related to customer-led strategies that focus on manifest needs (Cheng and Krumwiede, 2012).

Plessis (2007) explained that incremental innovation is basically a modification in product which also called line extension or market pull innovation. Incremental innovation does not need to significantly diversify from current business. That is why this type of innovation enhances the skills and competencies of the organizational employees. Incremental innovation is decisive for the organization because it helps the organization to increase their market to be remaining in industry for long time.

2.3.1.2. Radical innovation

is a major change that represents a new technological paradigm (Engen and Holen, 2014). It implies that the codes developed to communicate changing technology will become in adequate. Radical change creates a high degree of uncertainty in organizations and service it also sweeps away significant parts of previous investments in technical skills and knowledge, designs, production techniques, plants and equipment the change is not necessary delimited by the supply side. It comes from a change on the demand side and in the organizational or institutional structure.

Radical innovation is a product, service and process with entirely unique or significant improvements in existing features which improve the cost and performance, radical innovation is a highly risky for the business because radical innovated products

are more difficult to commercialize. But on the other hand, radical innovation in product, service or process is crucial for the business because it involves the development and application of new technology. Important aspect of radical innovation is that to what extent new technology is more sophisticated and advance as compared to current technology (Kashif *et al*, 2010).

Radical innovation is expected to imply more fundamental changes for the company's activities, and it's often related to high risks during both the development and commercialization in comparison to incremental innovation. radical innovation as products that have a high impact on existing markets or create wholly new markets by offering totally new benefits, significant improvements in known benefits, or significant reduction in cost (Ulrika & Carolinne,2016). Radical innovation also represents the development and implementation of new services or processes that lead to fundamental improvements in operational efficiencies, interactions with the market, and/or the fulfillment of new needs among stakeholders (Ringberg, Reihlen and Rydén, 2018). Radical innovation is defined as fundamental changes in new services that represent revolutionary changes in service benefits (Cheng and Krumwiede, 2012).

2.4. Technological capabilities (TCs)

This part discusses the fourth concept of these study technological capabilities (TCs) which represent the moderator variable, including the concept, and definitions of TCs.

TCs are part of the research approach that studies the concept of capabilities. This approach analyses how a specific firm's capability can foster the use of resources in a determinate organization's functional area. The firm's competitive advantage will depend on the level of capabilities which the firm possesses. In a more deeply consideration, Winter (2003) said an organizational capability is a high-level routine (or collection of routines) that, together with its implementing input flows, confers upon an organization's management a set of decision options for producing significant outputs of a particular type. Various capabilities within a company could be marketing, networking, technological, or investment. The classification of the capability depends on its functional task; moreover, a capability contributes to the firm's performance in the market's arena. TCs are a key element in the use of knowledge and technology as requirements to achieve innovations within the firm. Authors defined technological capabilities as a set of functional abilities, reflected in the firm's performance through

various technological activities and whose ultimate purpose is firm-level value management by developing difficult-to-copy organizational abilities (Business, 2014). Rapid technological change or growth is witnessed in today's competitive and dynamic economy around the globe. This is highly interlinked with utilization, transfer, adoption and even development of new and innovative technologies by stakeholders involved. In this regard, the technological capability of nations in general and firms in particular is crucial. Developing nations have low technological capability, which has the tendency to hinder their development. Understanding and mitigating this hindering factor is essential for self-sustained development and increased technological capability development (Jantunen *et al.*, 2011).

Capabilities are defined as “a firm's capacity to deploy resources, using organizational processes, to affect a desired end (Haeussler, Patzelt and Zahra, 2012). From this perspective, capabilities can be understood as a firm's orientation to integrate and reconfigure its resources and processes and, even more importantly, transform its processes in response to foreign environments to achieve competitive advantage (Wang and Ahmed, 2007).

TCs 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, (Authors 2017). Technological capability is the ability to make effective use of technological knowledge in production, engineering and innovation (Srivastava, Gnyawali and Hat, 2015). It has the capacity to enable a firm in creating new technologies and to develop new products and processes in response to their changing economic environment. The various activities undertaken to acquire intangible assets for technological learning are a major process for building and accumulating these capabilities. Technological capability extends beyond having advanced technology and incorporates intangible asset of the firm in the form of knowledge about that technology (Srivastava, Gnyawali and Hat, 2015).

2.5. The relationship of the study variables

This part discusses the theoretical background of the study relationships, including, the relationship between strategic orientation and operational performance, the relationship between strategic orientation and service innovation, the relationship between service innovation and operational performance, the mediating role of service innovation, and moderating effect of technological capabilities.

2.5.1. The relationship between SO and OP

Performance is a crucial issue for all individuals and organizations. Most of the recent studies began to investigate the relationship between strategic orientation and performance such as investigating the effect of strategic orientation and operational performance.

Al-Ansaari, Bederr and Chen (2015) indicated that a firm's strategy can substantially influence its structure, its activity, its investment, its relation to the market, and its business performance. A firm can utilize strategy as a key to solving problems, creating new capabilities, and improving business performance. A strategy can provide a framework that permits a firm and its manager to assemble specialized assets, to identify opportunities for providing valued products and services to customers, and to deliver those products and services for higher profits in the marketplace, in addition market orientation exists on a continuum characterized by the degree to which firms acquire, disseminate and respond to information collected from customers, channels and competitors (Laukkanen *et al.*, 2013).

(Amirkhani and Reza, 2015) indicated that there were a strong relationship between strategic orientation (market orientation, technology orientation and orientation to reduce the cost) and firm performance. While, (Ho, Plewa and Lu, 2016) emphasized that a positive relationship between strategic orientation (market orientation ,entrepreneurial orientation , relationship orientation and technology orientation) and business performance, and (Campbell and Park, 2017) indicated a positive relationship between strategic orientation components (social capital , entrepreneurial orientation, intellectual capital, enlightened Self- interest, stakeholder Saliency, In –group Tie and corporate Social Responsibility) and business performance. Moreover,

(Laukkanen *et al.*, 2013) showed that a positive relationship between strategic orientation (learning, entrepreneurial, market and brand orientations) and business performance, learning orientation influences the inclination of a firm to create and utilize all kinds of knowledge. While, (Campbell and Park, 2017) expressed that a positive relationship between strategic orientation and business performance. In addition to that (Deutscher *et al.*, 2016) examined that whether favorable strategic orientation (entrepreneurial orientation, market orientation and learning orientation) can have a positive impact on firm performance. (Scott-Kennel and Giroud, 2015) conducted a study on assessing the effectiveness of strategic orientation on firm

performance; and showed that a positive relationship between strategic orientation and performance in New Zealand firms, while (Theodosiou, Kehagias and Katsikea, 2012) indicated that a positive relationship between strategic orientation (customer orientation , competitor orientation , internal/cost orientation ,innovation orientation) and firm performance.

2.5.2. The relationship between SO and service innovation

According to (Cheng and Krumwiede, 2012) strategic orientation has been studied primarily as a determinant of service innovation. A significant number of studies indicate that a strategic-oriented firm generates superior service innovation and performance. This is because a strategic-oriented firm can keep existing customers satisfied and loyal, attract new customers, accomplish the desired level of growth and market share and, as a result, achieve desirable levels of firm performance. Moreover, there are so many studies conducted on the relationship between strategic orientation and service innovation, such as (Medina and Rufín, 2009) investigated the effect of strategic orientation on innovation the results showed that market driving proved to be a strong predictor to service innovation. While, (Cheng and Krumwiede, 2012) indicated that a positive relationship between market orientation and service innovation, (Tutar, Nart and Bingöl, 2015) conducted the effect of strategic orientation components (market orientation, entrepreneurial orientation and technology orientation) on innovation, the findings suggested that a positively related to innovation, while, (Ejdys, 2015) demonstrate that significant and positive relationships between strategic orientation and innovativeness. And (Aghajari and Senin, 2014) emphasized that strategic orientation is strongly associated with both types of innovation (incremental innovation and radical innovation). Therefore strategic orientation enables firms to improve their development of organizational capabilities because of their greater market information acquisition and utilization.

2.5.3. The relationship between SI and OP

Products with a higher degree of innovation are approved to have higher sales and financial performance, leading to greater overall business performance (Zhou *et al.*, 2005). However, the very nature of services, having a number of distinguishing features when compared to services (Cheng and Krumwiede, 2012), leads to a greater need to

establish credibility with customers. As such, service firms could also achieve greater operational performance even through less innovative services (Berry *et al.*, 2006).

Innovation literature has indicated that a formidable relationship exists between service innovation and firm performance (Cheng and Krumwiede, 2012). It is argued that service innovation is not an end unto itself rather; its value is in the facilitation and generation of outcomes that benefit operational performance regardless of financial rewards or market positions (Wind and Vijay, 1997; Benner and Tushman, 2003). Specifically, the way for service innovation to contribute to operational performance is through new benefits to existing customers, creation of new markets through an incremental addition of existing service values, or radical creation of brand new service values. In other words, service innovation, regardless of whether it is incremental or radical, is able to contribute significantly to operational profitability in terms of financial or market perspectives.

Therefore, several studies acknowledged the importance of service innovation on firm performance, (Isada and Isada, 2017) indicated that strong relationship between service innovation (incremental innovation and radical innovation) and firm operational performance. (Cheng and Krumwiede, 2012) demonstrate that a significant and a positive relationship between service innovation (incremental innovation and radical innovation) and firm performance, (Medina and Rufín, 2009) indicated that a positive influence of innovation on firms performance. While, (Abdi and AmatSenin, 2014) emphasized that a positive effect of innovation (Incremental innovation, radical innovation, product innovation, process innovation, and Administrative innovation) and performance, and (Engen and Holen, 2014) indicated that a positive relationship between innovation (incremental innovation and radical innovation) and firm performance.

2.5.4. The mediating role of SI on the relationship between SO and OP.

Resource based view theory (RBV) indicated that the service innovation is intangible resource achieving superior performance (Cheng and Krumwiede 2012)

The level of strategic oriented behaviors in a firm will affect its performance according to the extent of its influence on innovation efforts and performance. Several studies have attempted to shed light on the links in the strategic orientation-innovation-firm performance. Some examine the partial relationships between strategic orientation and innovation, while others research the innovation-firm performance link.

The mediation role of service innovation has been tested in number of the previous studies, (Cheng and Krumwiede, 2012) discovered that service innovation has a positive impact on the relationship between strategic orientation and performance within the context of the service sector in USA. (Medina and Rufin, 2009) emphasized that a fully mediation of innovation in the relationship between retailers' strategic orientations and business performance. While, (Mahmoud *et al.*, 2016) conducted market orientation, learning orientation and business performance the mediating role of innovation; the results of this study demonstrated that market orientation has significant association with innovation while learning orientation has significant impact on innovation. Moreover, innovation mediates the relationship between market orientation and business performance.

2.5.5. The moderating role of TCs on the relationship between SO and SI.

technological capabilities are a key elements in the use of knowledge and technology as requirements to achieve innovations within the firm (Business, 2014).

A firm's technological capability is strong if it has traditionally generated more technological innovations compared to other firms in the service. A firm's current technological capability is based on what the firm has done well in the past and is likely to make the firm stay in that successful path (Srivastava, Gnyawali and Hat, 2015). At the same time strong technological capability could also make the firm more inward-looking (Ferna and Garci, 2012) which in turn would make the firm place less value on external knowledge.

Firms with strong technological capabilities may be able to generate more value from cooperation with competitors than firms with weak technological capabilities. Although access to information about a partner's technology and knowledge base should be useful, capitalizing on it is highly dependent on a firm's own technological capabilities (Luo *et al.*, 2007). Because such capabilities are an important component of absorptive capacity a firm's ability to recognize the value of new information, assimilate it and apply it to commercial ends—they should help a firm to understand and learn from a rival's technological expertise. This can be very helpful in realizing the full potential of research & development cooperation with competitors. The stronger a firm's technological capabilities, the more easily it can assimilate knowledge from outside sources, and the greater are the chances that such knowledge will prove useful in creating innovative new products (Ritala & Hurmelinna Laukkanen, 2012). Moreover, a

firm with strong technological capabilities may be better able to select trusting, capable partners who do not only provide access to needed resources, but also help the firm avoid technology leakage and opportunistic behavior (Gnyawali & Park, 2009). The innovation benefits of cooperating with a competitor should therefore be enhanced by a firm's strong technological capabilities.

The moderating effect of technological capabilities has been tested in number of the previous studies, such as (Haeussler, Patzelt and Zahra, 2012) discovered that a fully moderating of technological capabilities on the relationship between strategic alliances and product development in high technology new firms.

(José and Ortega, 2010) indicated a technological capabilities enhance the relationships between (quality orientation and cost orientation) respectively and performance, (Srivastava, Gnyawali and Hat, 2015) studied behavioral implications of absorptive capacity: The role of technological effort and technological capability in leveraging alliance network technological resources. (Wu, 2014) conducted cooperation with competitors and product innovation: Moderating effects of technological capability and alliances with universities; the results support the existence of a bell-shaped relationship between co-opetition and product innovation performance. Technological capability and alliances with universities were shown to weaken the relationship.

2.6 Summary of the chapter

This chapter indicated 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, conceptualization of strategic orientation and the constructs of strategic orientation (market orientation, service orientation, interaction orientation and learning orientation) that enable a firm to gain a competitive advantage. In section two the chapter conceptualization of operational performance and the constructs of operational performance (flexibility, delivery, duality, and cost).in section three the chapter conceptualization of service innovation and the constructs of service innovation (innovation and radical). In section four the chapter conceptualization of technological capabilities. In the final part, the chapter illustrates the theoretical background of the study relationships including; the mediating role of service innovation between strategic orientation and operational performance, the moderating role of technological capabilities between strategic orientation and service innovation. The next chapter will focus on theories, conceptual framework, and hypotheses development.

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, mediating, and moderating variables. Followed by the hypotheses development are formulated based on the developed research framework.

3.1. Underpinning theories of the study

A theoretical framework work is a conceptual model of how one theorizes or makes logical sense of the relationships among the several factors that have been identified as important to the problem. (sekeran,2003).The aim of this study is to examine the impact of strategic orientation on operational performance, the mediating role of service innovation and moderating effect of technological capabilities on relationship between strategic orientation and service innovation. The theoretical framework of the study is anchored on the resource based view theory and dynamic capabilities theory. Strategic orientation concept is discussed in many previous literature such as (Cheng & Sheu, 2017; Brower ja Rowe 2017; Mu *et al.*, 2016; Campbell ja Park 2017) the high competitive environment among the competitors. The strategic orientation concept in this study is represented as a predictor for operational performance. In order to elaborate on the relationship between study variables , the research focused on the following theories as elucidated 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 strategic orientation on operational performance through incremental innovation. The RBV suggests that firms deploy their physical, human, and organizational resources to gain an advantage in the marketplace If these resources are valuable to customers, rare, and difficult to imitate, 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, (Cheng & 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 (Barney, 1991). 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 firms that are heterogeneous is expected to explain inter-firm performance differences (Hoopes, Madsen, & Walker, 2003). Firm resources, which can be tangible or intangible, include:

All assets, capabilities, organizational processes, firm attributes, information, knowledge .etc. Controlled by a firm that enable the firm to conceive of and important strategies that improve its efficiency and effectiveness, (Barney, 1991).

According to (Ho, 2014), the RBV plays a critical role in strategic orientation research. Scholars frequently argue that strategic orientations can be leveraged for competitive advantage and performance outcomes, (Cadogan et al. 2009; Kropp *et al.* 2006; Ruokonen and Saarenketo 2009). For example, strategic orientations have been linked to innovation capabilities and export performance (Hortinha *et al.*, 2011), new product commercialization (Mu and Di Benedetto 2011) and new product success (Hong *et al.* 2013; Sainio et al. 2012), as well as business performance (Kropp *et al.* 2006; Ruokonen and Saarenketo 2009).

However, some scholars argue that strategic orientations only have potential value as a resource, which is not sufficient for value delivery (Lisboa et al. 2011; Murray *et al.* 2011). They contend that firms must develop appropriate capabilities to fully realize the potential of strategic orientations (i.e. gain competitive advantage and enhance performance). Capabilities refer to knowledge and skills accumulated over time that enable firms to optimize their resources (Lisboa *et al.* 2011; Murray et al. 2011; Teece 2012). For instance, Doyle and Armenakyan (2014) conduct a meta-analysis on the relationship between market orientation and performance (measured as customer, market and financial performance). They report that market orientation relates to marketing capabilities more strongly than performance, thus concluding that market orientation may influence performance indirectly via marketing capabilities. Nevertheless, although, RBV suggests that strategic orientations help establish competitive advantage and promote performance, it does not stipulate whether capabilities should be part of the equation.

A systematic review of studies dealing with performance impact of strategic orientations shows evidence for both arguments. While, there are a number of studies suggesting that strategic orientations (market, service, interaction and learning orientations) influence performance through relevant capabilities such as innovation

capabilities (Hortinha *et al.*, 2011; Lisboa *et al.*, 2011), marketing capabilities (Murray *et al.*, 2011; Theodosiou *et al.*, 2012), technological capabilities (Business 2014; Haeussler *et al.* 2012; José ja Ortega 2010) there is equally strong evidence that establishes direct links between these strategic orientation and innovation related and business performance (Hong *et al.* 2013; Sainio *et al.* 2012).

Hence, the empirical evidence appears to suggest that market, service, interaction and learning orientations can affect firm's performance directly and through pertinent capabilities. Yet, it is less clear whether there is a direct or indirectly effect on performance for strategic orientations that are less frequently investigated. This study focuses on the indirect relationship between strategic orientation dimensions and operational performance.

3.1.2. Dynamic capabilities theory (DCT)

The dynamic capabilities theory (DCT) explained 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 strategic orientation on service innovation 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, *et al.*, 2007).

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).

Teece *et al.* (1997) define dynamic capabilities as the processes and routines used to adapt, alter, deploy and protect the firm's resources so to maintain them as a source of competitive advantage. Helfat (2007) 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, Peters, & Lettice, 2012; Helfat & Peteraf, 2003; winter, 2003). These further encourage the renewal and development of operational capabilities to better match the demands of the market environment (Day, 2011; Hou, 2008).

Teece (2007), suggest 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. This work evolved from the previous concepts of adapting, integrating and reconfiguring (Teece *et al.*, 1997). As previously discussed in chapter two strategic orientations is considered not only a remote activity at the beginning of a development project, but relevant in each stage of the new product development process (Heusinkveld *et al.*, 2009). Although Teece, (2007) defined the deployment of dynamic capability as the process of sensing and seizing market chances and reconfiguring the resource base. In same context the RBV defines organizational capabilities as the ability to use resources to create competitive advantage (Ozkaya, Droge, M. Hult, Calantone, & Ozkaya, 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 semi-permanent basis, and an organizational capability refers to an organizational ability to perform a coordinated task, utilizing organizational resources, for the purpose of achieving a particular end result (Helfat, 2003).

Based on the above discussion the impacts of the strategic orientation on operational performance may not directly expect, but within the mediation of service innovation where interaction will take place and the service innovation transform strategic orientation into outputs of created value. Thus, service innovation represents routines and process that enable firms to utilize strategic orientation in operational performance. In other words strategic orientation as resource leads to service innovation which influences operational performance. Resource based view theory of the framework in this research are justifiable. As explained before, is providing the theoretical base for understanding the effect of strategic orientation on service innovation and operational performance. While dynamic capability theory provide base for understanding how technological capabilities can moderates the relationship between strategic orientation and service innovation.

3.2. The conceptual framework of the study

Figure (3.1) below present the conceptual framework for this study which proposes that links of strategic orientation to service innovation and operational performance the theoretical approach of this study proposes that service innovation mediate the relationship between strategic orientation and operational performance and technological capabilities as moderating variables in the relationship between strategic orientation and service innovation.

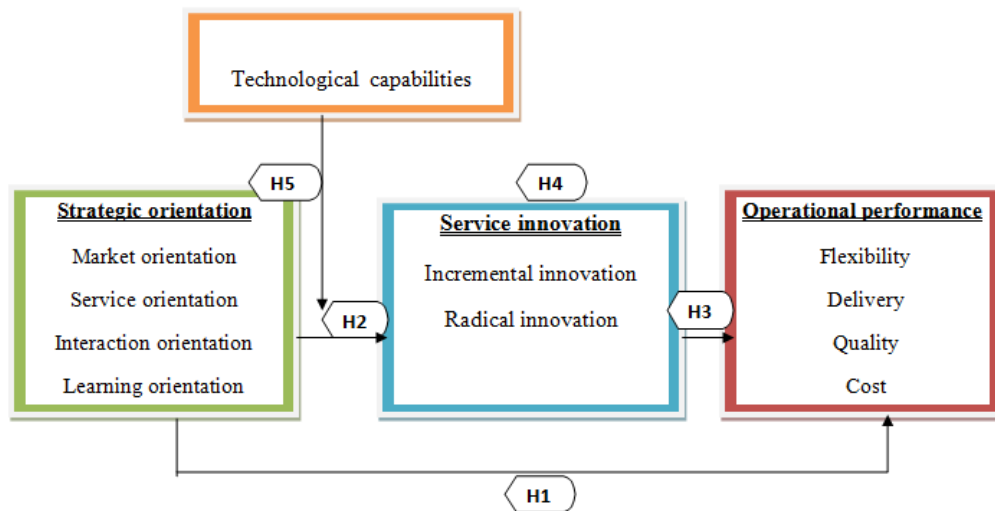


Figure (3. 1) the conceptual framework of the study

3.3. Hypotheses development of the study

In this study, there are five main hypotheses were developed to test the relationship between strategic orientation variables and operational performance and with the service innovation dimension. Moreover, testing the relationship between service innovation dimensions with operational performance. Alongside, test service innovation as a mediator variable between strategic orientation and operational performance. Finally, test the moderating effect of technological capabilities between strategic orientation and service innovation.

3.3.1. The relationship between strategic orientation and operational performance.

Strategic orientation helps managers to be more connected to the business environment; such an orientation appears to play a role for allowing the service firm to devise innovative solutions to business problems (Al-Ansaari, Bederr and Chen, 2015). In literature a number of scholars like (Brower and Rowe, 2017; Campbell and Park,

2017; Deutscher *et al.*, 2016; Al-Ansaari, Bederr and Chen, 2015; Deshpandé *et al.*, 2013) beside others, are discussed strategic orientation concept is important in developing strategic focus to enhance the organizational performance. (Amirkhani and Reza, 2015) indicates a positive relationship between strategic orientation and firm performance. While (Scott-Kennel and Giroud, 2015; Laukkanen *et al.*, 2013 ; Theodosiou, Kehagias and Katsikea, 2012) indicates a positive relationship between strategic orientation and performance.

Based on the above discussions the following hypotheses are generated:

H1. There is a positive relationship between strategic orientation and operational performance.

H1.1. there is a positive relationship between market orientation and flexibility.

H1.2. there is a positive relationship between market orientation and delivery.

H1.3. there is a positive relationship between market orientation and quality.

H1.4. there is a positive relationship between market orientation and cost.

H1.5. there is a positive relationship between service orientation and flexibility.

H1.6. there is a positive relationship between service orientation and delivery.

H1.7. there is a positive relationship between service orientation and quality.

H1.8. there is a positive relationship between service orientation and cost.

H1.9. there is a positive relationship between interaction orientation and flexibility.

H1.10. there is a positive relationship between interaction orientation and delivery.

H1.11. there is a positive relationship between interaction orientation and quality.

H1.12. there is a positive relationship between interaction orientation and cost.

H1.13. there is a positive relationship between learning orientation and flexibility.

H1.14. there is a positive relationship between learning orientation and delivery.

H1.15. there is a positive relationship between learning orientation and quality.

H1.16. there is a positive relationship between learning orientation and cost.

3.3.2. The relationship between strategic orientation and service innovation.

The strategic orientation is playing important role in building and affecting the service innovation such as (incremental innovation and radical innovation) in the firms. In accordance with the findings in literature strategic orientation was posited to have significant and positive relationship with service innovation. (Tutar, Nart and Bingöl, 2015) indicates a positive relationship between strategic orientation and service innovation. (Obeidat, 2016) states that strong strategic orientation is a prerequisite

towards achieving the highest innovativeness. While, (Ejdys, 2015) indicates a positive relationship between strategic orientation and Innovativeness. And (Cheng and Krumwiede, 2012) mentioned that the positively affect between strategic orientation and service innovation.

Based on the above discussions the following hypotheses are generated:

H2. There is a positive relationship between strategic orientation and service innovation.

H2.1. There is a positive relationship between market orientation and incremental innovation.

H2.2. There is a positive relationship between market orientation and radical innovation.

H2.3. There is a positive relationship between service orientation and incremental innovation.

H2.4. there is a positive relationship between service orientation and radical innovation.

H2.5. There is a positive relationship between interaction orientation and incremental innovation.

H2.6. There is a positive relationship between interaction orientation and radical innovation.

H2.7. There is a positive relationship between learning orientation and incremental innovation.

H2.8. There is a positive relationship between learning orientation and radical innovation.

3.3.3. The relationship between service innovation and operational performance.

The innovation literature has indicated that a formidable relationship exists between service innovation and service performance (Cheng and Krumwiede, 2012) the literature suggests that the innovation to build effective innovativeness is a significant driver of performance. (Tutar, Nart and Bingöl, 2015) Furthermore (Cheng and Krumwiede, 2012) show that there is a significant relationship between service innovation and performance. Most of the studies that examined the relationship between service innovation and firm performance have found a highly significant and positive relationship between them such as (Engen and Holen, 2014) investigated that there is a significant relationship between service innovation and performance While,(Zhang and Duan, 2010) confirmed that a significant and positive relationship between innovation and performance.

Based on the above discussions the following hypotheses are generated:

H3. There is a positive relationship between the service innovation and operational performance.

H3.1. There is a positive relationship between incremental innovation and flexibility.

H3.2. There is a positive relationship between incremental innovation and delivery.

H3.3. There is a positive relationship between incremental innovation and quality.

H3.4. There is a positive relationship between incremental innovation and cost.

H3.5. There is a positive relationship between radical innovation and flexibility.

H3.6. There is a positive relationship between radical innovation and delivery.

H3.7. There is a positive relationship between radical innovation and quality.

H3.8. There is a positive relationship between radical innovation and cost.

3.3.4. The service innovation mediates the effect between strategic orientation and firm operational performance.

According to the theory of resource based view (Kiiru, 2015) and empirical researches in the field of strategic management and marketing have begun to demonstrate how service innovation may play a mediating role in the relationship between any tangible or/and intangible resources and firm performance, such as (Cheng and Krumwiede, 2012) investigate a positive mediate effect of service innovation on relationship between market orientation and new service performance (Mahmoud *et al.*, 2016) show that a significant and positive mediating role of innovation on relationship between market, learning orientation and performance. While, (Medina and Rufín, 2009) investigate a significant and positive mediating role of innovation on relationship between strategic orientation and performance and (Huhtala *et al.*, 2014) confirmed that a significant and positive mediate between market orientation and business performance. The above conceptual and empirical researches can justify the existing of such relationships.

Therefore, based on the above discussions the following hypotheses are generated:

H4. Service innovations mediate the relationship between strategic orientation and operational performance.

H4.1. incremental innovation mediates the relationship between market orientation and flexibility.

H4.2. incremental innovation mediates the relationship between market orientation and delivery.

- H4.3.** incremental innovation mediates the relationship between market orientation and quality.
- H4.4.** incremental innovation mediates the relationship between market orientation and cost.
- H4.5.** incremental innovation mediates the relationship between service innovation and flexibility.
- H4.6.** incremental innovation mediates the relationship between service innovation and delivery.
- H4.7.** incremental innovation mediates the relationship between service innovation and quality.
- H4.8.** incremental innovation mediates the relationship between service innovation and cost.
- H4.9.** incremental innovation mediates the relationship between interaction orientation and flexibility.
- H4.10.** incremental innovation mediates the relationship between interaction orientation and delivery.
- H4.11.** incremental innovation mediates the relationship between interaction orientation and quality.
- H4.12.** incremental innovation mediates the relationship between interaction orientation and cost.
- H4.13.** incremental innovation mediates the relationship between learning orientation and flexibility.
- H4.14.** incremental innovation mediates the relationship between learning orientation and delivery.
- H4.15.** incremental innovation mediates the relationship between learning orientation and quality.
- H4.16.** incremental innovation mediates the relationship between learning orientation and cost.
- H4.17.** radical innovation mediates the relationship between market orientation and flexibility.
- H4.18.** radical innovation mediates the relationship between market orientation and delivery.
- H4.19.** radical innovation mediates the relationship between market orientation and quality.

H4.20. radical innovation mediates the relationship between market orientation and cost.

H4.21. radical innovation mediates the relationship between service orientation and flexibility.

H4.22. radical innovation mediates the relationship between service orientation and delivery.

H4.23. radical innovation mediates the relationship between service orientation and quality.

H4.24. radical innovation mediates the relationship between service orientation and cost.

H4.25. radical innovation mediates the relationship between interaction orientation and flexibility.

H4.26. radical innovation mediates the relationship between interaction orientation and delivery.

H4.27. radical innovation mediates the relationship between interaction orientation and quality.

H4.28. radical innovation mediates the relationship between interaction orientation and cost.

H4.29. radical innovation mediates the relationship between learning orientation and flexibility.

H4.30. radical innovation mediates the relationship between learning orientation and delivery.

H4.31. radical innovation mediates the relationship between learning orientation and quality.

H4.32. radical innovation mediates the relationship between learning orientation and cost.

3.3.5. Technological capabilities moderate the relationship between strategic orientation and service innovation.

Firms with superior technological competencies tend to be more innovative and thus perform at high levels. Those firms with superior technological capability can secure greater efficiency gains by pioneering process innovations and can achieve higher differentiation by innovating products in response to the changing market environment,(José and Ortega, 2010).

According to the theory of dynamic capabilities and results in the literature suggests that the technological capabilities is playing significant and positive moderating, therefore few previous studies investigate technological capabilities as moderate variables such as (Wu, 2014) investigated that a significant and positive moderate effect of technological capabilities on relationship between cooperation with competitors and product innovation, while (Haeussler, Patzelt and Zahra, 2012) states that the technological capabilities influence effectively on relationship between Strategic alliances and product development, while (Ferna and Garcı, 2012) investigated a significant and positive moderate effect of technological capabilities. And (José and Ortega, 2010) confirmed that a significant and positive moderate effect of technological capabilities on the relationship between Competitive strategies and firm performance.

Based on the above discussions the following hypotheses are generated:

H5. Technological capabilities moderate the relationship between strategic orientation and service innovation.

H5.1. There is positive moderating effect of technological capabilities on the relationship between market orientation and incremental innovation.

H5.2. There is positive moderating effect of technological capabilities on the relationship between market orientation and radical innovation.

H5.3. There is positive moderating effect of technological capabilities on the relationship between service orientation and incremental innovation.

H5.4. There is positive moderating effect of technological capabilities on the relationship between service orientation and radical innovation.

H5.5. There is positive moderating effect of technological capabilities on the relationship between interaction orientation and incremental innovation.

H5.6. There is positive moderating effect of technological capabilities on the relationship between interaction orientation and radical innovation.

H5.7. There is positive moderating effect of technological capabilities on the relationship between learning orientation and incremental innovation.

H5.8. There is positive moderating effect of technological capabilities on the relationship between learning orientation and radical innovation.

3.4. Control Variables

The study uses five control variables that have been identified to have a significant impact on the effects on OP. Previously, research indicates that the size of the firm has an impact on the relationship between variable similar such SO and OP (Liu 1995). Also, smaller firms might have fewer resources for the implementation of strategic orientation (Cao and Zhang 2011). The size of the firm was measured by the number of labourers. Second, (Ben Brik et al. 2011) the study controls for the age of the firm. Firm age can influence the implementation of strategic orientation and therefore, impact adaptiveness. Firm age is calculated as the experience of the firm since firm foundation (White et al. 1999), also firm Property of firm has been considered as control variable because of the different types of Property, and the kind of Property related to the management orientation and availability of resource. And also number of competitors has been considered as control variable.

3.5. Summary of the Chapter

This chapter presented the theoretical and conceptual framework which basically depends on previous studies to propose a direct link between strategic orientation and operational performance and direct link via two dimensions of service innovation (incremental and radical) as well as the exchange between service innovation and operational performance. Furthermore the chapter explains the mediating role of service innovation, beside clarifies the moderating effect of the technological capabilities in the relationship between strategic orientation and service innovation. The coming chapter illustrates the research methodology.

CHAPTER IV RESEARCH METHODOLOGY

4.0. Introduction

In this chapter, discussion of a general research design first, followed by, a discussion on the population of interest, sampling procedures and sample, followed by development of the questionnaire. It also includes the methods used in collecting data, in analyzing the data, and in testing the hypotheses.

4.1. General research design

The objective of this study was to examine the application of strategic orientation concept of services firms in Sudan. The study try to explain the relationship between strategic orientation and operational performance through service innovation as a mediator variable besides testing technological capabilities as a moderating variable. Based on the analysis of the results of the study and previous literatures, this research provides some explanation on how strategic orientation may create operational performance towards the services companies in Sudan, this study is quantitative in nature.

Consistent with the purpose of this study, the study relied on the Positivism philosophy, deduction approach to theory development, mono-method quantitative methodological choice, survey strategy and cross-sectional Time horizon and using personal administered questionnaire. A cross-sectional description survey research design was adopted for the purpose of this study. Cross-sectional is cost and time effective because data can be gathered just once perhaps over a period of days or weeks or months, in order to answer research questions (Sekaran, 2003). In addition to that, cross-sectional survey design conducted to assess the moderating effect of technological capabilities on the relationship between strategic orientation and service innovation in Sudan. This design is enabling to describe the different dimensions of strategic orientation that affect the operational performance.

4.2. Population and sampling

The population is defined as “set of all objects such as people, events or things that interested researchers studied” (Sekran, 2006).The Population of this study includes all managers of service firms located in Khartoum state. The sample frame of this study

was defined services firms in Sudan, were selected since they have greater contribution to the Sudan economy in terms of their great contributions to output, employment. Annuals report of central bank of Sudan (2014) in which declare list of Sudanese service firms was used as the sampling frame. Six services sectors were selected as target population in this study; hostelry, Mailers, Banker, Education, communication and Insurance.

After the sample frame and sample size were resolved, the following an important step to be made related to which body in the organization was most suitable to react to the study instrument. This study adopt the only a single response per firm was considered for this research when a single respondent is used to represent a firm the respondent approached should be the most informed and knowledgeable person about the issue of interest in that firm (sekeran,2003).The current study examines the effect of strategic orientation on operational performance in Sudanese service firms, the most appropriate person to get interest information and data from the general manager that represent the respective services firms in Sudan. Head of the firm was considered the most appropriate person, with the best knowledge and information on strategic orientation and operational assessment. Thus, the respondents selected for this research were services firm's managers or directors of the 161 sample firms.

In addition to that, this study also explained the moderating effect of technological capabilities on the relationship between strategic orientation and service innovation and the impact of strategic orientation on operational performance through service innovation. Thus the suitable person who asked to fill the questionnaire was ideally one of the managers at top management level. These managers have a good perception about their firm's business strategy as well as they have their own methodologies and techniques to be used in environmental scanning and information generating regarding their firms.

4.3. Measurement of variables

A variable is anything that can take on differing or varying values and this values can differ at various times for the same object or person, or at the same time for different objects or persons, beside that there are four main types of variables are: the independent variable (strategic orientation), The dependent variable (operational performance), the mediating variable (service innovation) 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 (sekeran,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 (sekeran, 2003).Therefore the Likert 5-point scale is commonly used in most of researches. Moreover, the questionnaire items were adopted from different sources to suit the service firms.

4.3.1. Measurement of SO

Strategic orientation defined as the principle underlying the activities, processes, and strategic directions that a firm undertakes to create behaviors necessary for achieving superior performance (Ho, Plewa and Lu, 2016). In this study strategic orientation consist of four dimensions; market orientation, service orientation, interaction orientation and learning orientation. The measurement items generated for each dimension are illustrated in the following:

4.3.1.1. Market orientation

Market orientation is defined as the organizational culture that most effectively and efficiently creates the necessary behavior for the creation of superior value for buyers and thus, continuous superior performance for the business (Cheng and Sheu, 2017). The research used six items considered to reflect the measurement of market orientation adopted from (Cheng and Sheu, 2017). A five-point Likert scale was used, as shown in table (4.1).

Table (4.1): Measurements for market orientation

No	Measurements	Source
1	We respond rapidly to competitive actions that threaten us	Cheng ja Sheu (2017)
2	We constantly monitor our level of commitment and orientation toward customers.	
3	We measure customer satisfaction systematically and frequently.	
4	We give close attention to after-sales service.	
5	Information on customers, marketing successes, and marketing failures is communicated across departments in our firm.	
6	All of our departments are responsive to and integrated in serving markets.	

Prepared by researcher (2018)

4.3.1.2. Service orientation

Service orientation is defined as an organization-wide embracement of a basic set of relatively enduring organizational policies, practices, and procedures intended to support and reward service-giving behaviors that create and deliver service excellence (Cheng and Sheu, 2017) The research used five items considered to reflect the measurement of service orientation adopted from (Oliveira and Roth, 2012) . A five-point Likert scale was used, as shown in table (4.2).

Table (4.2): Measurements for service orientation

No	Measurements	Source
1	Service quality values are explicitly addressed and actively promoted within our organization.	Oliveira ja Roth (2012)
2	Our employees are fully committed to customer service.	
3	Our metrics capture what is strategically important for measuring customer satisfaction.	
4	Our company has established service standards based on researched customer needs.	
5	Service standards are visible to both employees and customers.	

Prepared by researcher (2018)

4.3.1.3. Interaction orientation

Interaction orientation is defined as a firm’s ability to interact with its individual customers and to take advantage of information obtained from them through successive interactions to achieve profitable customer relationships (Cheng and Sheu, 2017).The research used five items considered to reflect the measurement of interaction orientation adopted from (Cheng and Sheu, 2017).A five-point Likert scale were used, as shown in table (4.3)

Table (4.3): Measurements for interaction orientation

No	Measurements	Source
1	We believe that each customer cannot be satisfied with the same set of services.	Cheng ja Sheu (2017)
2	We have systems in place that record the transactions of each customer.	
3	We analyze previous customer transactions at the individual customer level to predict future transactions from that customer.	
4	We encourage customers to share opinions of our services with their firms.	
5	We encourage customers to interactively participate in designing services.	

Prepared by researcher (2018)

4.5.1.4. Learning orientation

Learning orientation is defined as an organization-wide activity of creating and using knowledge to enhance competitive advantage' (Cheng and Sheu, 2017) The research used six items considered to reflect the measurement of learning orientation adopted from (Cheng and Sheu, 2017). A five-point Likert scale were used, as shown in table (4.4)

Table (4.4): Measurements for market orientation

No	Measurements	Source
1	Our employees view themselves as partners in charting the direction of the firm.	Cheng ja Sheu (2017)
2	We place a high value on open-mindedness.	
3	We encourage employees to 'think outside of the box.	
4	An emphasis on constant innovation is a part of our firm culture.	
5	We basically agree that our firm's ability to learn is the key to our competitive advantage.	
6	Learning in our firm is seen as a key commodity necessary to guarantee firm survival.	

Prepared by researcher (2018)

4.3.2. Measurements of OP

Operational performance is a source of competitive advantage for the enterprise to differentiate itself in the eyes of the customers from its competitors by operating at a lower cost and hence at a greater profit (Chavez et al., 2015). In this study operational performance consist of four dimensions; flexibility, quality, delivery and cost. The measurement items generated for each dimension are illustrated in the following:

4.3.2.1. Flexibility

Flexibility is defined as an ability of the company to adopt and respond to delivery or change, to give customers individual treatment, or to introduce new product (Chavez *et al.*, 2015).The research used five items considered to reflect the measurement of Flexibility adopted from (Bruque-Cámara, Moyano-Fuentes and Maqueira-Marín, 2016).A five-point Likert scale were used, as shown in table (4.5).

Table (4.5): Measurement for flexibility

No	Measurements	Source
1	Our company can quickly modify products to meet our major customer's requirements.	Bruque-Cámara et al., (2016)
2	Our company can quickly modify products to respond to our major competitors' innovations.	
3	Our company can quickly introduce new products onto the market.	
4	Our company can quickly respond to changes in market demand.	
5	Our company can quickly respond to changes in competitors.	

Prepared by researcher (2018)

4.3.2.2. Delivery

Delivery is defined as the ability to deliver services at the specified time. (Chavez *et al.*, 2015). The research used three items considered to reflect the measurement of delivery adopted from (Bruque-Cámara, Moyano-Fuentes and Maqueira-Marín, 2016). A five-point Likert scale were used, as shown in table (4.6)

Table (4.6): Measurements for delivery

No	Measurements	Source
1	Our company has an outstanding on-time delivery record to our major customers.	Bruque-Cámara et al., (2016)
2	The lead time for fulfilling customers' orders is short.	
3	Our company provides a high level of customer service to our major customer.	

Prepared by researcher (2018)

4.3.2.3. Quality

Quality is defined as the degree to which products and services meet service specifications (Chavez *et al.*, 2015). The research used five items considered to reflect the measurement of quality adopted from (Modgil and Sharma, 2016). A five-point Likert scale was used, as shown in table (4.7).

Table (4.7): Measurements for quality

No	Measurements	Source
1	Improved service quality.	Modgil ja Sharma (2016)
2	Reduced costs of defects and rework.	
3	Reduced delivery lead time of finished products/services to customers.	
4	Reduced customer complaints.	
5	A decline in the number of warranty claims.	

Prepared by researcher (2018)

4.3.2.4. Cost

Cost is defined as doing things cheaply, producing goods at a cost that enables them to be priced appropriately for the market while still allowing a return to the organization (Chavez et al., 2015). The research used four items considered to reflect the measurement of cost two measures adopted from (Modgil and Sharma, 2016) and two measures adopted from (Chavez et al., 2015). A five-point Likert scale were used, as shown in table (4.8).

Table (4.8): Measurements for cost

No	Measurements	Source
1	Labour productivity	Modgil ja Sharma (2016)
2	Production cost.	
3	Improved capacity utilization.	Chavez et al. (2015)
4	Cost effectiveness in operations.	

Prepared by researcher (2018)

4.3.3. Measurements of SI

Service innovation defined as a new idea set of services, procedures or changes that influences or alters a routine (Lai, Yusof and Kamal, 2016). In this study service innovation include of two dimensions; incremental innovation and radical innovation. The measurement items generated for each dimension are illustrated in the following:

4.3.3.1. Incremental innovation

Incremental innovation related to customer-led strategies that focus on manifest needs (Cheng and Krumwiede, 2012). The research used three items considered to reflect the measurement of Incremental innovation adopted from (Cheng and Krumwiede, 2012). A five-point Likert scale was used, as shown in table (4.9).

Table (4.9): Measurements for incremental innovation

No	Measurements	Source
1	The services were modification of an existing company service	Cheng ja Krumwiede (2012)
2	The services were revision of an existing company service.	
3	The services were repositioning of an existing company service.	

Prepared by researcher (2018)

4.3.3.2. Radical innovation

Radical innovation is defined as fundamental changes in new services that represent revolutionary changes in service benefits (Cheng and Krumwiede, 2012). The research used three items considered to reflect the measurement of radical innovation adopted from (Cheng and Krumwiede, 2012). Five-point Likert scales were used, as shown in table (4.10).

Table (4.10): Measurements for radical innovation

No	Measurements	Source
1	The services were totally new to the market.	Cheng ja Krumwiede (2012)
2	The services offered new features versus competitive services.	
3	The services required changes in the customer are buying behavior.	

Prepared by researcher (2018)

4.3.4. Measurements of TCs

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 (José and Ortega, 2010). The research used five items considered to reflect the measurement of technological capabilities three measure adopted from (Authors, 2017) and two measure adopted from (Jantunen et al., 2011) A five-point Likert scale were used, as shown in table (4.11).

Table (4.11): Measurements for technological capabilities

No	Measurements	Source
1	The firm has strong internal technology operations capabilities.	Authors (2017)
2	The firm has the technological infrastructure and competencies to engage in e-commerce initiatives.	
3	Our technological capabilities are top class.	
4	The success of our research and development activities is based on long-term know-how.	Jantunen et, al. (2011)
5	We have invested heavily in certain research and development projects.	

Prepared by researcher (2018)

4.4. Development of questionnaire

In this research, the questionnaires method is used as a technique for data collection. 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 written in English then translated into Arabic language. The questionnaire was then back-translated into English to ensure accuracy.

The survey questions were designed precisely to give clear ideas about the problems for the target respondents to answer. The questions on the research instrument were divided into the following: (1) Questions about company Informational (2) questions covered strategic orientation variables namely; (market orientation, service orientation, interaction orientation and learning orientation) (3) questions covered service innovation variables namely; (incremental innovation and radical innovation) (4) questions covered operational performance variable namely; (flexibility, delivery, quality, and cost) (5) questions covered technological capabilities. All the responses answers to the managers on 5 point scale namely: (a) strongly disagree; (b) disagree; (c) neutral (d); agree (e) and strongly agree. Instructions and well-arranged set of questions and response alternatives will make it easier for the respondents to answer them. A good introduction, well- organized instructions, and neat alignment of the questions are all important.

4.5. Pre-testing of the questionnaire

The researcher used pre- testing for the questionnaire in order to ensure that the questions are understood by the respondents with no ambiguities, an exploratory sample of (40) service firms was selected, there was no problems with the wording or measurement eliminate confusing statements. When checking the reliability of the variables, the research found that all variable is above than, 70 which mean the reliability of the variables, table (4.12) below show the pre-test of the questionnaire.

Table (4.12) Pre-test of the questionnaire for reliability

Variable	Number of Items	Cronbach's Alpha
Market orientation	6	.733
Service orientation	5	.789
Interaction	5	.787
Learning orientation	6	.828
Flexibility	5	.738
Delivery	3	.809
Quality	5	.742
Cost	4	.760
Incremental	3	.823
Radical	3	.748
Technological capabilities	5	.826

Source: prepared by researcher from data analysis (2018)

4.6. Data analysis techniques

The application of statistical package for social science (SPSS) version 23 and analysis of moments of structure (AMOS) version 25 were used. The data analysis techniques used in this study were described below as following:

4.6.1. 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 (Aaker *et al.*, 2007). In This study descriptive statistics were used to describe the firms in Sudan and respondents beside all the variables of the main four constructs shaped the model of this study (strategic orientation, technological capabilities, service innovation, and operational performance).

4.6.2. Factor analysis

Factor analysis is a common statistical method used to find a small set of unobserved variables (also called latent variables, or factors) which can account for the covariance among a larger set of observed variables (also called manifest variables), Thus it uses to assess the reliability and validity of measurement scales (Albright, 2006-2008).

Factor analysis is an interdependence technique its primary purpose is to identify the underlying structures or commonalities in the data (Hair, Black, Babin, Anderson, &

Tath, 2010). The factor analysis is used to test construct validity of items in the survey, i.e., to determine if the items actually measuring the concept supposed to measure (Sekaran, 2003). The factor analysis is used to test the validity of items in the survey, i.e. to ensure that the instrument has reasonable construct validity (Ho, 2011s; Kuo, 2011).

According to Albright, (2006-2008) it is possible to distinguish between two categories of factor analysis depending on whether the investigator wishes to explore patterns in the data or to test explicitly stated hypotheses; these are exploratory factor analysis and confirmatory factor analysis.

4.6.2.1. Exploratory factor analysis

Exploratory factor analysis corresponding to the former task is available in general purpose statistical software such as SPSS. When carrying out an EFA no substantive constraints are imposed on the data. Instead it is assumed that each common factor affects every observed variable and that the common factors are either all correlated or uncorrelated (Albright, 2006-2008). In this study, exploratory factor analysis was used to validate and ensure the goodness of measures under the following conditions:

- (1) Factor loading should be greater than 0.45 for sample that range between 150 and 200.
- (2) Any item cross loaded with tow factor should be dropped.
- (3) Factor that had eigenvalue exceeded 1.0 were accepted, while other were dropped.
- (4) The minimum acceptable value for KMO is 0.6.
- (5) Bartleet's test with p-value less than 0.05 was used to test the overall significance of correlation among items.

4.6.2.2. Confirmatory factor analysis

Confirmatory factor analysis (CFA) is theory-driven and it's a special case of the structural equation model (SEM). With CFA it is possible to place substantively meaningful constraints on the factor model, such as setting the effect of one latent variable to equal zero on a subset of the observed variables (Albright, 2006-2008). The advantage of CFA is that it allows for testing hypotheses about a particular factor structure.

4.6.3. Reliability analysis

Reliability analysis was conducted to test the consistency and stability of the measurement instrument and help to assess the goodness of 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, 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 were done on all study variables.

4.6.4. Correlation analysis

Correlation analysis was used to establish a correlation matrix between variables of the study. Correlation coefficient 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 see the degree of correlation between the main variables. That is to determine the relationship between strategic orientation and service innovation as a mediator and operational performance as dependent variable and moderating effect of technological capabilities in between strategic orientation and service innovation.

4.6.5. Multiple regression analysis

Multiple regressions indicate how adequate the predictors are in explaining the dependent variable. It also gives the best predictive model of the linear relationship present among the independent variables (Hair *et al.*, 2010). In addition, multiple regressions are appropriate multivariate method for evaluating construct and relationship between constructs (Tabachnick & Fidell, 2007). In this research multiple regressions was used to test the research hypothesis that is to determine if the specified independent variables were statistically significant predictors of the dependent variable.

4.7. Summary of the chapter

This chapter discusses the general research design described. It is followed by the justification for choosing the firms 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 service firms in Sudan was analyzed to presents the findings. The chapter was organized into four sections. The first section concerns with data cleaning, response rate, the characteristics of service firms and respondents, followed by the goodness of measures which discusses the validity and reliability of the measurement. The third section shows the descriptive analysis of the study variables. The last section focuses on the results of path analysis and hypotheses testing.

5.1. Data cleaning

Data cleaning deals with detecting and removing errors and inconsistencies from data in order 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 through 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 manipulates missing data, unengaged responses, and outliers.

5.1.1. Missing Data

Missing data is common and always expected in the process of collecting and entering data due to lack of concentration and/or the 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 and particularly in structural equation model (SEM). Both exploratory and confirmatory factor analysis and path models require a certain number of data points in order to compute estimates. Additionally, missing data might represent bias issues. Some people may not have answered particular questions in survey because of some common issue. If missing data is more than 10% of the responses on a particular variable, or from a particular

respondent, that variable or respondent may be problematic. In this study the proportion of missing data is lower than 10% therefore, there no need to remove any of responses.

5.1.2. Unengaged responses

Unengaged responses means some responses giving same answer for all the questionnaire 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 6 questionnaires was found to have standard deviation less than 0.5 and they were excluded from data analysis, table (5.1) shows the unengaged response.

Table (5.1) Unengaged responses

Total Questionnaires	167
Unengaged responses	6
Unengaged responses Rate	3%

Source: prepared by researcher 2018

5.1.3 Outliers

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

5.2. Response Rate

The population of this study was the Sudanese service firms located in the Khartoum state. The researcher employed convenient sample where self- administrated survey was used to distribute 171 questionnaires to the service firms in Khartoum stare, given that top managers were asked to fill the questionnaire. A total of 167 out of 171 questionnaires received from respondents, the overall response rate were 97% this was considered as high rate due to questionnaires given one by one to respondents and in researches used a self–administrated survey (Sekaran, 2003). Those who didn’t

responded to fill the questionnaire some were mentioned that they were not authorized to fill the questionnaires while others were not transparent in their justifications, table (5.2) below shows the summary of questionnaire response rate.

Table (5.2) Response rate of questionnaire

	Response
Total distributed questionnaires of respondents	171
Valid Total questionnaires received from respondents	167
Questionnaires not received from respondents	4
Questionnaires not valid for missing data	0
Questionnaires not valid for Unengaged responses	6
Questionnaires not valid for Outliers	0
Questionnaires valid to analysis	161
Overall response rate	97%

Source: prepared by researcher from data (2018)

5.3. Respondents characteristics

Based on the descriptive statistics using the frequency analysis this part investigates the profiles of firms that participated in the survey on the light of five characteristics, these are the property of firm, experience of firm, number of labourers, natural of work, and number of competitors. Table 5.3 show respondent's characteristics, in the property of firm, rate (90.1%) respondents were national, followed by (6.8%) respondent were foreign, while (3.1%) respondent were intermixed that represent the lower ratios.

Furthermore, the respondent's experience of firm, 20 and more are representing a rate (26.1%), from 11 to 15 representing a rate (25.5%), From 5 to 10 representing a rate (14.9%) while to less than 5 years representing a rate (21.7%) last in this group from 16 to 20 years are few number 19 frequencies and represented in (11.8%). The respondents number of labourers ,that fill up the questionnaires, majority of them were 200 and more are representing a rate (49.1 %) followed by form 101 to 150 and from 151 to 200 are representing a rate (13.7%), to less than 50 labourers are representing a rate (12.4%) and from 50 to 100 were representing a rate (11.2%) as lower ratios. Concerning the respondents natural of work majority of them were education which represent (44.1%), followed by banker were representing a rate (22.4%), then followed by hostelry were

representing a rate (16.8%), insurance were representing a rate (8.7%) , mailers (5.6%) and communication were (2.5%) represent the lower ratios. Regarding the number of competitors, the majority of the respondents 20 and more (82.0%) followed by from 11 to 15 were rate (8.7%), to less than 5 competitor were rate (5.0%) and from 5 to 10 were rate (2.5%) represent the lower ratios.

Table (5.3): respondent's characteristics

<i>Variable</i>	<i>Categories</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Property of firm</i>	National	145	90.1
	Foreign	11	6.8
	Intermixed	5	3.1
Total		161	100%
<i>Experience of firm</i>	to less than 5 years	24	14.9
	From 5 to 10	35	21.7
	from 11 to 15	41	25.5
	from 16 to 20	19	11.8
	20 and more	42	26.1
Total		161	100%
<i>Number of labourers</i>	to less than 50 labourers	20	12.4
	from 50 to 100	18	11.2
	from 101 to 150	22	13.7
	from 151 to 200	22	13.7
	200 and more	79	49.1
Total		161	100 %
<i>Natural of work</i>	Hostelry	27	16.8
	Mailers	9	5.6
	Banker	36	22.4
	Education	71	44.1
	Communication	4	2.5
	Insurance	14	8.7
Total		161	100%
<i>Number of competitors</i>	to less than 5 competitor	8	5.0
	from 5 to 10	7	4.3
	from 11 to 15	14	8.7
	20 and more	132	82.0
Total		161	100%

Source: prepared by researcher, (2018).

5.4. 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 exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The following are the detailed information of each.

5.4.1. Exploratory factor analysis (EFA)

Exploratory factor analysis (EFA) is a statistical approach for determining the correlation among the variables in a dataset (Gaskin, 2016). This type of analysis provides a factor structure (a grouping of variables based on strong correlations). In general, an (EFA) prepares the variables to be used for cleaner structural equation modeling. An EFA should always be conducted for new datasets. The beauty of an (EFA) over a (CFA) confirmatory is that no a priori theory about which items belong to which constructs is applied. This means the (EFA) will be able to spot problematic variables much more easily than the (CFA). Therefore this study used exploratory factor analysis for testing the validity and uni-dimensionality of measures to all variables under study, followed the assumptions recommended by (Lowry & Gaskin, 2014) as follow:

- There must be a clean pattern matrix.
- Adequacy.
- Convergent validity.
- Discriminant validity.

- Reliability.

5.4.1.1. Exploratory factor analysis for strategic orientation

Twenty two items was used to measure the independent variable (strategic orientation) were subjected to exploratory factor analysis using maximum likelihood (ML), the summary of results was showed in Table 5.4 below. All the remaining items has more than recommended value of at least 0.45 in measure of sample adequacy (MSA) with (KMO) value of 0.736 above the recommended minimum level of 0.60, and Bartlett's test of sphericity is significant ($p < .01$). Thus, the items are appropriate for factor analysis.

Table (5.4) exploratory factor analysis for strategic orientation

Items	Component			Code
	1	2	3	
We constantly monitor our level of commitment and orientation toward customers.		.639		MO2
We measure customer satisfaction systematically and frequently.		.848		MO3
We give close attention to after-sales service.		.613		MO4
Our company has established service standards based on researched customer needs.			1.022	SEO4
Service standards are visible to both employees and customers.			.458	SEO5
An emphasis on constant innovation is a part of our firm culture.	.614			LO4
We basically agree that our firm's ability to learn is the key to our competitive advantage.	.809			LO5
Learning in our firm is seen as a key commodity necessary to guarantee firm survival.	.695			LO6
Kaiser-Meyer-Olkin Measure of Sampling Adequacy				.736
Bartlett's Test of Sphericity				319.261
Total Variance Explained				54.404

Source: prepared by researcher from data analysis (2018)

5.4.1.2. Exploratory factor analysis for operational performance

Seventeen items was used to measure the dependent variable (operational performance) were subjected to exploratory factor analysis using maximum likelihood (ML) the summary of results was showed in Table 5.5 below. All the remaining items has more than recommended value of at least 0.45 in measure of sample adequacy (MSA) with (KMO) value of 0.761 above the recommended minimum level of 0.60, and Bartlett's test of sphericity is significant ($p < .01$). Thus, the items are appropriate for factor analysis.

Table (5.5) exploratory factor analysis for operational performance

Items	Component			Code
	1	2	3	
Our company can quickly introduce new products onto the market.			.686	F3
Our company can quickly respond to changes in market demand.			.691	F4
Our company can quickly respond to changes in competitors.			.686	F5
Improved service quality.	.516			Q1
Reduced costs of defects and rework.	.727			Q2
Reduced delivery lead time of finished products/services to customers.	.803			Q3
Reduced customer complaints.	.558			Q4
A decline in the number of warranty claims.	.525			Q5
Labour productivity		.608		C1
Production cost.		.843		C2
Improved capacity utilization.		.641		C3
Kaiser-Meyer-Olkin Measure of Sampling Adequacy				.761
Bartlett's Test of Sphericity				479.731
Total Variance Explained				56.173

Source: prepared by researcher from data analysis (2018)

5.4.1.3. Exploratory factor analysis for service innovation

Six items was used to measure the mediating variable (service innovation) were subjected to exploratory factor analysis using maximum likelihood (ML) the summary of results was showed in Table 5.6 below. All the remaining items has more than recommended value of at least 0.45 in measure of sample adequacy (MSA) with (KMO) value of 0.674 above the recommended minimum level of 0.60, and Bartlett's test of sphericity is significant ($p < .01$). Thus, the items are appropriate for factor analysis.

Table (5.6) exploratory factor analysis for service innovation

Items	Component		Code
	1	2	
The services were modification of an existing company service		.457	Incremental1
The services were revision of an existing company service.		.844	Incremental2
The services were repositioning of an existing company service.		.553	Incremental3
The services were totally new to the market.	.954		R1
The services offered new features versus competitive services.	.508		R2
Kaiser-Meyer-Olkin Measure of Sampling Adequacy			.674
Bartlett's Test of Sphericity			154.091
Total Variance Explained			50.854

Source: prepared by researcher from data analysis (2018)

5.4.1.4. Exploratory factor analysis for technological capabilities

Five items was used to measure the moderating variable (technological capabilities) were subjected to exploratory factor analysis using maximum likelihood (ML), the summary of results was showed in Table 5.7 below. All the remaining items has more than recommended value of at least 0.45 in measure of sample adequacy (MSA) with (KMO) value of 0.782 above the recommended minimum level of 0.60, and Bartlett's test of sphericity is significant ($p < .01$). Thus, the items are appropriate for factor analysis.

Table (5.7) exploratory factor analysis for technological capabilities

Items	Component	Code
	1	
The firm has strong internal technology operations capabilities.	.619	T1
The firm has the technological infrastructure and competencies to engage in e-commerce initiatives.	.779	T2
Our technological capabilities are top class.	.785	T3
The success of our research and development activities is based on long-term know-how.	.699	T4
We have invested heavily in certain research and development projects.	.678	T5
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.782
Bartlett's Test of Sphericity		322.887
Total Variance Explained		51.100

Source: prepared by researcher from data analysis (2018)

5.4.2. Convergent validity

Convergent validity means that the variables within a single factor are highly correlated. This is evident by the factor loadings. Sufficient/significant loadings depend on the sample size of dataset. Table 5.8 below outlines the thresholds for sufficient/significant factor loadings. Generally, the smaller the sample size, the higher the required loading.

Table (5.8) thresholds for sufficient/significant factor loadings

Sample size	Significant factor loadings
50	0.75
60	0.70
70	0.65
85	0.60
100	0.55
120	0.50
150	0.45
200	0.40
250	0.35
350	0.30

Source: adopted from (Gaskin, 2016)

Since the sample size used in analysis for this study was 161, therefore the sufficient factor loading was 0.45 as shown above in Table 5.8 of the factor structure for (EFA) indicating sufficient convergent validity of the measurement instrument.

5.4.3. Discriminant validity

Discriminant validity refers to the extent to which factors are distinct and uncorrelated. The rule is that variables should relate more strongly to their own factor than to another factor. Two primary methods exist for determining discriminant validity during an (EFA). The first method is to examine the rotated component matrix instead of pattern matrix when principle component used. Variables should load significantly only on one factor. If cross loading do exist (variable loads on multiple factors) then the cross loading should differ by more than 0.2. The second method is to examine the factor correlation matrix. The correlation between factors should not exceed 0.7. The following Table 5.9 shows the Discriminant validity.

Table (5.9) correlation Matrix for discriminant validity

	Components	1	2	3	4	5	6	7	8	9
1	Incremental	0.715								
2	market orientation	0.352	0.707							
3	service orientation	0.357	0.364	0.732						
4	learning orientation	0.355	0.334	0.472	0.714					
5	Flexibility	0.081	0.254	0.203	0.259	0.688				
6	Quality	0.616	0.465	0.397	0.388	0.216	0.641			
7	Cost	0.442	0.139	0.301	0.180	0.295	0.534	0.710		
8	Radical	0.307	0.296	0.247	0.197	0.341	0.471	0.159	0.698	
9	technological capabilities	0.220	0.346	0.028	0.145	0.381	0.333	0.421	0.476	0.762

Source: prepared by researcher from data analysis (2018)

As shown in Table (5.9) the correlation between all factors, are not exceeding 0.7.

5.4.4. Reliability analysis

This study used Cronbach's alpha as diagnostic tool to assess the degree of internal consistency between multiple measurements of variables. (Hair *et al*, 2010) stated that the lower limit for Cronbach's alpha is 0.70, although it may decrease to 0.60 in exploratory research. While Nunnally (1978) considered Cronbach's alpha values greater than 0.60 are taken as reliable. Given that Cronbach's alpha has being the most widely used measure (Sharma, 2000). Table 5.10 presents the summary of the results for reliability analysis. Confirmed that all the scales display the satisfactory level of reliability (Cronbach's alpha exceed the minimum value of 0.60). Therefore it can be concluded that the measures have acceptable level of reliability.

Table (5.10) reliability for study variables after EFA1 Table

Construct	Variables	Number of items	Cronbach's alpha
Strategic orientation	Market orientation	3	.742
	Service orientation	2	.650
	Learning orientation	3	.755
Operational performance	Flexibility	3	.730
	Quality	5	.768
	Cost	3	.744
Service innovation	Incremental	3	.659
	Radical	2	.647
Technological capabilities	Technological capabilities	5	.835

Source: prepared by researcher from data analysis (2018)

5.4.5. Confirmatory factor analysis

Confirmatory Factor Analysis (CFA) is the next step after exploratory factor analysis to determine the factor structure of dataset. In the (EFA) we explore the factor structure (how the variables relate and group based on inter-variable correlations); in the (CFA) we confirm the factor structure we extracted in the (EFA).

5.4.5.1. Confirmatory factor analysis for strategic orientation

The statistical analysis software package was used AMOA (Analysis of Moments of Structure) to perform the process of confirmatory factor analysis for the model, as this package is uses to test the hypotheses relating to the existence or non- existence of a relationship between the variables and underlying factors. The confirmatory factor analysis is also uses to assess the ability of the factor model to change from the actual dataset and also to compare several models of factors in this area. Figure (5.1) below show the Confirmatory Factor Analysis for independent variables

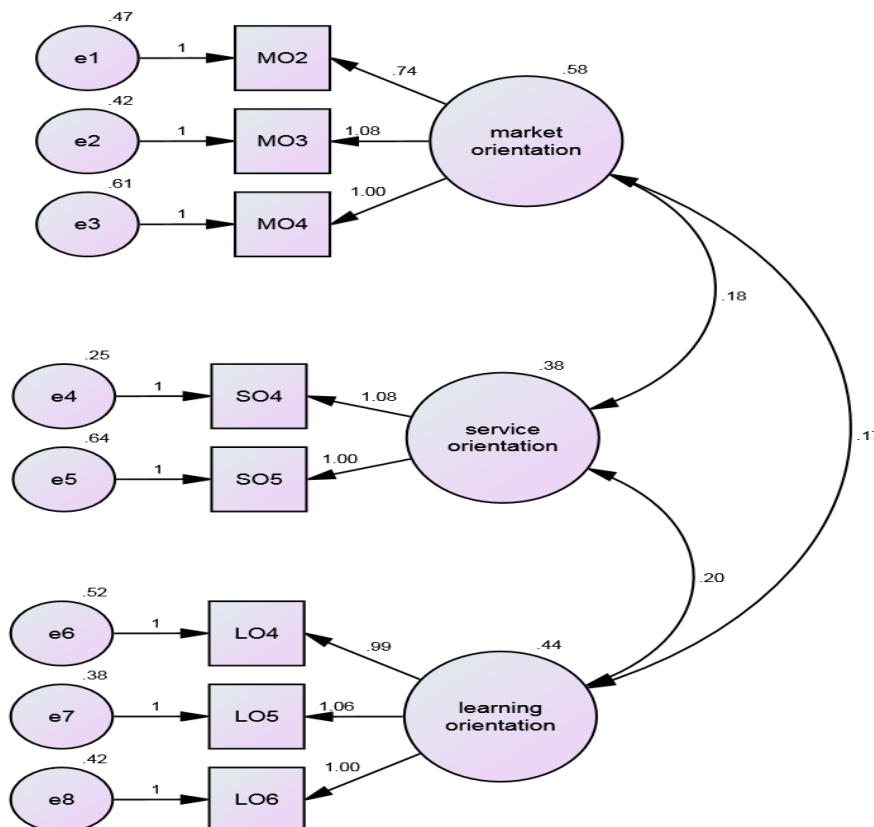


Figure (5.1) Confirmatory Factor Analysis for strategic orientation

Source: prepared by the researcher from data (2018).

The (CFA) fit for independent variables indices show that the measurements model fits the data well: Chi-square/degree of freedom (cmin/df) = 1.899; incremental fit index (IFI) = .931; comparative fit index (CFI) = 1.000 ; goodness of fit index (GFI) = .852; adjusted goodness of fit index (AGFI) = .802; square root mean of residual (SRMR) = .0375; root mean square error of approximation (RMSEA) = .000; and P Close = .872 .

5.4.5.2. Confirmatory factor analysis for operational performance

The statistical analysis software package was used (AMOS) to perform the process of confirmatory factor analysis for the model, as this package is used to test the hypotheses relating to the existence or non- existence of a relationship between the variables and underlying factors. The confirmatory factor analysis is also used to assess the ability of the factor model to change from the actual dataset and also to compare several models of factors in this area. Figure (5.2) below show the Confirmatory Factor Analysis for independent variables

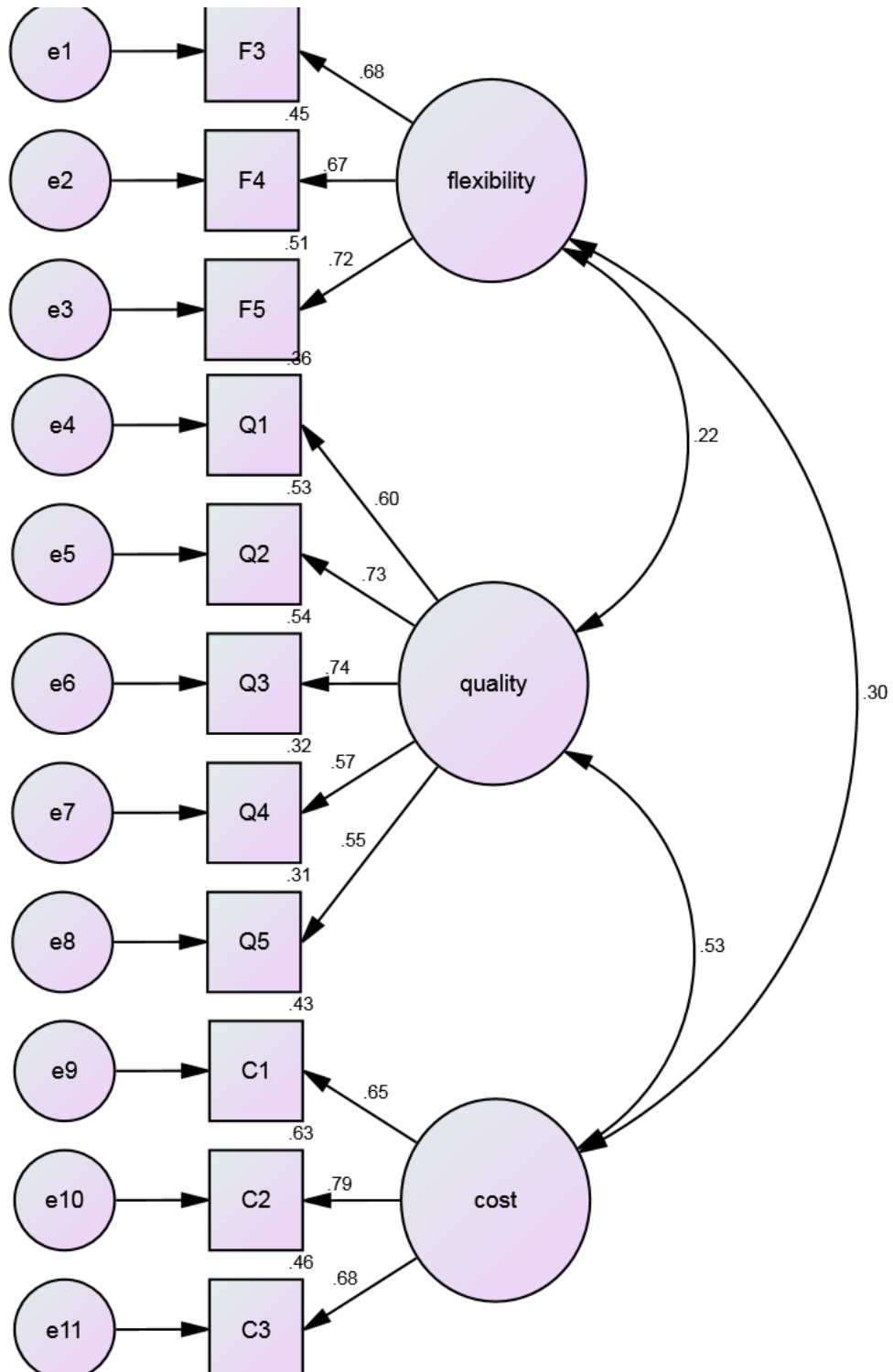


Figure (5.2) Confirmatory Factor Analysis for operational performance

Source: prepared by the researcher from data (2018).

The (CFA) fit for dependent variables indices show that the measurements model fits the data well: Chi-square/degree of freedom (cmin/df) = 1.344; incremental fit index

(IF) = .931; comparative fit index (CFI) = .968; goodness of fit index (GFI) = .852; (GFI)= .945 ; adjusted goodness of fit index (AGFI) = .911; square root mean of residual (SRMR) = .0488; (NFI) = .888; root mean square error of approximation (RMSEA) = .046; and P Close = .549.

5.4.5.3. Confirmatory factor analysis for service innovation

The statistical analysis software package was used (AMOA) to perform the process of confirmatory factor analysis for the model, as this package is uses to test the hypotheses relating to the existence or non- existence of a relationship between the variables and underlying factors. The confirmatory factor analysis is also uses to assess the ability of the factor model to change from the actual dataset and also to compare several models of factors in this area. Figure (5.3) below show the Confirmatory Factor Analysis for independent variables

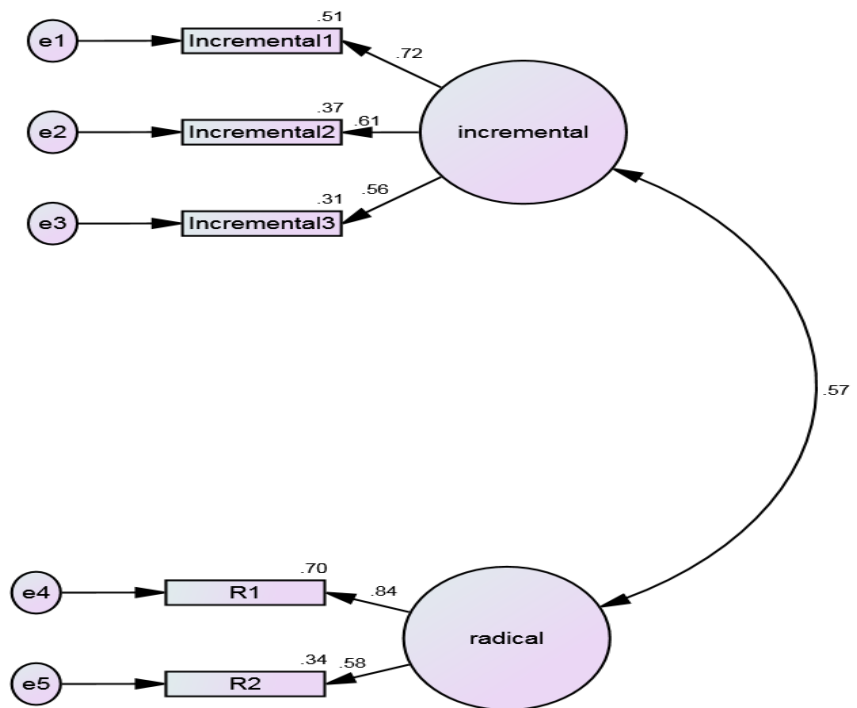


Figure (5.3) Confirmatory Factor Analysis for service innovation

Source: prepared by the researcher from data (2018).

The (CFA) fit for mediating variables indices show that the measurements model fits the data well: Chi-square/degree of freedom (cmin/df) = 4.031; incremental fit index (IF) = .931; comparative fit index (CFI) = .917; goodness of fit index (GFI) = .960; (GFI)= .945 ; adjusted goodness of fit index (AGFI) = .851; square root mean of residual (SRMR) = .0568; (NFI) = .897; root mean square error of approximation (RMSEA) = .138; and P Close = .017.

5.4.5.4. Confirmatory factor analysis for technological capabilities

The statistical analysis software package was used (AMOA) to perform the process of confirmatory factor analysis for the model, as this package is uses to test the hypotheses relating to the existence or non- existence of a relationship between the variables and underlying factors. The confirmatory factor analysis is also uses to assess the ability of the factor model to change from the actual dataset and also to compare several models of factors in this area. Figure (5.4) below show the Confirmatory Factor Analysis for independent variables

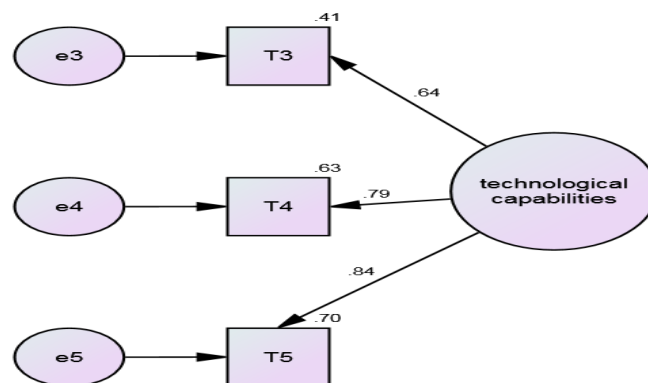


Figure (5.4) Confirmatory Factor Analysis for technological capabilities

Source: prepared by the researcher from data (2018).

The (CFA) fit for moderating variables indices show that the measurements model fits the data well: Chi-square/degree of freedom (cmin/df) = 1.000; incremental fit index (IF) = .931; comparative fit index (CFI) = 1.000; goodness of fit index (GFI) = 1.000; (GFI)= .945 ; adjusted goodness of fit index (AGFI) = 1.000; square root mean of residual (SRMR) = .0000; (NFI) = 1.000; root mean square error of approximation (RMSEA) = .565; and P Close = .000.

5.4.6. Model fit

Model fit refers to how well the proposed model accounts for the correlations between variables in the dataset. If the accounting for all the major correlations inherent in the dataset (with regards to the variables in the model), then the model will have a good fit. If not, then there is a significant “discrepancy” between the correlations proposed and the correlations observed, and thus have poor model fit.

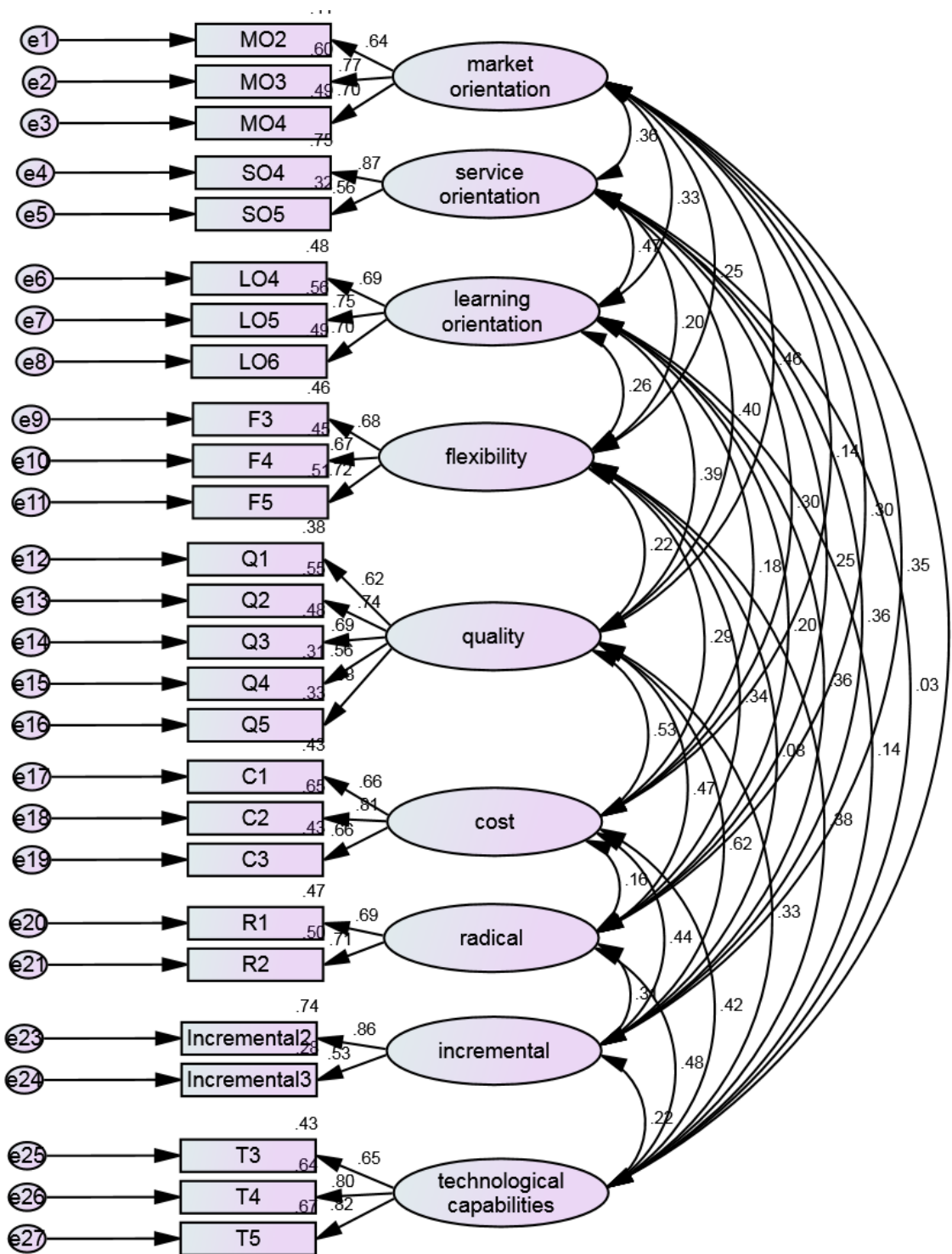


Figure (5.5) Path diagram for value model

Source: prepared by the researcher from data (2018).

There are specific measures that can be calculated to determine goodness of fit. The thresholds listed in the table (5.11) below are simply a guideline.

Table (5.11) measures to determine goodness of model fit

Measure	Threshold
Chi-square/degree of freedom(cmin/df)	< 3 good; < 5 sometimes permissible
P-value for model	>.05
CFI	>.95 great; >.90 traditional; >.80 sometimes permissible
GFI	>.95
AGFI	>.80
SRMR	<.09
RMSEA	<.5 good; .05-.10 moderate;> 10 bad
P Close	>.05

Source: Adopted from (Gaskin, 2017)

Based on the thresholds listed in Table (5.11) above the confirmatory factor analysis (CFA) was run to check the validation of the measurements. Table (5.12) presents the measures and the (CFA) results. The (CFA) fit indices show that the measurements model fits the data well: Chi-square/degree of freedom (cmin/df) = 1.531; incremental fit index (NFI) =.885 comparative fit index (CFI) = .888; goodness of fit index (GFI) = .852; adjusted goodness of fit index (AGFI) = .802; square root mean of residual (SRMR) = .0598; root mean square error of approximation (RMSEA) = .058; and P Close = .132.

Table (5.12) model fit measures

Measure	Estimate	Threshold	Interpretation
CMIN	1.531	--	--
DF	1	--	--
CMIN/DF	1.531	Between 1 and 3	Excellent
GFI	.852	>0.95	Excellent
AGFI	.802	>0.80	Excellent
CFI	.888	>0.95	Excellent
SRMR	.0598	<0.08	Excellent
NFI	.885	>0.95	Excellent
RMSEA	.058	<0.06	Excellent
P Close	.132	>0.05	Excellent

Source: prepared by researcher from data analysis (2018)

5.4.7. Reliability and validity

To evaluate the reliability and validity of the measurement instrument, several statistical analyses were conducted. To verify scale reliability, composite reliability (CR). Table (5.13) shows that all CR values have exceeded the minimum requirement of 0.70. Therefore, the measurement instrument has a high level of reliability (Lee, Foo, Leong, & Ooi, 2016). In terms of convergent validity, the Average Variance Extracted (AVE) for all scales is greater than the suggested threshold 0.5 as recommended by (Fornell & Larcker, 1981) indicating sufficient convergent validity of the measurement instrument. Table (5.13) shows the details of the above mentioned.

Table (5.13) validity and reliability test

Variables	CR	AVE	MSV	ASV
Incremental	0.710	0.512	0.379	0.138
market orientation	0.749	0.500	0.216	0.109
service orientation	0.702	0.536	0.223	0.104
learning orientation	0.777	0.509	0.223	0.096
Flexibility	0.769	0.474	0.145	0.072
Quality	0.812	0.412	0.379	0.196
Cost	0.796	0.505	0.285	0.114
Radical	0.629	0.487	0.227	0.109
technological capabilities	0.773	0.580	0.227	0.106

Source: prepared by the researcher from data (2018)

Based on table 5.13 above the validity concerns showed that convergent validity of the AVE for flexibility is less than 0.50, convergent validity of the AVE for quality is less than 0.50, and convergent validity of the AVE for radical is less than 0.50. And composite reliability of the CR for radical is less than 0.70.

5.5. Modification of conceptual framework and hypotheses

As a result of factor analysis the initial Framework of this study had been changed, the variables, of technological capabilities, service innovation remained without change. However the variables related to strategic orientation has been changed to three variables, market, service, and learning orientations while, the items related to the operational performance were factored into three variables instead of four conceptualized component.

Sequentially, the initial hypotheses presented with the proposed model will be restated. Figure (5.6) presents the modified conceptual framework, and the restated hypotheses are shown in table (5.13).

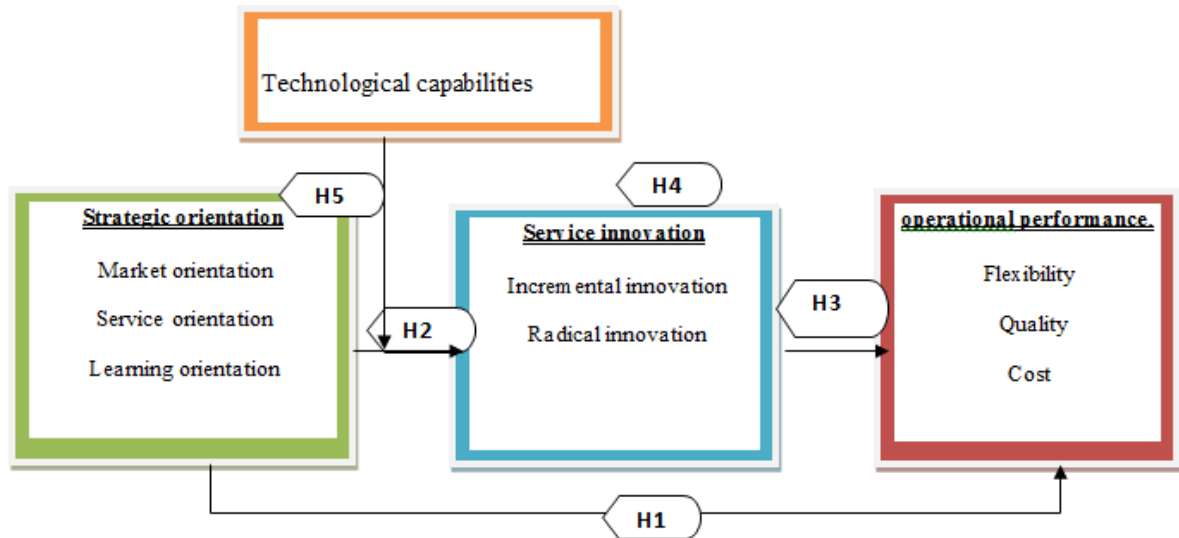


Figure (5.6): The Modified conceptual framework.

Source: prepared by researcher (2018)

Table (5.14) the restated hypotheses

H1. There is a positive relationship between strategic orientation and operational performance.

H1.1 there is a positive relationship between market orientation and flexibility.

H1.2 there is a positive relationship between market orientation and quality.

H1.3 there is a positive relationship between market orientation and cost.

H1.4 there is a positive relationship between service orientation and flexibility.

H1.5 there is a positive relationship between service orientation and quality.

H1.6 there is a positive relationship between service orientation and cost.

H1.7 there is a positive relationship between learning orientation and flexibility.

H1.8 there is a positive relationship between learning orientation and quality.

H1.9 there is a positive relationship between learning orientation and cost.

H2. There is a positive relationship between strategic orientation and service innovation.

H2.1 There is a positive relationship between market orientation and incremental innovation.

H2.2 There is a positive relationship between market orientation and radical innovation.

H2.3 There is a positive relationship between service orientation and incremental innovation.

H2.4 there is a positive relationship between service orientation and radical innovation.

H2.5 There is a positive relationship between learning orientation and incremental innovation.

H2.6 There is a positive relationship between learning orientation and radical innovation.

H3. There is a positive relationship between the service innovation and operational performance.

-
- H3.1** There is a positive relationship between incremental innovation and flexibility.
 - H3.2** There is a positive relationship between incremental innovation and quality.
 - H3.3** There is a positive relationship between incremental innovation and cost.
 - H3.4** There is a positive relationship between radical innovation and flexibility.
 - H3.5** There is a positive relationship between radical innovation and quality.
 - H3.6** There is a positive relationship between radical innovation and cost.
-

H4. Service innovations mediate the relationship between strategic orientation and operational performance.

- H4.1** incremental innovation mediates the relationship between market orientation and flexibility.
 - H4.2** incremental innovation mediates the relationship between service orientation and flexibility.
 - H4.3** incremental innovation mediates the relationship between learning orientation and flexibility.
 - H4.4** incremental innovation mediates the relationship between market orientation and quality.
 - H4.5** incremental innovation mediates the relationship between service orientation and quality.
 - H4.6** incremental innovation mediates the relationship between learning orientation and quality.
 - H4.7** incremental innovation mediates the relationship between market orientation and cost.
 - H4.8** incremental innovation mediates the relationship between service orientation and cost.
 - H4.9** incremental innovation mediates the relationship between learning orientation and cost.
 - H4.10** radical innovation mediates the relationship between market orientation and flexibility.
 - H4.11** radical innovation mediates the relationship between service orientation and flexibility.
 - H4.12** radical innovation mediates the relationship between learning orientation and flexibility.
 - H4.13** radical innovation mediates the relationship between market orientation and quality.
 - H4.14** radical innovation mediates the relationship between service orientation and quality.
 - H4.15** radical innovation mediates the relationship between learning orientation and quality.
 - H4.16** radical innovation mediates the relationship between market orientation and cost.
 - H4.17** radical innovation mediates the relationship between service orientation and cost.
 - H4.18** radical innovation mediates the relationship between learning orientation and cost.
-

H5. Technological capabilities moderate the relationship between strategic orientation and service innovation.

- H5.1** There is a positive moderating effect of technological capabilities on the relationship between market orientation and incremental.
 - H5.2** There is a positive moderating effect of technological capabilities on the relationship between service orientation and incremental.
 - H5.3** There is a positive moderating effect of technological capabilities on the relationship between learning orientation and incremental.
 - H5.4** There is a positive moderating effect of technological capabilities on the relationship between market orientation and radical.
 - H5.5** There is a positive moderating effect of technological capabilities on the relationship between service orientation and radical.
 - H5.6** There is a positive moderating effect of technological capabilities on the relationship between learning orientation and radical.
-

Source: prepared by researcher (2018).

5.6. Descriptive analysis

Descriptive statistics such as mean and standard deviation was used to describe the characteristics of the firms and all the variables (strategic orientation, service innovation, technological capabilities and operational performance) under the study. Given that the study include some of firm characteristics such as property of firm, experience of firm, number of competitors, natural of work and number of labourers.

5.6.1 Descriptive analysis of the model

Table (5.15) shows the means and standard deviations of the study variables components market orientation, service orientation, learning orientation, technological capabilities, incremental, radical, flexibility, quality and cost. The table reveals that the firms operating in Sudan are emphasized the technological capabilities was in the top ranking score (mean=4.0709, standard deviation=.90360), followed by market orientation (mean=3.7896, standard deviation=.67558), followed by learning orientation (mean=3.4771, standard deviation=.57511), followed by Quality (mean=3.4582, standard deviation=.48186), followed by flexibility (mean=3.3976, standard deviation=.56938), followed by Cost (mean=3.2335, standard deviation=.52335), followed by service orientation (mean=3.0972, standard deviation=.51144), followed by Radical (mean=3.0916, standard deviation=.57081), and Incremental (mean=2.6259, standard deviation=.43749). Given that the scale used a 5-point scale (1=strongly disagree, 5=strongly agree), this finding indicates that the technological capabilities tends to inhabit high position in the firms operating in Sudan.

Table (5-15) Descriptive Analysis of the model

Variables name	Mean	Standard Deviation
market orientation	3.7896	.67558
service orientation	3.0972	.51144
learning orientation	3.4771	.57511
Flexibility	3.3976	.56938
Quality	3.4582	.48186
Cost	3.2335	.52335
Incremental	2.6259	.43749
Radical	3.0916	.57081
technological capabilities	4.0709	.90360

Note: All variables used a 5-point likert scale (1= strongly disagree, 5= strongly agree)

5.7. Correlation analysis

The correlation analysis was used between the study variables with aim of identifying the correlative relationship between the independent, dependent, mediating and moderating variables, so whenever the closer the degree of correlation to the integer one, the stronger the correlation between the two variables, whenever the less the degree of correlation than the integer one, the weaker the relationship between the two variables, and the relationship may be direct or inverse. In general, the relationship is weak if the value of the correlation coefficient is less than (0.30), and it can be considered medium if the correlation coefficient value ranges between (0.30-0.70), yet if the value of the correlation is more than (0.70) the relationship is considered strong between variables, and the correlation is considered positive if its value is negative. Table (5-16) shows the values of link between variables.

Table (5 -16) Person correlation coefficient for all variables

<i>Variables</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>
<i>1. Market orientation</i>	<i>1</i>								
<i>2. Service orientation</i>	<i>.441**</i>	<i>1</i>							
<i>3. Learning orientation</i>	<i>.419**</i>	<i>.569**</i>	<i>1</i>						
<i>4. Flexibility</i>	<i>.320**</i>	<i>.255**</i>	<i>.321**</i>	<i>1</i>					
<i>5. Quality</i>	<i>.552**</i>	<i>.481**</i>	<i>.469**</i>	<i>.278**</i>	<i>1</i>				
<i>6. Cost</i>	<i>.196*</i>	<i>.359**</i>	<i>.235**</i>	<i>.361**</i>	<i>.622**</i>	<i>1</i>			
<i>7. Incremental</i>	<i>.434**</i>	<i>.440**</i>	<i>.436**</i>	<i>.120</i>	<i>.726**</i>	<i>.531**</i>	<i>1</i>		
<i>8. Radical</i>	<i>.400**</i>	<i>.310**</i>	<i>.271**</i>	<i>.436**</i>	<i>.572**</i>	<i>.242**</i>	<i>.394**</i>	<i>1</i>	
<i>9. Technological capabilities</i>	<i>.408**</i>	<i>.050</i>	<i>.177*</i>	<i>.464**</i>	<i>.399**</i>	<i>.489**</i>	<i>.270**</i>	<i>.578**</i>	<i>1</i>

Source: prepared by the researcher from data (2018).

Figure (5.7) below show the correlation analysis between study variables, as it was explained that there were moderate links between study variables, and that there were strong and weak links, and correlation analysis showed that there was a reverse correlation between same variables. In the following are hypotheses testing the last part of data analysis and findings.

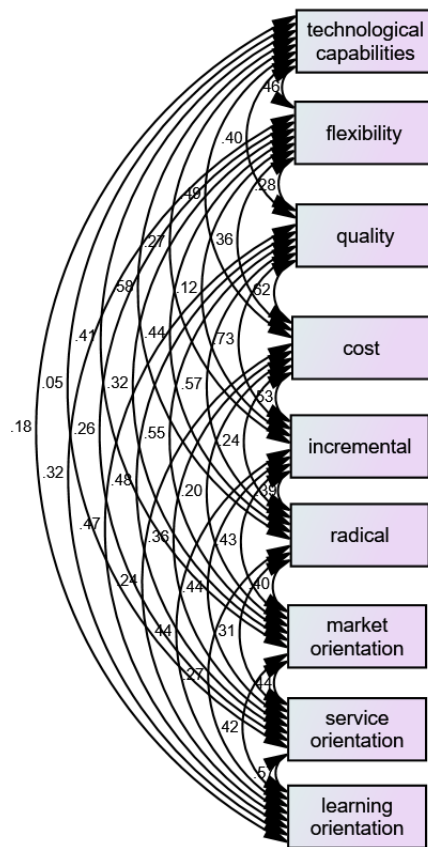


Figure (5.7): Correlation analysis between study variables.

Source: prepared by the researcher from data (2018).

5.8. Hypotheses testing

This section discusses the results of hypotheses of the study. The hypotheses were tested with the path analysis that discloses the effect of independent variables on dependent variables and the effect of mediator and moderator in relationships between variables through the structural equation modeling (SEM) that grows out of and serves purposes similar to multiple regression, but in more powerful way which takes in account the modeling of interactions between variables, nonlinearities, correlated independents, measurement error, correlated error terms, multiple latent independents each measured by multiple indicators, and one or more latent dependents also each with multiple indicators (Gaskin, 2016). SEM may be used as a more powerful alternative to

multiple regression, path analysis, factor analysis, time series analysis, and analysis of covariance. That is, these procedures may be seen as special cases of SEM, or, to put it another way, SEM is an extension of the general linear model (GLM) of which multiple regression is a part. Given that the variables appeared in confirmatory factor analysis encompasses 45 hypotheses in this study. The main effects as well as the mediating effect were examined using path analysis, the statistical procedures of which had been explained in chapter four.

In order to perform path analysis, it is generally agreed that there are at least the assumptions of model fit should be met. It's given that the model fit was done in (CFA), however the need to do it again in structural model is important in order to demonstrate sufficient exploration of alternative models (Gaskin, 2016). Every time the model changes and a hypothesis are tested, model fit must be assessed. Thus the Absolute fit indices and Incremental fit indices assumptions are provided below:

5.8.1. Absolute fit indices

Absolute fit indices provide the most fundamental indication of how well the proposed theory fits the data, it includes indices like the Chi-Squared test, RMSEA, GFI, AGFI, the RMR and the SRMR the information about each are in the following sub sections.

1. The relative/normed chi-square/df (χ^2/df)

Due to the restrictiveness of the Model Chi-Square (Hooper, Coughlan, & Mullen, 2008) indicates that researchers have sought alternative indices the relative/normed chi-square (χ^2/df) which means (the model calculated value of chi-square divided by the degree of freedom), as one example of statistic that minimizes the impact of sample size on the Model Chi-Square. The recommendations regarding an acceptable ratio for this statistic range from as high as 5.0 to as low as 2.0 (Hooper et al, 2008).

2. Root Mean Square Error of Approximation (RMSEA)

The RMSEA is the second fit statistic reported in SEM to tell us how well the model, with unknown but optimally chosen parameter estimates would fit the populations' covariance matrix (Hooper et al, 2008). In recent years it has become regarded as one of the most informative fit indices due to its sensitivity to the number of estimated parameters in the model. In other words, the RMSEA favours parsimony in

that it will choose the model with the lesser number of parameters. Recommendations for RMSEA cut-off points have been reduced considerably in the last fifteen years. Up until the early nineties, an RMSEA in the range of 0.05 to 0.10 was considered an indication of fair fit and values above 0.10 indicated poor fit, and then it was thought that an RMSEA of between 0.08 to 0.10 provides average fit and below 0.08 shows a good fit (Hooper et al, 2008). However, more recently, a cut-off value close to .06 (Hu and Bentler, 1999) or a stringent upper limit of 0.07 (Steiger, 2007) seems to be the general consensus amongst authorities in this area (Hooper et al, 2008). Finally it is generally reported in conjunction with the RMSEA and in a well-fitting model the lower limit is close to 0 while the upper limit should be less than 0.08.

3. Goodness-of-fit statistic (GFI) and the adjusted goodness-of-fit statistic (AGFI)

According to Hooper et al, (2008) the (GFI) was created as an alternative to the Chi-Square test and calculates the proportion of variance that is accounted for by the estimated population covariance, this statistic ranges from 0 to 1 and with larger samples increasing its value and the cut-off point of 0.90 has been recommended for the GFI however, simulation studies have shown that when factor loadings and sample sizes are low a higher cut-off of 0.95 is more appropriate. On the other hand the value of AGFI which adjusts the GFI based upon degrees of freedom also ranges between 0 and 1 and it is generally accepted that values of 0.90 or greater indicate well-fitting models.

4. Root mean square residual (RMR) and standardized root mean square residual (SRMR)

The RMR and the SRMR are the square root of the difference between the residuals of the sample covariance matrix and the hypothesized covariance model. Values for the SRMR range from zero to 1.0 with well-fitting models obtaining values less than .05, however values as high as 0.08 are deemed acceptable (Hooper et al, 2008). An SRMR of 0 indicates perfect fit but it must be noted that SRMR will be lower when there is a high number of parameters in the model and in models based on large sample sizes (Hooper et al, 2008).

5.8.2. Incremental fit indices

Incremental fit indices are a group of indices that do not use the chi-square in its raw form but compare the chi-square value to a baseline model this means it use to measure

how well the model fits in comparison to no model at all. This category includes Normed-fit index (NFI), Non-Normed Fit Index (NNFI) and Comparative fit index (CFI) (Hooper et al, 2008). The following sub sections will discuss these indices.

1. Normed-fit index (NFI)

This statistic assesses the model by comparing the χ^2 value of the model to the χ^2 of the null model. Values for this statistic range between 0 and 1 with Bentler and Bonnet (1980) recommending values greater than 0.90 indicating a good fit. More recent suggestions state that the cut-off criteria should be $NFI \geq .95$ (Hu and Bentler, 1999).

2. Non-Normed Fit Index (NNFI)

Non-Normed Fit Index (NNFI), also known as the Tucker-Lewis index (TLI), is an index that prefers simpler models. Recommendations as low as 0.80 as a cutoff have been preferred however Hu and Bentler (1999) have suggested $NNFI \geq 0.95$ as the threshold.

3. Comparative fit index (CFI)

This statistic assumes that all latent variables are uncorrelated (null/independence model) and compares the sample covariance matrix with this null model. The values for this statistic range between 0.0 and 1.0 with values closer to 1.0 indicating good fit. A cut-off criterion of $CFI \geq 0.90$ was initially advanced however, recent studies have shown that a value greater than 0.90 is needed in order to ensure that miss-specified models are not accepted (Hu & Bentler, 1999). From this, a value of $CFI \geq 0.95$ is presently recognized as indicative of good fit (Hu & Bentler, 1999). Today this index is included in all SEM programs and is one of the most popularly reported fit indices due to being one of the measures least affected by sample size (Fan, Thompson, & Wang, 1999).

5.8.3. The relationship between strategic orientation and operational performance.

This section aims to investigate the first hypotheses in this study which assumes that the strategic orientation dimensions have positive relationship with the operational performance dimensions as shown in figure (5.8) below. Based on the below figures nine hypotheses were developed to be tested. Therefore, to test these hypotheses, a

similar process of path analysis using AMOS was conducted to predict the impacts of strategic orientation dimensions on operational performance dimensions.

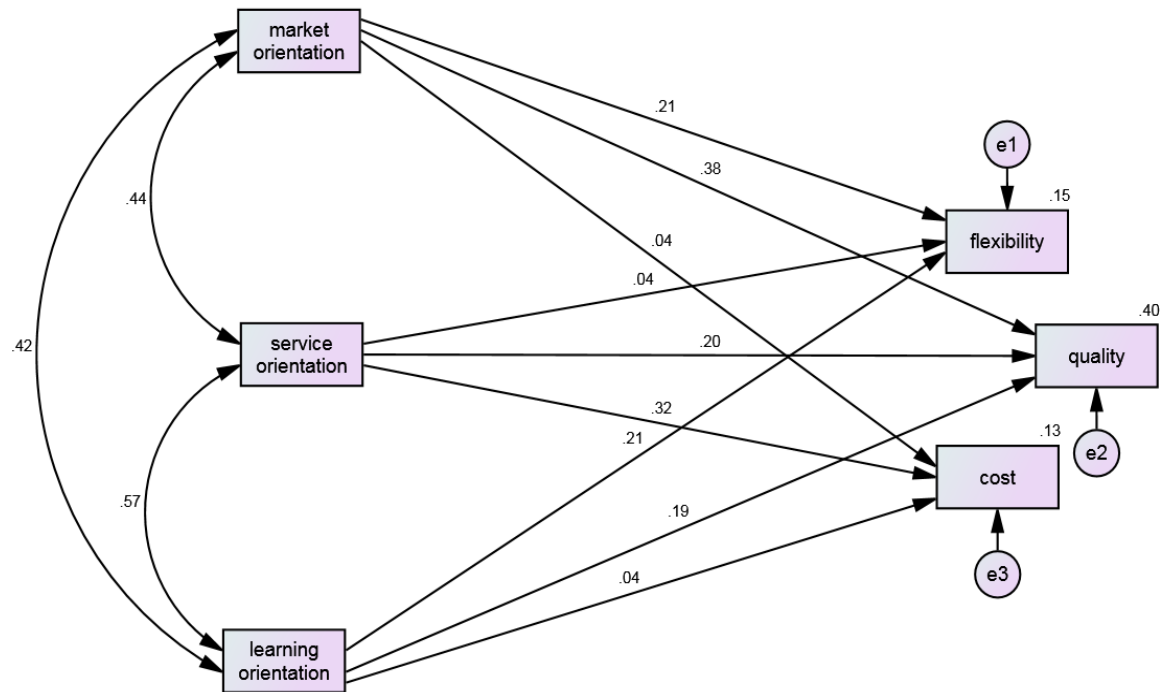


Figure (5.8): The Relationship between SO and OP.

Source: prepared by the researcher from data (2018).

From the above figure first hypotheses was developed to be tested. In order to test this hypothesis, path analysis in (SEM) using AMOS was conducted to tests the impacts of strategic orientation dimensions on operational performance dimensions. The results of path analysis showing Model fit parameters consistent with recommendation as follow, CMIN/DF=2.365, RMSEA=.421, GFI=.871, AGFI=.098, SRMR=.029, NFI=.727, IFI= .963 CFI=.724, and PCLOSE=.060.

Table (5.17) summarizes the results of regression analysis. First, the analysis of the results showed that the three components of strategic orientation have partial significant relationship with flexibility, the results indicate positive relationship between the two variables with values of (estimate =.180, $p < 0 .05$; estimate =.205, $p < 0.05$) respectively to (market orientation, and learning orientation) on flexibility and not positive relationship between service orientation and flexibility, estimate =.048, $p>0.05$.

These results give supported to hypotheses H1.1 (The market orientation and flexibility), not supported H1.2 (The service orientation and flexibility) and supported H1.3 (The learning orientation and flexibility).

Second, analysis of the results in table 5.17 also showed that (market orientation, service orientation and learning orientation) have significant and positive relationship with quality respectively to (estimate = .273, $p < 0.01$; estimate = .190, $p < 0.05$; estimate = .163, $p < 0.05$).

These results give supported to hypotheses H1.4 (market orientation and quality.), H1.5 (service orientation and quality.) and H1.6 (learning orientation and quality). Further analysis of the results in table 5.17 showed that (market orientation and learning orientation) have not significant relationship with cost respectively to (estimate = .030, $p > 0.05$; estimate = .033, $p > 0.05$), while the (service orientation) has significant relationship with cost, (estimate = .329, $p < 0.01$). These results give not supported to hypotheses H1.7 (market orientation and cost.), supported H1.8 (service orientation and cost) and not supported H1.9 (learning orientation and cost). Thus hypothesis **H1** which states that there is partially positive relationship between strategic orientation and operational performance was partially supported.

Table (5.17) regression weights for relationship between SO and OP

Relationship		Estimate	S.E.	C.R.	P
Flexibility	<--- market orientation	.180	.070	2.559	.011
Flexibility	<--- service orientation	.048	.103	.467	.640
Flexibility	<--- learning orientation	.205	.090	2.273	.023
Quality	<--- market orientation	.273	.050	5.453	.000
Quality	<--- service orientation	.190	.073	2.605	.009
Quality	<--- learning orientation	.163	.064	2.535	.011
Cost	<--- market orientation	.030	.065	.464	.643
Cost	<--- service orientation	.329	.095	3.452	.000
Cost	<--- learning orientation	.033	.084	.390	.696

Source: prepared by the researcher from data (2018).

In accordance with the above mentioned the general trend of the exchange between strategic orientation and operational performance was partially supported. Table (5.18) presents the summary of hypotheses testing results for the relationship between strategic orientation and operational performance.

Table (5.18) summary of hypotheses testing results for the relationship between SO and OP

<i>H1</i>	<i>Remark</i>
<i>The relationship between strategic orientation and operational performance.</i>	<i>partially supported</i>
Strategic orientation and flexibility.	partially supported
H1.1. the relationship between market orientation and flexibility.	supported
H1.2. the relationship between service orientation and flexibility.	not supported
H1.3. the relationship between learning orientation and flexibility.	supported
Strategic orientation and quality.	Fully supported
H1.4. the relationship between market orientation and quality.	Supported
H1.5. the relationship between service orientation and quality.	Supported
H1.6. the relationship between learning orientation and quality.	supported
Strategic orientation and cost.	partially supported
H1.7. the relationship between market orientation and cost.	not supported
H1.8. the relationship between service orientation and cost.	Supported
H1.9. the relationship between learning orientation and cost.	not supported

Source: prepared by researcher from data (2018)

5.8.4. The relationship between strategic orientation and service innovation.

This section aims to investigate the second hypotheses in this study which assumes that the strategic orientation dimensions have positive relationship with the service innovation dimensions as shown in figure (5.9) below. Based on the below figures six hypotheses were developed to be tested. Therefore, to test these hypotheses, a similar process of path analysis using AMOS was conducted to predict the impacts of strategic orientation dimensions on service innovation dimensions.

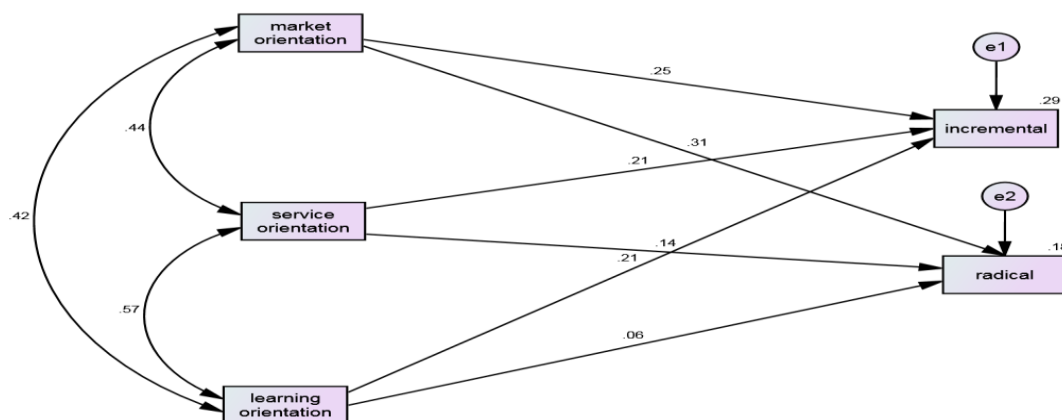


Figure (5.9): The relationship between SO and SI.

Source: prepared by the researcher from data (2018).

The results of path analysis showing Model fit parameters consistent with recommendation as follow, CMIN/DF= 3.357, RMSEA=.214, GFI=.980, AGFI=.701, SRMR=.071, NFI=.959, IFI= .963 CFI=.962, and PCLOSE=.052. Table (5.19) summarizes the results of regression analysis. Showed that the three components of strategic orientation have significant relationship with the all components of service innovation except the service and learning orientation with radical innovation

Regarding the effect of strategic orientation on incremental the regression weights output shows that significant relationship between market, service and learning orientations and incremental (estimates=.164, $p < 0.01$; estimates=.177, $p < 0.05$; estimates=.162, $p < 0.05$). Thus, the outcomes indicate a positive relationship between strategic orientation and incremental. These results give support to hypotheses H2.1 (market orientation and incremental), support to hypotheses H2.2 (service orientation and incremental) and support to hypotheses H2.3 (learning orientation and incremental).

In terms of the exchange between strategic orientation and radical the regression weights shows significant relationship between market orientation and radical (estimates=.265, $p < 0.01$) and not significant effect between (service orientation and learning orientation) and radical (estimates=.153, $p > 0.05$; estimates=.061, $p > 0.05$). These results give support to hypotheses H2.4 (market orientation and radical) not support H2.5 (service orientation and radical) and it will not support H2.6 (learning orientation and radical). Thus hypothesis **H2** which states that there is a positive relationship between strategic orientation and service innovation was partially supported.

Table (5.19) Regression weights for relationship between SO and SI

Relationship			Estimate	S.E.	C.R.	P
incremental	<---	market orientation	.164	.049	3.333	.000
incremental	<---	service orientation	.177	.072	2.463	.014
incremental	<---	learning orientation	.162	.063	2.564	.010
radical	<---	market orientation	.265	.069	3.846	.000
radical	<---	service orientation	.153	.101	1.518	.129
radical	<---	learning orientation	.061	.088	.689	.491

Source: prepared by the researcher from data (2018).

In accordance with the above mentioned the general trend of the exchange between strategic orientation and service innovation was partially supported. Table (5.20)

presents the summary of hypotheses testing results for the relationship between strategic orientation and service innovation.

Table (5.20) Summary of hypotheses testing results for the relationship between SO and SI

H2	Remark
The relationship between strategic orientation and service innovation.	partially supported
Strategic orientation and incremental.	fully supported
H2.1. the relationship between market orientation and incremental.	Supported
H2.2. the relationship between service orientation and incremental.	Supported
H2.3. the relationship between learning orientation and incremental.	Supported
Strategic orientation and radical.	partially supported
H2.4. the relationship between market orientation and radical.	Supported
H2.5. the relationship between service orientation and radical.	not supported
H2.6. the relationship between learning orientation and radical.	not supported

Source: prepared by researcher from data (2018)

5.8.5. The relationship between service innovation and operational performance.

This section concerns with testing of third hypotheses in this study which assumes that the service innovation such as (incremental and radical) have positive relationship with operational performance (flexibility, quality and cost) as shown in figure (5.10) below.

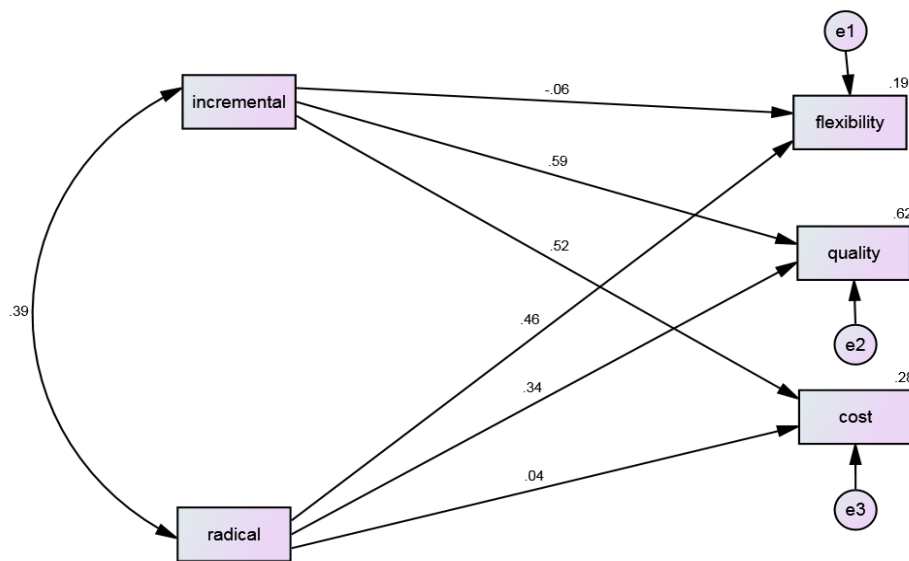


Figure (5.10): The relationship between SI and OP.

Source: prepared by the researcher from data (2018).

The results of path analysis showing Model fit parameters consistent with recommendation as follow, CMIN/DF= 1.262, RMSEA=.338, GFI=.881, AGFI=.406, SRMR=.026, NFI=.824, IFI=.832 CFI=.828, and PCLOSE=.070. Table (5.21) summarizes the results of regression analysis. Showed that the two components of service innovation have a significant and positive relationship with the components of operational performance

Regarding the effect of incremental on operational performance the regression weights output shows not significant relationship between incremental and flexibility (estimates=-.080, $p>0.05$) and significant effect between incremental with quality and cost (estimates=.653, $p<0.01$; estimates=.616, $p<0.01$). Thus, the outcomes indicate a partially positive relationship between incremental and operational performance. These results give not support to hypotheses H3.1 (incremental and flexibility), support to hypotheses H3.2 (incremental and quality) and support to hypotheses H3.3 (incremental and cost).

In terms of the exchange between radical and operational performance the regression weights shows significant relationship between radical with all dimensions of operational performance, (estimates=.459, $p<0.01$; estimates=.286, $p<0.01$;

estimates=.036, $p < 0.05$). These results give support to hypotheses H3.4 (radical and flexibility) support hypotheses H3.5 (radical and quality) and support H3.6 (radical and cost). Thus, hypothesis **H3** which states that there is a positive relationship between service innovation and operational performance was partially supported.

Table (5-21) regression weights for relationship between SI and OP

Relationship			Estimate	S.E.	C.R.	P
flexibility	<---	incremental	-.080	.101	-.791	.429
quality	<---	incremental	.653	.058	11.239	.000
cost	<---	incremental	.616	.087	7.070	.000
cost	<---	Radical	.036	.067	.536	.002
quality	<---	Radical	.286	.045	6.418	.000
flexibility	<---	Radical	.459	.077	5.957	.000

Source: prepared by the researcher from data (2018).

In accordance with the above mentioned the general trend of the exchange between service innovation and operational performance was partially supported. Table (5.22) presents the summary of hypotheses testing results for the relationship between service innovation and operational performance.

Table (5.22) summary of hypotheses testing results for the relationship between SI and OP.

<i>H3</i>	<i>Remark</i>
<i>The relationship between service innovation and operational performance.</i>	<i>partially supported</i>
Incremental and operational performance.	Partially supported
H3.1. the relationship between incremental and flexibility.	not supported
H3.2. the relationship between incremental and quality.	Supported
H3.3. the relationship between incremental and cost.	Supported
Radical and operational performance.	Fully supported
H3.4. the relationship between radical and flexibility.	Supported
H3.5. the relationship between radical and quality.	Supported
H3.6. the relationship between radical and cost.	Supported

Source: prepared by researcher from data (2018)

5.8.6. The mediating role of service innovation.

The fourth part of hypotheses testing in this study deals with the mediating role of service innovation which included in **H4**. The support from the first three hypotheses provides the initial steps required to test the fourth hypothesis in the study which

predicts whether service innovation (incremental and radical) may be a mediating variable between the strategic orientation (market, service and learning orientations) and operational performance (flexibility, quality and cost). As shown in figure (5.11) below.

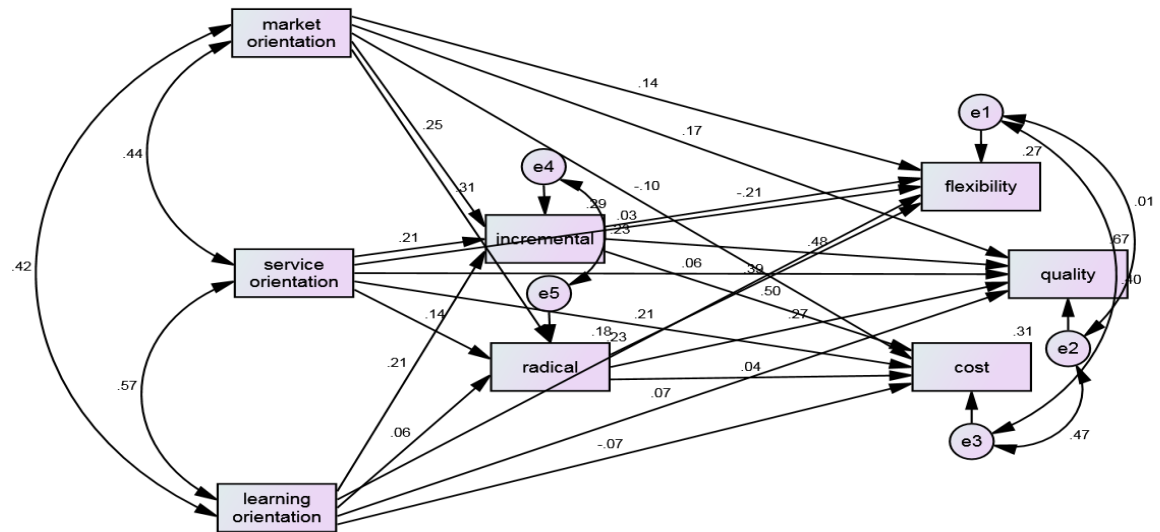


Figure (5.11) the mediating effect of service innovation.

Source: prepared by the researcher from data (2018).

Concerning the model fit recommendation AMOS output showing Model fit indices as follow, CMIN/DF=1.000, RMSEA=.347, GFI=1.000, AGFI=1.000, SRMR=.028, NFI=1.000, CFI=1.000, IFI=1.000 and PCLOSE=.081.

5.8.6.1. The mediating role of incremental innovation in the relationship between SO and OP.

In this part the incremental innovation was hypothesized to mediate the relationship between strategic orientation (market orientation, service orientation and learning orientation) and operational performance (flexibility, quality and cost) as follows:

5.8.6.1.1. The mediating role of incremental innovation in the relationship between SO and flexibility.

In this subsection the incremental service innovation was hypothesized to mediate the relationship between strategic orientation and flexibility as shown in figure (5.12)

below. However, to test this hypothesis an examination of whether incremental mediates the relationship between market orientation and flexibility must be estimated firstly. Secondly, the examination of whether incremental mediates the relationship between service orientation and flexibility. Thirdly, the examination of whether incremental mediates the relationship between learning orientation and flexibility.

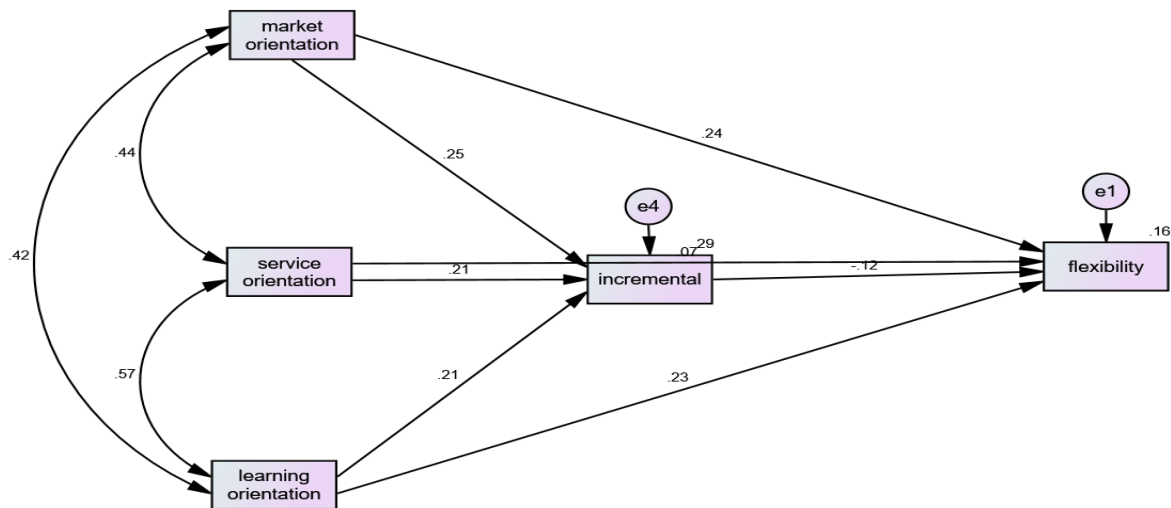


Figure (5.12) the mediating effect of incremental between SO and flexibility.

Source: prepared by the researcher from data (2018).

The result of regression weights presented in table (5.23) below which' represents the direct effects shows market orientation significantly influence flexibility ($p=0.05$), market orientation significantly influence incremental innovation ($p<0.01$), and incremental innovation not significantly influence flexibility ($p>0.05$).

Table (5.23) regression weights for direct effect between SO, II and flexibility

Relationship		Estimate	S.E.	C.R.	P
incremental	<--- market orientation	.164	.049	3.333	000
incremental	<--- service orientation	.177	.072	2.463	.014
incremental	<--- learning orientation	.162	.063	2.564	.010
Flexibility	<--- Incremental	-.151	.113	-1.339	.181
Flexibility	<--- market orientation	.205	.072	2.829	.005
Flexibility	<--- service orientation	.075	.104	.717	.473
Flexibility	<--- learning orientation	.230	.092	2.506	.012

Source: prepared by the researcher from data (2018).

On the other hand, table (5.24) illustrates the indirect effect shows no significant relationship between market orientation and flexibility through incremental innovation. This, result confirmed that no mediation role of incremental innovation in the relationship between market orientation and flexibility. Thus, the summing indirect effect indicated no mediation of incremental innovation with the above mentioned relationship.

Table (5.24) User-defined estimands for indirect effect between MO and flexibility

Parameter	Estimate	Lower	Upper	P
A x B	-.025	-.090	.016	.188

Source: prepared by the researcher from data (2018).

With regards to the examination of whether incremental innovation mediates the relationship between service orientation and flexibility as depicted in figure (5.12) and table (5.23) above shows service orientation not significantly influence flexibility ($p > 0.05$), service orientation significantly influence incremental innovation ($p < 0.05$), and incremental innovation not significantly influence flexibility ($p > 0.05$). On the other hand, table (5.25) below presented the indirect effect shows not significant relationship between service orientation and flexibility through incremental innovation ($p > 0.05$). This, result confirms the no mediating role of incremental innovation in the relationship between service orientation and flexibility. Thus, the summing up of the direct and indirect effect indicated no mediation of incremental innovation with the above mentioned relationship.

Table (5.25) User-defined estimands for indirect effect between SEO and flexibility

Parameter	Estimate	Lower	Upper	P
A x B	-.027	-.116	.018	.232

Source: prepared by the researcher from data (2018).

With regards to the examination of whether incremental innovation mediates the relationship between learning orientation and flexibility as depicted in figure (5.12) and table (5.23) above show that learning orientation significantly influence flexibility

($p < 0.05$), learning orientation significantly influence incremental innovation ($p < 0.05$), and incremental innovation not significantly influence flexibility ($p > 0.05$). Whereas, table (5.26) presented the indirect effect shows not significant relationship between learning orientation and flexibility through incremental innovation ($p > 0.05$). This, result confirms the no mediating role of incremental innovation in the relationship between learning orientation and flexibility. Thus, the summing up of the indirect effect indicated no mediation of incremental innovation with the above mentioned relationship.

Table (5.26) User-defined estimands for indirect effect between LO and flexibility

Parameter	Estimate	Lower	Upper	P
A x B	-.024	-.091	.018	.228

Source: prepared by the researcher from data (2018).

Given all the above mentioned the hypothesis of incremental as service innovation no mediates the relationship between the strategic orientation and flexibility is fully not supported in this study.

5.8.6.1.2. The mediating role of incremental innovation in the relationship between SO and quality.

In this subsection the incremental innovation was hypothesized to mediate the relationship between strategic orientation and quality as shown in figure (5.13) below. However, to test this hypothesis an examination of whether incremental innovation mediates the relationship between market orientation and quality must be estimated firstly. Then, the prediction of whether incremental innovation mediates the relationship between service orientation and quality must be tested secondly. And prediction of whether incremental innovation mediates the relationship between learning orientation and quality must be tested thirdly.

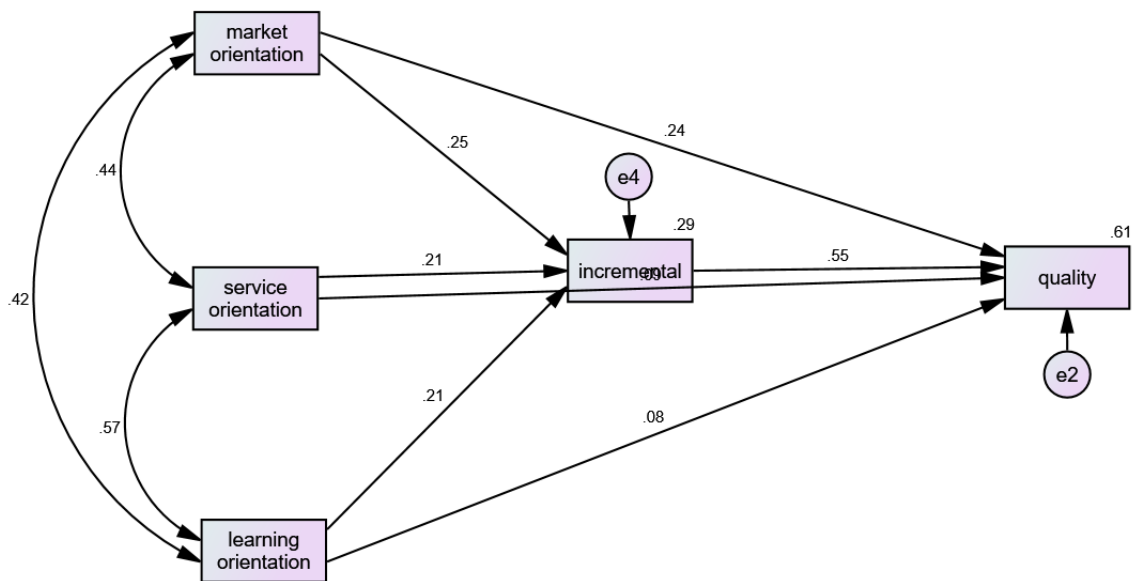


Figure (5.13) the mediating role of incremental between SO and quality.

Source: prepared by the researcher from data (2018).

Table (5.27) below shows market orientation significantly influence quality ($p < 0.01$), market orientation significantly influence incremental innovation ($p < 0.01$), and incremental innovation significantly influence quality ($p < 0.01$).

Table (5.27) regression weights for direct effect between SO, II and quality

Relationship			Estimate	S.E.	C.R.	P
incremental	<---	market orientation	.164	.049	3.333	.000
incremental	<---	service orientation	.177	.072	2.463	.014
incremental	<---	learning orientation	.162	.063	2.564	.010
Quality	<---	Incremental	.604	.065	9.345	.000
Quality	<---	market orientation	.174	.042	4.175	.000
Quality	<---	service orientation	.083	.060	1.393	.164
Quality	<---	learning orientation	.065	.053	1.232	.218

Source: prepared by the researcher from data (2018)

Whereas, Table (5.28) presented the indirect effect shows significant relationship between market orientation and quality through incremental innovation ($p < 0.05$). This result confirmed that a partial mediation of incremental innovation in the relationship between market orientation and quality.

Table (5.28) User-defined estimands for indirect effect between MO and quality

Parameter	Estimate	Lower	Upper	P
A x B	.099	.034	.184	.001

Source: prepared by the researcher from data (2018).

With regards to the examination of whether incremental innovation mediates the relationship between service orientation and quality as depicted in figure (5.13), above. While, the result of regression weights for the direct effects in Table (5.27) shows service orientation not significantly influence quality ($p > 0.05$), service orientation significantly influence incremental innovation ($p < 0.05$), and incremental innovation significantly influence quality ($p < 0.01$). Whereas, able (5.29) illustrates the indirect effect shows significant relationship between service orientation and quality through incremental innovation ($p < 0.05$). Thus, this result confirms the indirect effect indicated that there is full mediation of incremental innovation with the above mentioned relationship.

Table (5.29) User-defined estimands for indirect effect between SEO and quality

Parameter	Estimate	Lower	Upper	P
A x B	.107	.014	.224	.026

Source: prepared by the researcher from data (2018)

With regards to the examination of whether incremental innovation mediates the relationship between learning orientation and quality as depicted in figure (5.13) above, the result of regression weights for the direct effects in table (5.27) shows learning orientation not significantly influence quality ($p > 0.05$), learning orientation significantly influence incremental innovation ($p < 0.05$), and incremental innovation significantly influence quality ($p < 0.01$).

On the other hand, table (5.30) illustrates the indirect effect shows significant relationship between learning orientation and quality through incremental innovation ($p < 0.05$). This, result confirms that full mediation of incremental innovation in the relationship between learning orientation and quality.

Table (5.30) User-defined estimands for indirect effect between LO and quality

Parameter	Estimate	Lower	Upper	P
A x B	.098	.022	.182	.013

Source: prepared by the researcher from data (2018).

Given all the above mentioned the hypothesis of incremental as service innovation full mediates the relationship between the strategic orientation and quality is fully supported in this study.

5.8.6.1.3. The mediating role of incremental innovation in the relationship between SO and cost.

The incremental innovation was hypothesized to mediate the relationship between strategic orientation and cost. However, to test this hypothesis an examination of whether incremental innovation mediates the relationship between market orientation, service orientation and learning orientation with the cost as shown in figure (5.14) below, incremental innovation mediates the relationship between market orientation and cost must be estimated firstly, the prediction of whether incremental mediates the relationship between service orientation and cost must be tested secondly, and the prediction of whether incremental innovation mediates the relationship between learning orientation and cost must be tested thirdly.

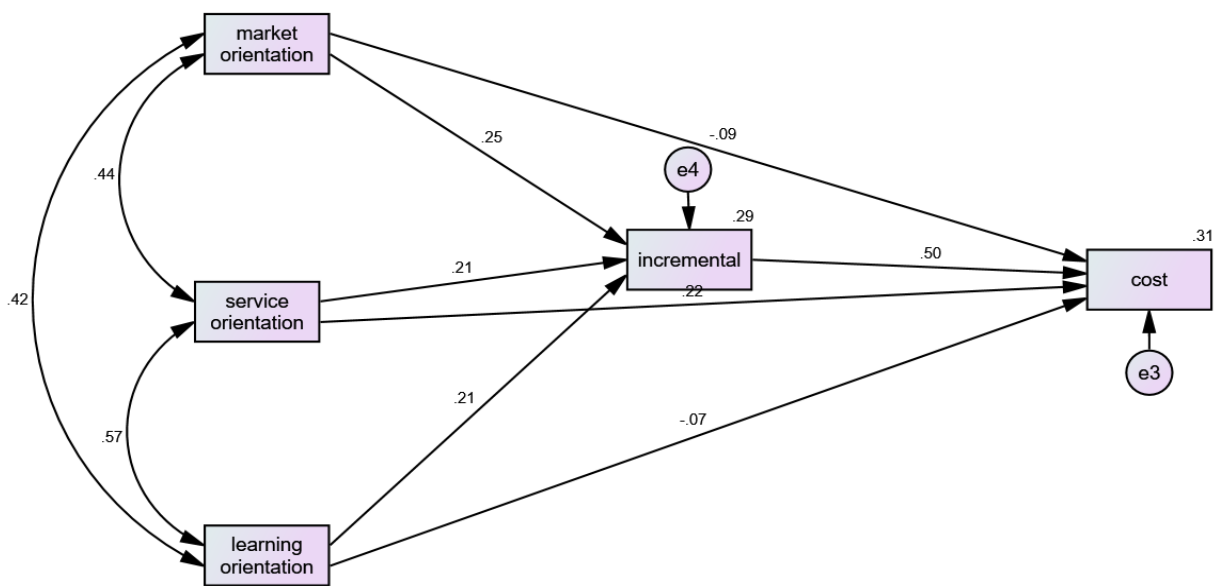


Figure (5.14) the mediating role of incremental between SO and cost.

Source: prepared by the researcher from data (2018).

To examine the mediating role of incremental between market orientation and cost, the result of regression weights for the direct effects in table (5.31) below shows market orientation not significantly influence cost ($p > 0.05$), significant influence between market orientation and incremental innovation ($p < 0.01$), and incremental innovation significantly influence cost ($p < 0.01$).

Table (5.31) Regression Weights for direct effect between SO, II and cost

Relationship		Estimate	S.E.	C.R.	P
incremental	<--- market orientation	.164	.049	3.333	.000
incremental	<--- service orientation	.177	.072	2.463	.014
incremental	<--- learning orientation	.162	.063	2.564	.010
Cost	<--- Incremental	.604	.093	6.469	.000
Cost	<--- market orientation	-.069	.060	-1.145	.252
Cost	<--- service orientation	.222	.086	2.570	.010
Cost	<--- learning orientation	-.065	.076	-.856	.392

Source: prepared by the researcher from data (2018).

Beside the direct effects, Table (5.32) illustrates the indirect effect shows significant relationship between market orientation and cost through incremental innovation ($p < 0.05$). This, result indicates that full mediation of incremental innovation in the relationship between market orientation and cost.

Table (5.32) User-defined estimands for indirect effect between MO and cost

Parameter	Estimate	Lower	Upper	P
A x B	.099	.035	.217	.001

Source: prepared by the researcher from data (2018).

With regards to the examination of whether incremental innovation mediates the relationship between service orientation and cost as depicted in figure (5.14) above, the result of regression weights for the direct effects in table (5.31) above shows service orientation significantly influence cost ($p < 0.05$), service orientation significantly influence incremental innovation ($p < 0.5$), and incremental innovation significantly influence cost ($p < 0.001$). Whereas, table (5.33) illustrates the indirect effect shows significant relationship between service orientation and cost through incremental innovation ($p < 0.05$). This, result indicates that partial mediation of incremental innovation in the relationship between service orientation and cost.

Table (5.33) User-defined estimands for indirect effect between SEO and cost

Parameter	Estimate	Lower	Upper	P
A x B	.107	.015	.240	.021

Source: prepared by the researcher from data (2018).

With regards to the examination of whether incremental innovation mediates the relationship between learning orientation and cost as depicted in figure (5.14) above, the result of regression weights for the direct effects in Table (5.30) shows learning orientation not significantly influence cost ($p > 0.05$), learning orientation significantly influence incremental innovation ($p < 0.05$), and incremental innovation significantly influence cost ($p < 0.01$).

Whereas, table (5.34) illustrates the indirect effect shows significant relationship between learning orientation and cost through incremental innovation ($p < 0.05$). This, result indicated that a full mediation of incremental innovation in the relationship between learning orientation and cost.

Table (5.34) User-defined estimands for indirect effect between LO and cost

Parameter	Estimate	Lower	Upper	P
A x B	.098	.029	.191	.007

Source: prepared by the researcher from data (2018).

Given all the above mentioned the hypothesis of incremental innovation mediates the relationship between the strategic orientation and cost is fully supported in this study.

5.8.6.2. The mediating role of radical innovation in the relationship between SO and OP.

In this part the radical innovation was hypothesized to mediate the relationship between strategic orientation (market orientation, service orientation and learning orientation) and operational performance (flexibility, quality and cost) as follows:

5.8.6.2.1 The mediating role of radical innovation in the relationship SO and flexibility.

The radical innovation was hypothesized mediate the relationship between strategic orientation and flexibility. However, to test this hypothesis an examination of whether radical innovation mediates the relationship between market orientation and flexibility, the examination of whether radical innovation mediates the relationship between service orientation and flexibility and examination of whether radical innovation mediates the relationship between learning orientation and flexibility as shown in figure (5.15) below.

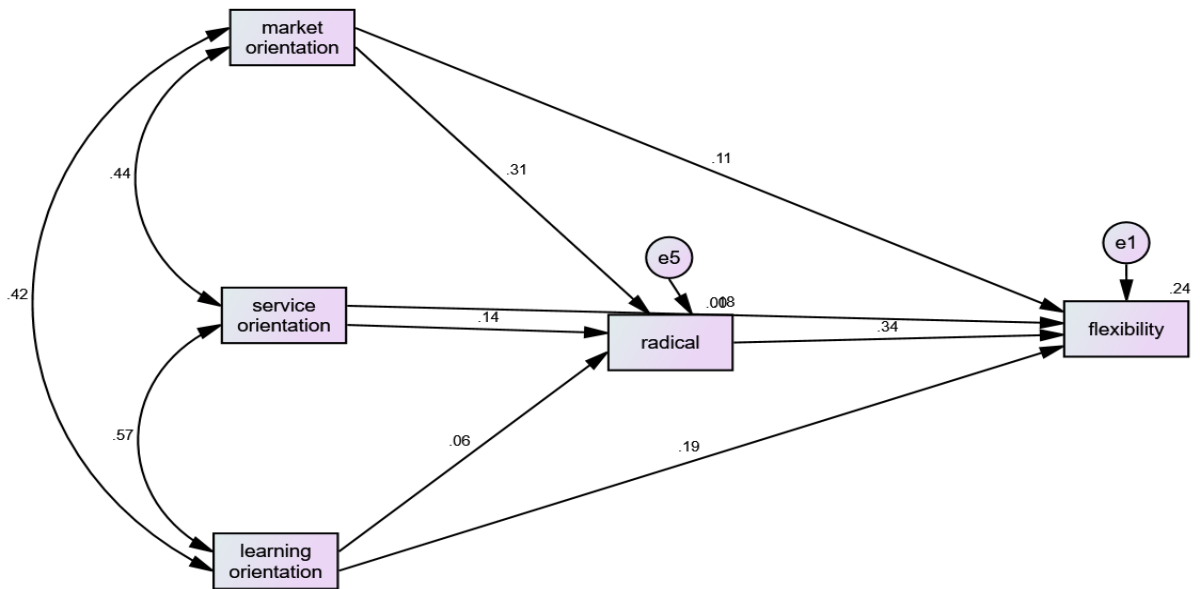


Figure (5.15) the mediating role of RI between SO and flexibility relationship.

Source: prepared by the researcher from data (2018).

The result of regression weights for the direct effects in table (5.35) below shows market orientation not significantly influence flexibility ($p > 0.5$), significant influence between market orientation and radical ($p > 0.01$), and radical innovation significantly influence flexibility ($p < 0.01$).

Table (5.35) Regression Weights for direct effect between SO, RI and flexibility

Relationship			Estimate	S.E.	C.R.	P
Radical	<---	market orientation	.265	.069	3.846	000
Radical	<---	service orientation	.153	.101	1.518	.129
Radical	<---	learning orientation	.061	.088	.689	.491
Flexibility	<---	Radical	.344	.076	4.526	000
Flexibility	<---	market orientation	.089	.069	1.284	.199
Flexibility	<---	service orientation	-.005	.097	-.047	.963
Flexibility	<---	learning orientation	.184	.085	2.164	.030

Source: prepared by the researcher from data (2018).

Whereas, table (5.36) illustrates the indirect effect shows significant relationship between market orientation and flexibility through radical innovation ($p < 0.05$). This, result established that full mediation of radical innovation in the relationship between market orientation and flexibility.

Table (5.36) User-defined estimands for indirect effect between MO and flexibility

Parameter	Estimate	Lower	Upper	P
A x B	.091	.037	.186	.001

Source: prepared by the researcher from data (2018).

With regards to the examination of whether radical innovation mediates the relationship between service orientation and flexibility as depicted in figure (5.15), above, the result of regression weights for the direct effects in table (5.35) shows service orientation not significantly influence flexibility ($p>0.05$), service orientation not significantly influence radical innovation ($p>0.05$), and radical innovation significantly influence flexibility ($p<0.01$).

On the other hand, table (5.37) presented the indirect effect shows not significant relationship between service orientation and flexibility through radical innovation ($p>0.05$). This, result indicated that no mediation of radical innovation in the relationship between service orientation and flexibility.

Table (5.37) User-defined estimands for indirect effect between SEO and flexibility

Parameter	Estimate	Lower	Upper	P
A x B	.053	-.002	.145	.063

Source: prepared by the researcher from data (2018).

With regards to the examination of whether radical innovation mediates the relationship between learning orientation and flexibility as depicted in figure (5.15), above, the result of regression weights for the direct effects in table (5.35) shows learning orientation not significantly influence flexibility ($p>0.05$), learning orientation not significantly influence radical innovation ($p>0.05$), and radical innovation significantly influence flexibility ($p<0.01$).

Table (5.38) illustrates the indirect effect shows not significant relationship between learning orientation and flexibility through radical innovation ($p>0.05$). This result indicates no mediation of radical innovation in the relationship between learning orientation and flexibility.

Table (5.38) User-defined estimands for indirect effect between LO and flexibility

Parameter	Estimate	Lower	Upper	P
A x B	.021	-.030	.082	.364

Source: prepared by the researcher from data (2018).

Given all the above mentioned the hypothesis of radical innovation mediates the relationship between the strategic orientation and flexibility is partial supported in this study.

5.8.6.2.2. The mediating role of radical innovation in the relationship between SO and quality.

The radical innovation was hypothesized to mediate the relationship between strategic orientation (market, service and learning) and quality. However, to test this hypothesis an examination of whether radical innovation mediates the relationship between market orientation and quality must be estimated firstly, the prediction of whether radical innovation mediates the relationship between service orientation and quality must be tested secondly and the prediction of whether radical innovation mediates the relationship between learning orientation and quality must be tested thirdly as shown in figure (5.16).

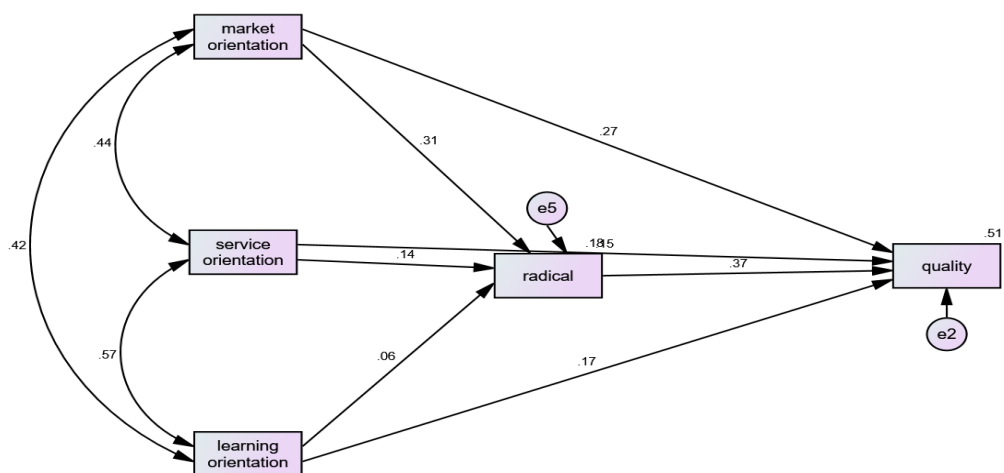


Figure (5.16) the mediating role of RI between SO and quality relationship.

Source: prepared by the researcher from data (2018).

To examine the mediating role of radical innovation between market orientation and quality, the result of regression weights for the direct effects in table (5.39) shows market orientation significantly influence quality ($p < 0.01$), significant influence between market orientation and radical innovation ($p < 0.01$), and radical innovation significantly influence quality ($p < 0.01$).

Table (5.39) Regression Weights for direct effect between SO, RI and quality

Relationship			Estimate	S.E.	C.R.	P
radical	<---	market orientation	.265	.069	3.846	.000
radical	<---	service orientation	.153	.101	1.518	.129
radical	<---	learning orientation	.061	.088	.689	.491
quality	<---	Radical	.315	.052	6.103	.000
quality	<---	market orientation	.189	.047	4.017	.000
quality	<---	service orientation	.142	.066	2.144	.032
quality	<---	learning orientation	.143	.058	2.478	.013

Source: prepared by the researcher from data (2018).

On the other hand, table (5.40) illustrates the indirect effect shows significant relationship between market orientation and quality through radical innovation ($p < 0.01$). This, result indicated that a partial mediation of radical innovation in the relationship between market orientation and quality.

Table (5.40) User-defined estimands for indirect effect between MO and quality

Parameter	Estimate	Lower	Upper	P
A x B	.084	.037	.160	.000

Source: prepared by the researcher from data (2018).

With regards to the examination of whether radical innovation mediates the relationship between service orientation and quality as depicted in figure (5.16), above, the result of regression weights for the direct effects in table (5.39) shows service orientation significantly influence quality ($p < 0.05$), service orientation not significantly influence radical innovation ($p > 0.05$), and radical innovation significantly influence quality ($p < 0.01$).

Table (5.41) illustrates the indirect effect shows not significant relationship between service orientation and quality through radical innovation ($p > 0.05$). This, result indicates no mediation effect of radical innovation in the relationship between service orientation and quality.

Table (5.41) User-defined estimands for indirect effect between SEO and quality

Parameter	Estimate	Lower	Upper	P
A x B	.048	-.002	.134	.064

Source: prepared by the researcher from data (2018).

With regards to the examination of whether radical innovation mediates the relationship between learning orientation and quality as depicted in figure (5.16), above, the result of regression weights for the direct effects in table (5.39) shows learning orientation significantly influence quality ($p < 0.05$), learning orientation not significantly influence radical innovation ($p > 0.05$), and radical innovation significantly influence quality ($p < 0.01$). Thus, the satisfaction of these three assumptions indicates that the radical innovation has established partial mediating effect.

Whereas, table (5.42) presented the indirect effect shows not significant relationship between learning orientation and quality through radical innovation ($p > 0.05$). This, result indicates no mediation effect of radical innovation in the relationship between learning orientation and quality.

Table (5.42) User-defined estimands for indirect effect between LO and quality

Parameter	Estimate	Lower	Upper	P
A x B	.019	-.024	.079	.350

Source: prepared by the researcher from data (2018).

Given all the above mentioned the hypothesis of radical innovation mediates the relationship between the strategic orientation and quality is partially supported in this study.

5.8.6.2.3. The mediating role of radical innovation in the relationship between strategic orientation and cost.

The radical innovation was hypothesized to mediate the relationship between strategic orientation and cost. However, to test this hypothesis an examination of whether radical innovation mediates the relationship between market and cost must be estimated firstly, then the prediction of whether radical innovation mediates the relationship between service orientation and cost must be tested secondly, and the

prediction of whether radical innovation mediates the relationship between learning orientation and cost must be tested thirdly as shown in figure (5.17) below.

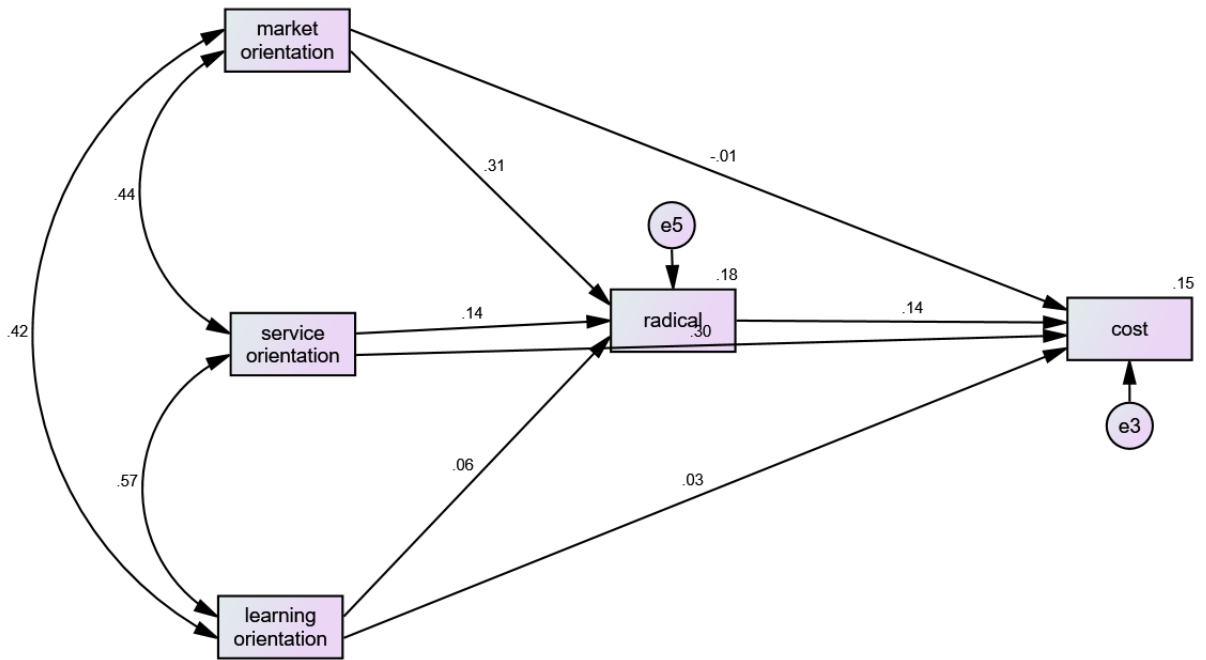


Figure (5.17) the mediating role of RI between SO and cost relationship.

Source: prepared by the researcher from data (2018).

To examine the mediating role of radical innovation between market orientation and cost, while the result of regression weights for the direct effects in table (5.43) below shows market orientation not significantly influence cost ($p > 0.5$), significant influence between market orientation and radical ($p < 0.01$), and radical innovation not significantly influence cost ($p > 0.05$).

Table (5.43) Regression Weights for direct effect between SO, RI and cost

Relationship			Estimate	S.E.	C.R.	P
Radical	<---	market orientation	.265	.069	3.846	000
Radical	<---	service orientation	.153	.101	1.518	.129
Radical	<---	learning orientation	.061	.088	.689	.491
Cost	<---	Radical	.132	.074	1.777	.076
Cost	<---	market orientation	-.005	.068	-.069	.945
Cost	<---	service orientation	.309	.095	3.250	.001
Cost	<---	learning orientation	.025	.083	.297	.767

Source: prepared by the researcher from data (2018).

On the other hand, table (5.44) illustrates the indirect effect shows not significant relationship between market orientation and cost through radical innovation ($p > 0.05$). This, result indicated that no mediation of radical innovation in the relationship between market orientation and cost.

Table (5.44) User-defined estimands for indirect effect between MO and cost

Parameter	Estimate	Lower	Upper	P
A x B	.035	-.005	.107	.072

Source: prepared by the researcher from data (2018).

With regards to the examination of whether radical innovation mediates the relationship between service orientation and cost as depicted in figure (5.17) above, the result of regression weights for the direct effects in table (5.43) shows service orientation significantly influence cost ($p < 0.05$), service orientation not significantly influence radical innovation ($p > 0.05$), and radical innovation not significantly influence cost ($p < 0.05$).

Table (5.45) illustrates the indirect effect shows not significant relationship between service orientation and cost through radical innovation ($p > 0.05$). This, result indicated that no mediation effect of radical innovation in the relationship between service orientation and cost.

Table (5.45) User-defined estimands for indirect effect between SEO and cost

Parameter	Estimate	Lower	Upper	P
A x B	.020	-.003	.085	.090

Source: prepared by the researcher from data (2018).

With regards to the examination of whether radical innovation mediates the relationship between learning orientation and cost as depicted in figure (5.17) above, the result of regression weights for the direct effects in table (5.43) shows learning orientation not significantly influence cost ($p>0.05$), learning orientation not significantly influence radical innovation ($p>0.05$), and radical innovation not significantly influence cost ($p>0.05$). Thus, the satisfaction of these three assumptions indicates that the radical innovation has established no mediating effect. On the other hand, table (5.46) illustrates the indirect effect shows not significant relationship between learning orientation and cost through radical innovation ($p>0.05$). This, result confirms that no mediation role of radical innovation in the relationship between learning orientation and cost.

Table (5.46) User-defined estimands for indirect effect between LO and cost

Parameter	Estimate	Lower	Upper	P
A x B	.008	-.007	.056	.237

Source: prepared by the researcher from data (2018).

Given all the above mentioned the hypothesis of radical innovation as service innovation mediates the relationship between the strategic orientation and cost is not supported in this study.

Table (5.47) presents the summary of hypotheses testing results for the mediating effect of service innovation in the relationship between strategic orientation and operational performance. The findings implied that the three component of strategic orientation (market, service and learning orientations) influences the three component of operational performance (flexibility, quality and cost) of firms operated in Sudan through incremental and radical innovation. These results indicated that incremental is the major service innovation through which the three component of strategic orientation effect operational performance component, followed by radical innovation.

Table (5.47) summary of hypotheses testing results for the mediating role of service innovation

H4	Remark
<i>Service innovations mediate the relationship between strategic orientation and operational performance.</i>	Partially supported
<i>Incremental mediate relational ship strategic orientation and operational performance.</i>	<i>Partially supported</i>
H4.1. incremental mediates between market orientation and flexibility.	No mediation
H4.2. incremental mediates between service orientation and flexibility.	No mediation
H4.3. incremental mediates between learning orientation and flexibility	No mediation
H4.4. incremental mediates between market orientation and quality.	Partial mediation
H4.5. incremental mediates between service orientation and quality.	Full mediation
H4.6. incremental mediates between learning orientation and quality.	Full mediation
H4.7. incremental mediates between market orientation and cost.	Full mediation
H4.8. incremental mediates between service orientation and cost.	Partial mediation
H4.9. incremental mediates between learning orientation and cost.	Full mediation
<i>Radical mediate relational ship strategic orientation and operational performance.</i>	Partially supported
H4.10. radical mediates between market orientation and flexibility.	Full mediation
H4.11. radical mediates between service orientation and flexibility.	No mediation
H4.12. radical mediates between learning orientation and flexibility.	No mediation
H4.13. radical mediates between market orientation and quality.	Partial mediation
H4.14. radical mediates between service orientation and quality.	No mediation
H4.15. radical mediates between learning orientation and quality.	No mediation
H4.16. radical mediates between market orientation and cost.	No mediation
H4.17. radical mediates between service orientation and cost.	No mediation
H4.18. radical mediates between learning orientation and cost.	No mediation

Source: prepared by the researcher from data (2018).

5.8.7. The moderating effect of technological capabilities

The fifth hypothesis predicts that the technological capabilities moderate the relationship between strategic orientation dimensions (market, service and learning) and service innovation dimension (incremental and radical), as shown in figure (5.18) below.

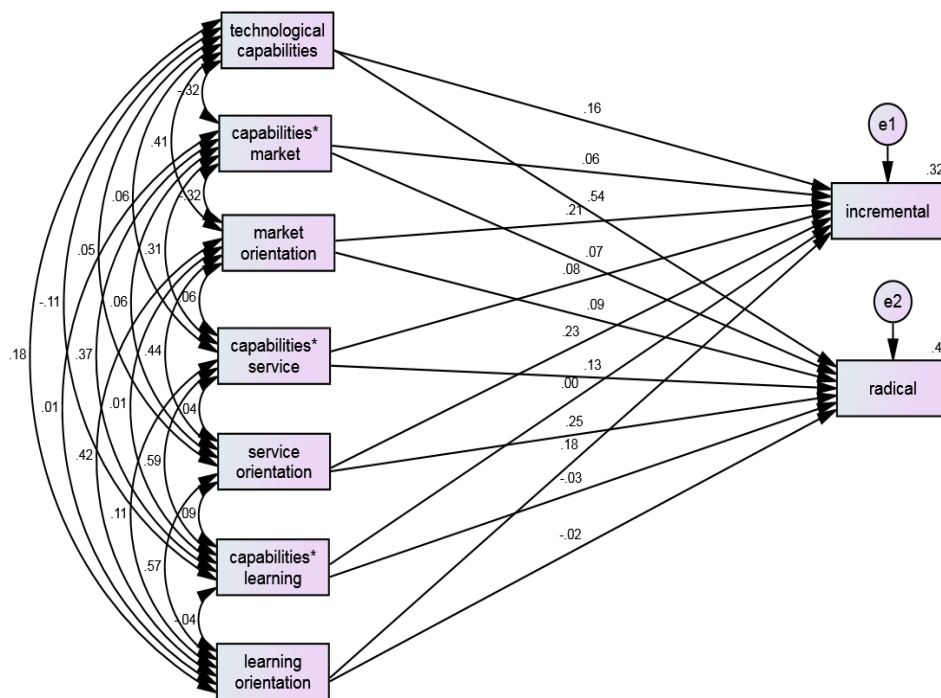


Figure (5.18) the moderating effect of technological capabilities

Source: prepared by the researcher from data (2018)

Concerning the model fit recommendation AMOS output showing Model fit indices as follow, CMIN/DF= 3.515, RMSEA.125, GFI=.995, AGFI=.784, SRMR=.033, NFI=.992, IFI= CFI=.994, and PCLOSE=.113.

5.8.7.1 The moderating effect of TCs on the relationship between SO and SI.

Figure (5.19) below presents the model for the moderating effect of technological capabilities in the relationship between strategic orientation (market, service, and learning) and incremental innovation.

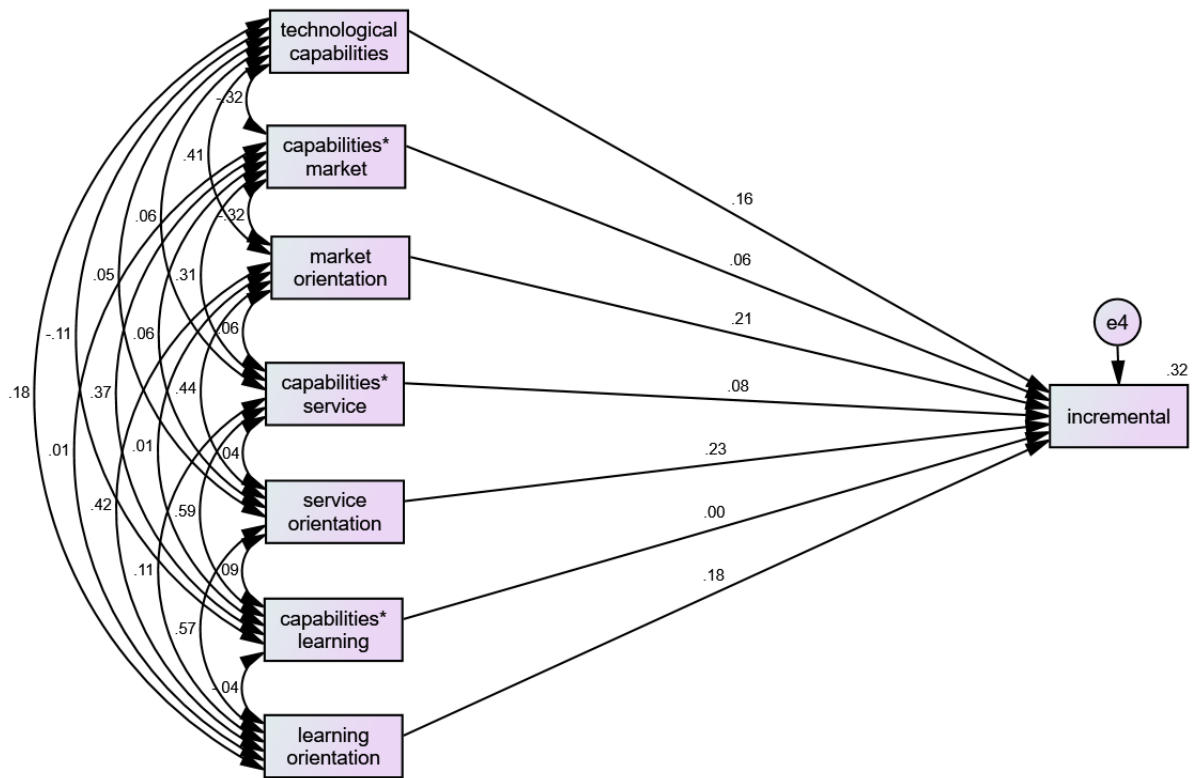


Figure (5.19) the moderating effect of TCs in SO and incremental relationship

Source: prepared by the researcher from data (2018).

To examine the moderating effects of technological capabilities between strategic orientation and incremental innovation, the results of direct and moderating effects of technological capabilities on the relationship between strategic orientation and incremental innovation are as shown in table (5.48) below.

Table (5.48) Regression Weights for direct effect between TCs, SO and incremental.

Relationship			Estimate	S.E.	C.R.	P
Incremental	<---	market orientation	.134	.056	2.400	.016
Incremental	<---	service orientation	.197	.073	2.702	.007
Incremental	<---	learning orientation	.138	.064	2.163	.031
Incremental	<---	technological capabilities	.076	.036	2.107	.035
Incremental	<---	capabilities_X_market	.024	.029	.815	.415
Incremental	<---	capabilities_X_service	.035	.036	.987	.324
Incremental	<---	capabilities_X_learning	.000	.031	.005	.996

Source: prepared by the researcher from data (2018).

5.8.7.1.1. The moderating effect of TCs on the relationship between market orientation and incremental innovation.

This subsection proposed that technological capabilities would moderate the relationship between market orientation and incremental innovation. The results in table (5.48) show that the interaction term of market orientation and technological capabilities was not significant (estimate=.024, $p > .05$) for predicting incremental innovation. Further inspection reveals that the coefficient of the technological capabilities effect was significant (estimate=.076, $p < .05$). However, figure (5.20) shows the moderating effect of technological capabilities on the relationship between market orientation and incremental innovation in which the technological capabilities strengthens the positive relationship between market orientation and incremental innovation.

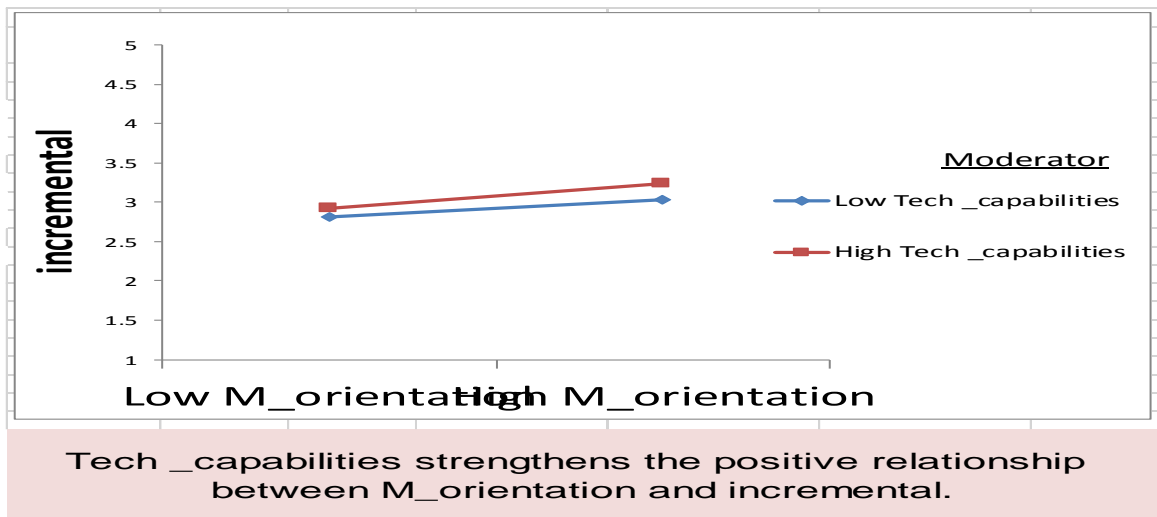


Figure (5. 20) moderating effect of TCs in MO and II relationship

Source: prepared by the researcher from data (2018).

5.8.7.1.2 The moderating effect of technological capabilities on the relationship between service orientation and incremental innovation.

This subsection proposed that technological capabilities would moderate the relationship between service orientation and incremental innovation. The results in table (5.48) show that the interaction term of service orientation and technological capabilities was not significant (estimate=.035, $p > .05$) for predicting incremental innovation. Further inspection reveals that the coefficient of the technological capabilities effect was significant (estimate=.076, $p < .05$). Figure (5.21) shows the

moderating effect of technological capabilities on the relationship between service orientation and incremental innovation in which the technological capabilities strengthens the positive relationship between service orientation and incremental innovation.

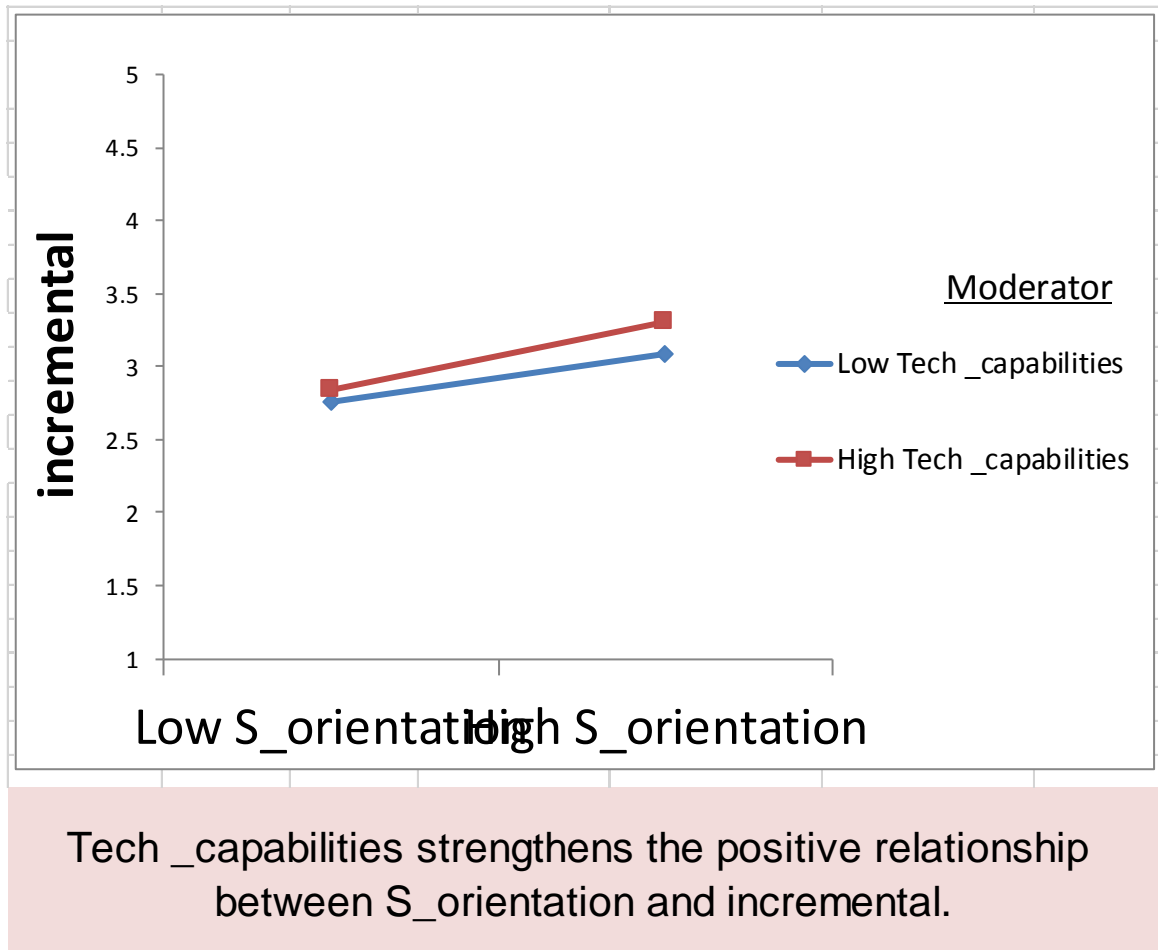


Figure (5.21) moderating effect of TCs in SEO and II relationship

Source: prepared by the researcher from data (2018).

5.8.7.1.3. The moderating effect of TCs on the relationship between learning orientation and incremental innovation.

This subsection proposed that technological capabilities would strengthen the positive relationship between learning orientation and incremental innovation. The results in table (5.48) show that the interaction term of learning orientation and technological capabilities was not significant (estimate=-.000, $p > .05$) for predicting incremental innovation. Further inspection reveals that the coefficient of the technological capabilities effect was significant (estimate=.076, $p < .05$). However, figure

(5.22) shows the moderating effect of technological capabilities on the relationship between learning orientation and incremental innovation in which the technological capabilities strengthens the positive relationship between learning orientation and incremental innovation.

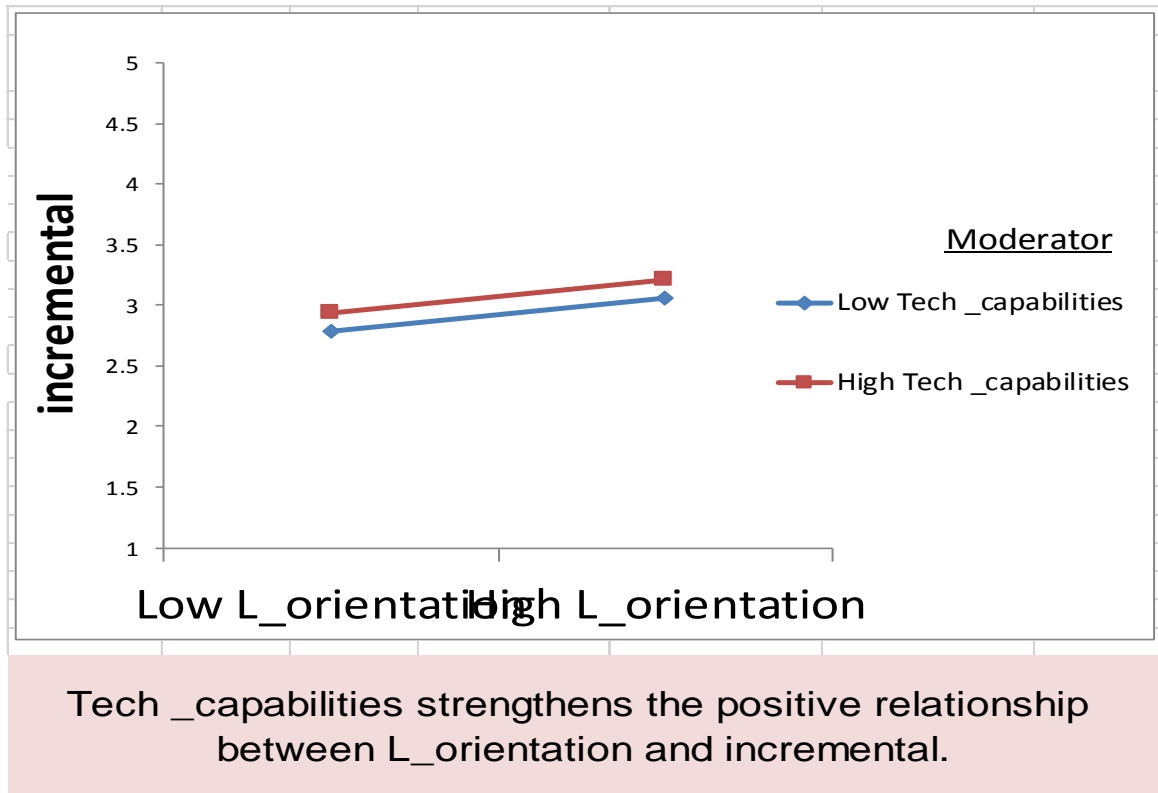


Figure (5.22) moderating effect of TCs in LO and II relationship

Source: prepared by the researcher from data (2018).

5.8.7.2. The moderating effect of TCs on the relationship between strategic orientation and radical innovation.

In the second part, figure (5.23) presents the model for the moderating effect of technological capabilities in the relationship between strategic orientation and radical innovation as follow:

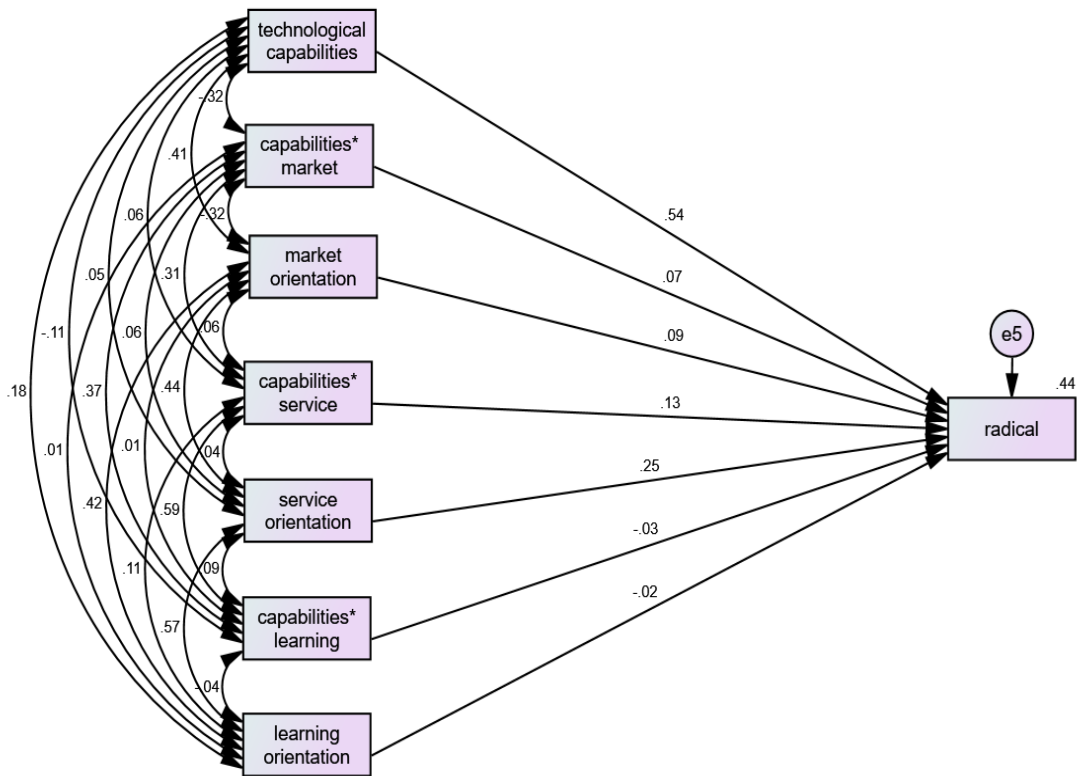


Figure (5.23) the moderating effect of TCs in SO and RI relationship

Source: prepared by the researcher from data (2018).

To examine the moderating effects of technological capabilities between strategic orientation and radical innovation, the results of direct and moderating effects of technological capabilities on the relationship between strategic orientation and radical innovation are as shown in table (5.49) below.

Table (5.49) Regression Weights for direct effect between TCs, SO and radical

Relationship		Estimate	S.E.	C.R.	P
Radical	<--- market orientation	.078	.066	1.177	.239
Radical	<--- service orientation	.277	.087	3.186	.001
Radical	<--- learning orientation	-.021	.076	-.275	.784
Radical	<--- technological capabilities	.343	.043	7.943	.000
Radical	<--- capabilities_X_market	.034	.034	.991	.322
Radical	<--- capabilities_X_service	.069	.042	1.636	.102
Radical	<--- capabilities_X_learning	-.014	.037	-.389	.697

Source: prepared by the researcher from data (2018).

5.8.7.2.1. The moderating effect of technological capabilities on the relationship between market orientation and radical innovation.

This subsection proposed that technological capabilities would moderate the relationship between market orientation and radical innovation. The results in table (5.49) show that the interaction term of market orientation and technological capabilities was not significant (estimate=.034, $p > .05$) for predicting radical innovation. Further inspection reveals that the coefficient of the technological capabilities effect was significant (estimate=.343, $p < .01$). However, technological capabilities show moderating effect between market orientation and radical. Figure (5.24) shows the moderating effect of technological capabilities in the relationship between market orientation and radical innovation in which the technological capabilities strengthens the positive relationship between market orientation and radical innovation.

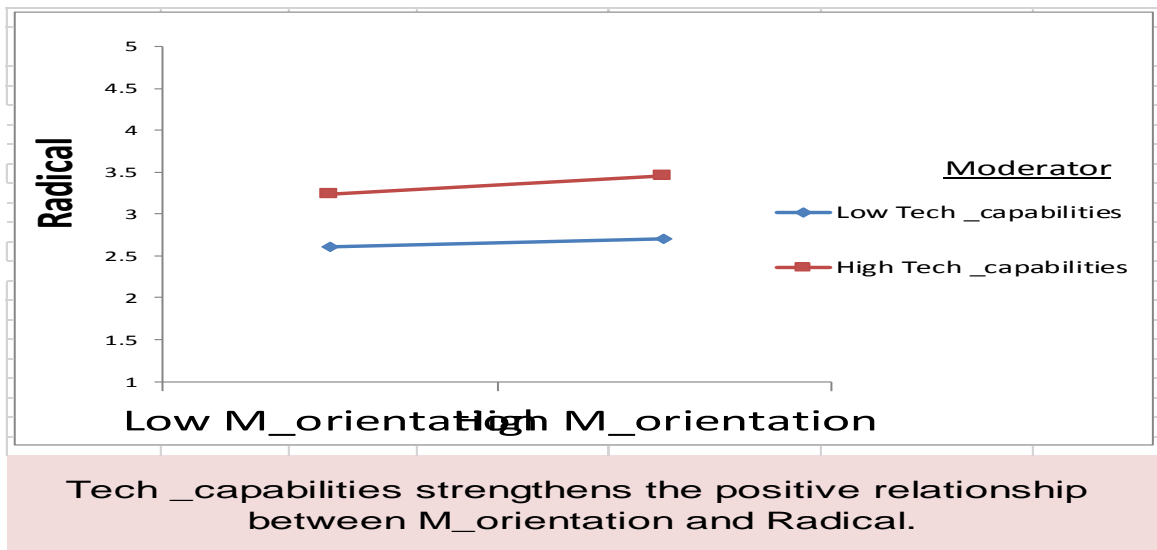


Figure (5.24) moderating effect of TCs in MO and RI relationship

Source: prepared by the researcher from data (2018).

5.8.7.2.2. The moderating effect of TCs on the relationship between service orientation and radical innovation.

This subsection proposed that technological capabilities would moderate the relationship between service orientation and radical innovation. The results in Table (5.49) show that the interaction term of service orientation and technological capabilities was not significant (estimate=.069, $p > .05$) for predicting radical innovation. Further inspection reveals that the coefficient of the technological capabilities effect

was significant (estimate=.343, $p < .01$). However, technological capabilities show moderating effect between service orientation and radical innovation. Figure (5.25) shows the moderating effect of technological capabilities in the relationship between service orientation and radical innovation in which the technological capabilities strengthens the positive relationship between service orientation and radical innovation.

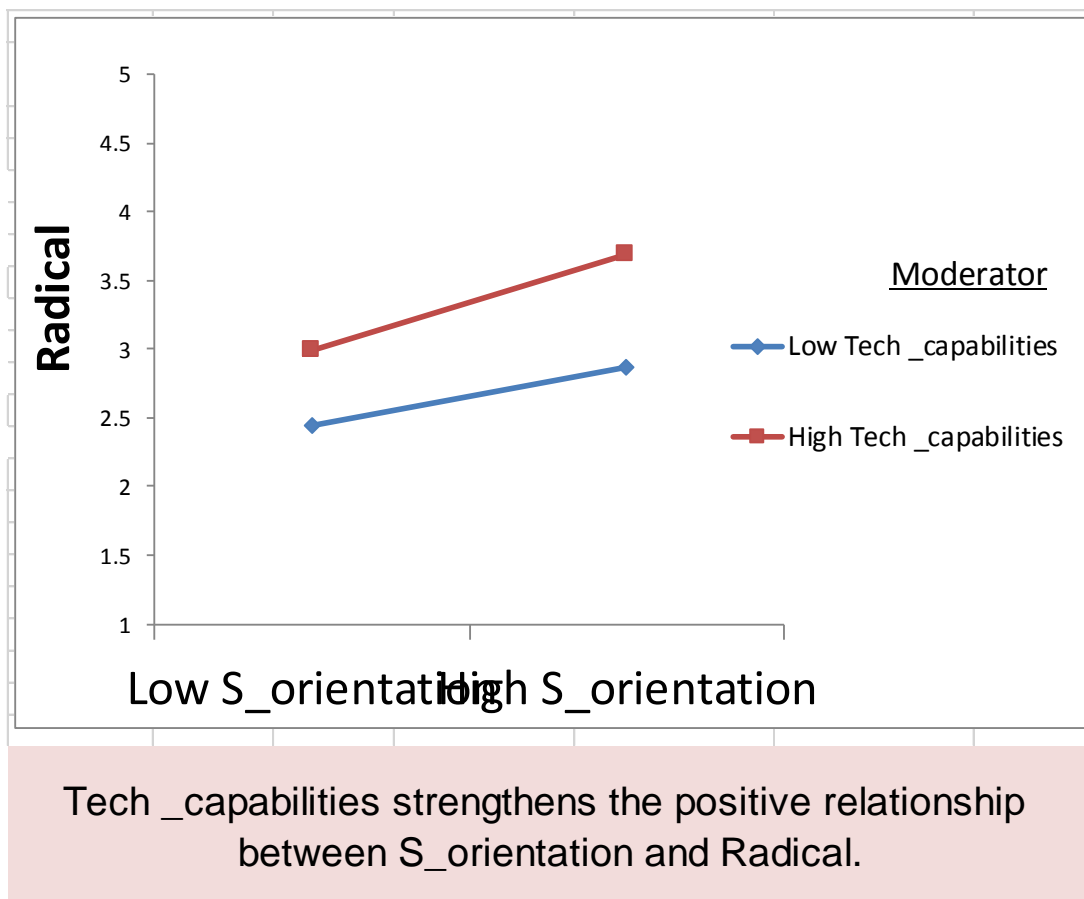


Figure (5.25) moderating effect of TCs in SEO and RI relationship

Source: prepared by the researcher from data (2018).

5.8.7.2.3. The moderating effect of TCs on the relationship between learning orientation and radical innovation.

This subsection proposed that technological capabilities would moderate the relationship between learning orientation and radical innovation. The results in Table (5.49) show that the interaction term of learning orientation and technological capabilities was not significant (estimate=-.014, $p > .05$) for predicting radical innovation. Further inspection reveals that the coefficient of the technological capabilities effect was significant (estimate=.343, $p < .01$). However, Figure (5.26) shows

the moderating effect of technological capabilities in the relationship between learning orientation and radical innovation in which the technological capabilities strengthens the positive relationship between learning orientation and radical innovation.

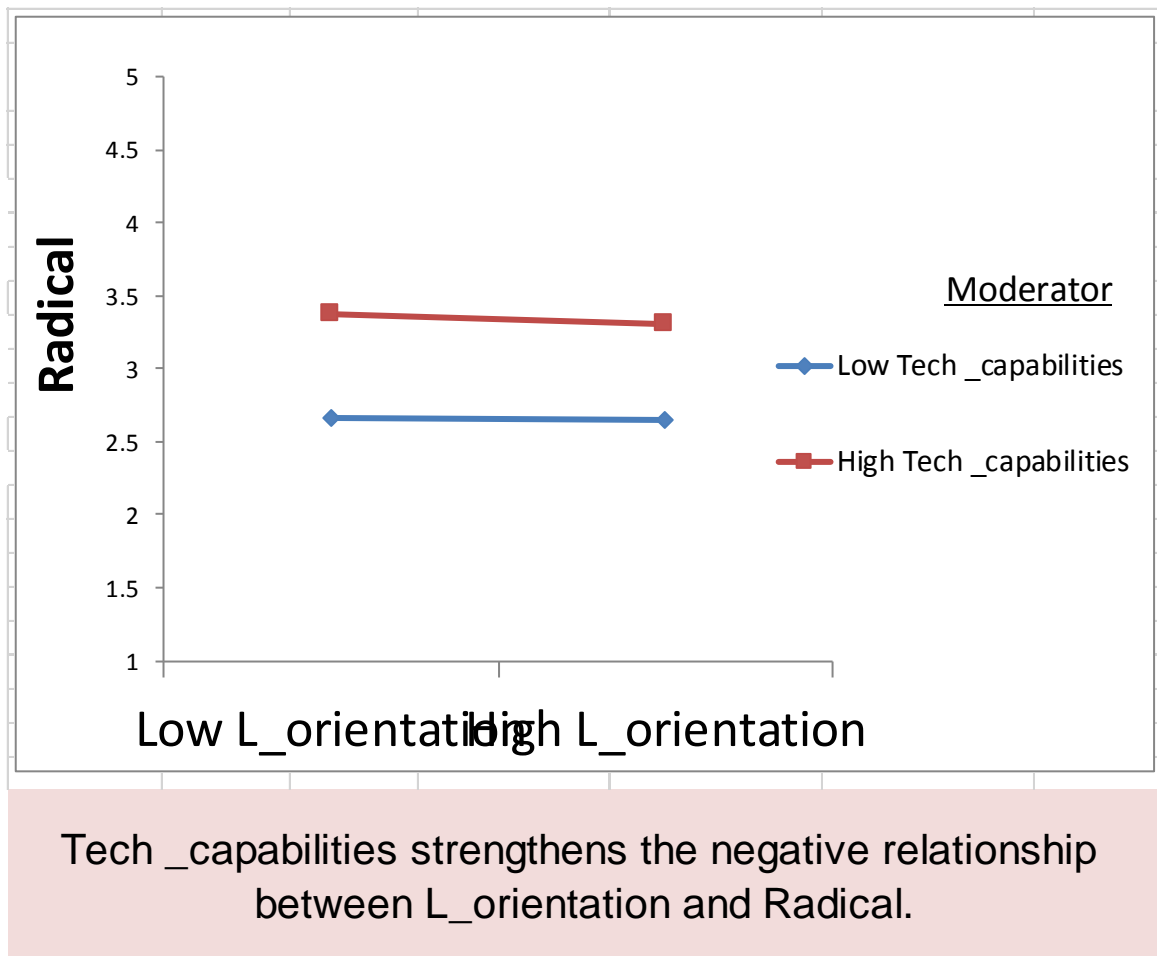


Figure (5.26) moderating effect of TCs in LO and RI relationship

Source: prepared by the researcher from data (2018).

Table (5.50) summary of hypotheses testing results for the moderating effect of technological capabilities

H5	Remark
<i>Technological capabilities moderate the relationship between strategic orientation and service innovation.</i>	<i>Fully not supported</i>
Technological capabilities moderate the relationship between strategic orientation and incremental innovation.	Fully supported
H5.1 .Technological capabilities moderate market orientation - incremental.	Supported
H5.2 . Technological capabilities moderate service orientation - incremental.	Supported
H5.3 . Technological capabilities moderate learning orientation - incremental.	Supported
Technological capabilities moderate the relationship between strategic orientation and radical innovation.	Fully supported
H5.4 . Technological capabilities moderate market orientation - radical.	Supported
H5.5 . Technological capabilities moderate service orientation - radical.	Supported
H5.6 . Technological capabilities moderate learning orientation - radical.	Supported

Source: prepared by researcher from data (2018)

Table (5.51) summary of the study results

Hypotheses One: The relationship between strategic orientation and operational performance.	partially supported
H1.1. the relationship between market orientation and flexibility.	supported
H1.2. the relationship between service orientation and flexibility.	not supported
H1.3. the relationship between learning orientation and flexibility.	supported
H1.4. the relationship between market orientation and quality.	Supported
H1.5. the relationship between service orientation and quality.	Supported
H1.6. the relationship between learning orientation and quality.	supported
H1.7. the relationship between market orientation and cost.	not supported
H1.8. the relationship between service orientation and cost.	Supported
H1.9. the relationship between learning orientation and cost.	not supported
Hypotheses Two: The relationship between strategic orientation and service innovation.	partially supported
H2.1. the relationship between market orientation and incremental.	Supported
H2.2. the relationship between service orientation and incremental.	supported
H2.3. the relationship between learning orientation and incremental.	supported
H2.4. the relationship between market orientation and radical.	Supported
H2.5. the relationship between service orientation and radical.	not supported
H2.6. the relationship between learning orientation and radical.	not supported
Hypotheses Three: The relationship between service innovation and operational performance.	partially supported
H3.1. the relationship between incremental and flexibility.	not supported
H3.2. the relationship between incremental and quality.	Supported
H3.3. the relationship between incremental and cost.	Supported
H3.4. the relationship between radical and flexibility.	Supported
H3.5. the relationship between radical and quality.	Supported
H3.6. the relationship between radical and cost.	supported
Hypotheses Four: Service innovations mediate the relationship between strategic orientation and operational performance.	Partially supported
H4.1. incremental mediates between market orientation and flexibility.	No mediation
H4.2. incremental mediates between service orientation and flexibility.	No mediation
H4.3. incremental mediates between learning orientation and flexibility	No mediation
H4.4. incremental mediates between market orientation and quality.	Partial mediation
H4.5. incremental mediates between service orientation and quality.	Full mediation
H4.6. incremental mediates between learning orientation and quality.	Full mediation
H4.7. incremental mediates between market orientation and cost.	Full mediation
H4.8. incremental mediates between service orientation and cost.	Partial mediation
H4.9. incremental mediates between learning orientation and cost.	Full mediation
H4.10. radical mediates between market orientation and flexibility.	Full mediation
H4.11. radical mediates between service orientation and flexibility.	No mediation
H4.12. radical mediates between learning orientation and flexibility.	No mediation
H4.13. radical mediates between market orientation and quality.	Partial mediation
H4.14. radical mediates between service orientation and quality.	No mediation
H4.15. radical mediates between learning orientation and quality.	No mediation

H4.16. radical mediates between market orientation and cost.	No mediation
H4.17. radical mediates between service orientation and cost.	No mediation
H4.18. radical mediates between learning orientation and cost.	No mediation
Hypotheses Five: Technological capabilities moderate the relationship between strategic orientation and service innovation.	Fully supported
H5.1. Technological capabilities moderate market orientation - incremental.	Supported
H5.2. Technological capabilities moderate service orientation - incremental.	Supported
H5.3. Technological capabilities moderate learning orientation - incremental.	Supported
H5.4. Technological capabilities moderate market orientation - radical.	Supported
H5.5. Technological capabilities moderate service orientation - radical.	Supported
H5.6. Technological capabilities moderate learning orientation - radical.	Supported

Source: prepared by researcher from data (2018)

5.9. Summary of the chapter

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

CHAPTER VI

DICUSSION AND CONCLUSION

6.0. Introduction

In this final chapter, the findings are discussed in relation to previous studies, followed by implications of findings for theory and management is developed, followed by limitations and suggestion for future research, finally an overall conclusion of the study.

6.1. Recapitulation

This section is summary of the major findings of the study and relates to the findings of previous studies when it possible, and will discuss more each findings on the nest section. This study aimed to investigating the relationship between strategic orientation and operational performance and study on service firms in Sudan. Further, the study as well examined the relationship between strategic orientation and two types of service innovation. The study was also explored the relationship between service innovation and operational performance. Moreover, the study tried to determine the mediating effect of service innovation in the relationship between strategic orientation and operational performance besides the moderating effect of technological capabilities on the relationship between strategic orientation and service innovation. Instituted on the above discussion, the key outcomes of this research as follows:

1. Strategic orientation of service firms in Sudan is consisting of three components, through which is the market orientation, service orientation and learning orientation.
2. Market orientation is highly adopted in service firms in Sudan the hefty component of strategic orientation.
3. Service innovation in service firms in Sudan is consisting of two components, incremental innovation and radical innovation.
4. Service innovation has the greater positive relationship with operational performance. The emphases on the service orientation from service firms in Sudan seems to be the most important strategic orientation components for fulfilled operational performance in service firm in Sudan.
5. Components of the operational performance in service firm in Sudan are flexibility quality and cost.
6. Service innovation has a positive relationship with operational performance, because the similar emphasis on incremental innovation and radical innovation from Sudanese

service firms appears to be the most important drivers for enhancing a firm's operational performance.

7. The service innovation has partial mediation on the relationship between strategic orientation and operational performance.

8. Technological capabilities of service firms in Sudan have fully moderating effect on the relationship between strategic orientation and service innovation.

6.2. Discussion

The discussion covers the relationship between strategic orientation and operational performance and service innovation, beside the relationship between service innovation and operational performance. Furthermore, the discussion will extend to cover the mediating effect of service innovation in the relationship between strategic orientation and operational performance as well as the moderating effect of technological capabilities between strategic orientation and service innovation. After conducting the exploratory factor analysis, the interaction orientation and delivery variables were excluded because they did not meet the requirements of the exploratory factor analyses, as the samples of the study examined did not absorb the measurements of those dimensions.

6.2.1. The relationship between SO and OP.

The first objective in this study was to investigate the direct effects of the three components of strategic orientation (market orientation, service orientation and learning orientation) on operational performance of Sudanese service firms.

6.2.1.1. Market orientation and operational performance.

Market orientation was found to have a direct positive impact on operational performance. Market orientation refers to the firm's commitment to adopt the best practices and ideas in the marketing concept. Therefore, confirming that the results of path analysis showed that market orientation has positive effect on operational flexibility and operational quality, but it has negative impact on operational cost ($p > 0.05$). Overall, these results are argued with previous studies such as (Obeidat, 2016) who find that market orientation has not impact on organizational performance in telecommunication companies in Jordan. The difference between it and the current study in the culture and environmental factors. (Zhang and Duan, 2010) who shows that

market orientation is not significantly with performance in SMEs and large manufacturing exporters in China, However, given that conduct his study in manufacturing exporters, this study extends their findings in service firms. Furthermore, while prior studies suggest that market orientation has stronger impact on performance (Wan, 2013) find that market orientation has a positive direct effect on superior firm performance in Malaysian SMEs. Amirkhani ja Reza (2015) has shown that there is a significant relationship between the market orientation with the bank performance and the business strategy in Tehran branch of Eghtesad Novin Bank.(Al-Ansaari, Bederr and Chen, 2015) revealed that market orientation has a positive effect on business performance compared to technology and alliance orientations within SMEs in the Dubai marketplace.(Laukkanen *et al.*, 2013) investigate that market orientation has a positive effect on business growth in SMEs in both Hungary and Finland through brand and market performance who report the market orientation has a positive impact on firm performance,(Ho, 2014) who report market orientation has a positive and significant effect on business performance. This thesis gives empirical evidence to support the significance of market orientation, particularly in the service sector, which needs to pay attention to improve their service system to make sure that the services meet the customer's demand. If the owners or entrepreneurs of the firm are able to capture the problem and take action at the flexibility stage, they will be able to retain their customers.

6.2.1.2. Service orientation and operational performance.

The outcomes in this study showed that service orientation has a positive and significant effect on operational quality and operational cost, but it has not effect on operational flexibility ($p>0.05$). Thus, service orientation indicates partial support to operational performance. These results are coinciding with(Cheng and Sheu, 2017) who states that service orientation has strong effect with collaborative service innovation performance. Moreover,(Oliveira and Roth, 2012) argue, the relationship between service orientation and firm performance is stronger for service sector firms than firms in the manufacturing sector. However, given that (Oliveira and Roth, 2012) measured structure of service orientation was found to be invariant for both goods producing and service firms, this study examined service orientation only in service firms.

6.2.1.3. Learning orientation and operational performance.

Learning orientation was found to be a significant determinant of firm operational performance. The finding in this study shows that learning orientation has a positive effect on operational flexibility and operational quality and it has a negative effect on operational cost ($p > 0.05$). Overall, these results consistent with previous studies such as (Laukkanen *et al.*, 2013) found that learning orientation is a weak effect on business growth in the Hungarian firms. Furthermore, some earlier studies provide consistent evidence that learning orientation has a positive and stronger impact on firm performance (Cheng and Sheu, 2017) show that learning orientation has the strongest effect on collaborative service innovation performance, and is the most effective for basic installed base services and maintenance services. Mahmoud *et al.*, (2016) demonstrated that learning orientation has significant impact on business performance. Scholars believe that learning orientation helps to create hefty performance of the firms (Griffith, Kiessling and Dabic, 2012). However, the results of this study support these pervious findings, as it is found that learning orientation has significant impact on operational performance.

6.2.2. The Relationship between strategic orientation and service innovation.

The second objective in this study was to examine the direct effects of the three components of strategic orientation components (market orientation, service orientation and learning orientation) on service innovation in Sudanese service firms.

6.2.2.1. Market orientation and innovation.

The findings in this study shows statistical significant and positive relationship between market orientation and service innovation dimensions, incremental and radical. Thus market orientation indicates a positive link between two dimensions of innovation, incremental innovation and radical innovation. This finding reinforces the link between market orientation and innovation found by scholars in various contexts such as multiple service sector (Cheng ja Krumwiede 2012), insurance sectors (Lado and Maydeu- Olivares, 2001), hotel (Zhou *et al.*, 2009) and retailing (Chang and Chen, 1998) as well as extending this link to services firm. The strength relationship between market orientation and service innovation suggesting that market orientation is effective drivers of service innovation. Furthermore, prior studies suggest that market orientation

has a positively significant relationship with innovation. Zhang ja Duan (2010) who find that market orientation has a positive direct effect on innovation of manufacturing firms in mainland China. Huhtala et al., (2014) show that market orientation has a positive impact on innovation capability in Finland. Tutar *et al.*, (2015) suggest that proactive market orientation is positively related in innovation capabilities. While (Mahmoud *et al.*, 2016) demonstrated that market orientation has significant association with innovation. Moreover, there were some previous findings in the literature like (Medina and Rufín, 2009) which argued, revealed that no relationship between market orientation and overall innovation in Spain, the difference between it and the current study in the culture and environmental factors.

6.2.2.2. Service orientation and innovation.

The findings in this study show that a positive relationship between service orientation and incremental innovation and not positive relationship between service innovation and radical innovation ($p>0.05$). Thus the service orientation indicates partial support with the service innovation. These results are argued with previous studies such as (Cheng and Sheu, 2017) that have find that weakest effect of service orientation on collaborative service innovation performance. Furthermore, while the some prior studies suggested that service orientation has stronger impact on service innovation like (Oliveira and Roth, 2012) who has report that service orientation has a positive impact on an empirically develops its measurement in the context of business-to-business (B2B) e-commerce.

6.2.2.3. Learning orientation and innovation.

The results of this study show that a positive relationship between learning orientation and incremental innovation and not positive relationship between learning orientation and radical innovation ($p>0.05$). Thus the learning orientation indicates partial support to service innovation. Despite the scarcity of empirical evidence on the link between learning orientation and service innovation however, these results support the assertion of the (Ejdys, 2015) who found that relationship between learning orientation and innovativeness level of residential care services is statistically insignificant.

Furthermore, there were some findings from the service sector literature as a contradiction to the results of this study (Mahmoud *et al.*, 2016) who report that

learning orientation has significant impact on innovation, in the Ghanaian banking domain. However, given that (Mahmoud *et al.*, 2016) conduct their study in one service sector such as banking this study examined their findings in multiple service sector including, banking, insurance, hotel, communication, post and education.

6.2.3. The relationship between service innovation and operational performance.

The third research objectives chase to explain the relationship between the two components of service innovation, incremental innovation and radical innovation and operational performance dimensions, flexibility, quality and cost.

6.2.3.1. Incremental innovation and operational performance.

This subsection deals with the relationship between incremental innovation and three components of operational performance, flexibility, quality and cost, as first sub-hypothesis of the main relationship between service innovation and operational performance. The findings show that no significant relationship between incremental innovation and flexibility ($p > 0.05$), significant relationship between incremental innovation and quality and significant relationship between incremental innovation with cost. This results indicate that incremental innovation has a partially support to operational performance. The results also show that the inverse relationship between incremental innovation and flexibility estimate= (-.080), ($p > 0.05$), this indicates that there is no Sudanese service firm that adopts the incremental innovation to achieving flexibility. This finding is in contradiction with a number of scholars for example (Cheng ja Krumwiede 2012) who has report a positive and significant relationship between incremental innovation and new service performance linkage in service sectors in Taiwan, In contrast this result does not support the findings of a prior study by (Medina and Rufín, 2009) which showed insignificant relationship between innovation and performance.

6.2.3.2. Radical innovation and operational performance.

This subsection deals with the relationship between radical innovation and operational performance constructs, flexibility, quality and cost, the findings of this study show that a positive and significant relationship between radical innovation with all dimensions of operational performance flexibility , quality and cost, This result is in

line with (Zhang and Duan, 2010) who has found that a positive relationship between innovation and new product performance, and (Cheng ja Krumwiede 2012) who has report that a positive and significant relationship between radical innovation and new service performance linkage, while, (Mahmoud *et al.*, 2016) which argues that a negative effect between innovation and business performance.

6.2.4. The mediating role of service innovation.

The fourth research objective of this study concerns with testing the two dimensions of service innovation (incremental and radical) mediate the exchange between strategic orientation and operational performance. Generally, examining this relationship is important because the process through which strategic orientation enhance operational performance has often been overseen in previous studies. Innovation is an instrument that can be used by entrepreneurs in manipulating opportunities for diverse business operations; and entrepreneurs must be deliberate and make informed choices about the sources or ideas of innovation (Wan, 2013). In this study, innovation or the extent to which a new service extension is hypothesized to act as a mediator in the relationship between strategic orientation and operational performance. This approach is premised on the belief that any attempt to improve a strategic orientation should lead to some kind of improvement in its existing way of doing business leading to better performance. The current research follows (Cheng and Krumwiede, 2012) who integrated service innovation as a mediator between market orientation and new service performance. In this thesis, service innovation is tested on a larger scale in concert with three different constructs of strategic orientation. In this study service innovation was found to have a partial mediating effect on the relationship between strategic orientation and operational performance. The following sections will discuss the mediation effect of service innovation on the relationship between each component of strategic orientation and operational performance.

6.2.4.1. The mediating role of incremental innovation in the relationship between SO and OP.

This part deals with the mediating effect of incremental innovation in the relationship between strategic orientation and operational performance. The result indicate that a partially support the mediating effect of incremental innovation in this

relationship. Regarding the mediating effect of incremental innovation in the relationship between market orientation and operational performance the results of the indirect effect indicates that a partially mediation effect of this relationship.

Innovation was found to significantly mediate the relationship between market orientation and firm performance. The mediation effect of innovation between market orientation and firm performance needs to be explained a bit further. The hypothesis posits that when a firm adopts market orientation it will achieve innovation which will then lead to superior firm performance. Therefore, this thesis argues that innovation mediates and enhances the relationship between market orientation and firm performance. The finding confirms a previous study by Cheng ja Krumwiede (2012) who found incremental innovation to have a positive mediating effect on market orientation and firm performance. Mahmoud *et al.* (2016) who has emphasis innovation mediates the relationship between market orientation and business performance Medina ja Rufín (2009) report innovation acting as a mediator between market orientation in retailers and business performance. More research needs to be undertaken to gather evidence to further validate this relationship between market orientation, innovation and firm performance. The result of this study also indicates that incremental innovation not mediates the relationship between service innovation and operational performance.

Regarding the incremental innovation mediate effect in the relationship between service orientation and operational performance, the results of this study show that no mediates effect of incremental in the relationship between service orientation and operational performance. The results also explain that an inverse relationship between incremental innovation and flexibility estimate= (-.151), ($p>0.05$), this indicates that there is no interest from the managers of Sudanese service firms in the sectors (hotel, post, banking, education, communication and insurance.) the incremental innovation to achieving flexibility.

Finally, the findings show that incremental innovation partially mediates between learning orientation and operational performance. This confirms that firms with greater innovation will be more successful in responding to their environments and develop new innovations leading to competitive advantage and superior performance. These results are consistent with some of the previous studies for example, (Authors, 2013) who demonstrated incremental innovation to have a positive mediating effect on organizational culture and firm performance in the Turkish financial services sector.

While (Authors, 2015) shows that innovation as a partial mediator variable in the relationship between the high-performance human resource management and firm performance. And (Authors 2017) who asserted that incremental innovation performance becomes the best mediating variable between total quality management and competitive advantage.

6.2.4.2. The mediating role of radical innovation in the relationship between SO and OP.

This sub-section concerns with the mediating effect of radical innovation in the relationship between strategic orientation and operational performance. The results were found to have a partial mediating effect of radical innovation in this relationship. Regarding the mediating effect of radical innovation in the relationship between market orientation and operational performance the results obtained from indirect effect indicates partial mediation effect to radical innovation in this relationship. The result also indicates that radical innovation not mediates the relationship between service orientation and learning orientation with operational performance. Other researchers have attempted to study the same path suggested in this study. (Cheng and Krumwiede, 2012) found that radical innovation fully mediated the relationship between strategic orientation and organizational performance. (Authors, 2017a) who asserted that radical innovation performance becomes the best mediating variable between total quality management and competitive advantage, and (Authors, 2017b) who confirm that innovation play a mediating role between relational resources and firm performance. Whereas (Authors, 2013) reported a partial mediating effect consistent with this study. And also (Mafabi *et al.*, 2015) who found that innovation partially mediate the effect of creative climate on organizational resilience.

Radical innovation is considered a good variable for mediation since most types of strategic orientation (i.e. market, service, and learning orientations) have been proven to have positive relationships with radical innovation and performance, and innovation with performance as indicated in the previous sections of this study. Market orientation relates to implementing something new or different as a response to market conditions and may be perceived as innovative behavior. Such market oriented firms are able to enhance the level of innovation and enjoy greater levels of success in the market (Authors, 2013). Although both market orientation and innovation have significant effects on performance, much of the variance in operational performance is attributed to

the mediating role innovation in the market orientation-performance linkage (Obeidat, 2016).

6.2.5. The moderating effect of TCs on the relationship between SO and SI.

The fifth main research objective of this study hypothesis that technological capabilities moderate the relationship between strategic orientation and service innovation. However, fully support is found for the moderating effect of technological capabilities. The moderating test of technological capabilities for the relationship between strategic orientation components, market orientation, service orientation and learning orientation with service innovation dimensions, incremental innovation and radical innovation indicates that there was fully moderating effect of technological capabilities on this relationship. Although technological capabilities fully moderate between strategic orientation and service innovation, there is an inverse relationship between learning orientation and radical innovation estimate (-.021), ($p > 0.05$), this shows that the service firms were not interested in learning orientation to achieve radical innovation.

According to (Srivastava, Gnyawali and Hat, 2015) technological capability refers to internal competence or strength of the focal firm relative to other firms. Regarding the moderate effect of technological capabilities between strategic orientation and incremental innovation relationship, the finding of this research demonstrates that technological capabilities have moderate effect on the relationship between strategic orientation and incremental innovation. Most of the previous studies did consider this matter. Moreover, most of the previous studies addressed the moderating effect of technological capabilities on the relationship between the strategic orientation constructs and innovation, such as (José and Ortega, 2010) which indicated that the technological capabilities is moderating the relationship between quality orientation , cost orientation respectively, as a dimensions of competitive strategies and firm performance. Regarding the moderate effect of technological capabilities between strategic orientation and radical innovation relationship, the overall result shows that technological capabilities were moderate the relationship between the components of strategic orientation (market, service and learning) and radical innovation. These results argued, with (Srivastava, Gnyawali and Hat, 2015) which posited a negative moderation effect of technological capability. Moreover, (Haeussler, Patzelt and Zahra, 2012) who

has report that technological capabilities moderate effect on the relationship between strategic alliances and product development in high technology new firms. And (Jantunen *et al.*, 2011) who has demonstrates that technological capabilities moderate effect on the relationship between innovation and internationalization as growth strategies.

6.3. Implications of the study

The sections above detailed the findings relating to the five broad categories of findings, namely, the direct effect of factors of strategic orientation (market orientation, service orientation and learning orientation) on operational performance, the direct effect of components of strategic orientation on service innovation , the direct effect of components of service innovation (incremental innovation and radical innovation) on operational performance, the mediating effect of service innovation on the relationship between strategic orientations and operational performance, and moderating effect of technological capabilities on the relationship between strategic orientation and service innovation. The discussion here in this section will bring together all the findings and attempt to create a holistic overview of the implications from the testing of the conceptual model. This section contains two sub-sections the theoretical implications and managerial implications of the study findings which are discussed below:

6.3.1. Theoretical implications

The current study has supported the present knowledge on strategic orientation in service sector. Although this study is conducted in Sudan, some general implications can be derived for theoretical literature on this topic that are not localised 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 strategic orientation mediated through service innovation under the moderating influence of the technological capabilities.

The first theoretical contribution of this study is the development of a dimension of strategic orientation constructs through comprehensive combination perspective; based on a survey data of 161 service firms, this study carries more weight especially for generalization purpose due to the limited quantitative approach in the extant literatures. As a whole, strategic orientation has important implications for operational performance.

The second theoretical contribution, it an attempt to viaduct that knowledge gap by addressing the value of strategic orientation as drive of such service innovation like incremental innovation and radical innovation, the result consists with the findings in literature that strategic orientation was posited to have significant and positive relationship with service innovation.

The third theoretical contribution, this study also contributes to the literature by extending the knowledge on the linkage between service innovation and operational performance, our results, in conjunction with theoretical arguments; suggest that service innovation plays a big role on operational performance.

The fourth theoretical contribution is an attempt to extend strategic orientation in evidencing new relationships this study spotlighted the mediating effect of service innovation (incremental innovation and radical innovation) in the exchange between strategic orientation and operational performance. The findings of the result confirmed the partial mediating effect of service innovation between strategic orientation and operational performance. This study contributes to the literature by examining the service innovation constructs (incremental innovation and radical innovation) as a mediator between strategic orientation and operational performance.

The fifth theoretical contribution, this study was investigating the moderating effect of technological capabilities in the relationship between strategic orientation and service innovation. The findings of the research found that the technological capabilities have fully moderating effect on the relationship between strategic orientation and service innovation. In addition, Most of the previous research examined the moderating effect of technological capabilities on the relationship between one dimension of strategic orientation and innovation such as (Cheng and Krumwiede, 2012) therefore, this study contributes to the literature by examining the moderating effect of technological capabilities on the relationship between all three constructs of strategic orientation (market orientation, service orientation and learning orientation) and service innovation In addition, this study contributes to the literature about the technological capabilities concept based on resource based view theory.

6.3.2. Managerial implications

This study offers a number of managerial implications. *First*, this study will help decision makers in companies to know the importance of strategic orientation and how strategic orientations influence the operational performance. Therefore, decision makers should focus on improve their strategic orientation. *Second*, the study highlights the importance of managerial emphasis on the creation of a strategic oriented business environment and encouragement of innovative activities. Given that strategic orientation helps managers to be more connected to the business environment such as dimension of strategic orientation appear to play an important role in allowing service firms to devise innovative solutions to business problems. *Third*, from managerial point of view the findings obtained from testing the conceptual framework of this study improves the common understanding among decision makers, which makes the firm more likely to be able to effectively respond to environmental changes.

6.4. Limitations of the study

Despite the aforementioned contributions, this study confronted by a number of limitations that should be took about in order to be path for future study. *Firstly*, this study tests the role of strategic orientation in service context. *Secondly*, this study use of only one respondent per company, which might be a cause of possible response bias. Thus, caution should be taken in results interpreting. *Thirdly*, like the majority of the studies in strategic orientation literature, this study is cross-sectional in nature. 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*, Structural equation modeling on AMOS software was used as the statistical tool for this study. Although AMOS is well known for its efficiency, the size of the data set (n=161) may have reduced the power of the statistical test.

6.5. Suggestions for future research

this section pointed out there are quite a few limitations in this study and some directions for future research could be derived from within these limitations before progressing onto some more general avenues for future research.

First, this study tested strategic orientation in service context, future research should test in other settings (e.g. manufacturing) could expand the scope of strategic

orientation. *Second*, this study use of only one respondent per company, future research should endeavor to collect data from multiple members. *Third*, instate of cross-sectional data future research should consider alternative approaches such as panel data or a longitudinal design whenever possible. *Fourth*, this study taken up technological capabilities as one dimension moderate effect between strategic orientation and innovation, future research has to take into consideration the moderating effect of technological capabilities with multiple dimensions in this relationship. *Finally*, this study focuses on service firms in Sudan. Future research may include firms from other industries or regions to generalize the findings. It would provide valuable information for managers regarding the mapping of strategic orientation with operational performance.

6.6. Conclusions

This study is an attempt to developing a conceptual framework to examine the link between strategic orientation and operational performance exploring the mediating role of service innovation in this relationship in service sector in Sudan. Moreover, the study has investigated the moderating effect of technological capabilities between strategic orientation and service innovation. The present study was run among 161 firms from different service firms in Sudan. The findings demonstrate that strategic orientations in Sudan consist of three components (market, service and learning) and firms in Sudan are to some extent implemented strategic orientation.

This study makes important contributions to theory, methodology and business performance. Moreover, this study supports strategic planning by linking market, service and learning orientations to different aspects of performance. It also gives managers guidance on combining strategic orientations to achieve enhanced profitability. In the interests of advancing this field, a number of suggestions for future research are provided throughout this chapter.

Scholars should continue to strive towards a better conceptual understanding of how combinations of strategic orientation drive superior business performance.

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APPENDIXES

Appendix 1: Questionnaire



Sudan University of science and technology

College of Graduate Studies

Department of Business Administration

Questionnaire Submitted in Fulfillment for the Requirement for the Degree of
philosophy of doctorate in Business Administration

Title:

**The mediating role of service innovation on the relationship between strategic
orientation and operational performance: the moderating effect of technological
capabilities.**

(A study on Sudanese services companies)

Presented by:

Adam Yagoub Abker

Supervisor:

Dr: Siddig Balal Ibrahim

Services companies managers Questionnaire

Dear Manager

Peace, mercy and blessings of Allah.....After

The aim of this study is to examine (**The mediating role of service innovation on relationship between strategic orientation and operational performance the moderating effect of technological capabilities**). All information will be treated as strictly confidential will be used for an academic purpose.

Guidelines:

- Please read each sentence and then tick the category which more accurately reflects your agreement or disagreement with the sentence.
- What is important is that you express your opinions as honestly as possible.
- Please remember to be sure that you give a mark for each sentence (do not omit any), and that you never give more than one mark to a single sentence.
- Please feel free to contact the researcher if you may need any information concerning the questionnaire.

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Section 1: General information about company:

Please tick (✓) clearly in the space that represents the most appropriate answer for your case, as provided below.

1. Property of firm:

Property of firm	National	foreign	Intermixed

2. Experience of firm:

Experience of firm	to less than 5 years	5 to 10	11 to 15	16 to 20	20 and more

3. Number of labourers:

Number of labourers	to less than 50 labourers	50 to 100	101 to 150	151 to 200	200 and more

4. Natural of work:

Natural of work	hostelry	Mailers	Banker	Education	communication	Insurance

5. Number of competitors:

Number of competitors	to less than 5 competitor	5 to 10	11 to 15	20 and more

Section 2: strategic orientation: (market, service, interaction, learning orientation)

Please tick (✓) clearly in the space that represents the most appropriate answer according to your opinion about the company's market strategies, as provided below.

Market orientation:

	Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	We respond rapidly to competitive actions that threaten us					
2	We constantly monitor our level of commitment and orientation toward customers.					
3	We measure customer satisfaction systematically and frequently.					
4	We give close attention to after-sales service.					
5	Information on customers, marketing successes, and marketing failures is					

	communicated across departments in our firm.					
6	All of our departments are responsive to and integrated in serving markets.					

Service orientation:

No	Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	Service quality values are explicitly addressed and actively promoted within our organization.					
2	Our employees are fully committed to customer service.					
3	Our metrics capture what is strategically important for measuring customer satisfaction.					
4	Our company has established service standards based on researched customer needs.					
5	Service standards are visible to both employees and customers.					

Interaction orientation:

No	Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	We believe that each customer cannot be satisfied with the same set of services.					
2	We have systems in place that record the transactions of each customer.					
3	We analyze previous customer transactions at the individual customer level to predict future transactions from that customer.					
4	We encourage customers to share opinions of our services with their firms.					
5	We encourage customers to interactively participate in designing services.					

Learning orientation:

No	Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	Our employees view themselves as partners in charting the direction of the firm.					
2	We place a high value on open-mindedness.					
3	We encourage employees to 'think outside of the box.					
4	An emphasis on constant innovation is a part of our firm culture.					
5	We basically agree that our firm's ability to learn is the key to our competitive advantage.					
6	Learning in our firm is seen as a key commodity necessary to guarantee firm survival.					

Section 3: operational performance: (flexibility, delivery, quality, and cost)

Please tick (✓) clearly in the space that represents the most appropriate answer according to your opinion, as provided below.

Flexibility:

No	Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	Our company can quickly modify products to meet our major customer's requirements.					
2	Our company can quickly modify products to respond to our major competitors' innovations.					
3	Our company can quickly introduce new products onto the market.					
4	Our company can quickly respond to changes in market demand.					
5	Our company can quickly respond to changes in competitors.					

Delivery:

No	Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	Our company has an outstanding on-time delivery record to our major customers.					
3	The lead time for fulfilling customers' orders is short.					
4	Our company provides a high level of customer service to our major customer.					

Please evaluate how your firm compares to your major services competitor through three years a go

Quality:

No	Item	more worse	worse	Don't Know	pester	More better.
1	Improved service quality.					
2	Reduced costs of defects and rework.					
3	Reduced delivery lead time of finished products/services to customers.					
4	Reduced customer complaints.					
5	A decline in the number of warranty claims.					

Cost:

	Item	more worse	worse	Don't Know	pester	More better.
1	Labour productivity					
2	Production cost.					
3	Improved capacity utilization.					
4	Cost effectiveness in operations.					

Section 4: service innovation: (incremental innovation, radical innovation)

Please tick (✓) clearly in the space that represents the most appropriate answer according to your opinion, as provided below.

Incremental innovation:

	Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	The services were modification of an existing company service					
3	The services were revision of an existing company service.					
3	The services were repositioning of an existing company service.					

Radical innovation:

	Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	The services were totally new to the market.					
2	The services offered new features versus competitive services.					
3	The services required changes in the customer are buying behavior.					

Section 5: technological capabilities:

Please tick (✓) clearly in the space that represents the most appropriate answer according to your opinion, as provided below.

	Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	The firm has strong internal technology operations capabilities.					
2	The firm has the technological infrastructure and competencies to engage in e-commerce initiatives.					
3	Our technological capabilities are top class.					
4	The success of our research and development activities is based on long-term know-how.					
5	We have invested heavily in certain research and development projects.					

القسم الأول: التوجه الاستراتيجي: (التوجه بالسوق، التوجه بالخدمة، التوجه التفاعلي، التوجه بالتعلم)

الرجاء وضع علامة (✓) أمام الخيار الذي يناسب وجهه نظرك في العبارة المذكورة .

التوجه بالسوق:

م	العبارات	أوافق بشدة	أوافق	محايد	لا أوافق	لا أوافق بشدة
1	إستجابتنا سريعة إزاء سلوك الشركات المنافسة التي تمثل تهديدا لنا.					
2	نتحكم في مستوى الإلتزام نحو العملاء بصورة منتظمة .					
3	يتم قياس رضا العملاء بصورة منتظمة.					
4	نعطي أهمية خاصة لخدمات ما بعد تقديمها.					
5	يتم تبادل المعلومات عن العملاء في أقسام شركتنا.					
6	كل أقسام الشركة تستجيب وتتكامل في خدمة الاسواق.					

التوجه بالخدمة

م	العبارات	أوافق بشدة	أوافق	محايد	لا أوافق	لا أوافق بشدة
1	تتم معالجة قيمة جودة الخدمة بفعالية في داخل شركتنا.					
2	يلتزم الموظفون في توجههم بصورة كاملة نحو خدمة العملاء.					
3	يعتبر قياس رضا العميل هدف استراتيجي لنا.					
4	معايير الخدمة وضعت على أساس احتياجات العملاء.					
5	معايير الخدمة مرئية للعملاء والموظفين معاً.					

التوجه التفاعلي:

م	العبارات	أوافق بشدة	أوافق	محايد	لا أوافق	لا أوافق بشدة
1	نعتقد بأن ردود أفعال العملاء إزاء الخدمة التي نقدمها يمكن ملاحظتها.					
2	لدينا نظم لرصد التعاملات الخاصة بكل عميل.					
3	يتم تحليل المعاملات السابقة للعميل و ذلك من أجل التنبؤ بمعاملاتهم المستقبلية.					
4	تشجع الشركة عملائها على تبادل الآراء حول الخدمات التي تقدمها.					
5	تشجع الشركة مشاركة العملاء بالتفاعل في تصميم الخدمات.					

التوجه بالتعلم:

م	العبارات	أوافق بشدة	أوافق	محايد	لا أوافق	لا أوافق بشدة
1	يرى الموظفين أنفسهم كشركاء في رسم توجه الشركة					
2	نتعامل بإنفتاح في شركتنا.					
3	تشجع الشركة الموظفين في التفكير خارج الأطار الرسمي.					
4	التركيز على الإبتكار بصورة مستمرة يعتبر جزء من ثقافة الشركة.					
5	ندرك بأن الميزة التنافسية تشكل أساسا لقدرة الشركة على التعلم.					
6	يعتبر التعلم قيمة اساسية للتحسين في الشركة.					

القسم الثاني: الأداء التشغيلي: (المرونة ، التسليم ، الجودة ، التكلفة)

الرجاء وضع علامة (✓) أمام الخيار الذي يناسب وجهه نظرك في العبارة المذكورة.

المرونة:

م	العبارات	أوافق بشدة	أوافق	محايد	لا أوافق	لا أوافق بشدة
1	يمكن للشركة تعديل منتجاتها بسرعة لمقابلة متطلبات الزبائن الرئيسية.					
2	يمكن للشركة تعديل منتجاتها بسرعة إستجابة لإبتكارات المنافسين الرئيسية.					
3	يمكن للشركة إدخال منتجات جديدة بسرعة في السوق.					
4	يمكن للشركة أن تستجيب بسرعة لتغيرات الطلب بالسوق.					
5	يمكن للشركة أن تستجيب بسرعة للتغيرات التي تحدث لدى المنافسين.					

التسليم:

م	العبارات	أوافق بشدة	أوافق	محايد	لا أوافق	لا أوافق بشدة
1	قدرة الشركة على التسليم في الموعد المحدد عالية.					
2	الفترة المحددة للوفاء بطلبات العملاء قصيرة .					
3	تقدم الشركة لعملائها الرئيسيين خدمات بمستوى عالي.					

الجودة:

رجاءً قيم جودة الخدمة الخاصة بشركتك مقارنة بالمنافسين الرئيسيين لك خلال الثلاث سنوات الاخيرة.

م	العبارات	أفضل بكثير	أفضل	لا أدري	أسوأ	أسوأ بكثير
1	إبتكار خدمات جديدة.					
2	تخفيض معدل فشل الخدمة.					

3	تخفيض زمن التسليم.				
4	تخفيض شكاوي العملاء.				
5	إنخفاض عدد مطالبات الضمانة.				

التكلفة:

رجاءً قيم تكلفة الخدمة الخاصة بشركتك مقارنة بالمنافسين الرئيسيين لك خلال الثلاث سنوات الاخيرة.

م	العبارات	أفضل بكثير	أفضل	لا أدري	أسوأ	أسوأ بكثير
1	إنتاجية العامل.					
2	تكلفة الإنتاج.					
3	تحسين قدرة الإستخدام.					
4	فعالية التكاليف في التشغيل.					

القسم الثالث: إبتكار الخدمة: (الإبتكار التزايدي ، الإبتكار الجزري)

الرجاء وضع علامة (✓) أمام الخيار الذي يناسب وجهة نظرك في العبارة المذكورة.

الإبتكار التزايدي:

م	العبارات	أوافق بشدة	أوافق	محايد	لا أوافق بشدة	لا أوافق
1	توجد اسباب لتغيير الخدمة الحالية في الشركة.					
2	تتم مراجعة الخدمات الحالية المقدمة من قبل الشركة.					
3	تقوم الشركة باعادة الخدمات الحالية المقدمة.					

الإبتكار الجزري:

م	العبارات	أوافق بشدة	أوافق	محايد	لا أوافق بشدة	لا أوافق
1	الخدمات التي تقدمها الشركة تعتبر جديدة كلياً.					
2	الخدمات التي تقدمها الشركة جديدة مقارنة بالمنافسين.					
3	الخدمات التي نقدمها تتطلب تغيير في سلوك الزبون.					

القسم الرابع: القدرات التكنولوجية:

الرجاء وضع علامة (✓) أمام الخيار الذي يناسب وجهه نظرك في العبارة المذكورة.

م	العبارات	أوافق بشدة	أوافق	محايد	لا أوافق	لا أوافق بشدة
1	لدى الشركة قدرات تكنولوجية قوية للتشغيل.					
2	لدى الشركة بنية تكنولوجية للتجارة الإلكترونية.					
3	تعتبر القدرات التكنولوجية في مستوى القمة في الشركة.					
4	لدى الشركة نجاحات في أنشطة البحوث و التطوير على المدى الطويل.					
5	استثمرت الشركة في بعض مشروعات البحوث والتطوير بصورة ضخمة.					

القسم الخامس: معلومات عامة عن الشركة:

الرجاء وضع علامة (✓) أمام العبارة التي تراها مناسبة .

1- ملكية الشركة حسب النشأة:

ملكية الشركة	شركة وطنية	شركة أجنبية	شركة مختلطة

2- خبرة الشركة في المجال:

خبرة الشركة	أقل من 5 سنة	من 5 إلى 10	من 11 إلى 15	من 16 إلى 20	أكثر من 20

3/ عدد العاملين بالشركة:

عدد العاملين	أقل من 50 عامل	من 50 إلى 100	من 101 إلى 150	من 151 إلى 200	أكثر من 200

4/ طبيعة عمل الشركة:

خدمة تأمين	خدمة إتصالات	خدمة تعليمية	خدمة مصرفية	خدمة بريدية	خدمة فندقية	طبيعة العمل

5/ عدد المنافسين في المجال:

أكثر من 15	من 11 إلى 15	من 5 إلى 10	منافس أقل من 5	اعدد المنافسين

Appendix 3: Publications

Appendix 3.1: First Published Article.

Investigation the Relationship between strategic orientation and operational performance in the Sudanese service firms. *American Journal of Business, Economics and Management*, 6 (3), September 29, 2018, pages. 66-74

Appendix 3.1: Second Published Article.

The mediating role of service innovation in relationship between strategic orientation and Operational flexibility in Sudanese service firms. *Asian Journal of Management*, August 30, 2018