Sudan University of Science and Technology

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EFFECT OF SUPPLY CHAIN ORINTATION AND MARKETING SENSING ON SUSTAINABLE COMPETITVE ADVANTAG: THE MEDIATING ROLE OF INNOVATION CAPABILITY

A STUDY ON SUDANESE MANUFATRING COMPENIES IN KHARTOUM

تأثير توجه سلسلة التوريد و استشعار السوق على الميزة التنافسية المستدامة: الدور الوسيط للقدرات الإبداعية

دراسة على شركات ألتصنيع في الخرطوم

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By: Omaima Kahlan Kadhim Hilmi

Supervisor: Dr. Abdelsalam Adam Hamid

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بسم الله الرحمن الرحيم

{ يَرْفَعِ اللَّهُ الَّذِينَ آمَنُوا مِنكُمْ وَالَّذِينَ أُوتُوا الْعِلْمَ دَرَجَاتٍ }

سورة ألمجادله(11)

DEDICATION

I dedicate this thesis to my family and my friends for nursing me with affection and love and their dedicated partnership for success in my life.

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In the beginning, all praise is due to Allah, the lord of the world. He is bestowing his countless blessings on me; one of these blessings, granting me a unique opportunity and special circumstances to complete this research successfully.

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Abstract

The willingness to adopt supply chain orientation and push forward the importance of marketing sensing and innovation capability to achieve sustainable competitive advantages is an ongoing challenge for companies especially in the developing countries, although the interaction effect of the firm's sensing capabilities with the supply chain orientation on the firm sustainable competitive advantage has not been extensively examined experimentally, Therefore Drawing upon the resource-based view and dynamic capabilities theory, the study aims to developed a model to investigate the interaction between supply chain orientation and marketing sensing on sustainable competitive advantage. Also to examine the mediator role of innovation capability between independent variables (i,e. supply chain orientation and marketing sensing) and sustainable competitive advantage. Thus , the survey was used to collect the data from a convenience sample of (170) cases from Sudanese Manufacturing companies in Khartoum. And depending on the path analysis through using AMOS in Structural Equation Modeling demonstrates some empirical supports to the model of this study. The results reveal that there is a positive relationship between one dimension of SCO and SCA. Furthermore, the results indicate that the other two dimensions remained without effect on SCA ; also the results predict that MS positively influence the SCA. In addition, the mediating effect of IC shows that market sensing significantly contributes to SCA via product innovation While process innovation had no mediating effect between market sensing and sustainable competitive advantage. In contrary, the indirect (mediated) effect of supply chain orientation dimensions is not significantly on sustainable competitive advantage. In addition, the results showed that the interaction between supply chain orientation and marketing sensing make the market sensing affect sustainable competitive advantage, while the supply chain orientation was found to have no effect on sustainable competitive advantage. Based on study's results, the discussion of the findings, the theoretical and practical implications as well as the limitations and suggestions for future research in this study are provided.

Key words : SCO_ supply chain orientation; MS_ marketing Sensing ;

 IC_ Innovation Capability; SCA_ Sustainable Competitive Advantage .

المستخلص

إن مدى الاستعداد لاعتماد توجه سلسلة التوريد والتركيز على أهمية استشعار السوق والقدرة على الابتكار لتحقيق مزايا تنافسية مستدامة يمثل تحديًا مستمرًا للشركات وخاصة في البلدان النامية ، وعلى الرغم من أن تأثير التفاعل لقدرات استشعار السوق مع توجه سلسلة التوريد على الميزة التنافسية المستدامة للشركة لم يتم بحثها تجريبيًا على نطاق واسع ، لذلك و بالاعتماد على النظرة القائمة على الموارد ونظرية القدرات الديناميكية ، تهدف هذه الدراسة إلى تطوير نموذج للبحث في التفاعل بين توجه سلسلة التوريد واستشعار التسويق على الميزة التنافسية المستدامة. فضلا عن دراسة ألدور الوسيط لقدرة الابتكار بين المتغيرات المستقلة(توجه سلسلة التوريد واستشعار السوق) والميزة التنافسية المستدامة. لذلك، تم استخدام المسح لجمع البيانات من عينة ملائمة من (170) حاله من شركات التصنيع السودانية في الخرطوم. يوضح تحليل المسار من خلال استخدام برنامج أموس في نمذجة المعادلات البنائية بعض الدعم التجريبي لنموذج هذه الدراسة. كشفت النتائج أن هناك علاقة إيجابية بين أحد أبعاد توجه سلسلة التوريد والميزة التنافسية المستدامة. علاوة على ذلك ، تشير النتائج إلى أن البعدين الآخرين ظلوا بدون تأثير على الميزة التنافسية المستدامة . كما أظهرت النتائج إن استشعار السوق له تأثير ايجابي على الميزة التنافسية المستدامة. بالإضافة إلى ذلك أظهرت النتائج إن استشعار السوق يساهم بشكل كبير في خلق الميزة التنافسية المستدامة عبر ابتكار المنتج بينما لم يكن لابتكار العملية أي دور وسيط بين استشعار السوق والميزة التنافسية المستدامة. على النقيض من ذلك ، فقد أظهرت النتائج أن التأثير غير المباشر (الوساطة) لأبعاد توجه سلسلة التوريد ليس كبيرًا على الميزة التنافسية المستدامة. بالإضافة إلى ذلك فقد أظهرت النتائج أن التفاعل بين توجه سلسلة التوريد واستشعار السوق يجعل استشعار السوق يؤثر على الميزة التنافسية المستدامة , بينما أظهرت النتائج انه لم يكن لسلسلة التوريد أي تأثير على الميزة التنافسية المستدامة. بناءً على نتائج الدراسة، يتم تقديم مناقشة النتائج ، والآثار النظرية والعملية ، وكذلك القيود والتوصيات للبحوث المستقبلية في هذه الدراسة .

ألكلمات ألمفتاحيه: توجه سلسلة ألتوريد, استشعار السوق, القدرة على الابتكار, ألميزة ألتنافسية ألمستدامة.

CHAPTER ONE
RESEARCH FRAMEWORK

1.0 Introduction

Modernistic, turbulent and uncertain marketplace is what companies are facing in continual with challenges like cost reductions, miscellaneous buying habits, changing and complex consumer behavior, mature markets, globalization and so on (Lee et al, 2016). And given the ongoing global financial crisis and other worldwide problems, firms find that to gain and maintain competitive advantage is quite difficult, only temporary advantages are possible (Li & Liu 2014). Because sustaining competitive advantage according to schumpeterian perspective is extremely difficult, especially in dynamic markets, unless firms can match resources to market situations (Iyera, Srivastavab & Srinivasanc,2019). So it appeared in what is known as the dynamic capabilities which are refer to the ability to evolve new resources and reconfigure current ones to meet the problems that arise in the business environment (Lin & Tsai, 2016). Similarly, marketing capabilities are considering a as a major determinant of firms performance (Yanga & Jiang & Xieb, 2019). Hence, marketing capabilities can enable firms to effectively reconfigure and circulate (deploy) resources, help obtain sustainable competitive advantage, and affect the firms' revenue and profit growth in the long term (Guoa et al , 2018). As well, sensing capability indicates the organization's ability to keep pace with environmental changes by scanning the environment and evaluating markets and competitors and to quickly accomplish reconfiguration ahead of competition (Rashidirad , Salimian *and* Soltani *, 2017).* On the other hand, the supply chain orientation is a strategic capability, and it is considered as one of the most important factors contributing to achieving a sustainable competitive advantage(Acar et al , 2017). SCO reflects an intra-organizational management philosophy that contains a shared belief system about how to manage suppliers, besides behavioral norms that simplify relational exchange (Sramek ,

Omar & Germain , 2019). In addition, innovation capability is formed through the main process within the firm and cannot be separated from other practices, where the ability to innovate is a valuable asset for companies to build and sustain competitive advantage (Rajapathirana & Hui, 2018). The ability to innovate has become more important nowadays in allowing companies to maintain their competitive advantages and improve their performance. Moreover, due to the high competition and short product life cycle, innovation has become one of the required goals for all companies (Atalay, Anafarta and Sarvan, 2013).

Based on the above discussion, this study attempts to examine the interaction influence between supply chain orientation and marketing sensing on sustainable competitive advantage in the existence of innovation capability as a mediating variable.

1.1 Problem Statement

Based on the literature review, several knowledge gaps have been identified to be addressed in the current study. These gaps are presented as follows:

First, despite the abundance of studies and literatures regarding the impact of strategic orientation like marketing orientation and costumer orientation on performance and sustainable competitive advantage (e.g., Pratono et al , 2019; Marrewijk, 2009; Theodosiou , Kehagias and Katsikea 2012; Gotteland, Shock and Sarin; 2020) there is few studies addressed the impact of supply chain orientation on performance and sustaining competitive advantage. Although some prior studies have reported a positive relationship between SCO and performance (e.g ., hult et al , 2008 ; and Acar et al , 2017). Yet, on the contrary, (Gligor, 2014) confirm there is no positive direct relationship between SCO and sustainable competitive advantage. For these reasons this study aim to explain the lack of

consistency among the findings of previous studies and examine the relationship between supply chain orientation and sustainable competitive advantage. **Second,** marketing sensing has been studied as one of the dimensions of dynamic capabilities (Teece , 2007), although prior studies examine and debate the influence of dynamic capabilities on firm performance and competitive advantage (e.g., Ringov , 2017 ; Lin & Tsai 2016). Yet, there is still little understanding of the effect of marketing sensing on sustainable competitive advantage. Some Previous studies found to have a positive relationship between MS and SCA (e.g., Cao, Duan & El Banna , 2019 ; and Ahmed et al,2017; Tseng & Lee, 2014; Wilden, Gudergan & Lings, 2009). On the contrary, there are some studies have found a negative relationship between MS and SCA (e.g., Sugiyarti and ardyan , 2017; Ardyan , 2016). Moreover, prior research has addressed how outside-in marketing capability perspective interact with inside-out capability (e.g., Mu et al, 2018 ; and Yang & Jiang & Xie, 2019) Yet, they overlooked the effect of firm supply chain orientation on this capability. This implies that the benefits of adopting Supply chain orientation SCO have not been extensively and theoretically proven. Thus, this study suggest supply chain orientations and marketing sensing capability as an independent variables to measuring firm′s sustainable competitive advantage. **Third,** innovation capability has been empirically linked with superior performance (e.g., Atalay et al ,2013; Prajogo, 2016; Jajja et al , 2017; ardyan, 2016; Guimarães, 2019 ; Yu et al , 2017). Similarly, some studies findings agree that there is a direct and positive correlation between marketing sensing and innovation (e.g., Ahmed et al,2017 ; and Alshanty & Emeagwali , 2019), for this reason this study proposed innovation capability as a mediator variable, another reason to select this variable is despite of a substantial body of research on different types of strategic orientation linked with innovation capability(e.g., Adamsa, Freitas & Fontana , 2019 and Grawe, Chen & Daugherty , 2009), yet

there are hardly any research that study the influence of SCO and IC (e.g., hult et al , 2008; Tutara, Nart and Bingöl, 2015). In addition, there is a little understanding of how innovation capability interrelated with strategic SCO to enhance performance and sustainable competitive advantage. Besides, there is a need to conduct such a study in the developing countries, precisely in Sudan. Because, Sudanese companies need to be more willing to adopt supply chain orientation and push forward the importance of sensing the environment, also, to be more innovative.

1.2 Research Questions

Based on the research problem discussed above, this study aims to answer the following questions:

1. What is the influence of supply chain orientation on sustainable competitive advantage ?

2. What is the impact of the individual dimensions of supply chain orientation (top management support, commitment and compatibility) on sustainable competitive advantage ?

3. What is the influence of marketing sensing on sustainable competitive advantage ?

4. What is the effect of innovation capability on sustainable competitive advantage ?

5. What is the impact of the individual dimensions of innovation capability (product innovation capability and process innovation capability) on sustainable competitive advantage?

6. How would mediator role of innovation capability explain the relationship between Supply chain orientation and sustainable competitive advantage ?

7. How would mediator role of innovation capability explain the relationship between marketing sensing and sustainable competitive advantage ?

8. To what extend the interaction of supply chain orientation and marketing sensing can contribute in creating sustainable competitive advantage ?

1.3 Research Objectives

To find proper answers for proposed research questions, this study pursues the following objectives:

1. To examine the impact of supply chain orientation on Sustainable Competitive Advantage .

2. To examine the influence of marketing sensing on Sustainable competitive advantage.

3. To test the mediating role of innovation capability on the relationship between supply chain orientation and sustainable competitive advantage

4. To test the mediating role of innovation on the relationship between marketing sensing and sustainable competitive advantage.

5. To investigate the interaction effect between supply chain orientation and marketing sensing on sustainable competitive advantage.

1.4 Significance of the Research

The significance of this study rises from literature review of market sensing and supply chain orientation to carry out their roles in innovation capability and sustainable competitive advantage. Therefore the significance of this study can be illustrated through the following two classifications:

1.4.1. Theoretical Significance:

1- This study argues that a developed an interaction between market sensing and

Supply chain orientation increase the potential opportunities to achieve a sustainable competitive advantage.

2- This study aim to build a conceptual framework that will contribute to theories and practice in the field of competitive advantage, marketing and supply chain fields .

3- This study will explain how market sensing and supply chain orientation can contribute to developing innovative capabilities within a company.

4- This study is trying to fill the gap through the process of interaction between market sensing and supply chain orientation dimensions on sustainable competitive advantage **.**

1.4.2. Practical Significant

1- This study will make managers aware to cope with change and complexity of business environment in Sudan through the adoption of market sensing.

2- The adoption of supply chain orientation among firms operating in Sudan will contribute in establishing organizational capabilities and subsequently achieving sustainable competitive advantage.

3- Managers can emphasize the importance of intangible resources in enhancing their competitive advantage.

4- This study may encourage managers to play a greater role in activities related to the development of organizational capabilities in general.

1.5 Definitions of the Key Terms

This section presents the operational definitions of the study's variables, these definitions are adopted from previous literature and serve as a basis for the

measurements of various variables of the current study. The following table 1.1 reveals the operationalization definition of these key terms.

Table 1.1
Definitions of Key Terms

Terms	Definitions	Sources
Supply chain orientation	Supply chain orientation is the recognition by an organization of the systemic, strategic implications of the tactical activities involved in managing the various flows in supply chains.	(Mentzer et al , 2001)
Top management support	Top management support plays a critical role in shaping an organization's values, orientation, and direction also, have a substantial impact on organizational performance.	(Mentzer et al , 2001)
Commitment	Commitment is the implicit or explicit pledge of relational continuity between exchange partners.	(Mentzer et al , 2001)
Organizational compatibility	Organizational compatibility refers to the Complementary goals and objectives , as well as similarity in operating philosophies and corporate cultures.	(Mentzer et al , 2001)
Marketing sensing	Marketing sensing refers to the broad generation of market intelligence by an organization relating to present and future needs of customers, distribution of these knowledge across the organization's functional unit, and the organization's responsiveness/reaction to the market.	(Alshanty & Emeagwali , 2019)
Sustainable competitive advantage	SCA is a firm's capability to achieve a series of temporary advantages over time, in comparison to the main competitors, these sustained advantages involve R&D capability,	(Yu et al , 2017)

	managerial capability, profitability, etc..	
Innovation capability	Innovation capability is defined as the development of novel, appropriate, and unique products or services by a firm. It's also a firm openness to embracing new concepts, products, and procedures, consist of the firm's readiness to transform and adopt latest technology and market trends.	(Alshanty & Emeagwali , 2019)
Product innovation capability	Product innovation is defined as the development or use of new components, features and technologies to produce new products.	(Prgogo, 2016)
Process innovation capability	Process innovation is defined as the improvement to production processes technologies required to produce a product.	(Prgogo, 2016)

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CHAPTER TWO

LITERATURE REVIEW

2.0 Chapter Overview

This chapter presents a conceptual background for the various research variables (i.e., supply chain orientation, marketing sensing, sustainable competitive advantage and innovation capability). Subsequently, discussion the relationship between SCO and MS and their relationship with SCA, as well explains the mediating role of innovation capability between the independent variables on SCA.

2.1 Supply Chain Orientation

The notion of the orientation refers to the underlying awareness or latent philosophy that directs the nature and scope of a firm's internal and external activities(Gligor, 2014). Regarding of supply chain, term of supply chain orientation has been introduced by (Mentzer et al, 2001) as distinct from Supply Chain Management notion. Also, addressed that SCM is the implementation of SCO across various companies in the supply chain. The supply chain orientation concept has been described by different authors, (hult et al , 2008) indicate that SCO Arise when supply chain members shared value and beliefs that focus on the importance of overall supply chain not just on their a specific functional area. As well, (Mello and Stank , 2005) confirmed the benefits of viewing the supply chain as a whole rather than its constituent parts, Moreover, mentioned that firms with supply chain oriented are proactive in establishing relationships with other parties involved in supply chain that will result in the ability to enhance the value delivery operation. so that, adopting this philosophy by employees is the first step for the firm to adopting SCO (forman , 2014). Consequently, SCO is based on the perspective that the organization's supply chain is an independent entity and that a focus on achieving outcomes within the supply chain will lead to superior performance (Jadhav, Orr and Malik, 2019). Given of all that has been mentioned so far, viewing the supply chain holistically is the core of supply chain orientation

concept, moreover, it is consider as the underlying philosophy of SCM, as well without a sound understanding of the building blocks of culture that influence firm behavior it will be difficult to successfully implement SCO initiative and maintain a superior performance. Interestingly, research on SCO is very limited, although SCO is an important but largely unexamined topic and There is very limited published research on SCO (Amol, Kapoor and Ghosh, 2015). Nevertheless, the debate about SCO is still enduring   particularly regarding its relationship to performance and sustained competitive advantage as well with various firms capability.

The following subsections address the definition of supply chain orientation and its dimension .

2-1-1 The Definition of Supply Chain Orientation

Table 2.1 Summarizes the definitions of SCO which evolved across the previous literature from (2001) up to date.

Table 2.1: **Definitions of Supply Chain Orientation**

No	Author	Definition
1	Mintzer (2001)	Supply chain orientation is the recognition by an organization of the systemic, strategic implications of the tactical activities involved in managing the various flows in supply chains.
2	Forman & Lippert (2005)	SCO is The degree to which an individual understands the supply chain management concept.
3	hult et al (2008)	SCO refers to the extent to which there is a predisposing among chain members towered viewing the supply chain as an integrated entity and satisfying chain needs in an integrated.
4	Lengnick-Hall , Lengnick-Hall & Rigsbee .(2013)	SCO means the management of a supply chain is guided by an overarching philosophy designed to create a strategic, systemic, fully synchronized, well-orchestrated and tightly-integrated supply and demand management perspective.
5	Ehlers et al.	SCO shall be understood as the overall positive attitude of

	(2014)	an entrepreneur towards cooperation with business partners in the preceding or following stages of the supply chain and the recognition of common goals of actors along the supply chain.
6	Kirchoff, Tate & Mollenkopf. (2015)	SCO is identified as an internal philosophy of SCM that prioritizes relationships among supply chain partners.
7	lee & nam . (2016)	SCO is a shared value and belief system that aids in understanding who the organization should strategically manage its supply chain , and the behavioral needed inside the organization.
8	Acar et al ; 2017	SCO refers to the management philosophy that reflects the motivation level of a firm to provide efficiency in supply chain operations.
9	Amol & Kapoor.(2017)	It is said to possess supply chain orientation When an organization proactively notes and analyses each and every activity that takes place within the supply chain.
10	Velez and Prada-Ospina (2018)	SCO is the willingness among network members to visualize the supply chain as an integrated entity, seeking the satisfaction of the logistics network. It is consider as a fundamental background for the effective management of SCM.
11	Katrina, Kähkönen & Hallikas . (2019)	SCO is a firm's effort to cooperate with its suppliers by aiming for a strategic fit when choosing external resources in the upstream supply chain.
12	Yuhainis, Asharia & Bin (2016)	SCO is a set of activities that need to be performed to realize the SCM philosophy.

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Based on the above table 2.1, supply chain orientation can be summarized in that it represents Reflection of the willingness of individuals at all levels of the company to visualize the supply chain as one integrated entity, which result from the philosophy and culture embedded in the organization to achieve greater value for consumers.

2-1-2 Dimensions of Supply Chain Orientation

The essence of the concept of SCO has been represented in many perspectives. The strategic SCO paradigm relies on the authentic conceptualization of the construct, where SCO was deemed as a philosophy concentrated on the implications of managing supply chain flows (Esper et al , 2010). In another word strategic supply chain orientation has tactic characteristics that focusing on the employees awareness about the whole supply chain processes as well as the whole flow SCM and pursuing internal and external integration (lee and nam , 2016). (Defee and Fugate 2010) Addressed that a firm with SCO should possess an underlying culture that adopts a systems approach to viewing the supply chain holistically. (Deshpande & Webster, 1989) Defined organizational culture as ˝ the pattern of shared values and beliefs that help individuals understand organizational functioning and thus provide them norms for behavior in the organization˝. Hence , in order to successful and long-term relationships, there should be a high degree of cultural consistency (Mello and Stank 2005). Additionally, the concepts of strategic orientation, and culture are closely intertwined (Noble, Sinha & Kumar, 2002).

Mentzer et al. (2001) identified a set of cultural values associated with supply chain oriented firms possessing shared basic assumptions, and it is include (top management support , commitment and compatibility) .

2-1-3 The following Subsections Present the Components of SCO .

2.1.3.1 Top Management Support

Prior research has been examined top management support as a critical success factor (e.g., see Jaworski and Kohli, 1993; Zwikael, 2008; Moore, Konrad & Hunt, 2010; Khan, Long& Iqbal, 2014). Top manager support relate to facilitating reciprocity and alignment, and playing a substantial factor in changing

an organization's orientation, direction and values (Robinson et al , 2018). As well top management support comes in many different forms, for example, helping teams in dealing with hurdles, exhibiting commitment to the work and encouraging the subordinates (Khan et al, 2014).This means that top management processes practiced in organizations, leads to high level of project success (Zwikael; 2008), and regarding to supply chain management, top management support helps maintain strong relationships with supply chain members (Kirchoff ,Tat e& Mollenkopf 2016). Mentzer et al (2001) Indicate that Top Management Support are substantial element to the implementation of SCM and the lack or absence of top management support is a impediment to SCM. Additionally, those firms that exhibit top management support for SCM will have the "leadership and commitment to change" that is necessary for SCM to be initiated (Mello and Stank , 2005). According to Shanmugan and Kabiraj (2012) top management estimation about the potential of SCM philosophy define their support to this philosophy, which results in systems and policies that support this philosophy .

2.1.3.2 Commitment

Commitment is one of the most insightful relational constructs were identified which caused success or Failure of a relationship (Abosag, Tynan & Lewis, 2006). It is defined as an "enduring desire to maintain valued relationship" (Moorman, Zaltman & Deshpande et al , 1992). Commitment also has been defined as "an implicit or explicit pledge of relational continuity between exchange partners "(Gundlach, Achrol & Mentzer, 1995). Moreover, the integration and relationship between partners usually involve high relationship closeness, high commitment-trust, and a tendency to help each other (Wu, Weng & Huang, 2012). Which are essential to SCM implementation, when commitment is induced within an individual firm, it will lead that firm to act cooperatively with

other firms in implementing SCM(Mello and Stank, 2005) in another word ,commitment shapes the rules of engagement and interacting behaviors between exchange partners (Robinson et al , 2018). Hence, the commitment developed as a result of interaction between two organizations result into collaboration between firms and helps to maintain this collaboration and that supply chain collaboration in turn improves the supply chain partners' operational performance (Derek, Tukamuhabwa & Eyaa 2012). Commitment is a desire of a committed partner for the relationship, and specifically to an enduring desire to maintain a valued relationship and willingness to work to maintain it (Tukamuhabwa. 2011).

2.1.2.3 Organizational Compatibility

Organizational compatibility is defined as ″complementary goals and objectives, as well as similarity in operating philosophies and corporate cultures″ (Mentzer et al , 2001). Also Organizational compatibility means fitness of cultural norms and management techniques to the SCM.(Acar et al, 2016). According to Cooper, Lambert & Pagh ,(1997) The importance of corporate culture norms and its compatibility across channel parties cannot be disregard. Moreover Organizational compatibility in a supply chain means that companies must all have Supply Chain Orientation to achieve Supply Chain Management. (Shanmugan and Kabiraj , 2012). Also, supply chain oriented firms are proactive in establishing relationships with other supply chain partners that will enhance the value and reduce costs assets associated with value delivery (Mello and stank , 2005). Although the compatibility encompasses alignment of `exchange partner's corporate cultures and managerial techniques, yet "compatibility" does not suggest perfectly similar, but rather, not conflicting (Robinson et al , 2018) .

2.2 Marketing Sensing Capability

In highly competitive markets and dynamic environment, a firms successful performance relies on its abilities to predict market opportunities and to carefully see the organization's resources in capturing any opportunities. Marketing sensing concept has been engendered from the notion of organization environmental scanning, which means companies scan the environment in order to understand the extrinsic forces of change and develop an effective responses for it, so they secure or improve their position in the future (Choo & auster , 1993). Additionally, the core of dynamic Marketing Capability depends on the idea that an firms can quickly adapt and reconfigure their internal resources commensurate with the market demand when receiving the signal for any change in the markets (Guo et al , 2018). In literature a mountain of streams such as (Lindblom , 2008; Ardyan , 2016 **;** Alshanty, Emeagwali , 2019) others remain, were discussed the marketing sensing capability concept. According to (Lindblom , 2008) the concept of market-sensing capability refers to a firm's ability to Keep up and learn about its market environment, and to use this knowledge appropriately to guide its actions. Because It is important for a firm to have a good understanding of its market(s) and what its customers are demanding in order to response for it. Also, based on (Ardyan , 2016) sensing capability enables the firms to monitor market continuously, to find market opportunity accurately, and also to understand about market threat. Hence, market-sensing ability is a way of gaining market knowledge for decision-making process. Sensing capability can be characterized by a range of possibility advantages for firms especially with regard to exploring technological opportunities, probing markets, listening to customers, along with scanning the other components of the business ecosystem (Rashidirad et al , 2017) .

2.2.1 Marketing Sensing Definition

Table 2.2 Summarizes the definitions of marketing sensing which evolved across the previous literature from (1993) up to date.

Table 2.2: **Definition of Marketing Sensing**

No	Author	Definition
1	Jaworski & Kohli (1993)	Marketing sensing is a broad generation of market intelligence by an organization relating to present and future needs of customers, distribution of these knowledge across the organisation's functional unit, and the organization's responsiveness/reaction to the market.
2	Day (1994)	MS is the attitude and ability of searching, processing and using market information.
3	Lindblom (2008)	The concept of market-sensing capability refers to a firm's ability to learn about its market environment, and to use this knowledge appropriately to guide its actions.
4	Dentoni , English & Schwartz (2014)	MS is the capacity to gather market information, including information about customers, competitors and other chain members, distribute it effectively across an organization and consequently exploit a commercial and competitive benefit from possessing and correctly using this information.
5	Ardyan (2016)	sensing capability is a process of knowledge generalization about the market, wherein information is used into enterprises' decision-making.
6	Rashidirad et al (2017)	MS is the ability to calibrate the requirements for change and to effectuate the necessary adjustments would appear to depend on the ability to scan the environment, to evaluate markets and competitors, and to quickly

		accomplish reconfiguration ahead of competition.
7	Alshanty & Emeagwali (2019)	Market sensing capability is the capability to gather and use the information required to commercialize patented innovations from markets.

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Based on the above table 2.2, marketing sensing can define as The company's ability to collect information from Business environment and the different markets and analyze that information to see if there are opportunities that can be exploited or threats that can be avoided and thus the company can act and response correctly according to the situation.

2.2.2 Marketing Sensing Dimensions

Authors have generally operationalized MS as a multi-component construct. From capabilities approach, scholar classify MS in deferent categories. According to Day, (1994); Lindblom et al, (2008) marketing sensing has three element (Sense, sensemaking, response). While Foley & Fahy (2004) suggest five dimensions for MC (Learning orientation, Organization system, Marketing information, and Organization Communication). Huo (2008) Indicate that marketing sensing capability component are Sensing, absorptive, integrative, and innovative. Moreover Day (2011) addressed tow dimensions for marketing sensing capability (Dynamic, and Adaptive). This research follows the construct of MS that developed by Day, (1994) and other researchers (e.g., Moorman 1995; Choo, 2001; Choo, 2002; Lankinen, Rökman, and Tuominen, 2007; Day, 2001) have strongly built on this original work. Thus this study proposed three component, sense, sense making , and response for MS construct as developed by Day, (1994)

and adopted by Lindblom et al, (2008). In the following are the subsections of the MS construct.

2.2.2.1. *Sensing*

In order to improve the ability of the business to use its inside-out capabilities to exploit external opportunities that matters, there has to be a matching "outside-in" capability to sense these opportunities and decide how best to serve them. (day; 1994). Sensing new opportunities refers to scanning, learning, and interpretive activity. (TEECE, 2007) Sensing Capability also as (Hou, 2008) addressed, captures the effectiveness in sensing the environment, defined as the ability to generate, disseminate, and respond to market intelligence on customer needs effectively. As well, sensing refers to acquirement of information on consumers, competitors and other channel members (Lindblom , 2008).

2.2.2.2. *Sense Making*

Sense-making refers to the interpretative of collect information against past experiences and knowledge (Lindblom , 2008). In order to reintegrate change, it needs to be understood within existing value and meaning systems for one to make sense of such changes. Weick, (2005) Defined sense making as the " way station on the road to a consensually constructed, coordinated system of action". Also , it has been defined as "the process through which people work to understand issues or events that are novel, ambiguous, confusing, or in some other way violate expectations (Kjærgaard and Vendelø, 2015). In addition, sense making is the mechanism by which an individual attributes meaning to events (Gongne and Torkkeli , 2013). Sense-making is about post hoc rationalization, and retrospective explanation of events and situations. It is about people talking about what they do, and why they do it. Events are put into words, giving it a meaning and why they do it that way. It is thinking aloud. It is redrafting of emerging stories (Sharifi and

Zhang, 2008). In another word, firms scan the environment to collect information or data about actual or potential changes in the market; then they collectively interpret or make sense of that collected information (Wei and Wang , 2011).

2.2.2.3. *Response*

Response refers to exploitation of the collect and explicate information in decision-making. In other words, through response, the intangible information and knowledge is turned into visible marketing action (Lindblom , 2008). According to (Homburg, Grozdanovic & Klarmann , 2007) responsiveness defined as" the extent to which an organization responds quickly to customer-related changes ". As well, response is the process of transforming knowledge and the intangible information into noticeable marketing strategy (Ahmed et al,2017). Thus, organizational responsiveness is a firm-level strategic action. With increasing competition and constantly evolving customer needs, responsiveness to environmental changes has become a necessary success factor for companies (Wei and Wang , 2011).

2.3 *Sustainable Competitive Advantage*

Sustainable competitive advantage has been comprehensively studied and linked with various terms particularly with strategic field seines 1965. Henderson (1983) Confirmed that firms can obtain a competitive advantage when proactively take an action. Day and Wensley (1988) Advocated that customers and competitors, as well superior skills and resources are the potential sources for competitive advantage. As well, Dickson (1992) suggested that learning how to create new advantages will lead the firms to be on step ahead of competitors. Barney (1991) Discussed the different possibilities and sources that will lead to sustainable competitive advantage. In addition Hant and Morgan (1995) Proposed that a competitive advantage in resources can be translated into a competitive

advantage in the marketplace. Also, Oliver (1997) suggested that both resource capital and institutional capital are crucial to SCA. Hoffman (2000) Discussed how SCA is linked to other concepts in the strategy field in addition the potential sources of SCA. Moreover, the appropriate and effective way to measure the competitive advantage is process performance especially in terms of consistency with expectations RBV Cao, Berkeley & Finlay (2014). Additionally, SCA focusing on intellectual capital more than only dependent on capital and physical assets Mahdi, et al (2019). Hence, knowledge creation consider a substantial factor for firms to obtain SCA Yu, et al. (2017).

2.3.1 The Definition of Sustainable Competitive Advantage

The actual term "SCA" arise in 1985, when Porter (1985) introduced the types of competitive strategies (low-cost or differentiation) which can be used by firms to achieve SCA. In addition, there was no formal conceptual definition presented by Porter in his debate .

According to barney (1991) ″a firm it is said to have competitive advantage when it is implementing a value creating not simultaneously being implemented any current or potential competitors and when these other firms enable to duplicate the benefits of this strategy″. Similarly,(Hoffman; 2000) addressed that a sustainable competitive advantage can be achieved by adopting unique strategies that create value, which are difficult for current or potential competitors to implement at the same time, in addition to their inability to achieve these advantages and benefits. As well, (Kuncoro and Suriani, 2018) confirmed that firm can attain sustainable competitive advantage when the current or potential competitors can not duplicate or it will cost much to imitate. Thus, sustainable competitive advantage comes into being through the dynamic interplay between a firm and its external environment. So, for example, certain resources can be

strategic, but only if they cannot be copied or replaced by external rivals. (Lewis , 2000).

In conclusion, sustainable competitive advantage consider a journey and not a destination it is like tomorrow which is unavoidable but never arrives. Sustainable competitive advantage only becomes meaningful when this journey is experienced(Chaharbaghi and Lynch ,1999). Even though there is many definition may represented in different point of view yet, there is many   essential Characteristics in the SCA that all authors confirmed it, like the ability to creating unique value strategy that could stay for long run time, hard to imitate, moreover not simultaneously being implemented.

2.3.2 Sources of Sustainable Competitive Advantage

In order to sustain competitive advantage, business firms must continually reconfigure internal resources and capabilities to undertake its responsibility for adapting turbulent environment (Yu Cui and Jiao , 2011).

Day and Wensley (1988) Proposed two categorical of SCA recourses include   Superior skills and resources, superior skills refers to the firm ability to perform individual functions more effectively than other firms, while Superior resources are more tangible requirements for advantage that enhance firms capabilities. According to(Barney 1991) a firm recourses must have four attributes; rare among a firms current and potential competition, value, imperfectly imitable , and inability to be substituted.

As well, (Morgan and Hunt , 1995) suggest another element for SCA recourses consists of physical, legal, human, organizational, informational, and relational recourses.

Moreover, (Hoffman, 2000) addressed that Intangible resources is better suited than tangible ones to achieve SCA. As well the external intangible assets may contribute the most to value generation thus SCA to the firm. In addition to

that, according to RBV, not all of the company's resources can be considered strategic resources, sources of competitive advantage, where the competitive advantage occurs when there is a state of heterogeneity (different resources across firms) and resource immobility (*Madhani , 2010*).

2.4 Innovation Capability

A crucial factors in the success of industrial firms is the extent of their innovativeness. It is through innovativeness that industrial managers devise solutions to business problems and challenges, which effect their future (Hult Hurley& Knight, 2004). (LAWSONand SAMSON, 2001) Mention that innovation represents today's competitive advantage, supported by strong mainstream capabilities in quality, efficiency, speed and flexibility. Innovation can help firms play a dominant role in shaping the future of their industries. So that, innovation is a means of changing an organization, whether as a response to changes in its internal or external environment or as a preemptive action taken to influence an environment because even the most stable environments change (Damanpour , 1991). For this reasons, firms accept that innovation is a strategic necessity, not a strategic choice (Nijssen and Frambach, 2000). Furthermore, innovation is a complex process, which adds value to many structures from firms to countries and even regional structures (Burmaoğlu and Şeşen, 2017)**.** So that, innovation is generally introduced as the key factor for competition in various markets (AKMAN and YILMAZ , 2008).

2.4.1 Innovation Capability Definition

Innovation has been defined by different perspectives over time, Here are some of the most important of these definitions. According to (Sahoo, 2019) "innovation is an evolutionary process within an organization to adopt any change

pertaining to a device, system, policy or service that is new to the organization" .
Damanpour (1991) Defined the innovation as " the new product or service, a new
production process technology, a new structure or administrative system, or a new
plan or program pertaining to organizational member". Also, wang and ahmed
(2004) defined innovation capability as" The firm ability to introduce new products
or open new markets through combining strategic orientation with innovative
behavior and process". As well, innovative capability has been defined as "an
important factor that facilitates an innovative organizational culture, characteristics
of internal promoting activities and capabilities of understanding and responding
appropriately to the external environment " AKMAN and YILMAZ (2008). In line
with these perspectives Innovation capability can also be defined as originality
and modernity in introducing a new product or adopting a new process, innovative
management system or information systems, that add value to the organization and
help it achieving superior performance.

2.4.2 Innovation Capability Dimensions

The literature of innovation is long-standing There is several component for
the innovation capability through literature history.

Table 2.3: Innovation Capability Dimensions

Scholar	Dimensions
Miller and Friesen (1983)	New product or service innovation, methods of production or rendering of services, risk taking by key executives, and seeking unusual and novel solutions
Kotabe , Janet &Murray (1990) ; Kahn, (2018) ; Shu et al (2012); Goedhuys and Veugelers (2008)	Product and process innovation
	Administrative innovation, technical

Damanpour (1991)	innovation , product and process innovation , and radical and incremental innovation
wang and ahmed (2004)	product innovativeness, market innovativeness, process innovativeness, behavioral innovativeness, and strategic innovativeness
Derel, (2015); Atalay (2013)	Product and process innovation Marketing innovation, organizational innovation
KHATTAB, (2017)	Product innovation , supply chain innovation and Organizational innovation
Hao, Kasper & Muehlbacher (2012)	Product and process innovation Marketing innovation, managerial Innovation and technological innovation
Saunila and Ukko (2011)	Participatory leadership culture, ideation and organizing structures, work climate and wellbeing, know-how development, regeneration, external knowledge, and individual activity

Student's Work 2020

So based on the table **2.3** above, among numerous typologies of innovation advanced in the relevant literature, product and process innovation have gained the most attention. where From various research These two types of innovation have dominated most discussions and empirical studies on innovation.

The following subsections present the components of innovation capability as discussed in the previous literature. These components are product innovation and process innovation .

2.4.2.1 Product Innovation Capability

Innovation itself as a concept is multi-dimensional include distinct types And product innovation is the most outstanding, where is defined as " the development or use of new components, features and technologies to produce new products ″(Prajogo, 2016). As well, (wang and ahmed, 2004) defined product innovation "as the novelty and meaningfulness of new products introduced to the market at a timely fashion ″. According to (acar, 2012) small changes in designing the product cannot be considered as product innovation, Product innovation can take advantage of new knowledge or technology. In order to competing better then rivals, achieving product success, capturing market share, increasing return on investment and long-term viability, Companies must have the ability to innovate and develop new products using modern technologies and be able to launch them before competitors (Sahoo, 2019). Hence, product innovation is a key environmental factor that provides new product development projects that can lead to meet consumers wants and need (Hsiao and Hsum 2018). Moreover, product innovation is a critical factor for success for the company, as the benefits of successful innovation programs are clearly demonstrated in terms of sales, profits, and growth (coopr, 1984).

2.4.2.2 Process Innovation Capability

Process innovation is the new ideas or improvements in processes or organizational procedures and considered a curtail determinant of performance (Mooi, Rudd and Jong, 2020). Based on (oecd, 2005) process innovation has been defined as "the implementation/adoption of new or significantly improved production or delivery methods. It may involve changes in equipment, human resources, working methods or a combination of these″. Therefore, process

innovation means that the steps and stages of product development are innovative, as these steps include important developments in technologies, equipment, and software (acar, 2012). Current trends of development of process innovations are digitization, automation, use of biotechnology and nanotechnology, use of renewable energy sources. Process innovations concern not only production but also logistics and support processes. Logistics innovations offer great potential benefits not only for supply flexibility but also for ecology (Macurová, Peterková & Czerná, 2019).

2.5 The Relationship between SCO and IC

The correlation between supply chain orientation and innovation capability has been rarely studied. Hult et al (2008) indicate that SCO will effect IC through the exchanging between buyers and suppliers. SCO as philosophies and cultural nature might lead the firm to be more innovative when it starts implementing SCO initiatives and be source of new ideas (Acar , 2012; Melnyk et al, 2010; Tutara et al , 2015). Thus, there is a positive influence of partnership-based supply chain cooperation on the innovation and performance (Shan, Li and Shi, 2020). As well, determination of the firm strategy in general and firm strategic orientation in particular is a substantial factor for achieving successful innovation capability (AKMAN and YILMAZ , 2008). (Acar et al , 2017; Gligor, 2014) Confirmed that SCO consider as a recourses. Also Theoretically innovation has been declared to rely on the resource based of the firm. Consequently, combining diverse types of resources leads to the development of dynamic capabilities (Obeidat, 2016). Thus, The firms capabilities are developed over time through interactions between the company's resources and help deploy resources. As such, SCO can lead to the development of IC for better deploying the firm's SCO (Gligor, 2014).

2.6 The Relationship between Marketing Sensing and Innovation Capability

There are several studies which indicate that there is a positive relationship between Marketing sensing and innovation capability (e.g, Alshanty and Emeagwali, 2019; Alshanty et al , 2019 ; Ahmed et al 2017; Mahmoud et al , 2015; Lin and Wang, 2015). As well, ardyan (2016) confirm there is a positive relationship between MS and product innovation. According to (Sugiyarti and Ardyan, 2017) the firms can enhance its success in innovation, as well as improve performance by having the capability of sensing the market understand the market needs and be able to predict trends in the future. The market intelligence is so important, since product innovation process can be improved through the procuring the external market information and knowledge in addition to determination of customer desires, needs, which is consider as imperative for new innovation (Alshanty and Emeagwali, 2019) marketing orientation with product innovation capability enables new product development projects to focus on product innovativeness to satisfy customer needs(Hsiao and Hsum, 2018). The probability of an innovation's commercial success correlates highly with the developers' understanding of customer needs and top managers' sensitivity to markets. The ability to sense markets enables firms to anticipate new technologies' potential, leading to successful development activities (Lin and Wang, 2015).

2.7 The Relationship between Innovation Capability and SCA

A firm's capabilities are important in providing and sustaining its competitive advantage, and in the implementation of the entire strategy and Innovation capability consider as special asset of a firm (AKMAN and YILMAZ , 2008). There is a mountain of stream discussed the correlation between IC and SCA(e.g, Hult, Hurleyb & Knightc, 2004; Atalay et al ,2013; Prajogo, 2016;

Muhammad et al , 2017; Yu et al , 2017; Coelho and Moutinho, 2018; Guimarães, 2019). According to Prajogo (2016) product innovation and process innovation both have a positive influence on firm SCA. (Hall and Sen, 2002; Tajeddini, Trueman & Larsen, 2006 ; Rauch et al., 2009; adryan, 2016) Indicated the positive relationship between product innovation and SCA. In a competitive environment, in order to improve and secure their position in the market companies must use innovative tools (Burmaoğlu and Şeşen, 2019). Firms engage in innovative activities that may include acquiring, imitating or substituting resources, or major innovation to attain sustainable competitive advantage and outperform their competitors (Kabadurmus, 2020).

2.8 The Influence of SCO on SCA

Limited investigation has done on the influence of supply chain orientation on sustainable competitive advantage (e.g., Hult et al ,2008; Acar et al, 2016; Gligor, 2014; Sriyakul, Prianto, and Jermsittiparsert, 2019). While (Hult et al ,2008; Acar et al, 201; Sriyakul, Prianto, and Jermsittiparsert, 2019) indicate the positive relationship between SCO and SCA, in contrary (Gligor, 2014) indicate that there is no positive relationship between SCO and SCA. the RBV emphasizes that sustained competitive advantages is driven by firms' ability to develop and exploit resources that are rare, valuable, and difficult to imitate or substitute (Barney, 1991). As well, SCO is a strategic resource that Conditions apply (VIRN) (Mello and Stank 2005).Thus, according to RBV, supply chain oriented firms can obtain a competitive advantage and achieve superior performance (Gligor, 2014). Moreover, supply chain orientation relates with firm culture and this culture such as, top management support, commitment, compatibility well enhance the firm ability to attain and sustain their competitive advantage (Sriyakul, Prianto, and Jermsittiparsert, 2019; Mello and Stank 2005; Mentzer , 2001).

2.9 The Influence of MS on SCA

Market sensing concept has been largely discussed theoretically and empirically, and with SCA term, scholars confirm the positive influence of MS on SCA (e.g, Day, 1994; Tseng & Lee, 2014; Wilden, Gudergan, & Lings, 2009). In contrast, some previous study indicate the non significant relationship between marketing sensing and sustainable competitive advantage (e.g Sugiyarti and ardyan , 2017; Ardyan, 2016). Also, (Lindblom, et al 2008) confirmed That the high level of market sensing capability does lead to higher growth, yet, the study did not find market-sensing capability to have a positive effect on profitability. In addition, according to RBV and DC suggests that marketing sensing capabilities in particular may be immobile, inimitable, and largely non-substitutable value-creation mechanisms so these capabilities will enable the firm sustaining there competitive advantage (Morgan, Slotegraaf and Vorhies, 2009; teecy, 2007; barnny, 1991). Moreover, marketing orientation creates a competitive advantage that cannot be matched by competitors, as the relevant marketing companies outperform their competitors that are less market-oriented, given that the former creates long-term value for customers compared to the latter (Nobel, Sinha and Kumar, 2002).

2.10 The Mediating Role of Innovation Capability between SCO and SCA

There are hardly any studies that examine the mediator role of innovation capability Between Supply Chain Orientation and Sustainable competitive advantage. (Tutar, Nart and Bingöl, 2015) Indicate that innovation capabilities play a key role between strategic orientation and firm performance. According to (hult, 2004) innovativeness partially mediates the relationship between strategic orientation and firm performance. So that, this study suggest innovation capability

as a mediator variables between SCO and SCA. Because, for innovation to succeed, a strategic orientation must be defined, because without a strategy, it will be difficult to achieve the ability to innovate and succeed in addition to that, companies that adopt a formal strategy can achieve superior performance (Burmaoğlu and Şeşen , 2017). According to (Shan, Li & Shi, 2020) that suppliers' early cooperation in product innovation projects can also reduce high-cost design changes in the later stages, shorten the development cycle of innovation projects, and improve firm performance in general.

2.11 The Mediating Role of Innovation Capability between MS and SCA

There have been many previous studies on the influence of MS on SCA that confirmed the positive and direct relationship between them (e.g, Day, 1994; Tseng & Lee, 2014; Wilden, Gudergan, & Lings, 2009; Lindblom, et al 2008). Yet, other previous study indicate the non significant relationship between marketing sensing and sustainable competitive advantage (e.g Sugiyarti and ardyan , 2017; Ardyan , 2016 ; Olavarrieta & Friedmann). So this study suggest the innovation capability as a mediator to understand differences in findings across the previous studies. Because innovation capability is the application of relevant knowledge to achieve market value and is the effective, implementation of creative ideas within an firm (AKMAN and YILMAZ , 2008). Also, by integrating innovation with MO, a firm with a customer focus can take a more proactive perspective in innovation by meeting market responses, or customer needs (wang and chung, 2013). MO strategies of the firm are largely about the ongoing monitoring of customers' current and latent needs and market and competition conditions. Using MO, firms prepare and respond to these need by innovating and introducing appropriate products and services (Tavani et al, 2016).In addition,

dynamic capabilities enable firms to create new products and business processes and quickly respond to changing market conditions (Guo et al , 2018).

2.12 The Interaction between Supply Chain Orientation and Marketing Sensing

Resource-based view (RBV) suggest that firms that are able to combine resources and capabilities that are rare, valuable, nonsubstitutable, and difficult to imitate, will achieve a competitive advantage over competing firms (barney, 1991). Hence, Consolidating the resources and capabilities that have a relationship with each other well creating company's value and competitive advantages more than treating the resources in an isolated way, and this is because its inherent value is enhanced through dynamic capabilities (Newbert, 2007). According to (Gligor, 2014) there is a positive relationship between SCO and MS, also Gligor (2014) confirmed that The relationship become more stronger and important when there are dynamic and complex environments. As well, Warnakulasooriya (2007) indicated that Marketing orientation in general and marketing sensing in particular working in an integrated manner with supply chain orientation seeking to provide the best value of the final consumer in a profitable manner. Organizational learning and good knowledge of the external environment that makes the company superior to its competitors is achieved through the company's external partners such as suppliers and customers. Therefore, the marketing approach cannot be isolated from relationships with suppliers and customers as it drives the development of a systems approach within the firm (Gligor, 2014 p4).

2.13 Chapter Summary

This chapter presented a summary of the literature review for various variables of the study, including SCO, MS, IC and SCA. Additionally, this chapter revealed the relationship exists among these variables based on the prior literature. The next chapter presents the research underpinning theories, theoretical framework, hypotheses development and research Methodology.

CHAPTER THREE
HYPOTHESES DEVELOPMENT
AND
RESEARCH METHODOLOGY

3.0. Chapter Overview

This chapter presents the theoretical framework of the study which describes the relationship between the variables (i.e. independent, dependent, mediating variables). In addition, this chapter addresses the development of hypotheses based on the previous literature and the proposed theoretical framework.

3.1 Research Underpinning Theories

Based on the literature review this research model is depends on resource-based view, dynamic capability theory, as a main theories as following :

The resource-based view suppose, a firm's resources are the tangible or intangible assets controlled by the firm (*Morgan and Slotegraaf 2012*). According to the resource-based view, not all assets are equally important. The most important assets are strategic resources: those that are rare, valuable, and difficult to imitate and nonsubstitutable (Barney, 1991). This theory deals with the resource base of the business itself as a starting point. So, if the organizations or strategic business units are able to deploy their resources and capabilities strategically, they will convert competitive struggle to their own interests in the best way and create a sustainable competitive advantage (Acar and Zehir, 2010). Moreover, The resource-based view of the firm (RBV) considered now as the most popular theory of competitive advantage (Fahy, 2000). In the literature, there are two types of resources: tangible and intangible , Regarding to supply chain orientation due to its characteristics SCO can be seen as an intangible resource (Acar et al , 2017). Gligor. (2014) mention that according to Strategic management and supply chain management research, a firm orientations considering as resources. Moreover, (hult et al ,2008) argues that supply chain orientation is a capability created by combining tangible with intangible resources. Additionally, since supply chain

orientation is largely depends on firm intangible resources, this orientation provides members with the potential to build sustainable competitive advantages. hence, the RBV evolves the strategy that Necessary to achieve sustainable competitive advantage through emphasizes and enhancing internal resources and capabilities (*Madhani , 2010*). On another hand, dynamic capability theory (DCT) , it considers as an extension of the RBV toward regimes of rapid change. The rationale is that RBV has not adequately explained how and why certain firms have competitive advantage in situations of rapid and unpredictable change. In these markets, where the competitive landscape is shifting, the dynamic capabilities become the source of sustained competitive advantage (Eisenhardt and Martin,2000). (Teece, Pisano & Shuen , 1997) Defined Dynamic capability as ˝ the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments ˝. Based on this definition dynamic capabilities can be disaggregated into the capacity to sense and shape opportunities and threats, to seize opportunities, reconfiguring the business enterprise's intangible and tangible assets (Teece , 2007). There is a mountain of research argues the importance of marketing sensing as a dynamic capability that lead to attain superior performance In rapidly changing markets (Cao, Duan and El Banna 2019; Sugiyarti and Ardyan , 2017). The resource-based view and dynamic capabilities theory explaining what and how marketing capabilities should be developed in order to achieve a superior performanc . For example, the resource-based view maintains that rare, difficult to match and valuable resources are the foundation for gaining strong marketing capabilities, that lead to competitive advantages. Dynamic capabilities theory further shows how marketing capabilities are developed and adapt to market evolution (Yanga, Jianga and Xieb . 2019). This capability is dynamic in that it involves the interaction between a

36

firm's internal knowledge and the demands of the external market(UN ,2002). Innovation capability is actually one of the most important dynamics that enables SMEs to achieve a high level of competitiveness both in the national and international market. Thus, promoting and sustaining an improved innovation capability should be the key focus area of the top managers of SMEs (Saunila, 2015). Innovation capability driven theories help in understanding the process through which a firm changes and develops in dynamic market environment. Generally, organizational capabilities are an indication of what a firm can do and what it cannot do. Organizational capabilities is the ability of the firm to deploy its available resources as its main assets (Iddris, Awuah & Gebrekidan , 2014). Based on the theoretical base presented and discussed above, it can be ended that the underpinning theories resource based view, dynamic capability of the framework in this research are justifiable. As explained before, these theories provide the theoretical base for understanding the effect of market sensing and SCO on SCA, and the mediator role of innovation.

The below figure shows the research theoretical framework which illustrates the relationship between the independent variable(MS and SCO)and and the dependent variable (Sustainable Competitive Advantage). In addition to the mediator variable (innovation capability).
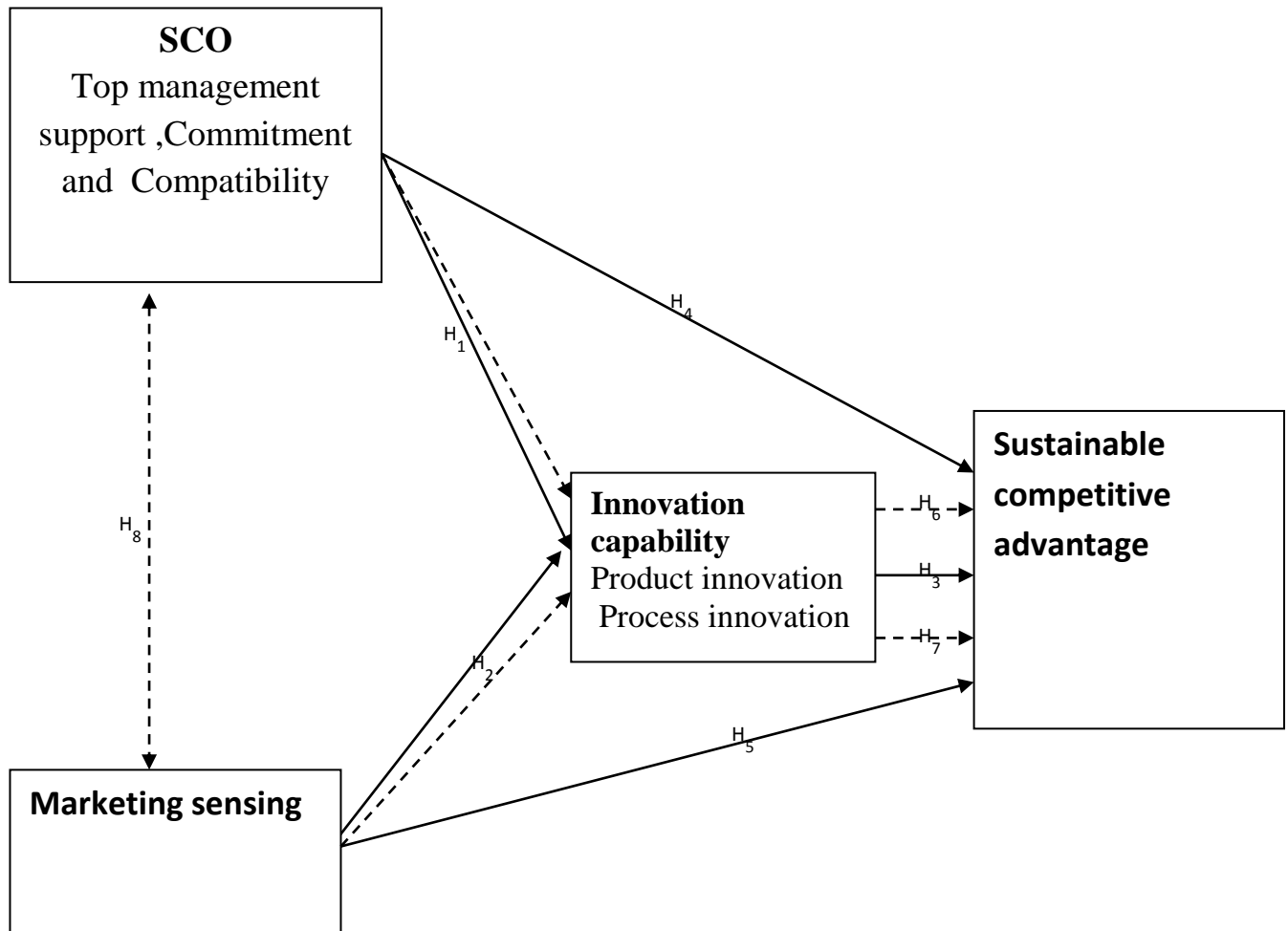
Figure (3.1) theoretical framework

Source: Student's work, 2020

3.2. Hypotheses Development of the Study

Based on the theoretical framework of the study, eight main hypotheses, in addition to sub-hypotheses, are formulated to reflect the relationships described in the framework, as follow:

3.2.1. The Relationship between Supply Chain Orientation and innovation capability

Strategic orientation is the philosophy of firm which shows how a job may be performed through a set of values and beliefs to attain a superior performance (Tutara, at al 2015). In prior research SCO has been defined as a cultural phenomenon contain from a set of, a system of knowledge and shared values that emphasizing on the relationship among supply chain members to achieve long term competitive advantage (mintzer , 2001; mello and stank, 2005; esper et al . 2010). Culture has often been recognized among the most important factors that affect the innovation of the organization (Acar, 2012). In addition, many companies have increasingly leaned on their supply chains as a source of new products and processes or improvements in existing ones. Organizations' key innovation task have been performed not only internally but also in collaboration with supply chain member (Melnyk et al, 2010). Additionally, a basic tenet of the RBV is that firms which want to outperforming should able to develop strategic resources (VRIN). Hence, strategic orientation provide a source that helps firms build dynamic capabilities(Hamid, Elhakem & Ibrahim, 2017). Moreover, innovations linked to supply management have been studied in terms of the collaborative actions between buyers and suppliers, such as early supplier involvement. According to (hult et al , 2008; Tutara et al , 2015) there is a positive and significant relationship between SCO and the innovation. For these reasons, the study expects that:

H1: supply chain orientation has a positive impact on innovation capability.

From this general hypothesis, two sub-hypotheses can be formulated as follows:

H1:1a: top management support is positively relates to product innovation.

H1:1b:commintment is positively relates to product innovation.

H1:1c: compatibility is positively relates to product innovation.

H1:2a: top management support is positively relates to process innovation.

H1:2b: commitment is positively relates to process innovation.

H1:2c: compatibility is positively relates to process innovation.

3.2.2.The Relationship between Marketing Sensing and Innovation Capability

There are several studies which argue the relationship between Marketing sensing and innovation capability. According to (Alshanty and Emeagwali, 2019; Alshanty et al , 2019 ; Ahmed et al 2017; Mahmoud et al , 2015; Ardyan, 2016) there is a positive and significant relationship between MS and innovation capability. Market sensing capability is one of sensing capabilities, which includes the capabilities of collecting and filtering market information from outside and inside the firm, elucidate its meaning, and determining the implications for action that can decrease commercialization process uncertainty and increase opportunities for successful innovation (Lin and Wang 2015). Therefore, innovation occurs as a result of marketing sensing and anticipating developments in the business environment (Alshanty and Emeagwali, 2019). The company's ability to learn from market changes is one of the most important sources of innovation and to achieve a sustainable competitive advantage (Weerawardena, 2003). Where knowledge of the market generates performance of product innovation because it strengthens the

company's ability to link market information, ideas and knowledge to gain broader perspectives on its implementation. Providing products based on deep knowledge of markets and can limit competitors 'ability to imitate them. (Luca & Gima, 2007). As well, many studies have found that organizations lacking dynamic capabilities have not received good outputs from innovation because they have not been able to deal with changes in the environment (KHATTAB,2017). Much of the firm's innovativeness hinges on the extent to which managers acquire and act on market intelligence. Organizations that act are responsive to markets. Organizations without the capacity to innovate may invest time and resources in studying markets but are unable to translate this knowledge into practice.(hunt et al , 2004). For these reasons, the study expects that:

H2: The firm's market sensing is positively relates to innovation capability

From this general hypothesis, two sub-hypotheses can be formulated as follows:

H2:1: The firm's market sensing is positively relates to product innovation capability .

H2:2: The firm's market sensing is positively relates to process innovation capability.

3.2.3. The Relationship between Innovation Capability and Sustainable Competitive Advantage.

In reference to the prior literature, many researchers have indicated the positive influence of innovation capability on competitive advantage and firm performance (e.g Hult et al, 2004; Atalay et al, 2013; Abd Aziz and Samadb, 2016; Ferreira, Coelho and Moutinho, 2018; Prajogo, 2016; Yu et al, 2017) beside others. Since Schumpeter's (1934) concept on "creative destruction", innovation has been

cosidrized as one of the effective competitive strategies in business markets today that enhance a firm ability to sustain their competitive advantage (Prajogo, 2016). (Dereli ,2015) Indicated that Only the companies with ability to innovation can achieve competitive advantage and survive in competitive market and dynamic environment. According to (akman and yilmaz, 2008) innovation is a main strategic tool to have a competitive advantage in such complex environments. Also, innovation is a necessity for long-term success, growth, sustainable performance, and to survive as the firm's industry. According to (Rios-Morales and Brennan, 2009 ; Tsai et al,2013 ; Carlsson, 2006), the nature of innovation is to create, support and maintain CA and performance. Product innovation studies have shown the direct effect on firms' business performance (Hall and Bagchi-Sen, 2002; Kayhan et al., 2006;Rauch et al., 2009). Also, product innovation is source of competitive advantage and also as a determinant of firm's success (Julienti, Bakar and Ahmad, 2010). In addition (Prajogo, 2016) indicate that both product and process innovation have a positive effect on business performance. For these reasons, the study expects that:

H3: There is a positive relationship between innovation capability and sustainable competitive advantage.

Based on the above general hypothesis the two sub-hypotheses can be formulated as follows:

H3:1: there is a positive relationship between product innovation and SCA.

H3:2: there is a positive relationship between process innovation and SCA.

3.2.4. The Relationship between Supply Chain Orientation and Sustainable Competitive Advantage.

According to (Hult et al ,2008) the firm ability to evolve and exploit resources that are rare, valuable, and difficult to imitate or substitute will enhance the

performance and sustain competitive advantage. As such supply chain serves as a strategic capability, so the RBV suggest that a supply chain orientation will positively affect desired outcomes. prior Results revealed that SCO has significant and positive effects on OPER (Hult et al ,2008; Acar et al, 201; Sriyakul, Prianto, and Jermsittiparsert, 2019). In contrary (Gligor, 2014) confirmed that there is no direct and positive impact of SCO on PERF. Intangible resources should be seen as critical elements to gain competitive advantage (Acar et al, 2016). Hence, commitment, organizational compatibility, and top management support, can be seen as antecedents of cooperation among organizations and crucial elements to assure long-term relationships and performance (Mello and stank, 2005; Morgan and Hunt, 1994). Moreover, the supply chain orientation is a necessary condition for the overall performance and effectiveness of the supply chain and adopted it will affect the downstream and upstream changes of the players, thus affecting the performance of the supply chain and the firm as a whole(Sriyakul, Prianto, and Jermsittiparsert, 2019). For these reasons, the study expects that:

H4: There is a positive relationship between SCO and SCA

Based on the above general hypothesis the three sub-hypotheses can be formulated as follows:

H4:1 There is a positive relationship between top management support and SCA.

H4:2 There is a positive relationship between commitment and SCA.

H4:3 There is a positive relationship between compatibility and SCA.

3.2.5. The Relationship between Marketing Sensing and Sustainable Competitive Advantage

The resource-based view of the firm rests on a simple premise that the organizations' desired outcome is to achieve a sustainable competitive advantage that allows them to earn economic rent or above-average returns (Lindblom et al

,2008). On other hand, the capability-based theory of competitive advantage suggests that a firm can achieve SCA through distinctive capabilities possessed by the firm (Weerawardena, 2003). As well, in general, market-sensing capabilities are critical in developing market focus and thus, ultimately, company performance (Lindblom et al ,2008). The elements of market sensing capability and their interrelatedness, as well as their link to the firm performance, it can be assumed that organizations that have mastered the market-sensing activities gain competitive advantage and superior business performance. In other words, an organization's ability to learn about its market environment and use this information appropriately to guide its actions is the key driver of business performance. Process market-sensing grants firms' unique competence, which is the source of creating a viable competitive advantage. Valued competences, like marketing capabilities, cannot be imitated withase, replaced, or conveyed within rivals; therefore, these capabilities make the base for viable competitive edge (Alshanty and Emeagwali, 2019). In literature a number of scholars (e.g, Day, 1994; Alshanty and Emeagwali, 2019 ; Foley & Fahy, 2004; Wilden, Gudergan, & Lings, 2009; Lindblom et al , 2008) beside others, have discussed the market sensing concept and most of them indicates that market sensing capability is important for firm performance and sustainable competitive advantage. In contrast, some previous study indicate the non significant relationship between marketing sensing and sustainable competitive advantage (e.g, Sugiyarti and ardyan , 2017; Ardyan , 2016; Olavarrieta & Friedmann, 2008). Also, Lindblom et al , (2008) confirmed That the high level of market sensing capability does lead to higher growth. Whoever, the study did not find market-sensing capability to have a positive effect on profitability. For these reasons, the study expects that:

H.5 there is a positive relationship between marketing sensing and sustainable competitive advantage

3.2.6. The Mediator role of Innovation between Supply Chain Orientation and Sustainable Competitive Advantage.

According to Resource-based theory, businesses need to create unique and valuable capabilities, in order to gain competitive advantage and sustain this competitive advantage preventing imitation and substitution of these capabilities is required (Acar, 2012.). As well, the firm's strategic orientation has been recognized as a critical organizational resource. Since strategic orientations are valuable, scarce, imperfectly tradable and inimitatable resources, so they lead to sustain the competitive advantage of firm (ANDREU et al , 2011). Also, dynamic capabilities are the processes which enable a firm to integrate, reconfigure, and to respond to and even promote market change. Considering the importance of organizational capability, innovation capability has become a critical factor for achieving firm competitiveness(Iddris, Baffour Awuah, & Abraha Gebrekidan, 2014). A firm's internal innovation activities will affect their innovation collaboration with external partners (Pulles et al. 2014). Therefore, strategic orientation of the firm reflects its operational, marketing, posture. in order to achieves its goals in markets by taking risks, investing in innovation, becoming proactive, so sustain its competitive advantage (Obeidat, 2016). Prior research examined the relationship between Strategic orientation and innovation as mediation with SCA. According to (hult , 2004) innovativeness partially mediates the relationship between strategic orientation and firm performance. On another hand, (Tutar at al, 2015) indicate that innovation capabilities play a key role between strategic orientation and market performance but there are hardly any studies that examine the relationship Between SCO with innovation and SCA. In

addition, SCO can lead to the development of innovation capability for better deploying the firm's SCO and generating a competitive advantage (Gligor, 2014). For these reasons, the study expects that:

H.7. innovation capability mediates the relationship between SCO and SCA

Based on the above general hypothesis the tow sub-hypotheses can be formulated as follows:

H.7.1 product innovation capability mediates the relationship between SCO and SCA

H.7.2 process innovation capability mediates the relationship between SCO and SCA

3.2.7. The Mediator role of Innovation between Marketing Sensing and Sustainable Competitive Advantage.

Previous studies explained that there is a direct relationship between market sensing capability on performance (e.g, Fang et al., 2014; Lindblom et al., 2008; Tseng & Lee, 2014). However, the evidence is not fully consistent. There are studies that explained the negative impact between market sensing capability on performance (e.g, Olavarrieta & Friedmann, 2008 ; Sugiyarti and ardyan , 2017; Ardyan , 2016). On another hand, (ahmed et al ,2017; Ardyan, 2016) suggest the innovation capability as mediator between marketing sensing and SCA. The logic is that successful performance and competitive advantages result from the processes of innovation and creativity within the organization that result from its ability to sensing changes that occur in the market, including technological changes, consumer demand, suppliers,…etc.(Teece, 2007). As well, according to (Shan, Li and Shi, 2020) dynamic capability can be used to modify existing capability or create new capability. In addition, organizational innovation can

improve a firm's performance, but the organization needs to accumulate knowledge in order to achieve innovation. Consequently, knowledge positively affects a firm's capability to be innovative (Tsai et al, 2013). Bearing in mind the above mentioned this study posit that:

H.7. Market Sensing Capability will Positively lead to Sustainable Competitive Advantage via Innovation Capability

Based on the above general hypothesis the tow sub-hypotheses can be formulated as follows:

H.7.1 Market sensing capability will positively lead to sustainable competitive advantage via product innovation capability

H.7.2 Market sensing capability will positively lead to sustainable competitive advantage via process innovation capability

H.8. The Interaction between Supply Chain Orientation and Marketing Sensing

There are some reasons to expect such an interaction between supply chain orientation and marketing sensing capability. First, drowning into the RBV theory grounded and DC theory, a firm must combine its recourses and capability in order to sustain their competitive advantage and achieve superior performance (barney 1991; teece, 2007). According to (Gligor . 2014) the company's resources and capabilities must be managed effectively with each other because it will achieve a better performance for the firms than resources used in isolation. On another hand (Acar et al , 2017) claiming that SCO is a resources that help the organization to achieve sustainable competitive advantage. As well, prior research established the positive effect of marketing sensing on sustainable competitive advantage (e,g Day, 1994; Tseng & Lee, 2014; Wilden, Gudergan, & Lings, 2009). In general, marketing orientation has a focus on the immediate customer. Firm

47

with MO may attain superior performance due to its greater understanding of customers and their needs, competitor capabilities and strategies, channel requirements and developments, and the broader market environment than their competitors (morgan, 2009). There is a strategic alignment between two concepts: Market Orientation (MO) and SCO. Furthermore, the link between SCO and MO is outlined as the customers and market orientation, Where both MO and SCM should work cohesively and not as separate ideas or philosophies (Velez and Ospina, 2018). As well, (Yusoff, Ashari & Salleh, 2016) suggest that the two (MO and SCO) is better viewed as a synergy to each other. In the statistical term they are covariance. Additionally, although these two concepts differ, yet, they share many things, including focus and awareness of the importance of top management in shaping the company's values and orientation as well as their focus on internal coordination of jobs to achieve a competitive advantage as well as the importance of understanding the needs of current and future customers (Warnakulasooriya, 2007). For these reasons, the study expects that:

H.8 The interaction between SCO an MS will positively affect the firm SCA.

3.3 Research Methodology

There are different ways of classifying research studies. One of the most important focuses on the methodology used. Quantitative research depends on measurement to compare and analyses different variables. in contrast, qualitative research uses qualifying words or record aspects of the world (bless et al, 2006). Also these methodology use several methods like laboratory experiments, field surveys, case research, ethnographic research, action research, and so forth.(Bhattacherjee, 2012). In addition, the qualitative method related with using open-ended questions, while the quantitative method associated with closedended

questions. The experimental research methodology usually include truth-seeking and may often involve the use of quantitative methods for analysis. It tends, so, to utilize a deductive approach to research design, that is, the use of a priori questions or hypotheses that the research will test. These often flow from sets of issues and questions arising from the researcher's engagement with a relevant prior research. The intention of experimental research is the production of results that are objective, valid and replicable (gray, 2013). Therefore, based on the research objective, philosophy, and approach, this study employs the quantitative methodology because it aims at testing the theory by examining the relationship between defined variables.

3.4 General Research Design

Research design relates directly to the testing of hypotheses. it is specification of the most adequate operation to be performed in order to test a specific hypothesis (bless, Smith & Kagee , 2006). Research design can be classified by the communication method used to gather primary data. survey is one of these methods. Survey is to question people and record their answers to analysis (cooper and emory, 1995). When the survey is confined to a local area a good way to collect data is to personally administer the questionnaires. The main advantage of this is that the researcher or a member of the research team can collect all the completed responses within a short period of time (sekaran and bougie, 2016). Based on the analysis of the results of this study and previous literatures, this research provides some explanation on how the interaction of market sensing and internal market orientation may create value for the firms.

3.5 Population and Sampling

Population refers to the group of people, events, or things of interest for which the researcher wants to make inferences (based on sample statistics), A sample is a subset of the population. While The sampling unit is the element or set of elements that is available for selection in some stage of the sampling process (sekaran and bougie, 2016). Therefore, based on the research objective and target population this study adopts the convenience sampling method, which is a non- probability sampling technique This choice is justified by lacking a proper sampling frame representing all elements of the population from which a sample is drawn. Besides, the research constraints regarding cost and time. Consequently, the data was collected from the Sudanese manufacturing companies and the The respondent was the departments of supply chain, logistics, operations who are responsible for the functions of supply chain, procurement, or operations concerned with the subject of study. So the research employed convenient sample where self-administrated survey was used to distribute 170 questionnaires to more than 100 manufacturing companies located in Sudanese capital Al Khartoum.

3.6 Measurement of Variables

Measurements are "rules for assigning numbers to objects to represent qualities of Attributes (Churchill, 1979). All items used to measure the variables were gauged on five points likert scale ranging from strongly disagree (5) to strongly agree (1). The five-point scale was used because using a five-point likert scale will enable the comparison of the reliability coefficient with others research (Saleh & Ryan, 1991). The object of item generation is to create a pool of items that would cover the sampling domain of each construct (Churchill, 1979). Regarding the measurements, all items were adopted from previous studies with making some modification following the pre-tests to be adapted to the current study. The

following subsections present the measurements of the study's variable including the independent variable (i.e., supply chain orientation and marketing sensing), the dependent variable (i.e., sustained competitive advantage), and the mediator variable (i.e., innovation capability).

3.6.1 Supply Chain Orientation

According to mentzer (2001) supply chain orientation is the recognition by an organization of the systemic, strategic implications of the tactical activities involved in managing the various flows in supply chains. Accordingly, this study adopts the work of Hamid (2018) as a guide in developing the measurements. Hamid (2018) proposes that supply chain orientation is a multidimensional variable involves three dimensions (i.e., top management support, commitment and compatibility).

3.6.1.1 Top Management Support

Top management support plays a critical role in shaping an organization's values, orientation, and direction also, have a substantial impact on organizational performance (mentzer, 2001). Consequently, six items were developed to measure top management support that adopted from (hamid, 2018) to assess the operationalized definition of TMS and considered to reflect the measurement of it as presented in Table 3.1.

Table 3.1

Measurement of Top Management Support

item	Top management support	
1	Top management of our company believes that the company's survival is linked to adopting the supply chain orientation.	**Hamid (2018)**
2	The top management of our company focuses on building and maintaining a long-term relationship with our key supply chain partners.	
3	Our top management emphasizes sharing strategic information with our supply chain partners.	
4	Our top management supports risk sharing with our key supply chain members .	
5	Sharing the rewards between our company and the members of the supply chain is important to the company's success.	
6	Our top management provides multiple opportunities to educate employees about supply chain management.	

3.6.1.2 Commitment

An implicit or explicit pledge of relational continuity between exchange partners (mentzer, 2001). Consequently, four items were developed to measure this dimension adopted from (hamid, 2018). Table 3.2 below presents the four items of the commitment .

Table 3.2
Measurement of Commitment

item	Commitment	
1	Our company works hard to maintain relationships with our key supply chain partners.	Hamid (2018)
2	Our continued relationship with our key supply chain partners is very important to us.	
3	We expect our relationship with our key partners in the supply chain to continue for a long time.	
4	Our relationship with our main partners in the supply chain is something we are very committed to.	

3.7.1.3 Organizational Compatibility

Organizational compatibility refers to complementary goals and objectives, as well as similarity in operating philosophies and corporate cultures (mentzer , 2001). Consequently, three items were developed by (hamid, 2018) to measured the organizational compatibility. Table 3.3 below presents the three items of the organizational compatibility .

Table 3.3
Measurement of Organizational Compatibility

item	Organizational Compatibility	
1	Our company goals are consistent with key supply chain partners.	Hamid (2018)
2	Our company has a similar operating philosophy with our key supply chain partners	
3	Our company has a close managerial style of our key supply chain partners	

3.6.2 Marketing Sensing Capability

Marketing sensing refers to the broad generation of market intelligence by an organization relating to present and future needs of customers, distribution of these knowledge across the organization's functional unit, and the organization's responsiveness/reaction to the market (Alshanty and Emeagwali, 2019). Consequently, five items were developed to measure marketing sensing that adopted from (Alshanty and Emeagwali ,2019).To assess the operationalized definition of sensing and considered to reflect the measurement of it as presented in Table 3.4 .

Table 3.4

Measurement of Marketing Sensing

Item	Market-sensing capability	
1	Our company acquire and use market information	Alshanty and Emeagwali (2019)
2	Our company anticipate rivals' actions	
3	Our company predict consumer demand	
4	Our company establish database to serve customers	
5	Our company integrate market and technology information	

3.6.3 Sustainable Competitive Advantage

SCA is "a firm's capability to achieve a series of temporary advantages over time, in comparison to the main competitors, these sustained advantages involve R&D capability, managerial capability, profitability, etc.."(Yu et al, 2017). Consequently, six items were developed to measure certain performance in comparison to competitors. Table 3.5 below presents the six items of sustainable competitive advantage.

Table 3.5

Measurement of Sustainable Competitive Advantage

Item	Sustainable Competitive Advantage (SCA)	
1	The quality of service that my firm offers is better than that of the competitor's services	
2	My firm is capable of R&D than the competitors	
3	My firm has better managerial capability than the competitors	
4	My firm's profitability is better	Yu et al. (2017)
5	The corporate image of my firm is better than that of the competitors	
6	The competitors are difficult to take place of my firm competitive advantage	

3.6.4 Innovation Capability

Innovation is a main strategic tool to have a competitive advantage in such complex environments (Gardaker *et al*., 1998). As well, the development of novel, appropriate, and unique products or services by a firm. It's also a firm openness to embracing new concepts, products, and procedures, consist of the firm's readiness to transform and adopt latest technology and market trends (Alshanty and Emeagwali , 2019). Accordingly, this study adopts the work of Alshanty and Emeagwali (2019) as a guide in developing the measurements. Alshanty and Emeagwali (2019) proposes that innovation capability is a multidimensional variable involves two dimensions (i.e., product innovation and process innovation).

3.6.4.1 Product Innovation Capability

Product innovation is defined as the development or use of new components, features and technologies to produce new products (Prajogo , 2016). The measures of product innovation were derived from the work of Alshanty and Emeagwali (2019) . Table 3.6 below shows the nine items of product capability.

Table 3.6

Measurement of Product Innovation Capability

Item	Product innovation	
1	In new product introduction, our company is often first-to-market	Alshanty and Emeagwali (2019)
2	Our new products and services are often perceived as very novel by customers	
3	New products and services in our company often take us up against new competitors	
4	In comparison with competitors, our company has introduced more innovative products and services during past 5 years	
5	We constantly emphasize development of particular and patent products	
6	We manage to cope with market demands and develop new products quickly	
7	We continuously modify design of our products and rapidly enter new emerging markets	
8	Our firm manages to deliver special products flexibly according to customers' orders	
9	We continuously improve old products and raise quality of new Products	

3.6.4.2 Process Innovation Capability

Process innovation is defined as the improvement to production processes technologies required to produce a product (Prgogo, 2016). Process innovation was measured with four items were sourced from Alshanty and Emeagwali (2019). The following table 3.7 presents the items of process innovation.

Table 3.7

Measurement of Process Innovation Capability

Item	Process innovations	
1	Development of new channels for products and services of our corporation is an on-going process	
2	We deal with customers' suggestions or complaints urgently and with utmost care	Alshanty and Emeagwali (2019)
3	In marketing innovations (entering new markets, new pricing methods, new distribution methods, etc.) our company is better than competitors	
4	We constantly emphasize and introduce managerial innovations (e.g. computer-based administrative innovations, new employee reward/training schemes, new departments or project teams, etc.)	

3.7 Pre-testing of the Questionnaire

The pre-test aims to identify defects in the instrument of data collection by implementing a trail administration for the survey .Accordingly, the questionnaire has been pre-tested on a sample of 30 respondents representing various service industries. In order to test the reliability, Cronbach's alpha coefficients were calculated for each variable and gauged with the satisfying level of reliability with alpha coefficients of 0.70. The following table 4.8 presents Cronbach alpha coefficients for the study's variables

Table 3.8

Pretest of the questionnaire: Reliability Result

Scale	Reliability Statistics	
	No. of items	Cronbach's Alpha
SCO_TMS	6	.920
SCO_ commitment	4	.905
SCO_ compatibility	3	.712
Marketing sensing	5	.941
Sustainable competitive advantage	6	.910
Product innovation capability	8	.914
Process innovation capability	4	.898

Student's work,2020

3.8 Data analysis techniques

To analysis the data and test hypothesis several statistical tools were adapted. **First** (Miranda, 2017) recommended to using partial least squares (PLS) regression developing by (hair et al., 2016) this technique designed primarily for predictive analysis Of problems which present some complexity. In addition, PLS has an advantage over the LISREL linear structural relations software package in those situation where the theory has not been sufficiently validated, as in our case on incorporating various antecedents of constructs EA and PC that have not been included in previous studies on sustainable competitive advantage.

Second (jubari, 2017) following the successful fitting of measurement model, a full SEM (containing both measurement model and structural model)was then conducted using Mplus, robust maximum- likelihood (MLR) estimation procedures to test the hypthesised structural relationships. The procedures is

similar to the aforementioned procedures for CFA, where the same estimation method, MLR was used and the same fit indices were used to assess the structural model (MLRx, CFI,TLI, RMSEA and SRMR).

Three (roy 2017) at first, the measurement model was constructed to test the validity and reliability of the conceptual model and later on two structural models were constructed to assess the model fitness, validate the proposed hypotheses by using SPSS and AMOS.

Finlay base on this argument among, when all researchers did not agree on specific data analysis program. Since, the model of the study is complex which contains a large number of variables and the number of questionnaires that will be distributed more than 300. Based on the suggestion (kline, 2011 pp: 11-12) the study is used (SPSS and AMOS)

1-Cass screening

-Missing data in rows and unengaged responses and outliers (on continuous variables)

2- Variable screening

-Missing data in columns

- Skewness and kurtosis

3- Exploratory factor analysis

-Itrate until you arrive at clean pattern matrix

-Adequacy

-Convergent validity & discriminante validity

-Reliability

4- Confirmatory factor analysis

- Obtain a roughly decent model quickly (cursory model fit, validity)

- Do configural and metric invariance test (if using grouping variable in causal model)

- Validity and reliability check

- Common method bias (marker if possible, CLF either way)

- Final measurement model fit

- Optionally, impute factor scores

5- Structural model multivariate assumption

- Outliers and influentials

- Multicollinearity

6- Include control variables in all of the following analyses

7- Mediation

- Test indirect effects using bootstrapping

- If you have multiple indirect paths from same IV to same DV, use AxB estimand

8- Multigroup comparisons

- Create multiple models

- Assing them the proper group data

- Test significance of moderation via ch-squar difference test Gaskin, j (2018).

3.9 Chapter Summary

This chapter presents the theoretical and conceptual framework which basically depends on previous studies to propose a direct link between market sensing and supply chain orientation with sustainable competitive advantage. Furthermore the chapter explains the mediating role of innovation capabilities, beside clarifies the interaction effect of supply chain orientation and marketing sensing on sustainable competitive advantage. In addition, this chapter covered the research methodology including the research method, and research design. Along with, discussing the study population, sampling, measurements, and the instrument of data collection. In addition, the data analysis techniques were presented.

Chapter four

DATA ANALYSIS AND FINDINGS

4.0 Chapter Overview

This chapter presents the findings of the data analysis and it is presented in three sections. The first section presents the process followed for measurement and validation of various constructs. Started by describe the descriptive statistics of the sample data then respondent's demographic information, section two The measurement and validation process of constructs, section three the results of the path analysis and hypotheses testing.

4.1. Descriptive Statistics

As far as measurement and validation of research instrument is concerned, before evaluating the psychometric properties of various constructs, it become necessary to describe and understand the descriptive statistics of the sample data. Descriptive statistics examines the accuracy of the data entry process; measures the variability of responses and reveals the spread of data points across the sides of the distribution. The understanding of descriptive statistics helps in the interpretation and generalization of research result.

First making data cleaning that deals with detecting and removing errors and inconsistencies from data in order to improve the quality of data. And dealing with Missing data that 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). and dealing with Unengaged responses that means some responses giving same answer for all

the questionnaire it seems to be random answers, in this case 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, we don't removed any questionnaires not received form a response finally dealing 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, in this dataset outliers were checked outliers but not making any change because it is seemed logic. There were no any outliers on dataset everything in dataset is logic.

And also skewness & kurtosis observed fairly normal distribution for our indicator of latent factor, and for all other variables (e.g..Gender, Age) in terms of skewness , However , observed mild kurtosis for our variable these kurtosis values ranged   benign to 3. While this does violate strict rules of normality,it is within more relaxed rules suggested by (Sposito, 1983) who recommend 3.3 as the upper threshold for normality. The assessment of descriptive statistics (Table 4.1) reveals that all the variables fall within the predefined the important values.

Table 4.1 Descriptive Statistics

	N		Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis
	Valid	Missing				
Gender	100	5	.081	.241	-2.034	.478
Age	105	0	.344	.236	-.892	.467
Year	97	8	-.541	.245	-.898	.485
Top_management1	105	0	.858	.236	-.018	.467
Top_management2	105	0	1.291	.236	.984	.467
Top_management3	102	3	.629	.239	-.365	.474
Top_management4	105	0	.707	.236	-.142	.467
Top_management5	103	2	.925	.238	.162	.472
Top_management6	86	19	.867	.260	.229	.514
Commitment1	104	1	1.492	.237	1.990	.469
Commitment2	104	1	1.303	.237	1.431	.469
Commitment3	105	0	.881	.236	-.007	.467
Commitment4	105	0	.881	.236	.234	.467
Organizational_Compatibility1	103	2	.693	.238	-.101	.472
Organizational_Compatibility2	104	1	.542	.237	-.326	.469
Organizational_Compatibility3	105	0	.254	.236	-.441	.467
Marketing_sensing_capability1	103	2	1.161	.238	1.311	.472
Marketing_sensing_capability2	105	0	.657	.236	-.312	.467
Marketing_sensing_capability3	105	0	1.006	.236	.779	.467
Marketing_sensing_capability4	105	0	1.098	.236	1.175	.467
Marketing_sensing_capability5	104	1	.776	.237	.357	.469
Sustainable_competitive_advantage1	105	0	.642	.236	-.029	.467
Sustainable_competitive_advantage2	105	0	.851	.236	.269	.467
Sustainable_competitive_advantage3	105	0	.919	.236	.458	.467
Sustainable_competitive_advantage4	105	0	.644	.236	.081	.467
Sustainable_competitive_advantage5	105	0	.507	.236	-.022	.467

Sustainable_competitive_advantage6	*104*	*1*	*.517*	*.237*	*-.411*	*.469*
Product_innovation1	*105*	*0*	*.380*	*.236*	*-.500*	*.467*
Product_innovation2	*105*	*0*	*.656*	*.236*	*.200*	*.467*
Product_innovation3	*105*	*0*	*.893*	*.236*	*.638*	*.467*
Product_innovation4	*103*	*2*	*.937*	*.238*	*.384*	*.472*
Product_innovation5	*104*	*1*	*1.089*	*.237*	*1.096*	*.469*
Product_innovation6	*104*	*1*	*.972*	*.237*	*.951*	*.469*
Product_innovation7	*103*	*2*	*.985*	*.238*	*.696*	*.472*
Product_innovation8	*104*	*1*	*1.295*	*.237*	*2.340*	*.469*
Process_innovation1	*103*	*2*	*1.075*	*.238*	*1.187*	*.472*
Process_innovation2	*104*	*1*	*1.015*	*.237*	*.871*	*.469*
Process_innovation3	*104*	*1*	*.725*	*.237*	*.231*	*.469*
Process_innovation4	*104*	*1*	*.984*	*.237*	*1.538*	*.469*

***All items were measured on a five-point Likert type scale**

Source: prepared by researcher from data analysis (2020)

4.2 Response rate

The population of this study was the Sudanese manufacturing companies. The researcher employed convenient sample where self-administrated survey was used to distribute 170 questionnaires to the manufacturing companies across the capital , the overall response rate was 62 % 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. Below is Table (4.2) to shows the summary of questionnaire response rate.

<p style="text-align:center">Table :4.2 Response rate of questionnaire</p>

Total distributed questionnaires	
Total questionnaires received from respondents	106
Valid questionnaires received from respondents	105
Invalid questionnaires	1
Questionnaires not received	64
Overall response rate	62%
Useable response rate	62%

Source: prepared by researcher from data analysis (2020)

4.3 Profile of the respondents

Based on the descriptive statistics using the frequency analysis this part investigates the respondents profile.

<p style="text-align:center">Table 4.3 Respondents Demographic Characteristics</p>

	Frequency	Percent
Male	52	49.5
Female	48	45.7
Total	100	95.2
System	5	4.8
Less than 25	1	1.0
from 25 to 35	44	41.9
from 36 to 45	42	40.0
over than 46	18	17.1
form 1 to 5	20	19.0
from 5 to 10	22	21.0
over than 10 year	52	49.5
Without	3	2.9
Miss value for system	8	7.6

Total	105	100.0

Source: prepared by researcher from data analysis (2020)

4.4 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 (CFA) confirmatory factor analysis. The following are the detailed information of each

4.4.1 A discussion on importance of exploratory factor analysis

Through exploratory factor analysis Henson and Robertson (2006) state that it is possible to retain inherent characteristics (i.e. individual variability and covariances) of an initial or original data set. They also say that it is possible to eliminate any 'noises' arising from either sampling or measurement errors that include existence of any unwarranted information. Thus, exploratory factor analysis can also be viewed as an instrument intended for consideration of those latent variables that are significant in explaining variations. It is useful when looking at any interrelationships between variables hence offering support in development of new theories (Henson and Roberts, 2006, Matsunaga, 2010). This researcher performs exploratory factor analysis in SPSS to yield a 'clean' pattern matrix. This involved factor extractions as well as generating key outputs, including; Kaiser-Meyer-Olkin (KMO) measure, Communalities, Total Variance Explained (TVE), Goodness-of-fit Test, Pattern Matrix and the Correlation Matrix. This process of generating a 'clean' pattern matrix involves going through several iterations until there were no cross-loading between scale items; which is central to determine discriminant validity.

4.4.2 Exploratory factor analysis for Supply chain orientation

Using Maximum Likelihood., the summary of results was showed in Table (4.4) and the SPSS output attached in appendix B3. As shown in Table (4.4) below all the remaining items has more than recommended value of at least 0.45 in measure of sample adequacy (MSA) with (KMO) (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 4.4 : KMO and Bartlett's measure of sample adequacy

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.811
Bartlett's Test of Sphericity	Approx. Chi-Square	537.736
	df	55
	Sig.	.000

Source: prepared by researcher from data analysis (2020)

Table depicts a good result for KMO and Bartlett's test of 0.811 which is significant (0.00). This result shows that the sample size is adequate for structural equation modelling (Gaskin, 2012, Kenny and McCoach, 2003).

The communalities in Table 4.5 are equally important in the determination of sample adequacy. They represent the proportion of variance of each variable that are explained by the factors. Therefore, based on condition those variables with high values under communalities are well represented in the common factor space, while variables with low values are not well represented. Thus, to support sample adequacy none of the communalities must be less than 0.30 (Gaskin, 2012). Table 4.5 shows that extractions are above minimum value of 0.30.

68

Table 4.5: Communalities for determination of sample adequacy

	Initial	Extraction
The top management of our company focuses on building and maintaining a long-term relationship with our key supply chain partners.	1.000	.638
Our top management emphasizes sharing strategic information with our supply chain partners.	1.000	.693
Our top management supports risk sharing with our key supply chain members .	1.000	.664
Sharing the rewards between our company and the members of the supply chain is important to the company's success.	1.000	.520
Our company works hard to maintain relationships with our key supply chain partners.	1.000	.773
Our continued relationship with our key supply chain partners is very important to us.	1.000	.831
We expect our relationship with our key partners in the supply chain to continue for a long time.	1.000	.679
Our relationship with our main partners in the supply chain is something we are very committed to.	1.000	.651
Our company goals are consistent with key supply chain partners.	1.000	.604
Our company has a similar operating philosophy with our key supply chain partners	1.000	.827
Our company has a close managerial style of our key supply chain partners	1.000	.847

Source: prepared by researcher from data analysis (2020)

Total variance explained table confirms sample adequacy as shown in Table 4.6 where variance of 70.254 per cent is explained after several iterations to determine a clean pattern matrix shown in Table 4.6 , (Gaskin, 2012). The fact that more variance is explained as shown in the 'Cumulative % Variance' column means that the extraction achieved from the data is good.

Table 4.6 : Total variance explained for determination of sample adequacy

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	5.144	46.763	46.763	5.144	46.763	46.763	4.339
2	1.478	13.436	60.200	1.478	13.436	60.200	3.330
3	1.106	10.054	70.254	1.106	10.054	70.254	3.673
4	.671	6.096	76.350				
5	.586	5.324	81.675				
6	.508	4.615	86.289				
7	.456	4.147	90.437				
8	.348	3.168	93.605				
9	.304	2.766	96.370				
10	.272	2.475	98.845				
11	.127	1.155	100.000				

Source: prepared by researcher from data analysis (2020)

In the wake of exploratory factor analysis the goodness-of-fit test (Table 4.7) confirms that it is significant which is attributable to a large sample size (Gaskin, 2012).

Table 4.7 : Goodness-of-fit test for adequacy

Goodness-of-fit test		
Chi-square	Df	Sig.
4711	659	.00

Source: prepared by researcher from data analysis (2020)

4.4.2.1 The tests for convergent validity post-measurement validation

The test for convergent validity seeks to establish whether scale items load highly on their factors in the pattern matrix (Gaskin, 2012). A pattern matrix is the main link between factor analysis in SPSS and confirmatory factor analysis in AMOS.

Table 4.8: The pattern matrix to establish convergent and discriminant validity.

	Component		
	1	2	3
The top management of our company focuses on building and maintaining a long-term relationship with our key supply chain partners.			.691
Our top management emphasizes sharing strategic information with our supply chain partners.			.900
Our top management supports risk sharing with our key supply chain members .			.846
Sharing the rewards between our company and the members of the supply chain is important to the company's success.			
Our company works hard to maintain relationships with our key supply chain partners.	.917		
Our continued relationship with our key supply chain partners is very important to us.	.959		
We expect our relationship with our key partners in the supply chain to continue for a long time.	.643		
Our relationship with our main partners in the supply chain is something we are very committed to.	.851		
Our company goals are consistent with key supply chain partners.		.632	
Our company has a similar operating philosophy with our key supply chain partners		.928	
Our company has a close managerial style of our key supply chain partners		.966	

Source: prepared by researcher from data analysis (2020)

4.4.3 Exploratory factor analysis for Marketing Sensing Capability

Using Maximum Likelihood., the summary of results was showed in Table (4.8) and the SPSS output attached in appendix B3. As shown in Table (4.9) below

all the remaining items has more than recommended value of at least 0.45 in measure of sample adequacy (MSA) with (KMO) (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 4.9 : KMO and Bartlett's measure of sample adequacy

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.855
Bartlett's Test of Sphericity	Approx. Chi-Square	219.407
	df	10
	Sig.	.000

Source: prepared by researcher from data analysis (2020)

Table 4.9 depicts a good result for KMO and Bartlett's test of 0.855 which is significant (0.00). This result shows that the sample size is adequate for structural equation modelling (Gaskin, 2012, Kenny and McCoach, 2003).

The communalities in Table 4.10 are equally important in the determination of sample adequacy. They represent the proportion of variance of each variable that are explained by the factors. Therefore, based on condition those variables with high values under communalities are well represented in the common factor space, while variables with low values are not well represented. Thus, to support sample adequacy none of the communalities must be less than 0.30 (Gaskin, 2012). Table 4.5 shows that extractions are above minimum value of 0.30.

Table 4.10: Communalities for determination of sample adequacy

	Initial	Extraction
Our company gets the target market information.	1.000	.628
Our company can anticipate the actions of competitors.	1.000	.604
Our company predicts consumer demand.	1.000	.656
Our company establishes a customer service database.	1.000	.732
Our company unifies market information and technology.	1.000	.633

Source: prepared by researcher from data analysis (2020)

Total variance explained table confirms sample adequacy as shown in Table 4.11 where variance of 65.043 per cent is explained after several iterations to determine a clean pattern matrix shown in Table 5.7,(Gaskin, 2012). The fact that more variance is explained as shown in the 'Cumulative % Variance' column means that the extraction achieved from the data is good.

Table 4.11 : Total variance explained for determination of sample adequacy

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.252	65.043	65.043	3.252	65.043	65.043
2	.561	11.229	76.272			
3	.472	9.440	85.713			
4	.407	8.144	93.857			
5	.307	6.143	100.000			

Source: prepared by researcher from data analysis (2020)

In the wake of exploratory factor analysis, the goodness-of-fit test (Table 4.12) confirms that it is significant which is attributable to a large sample size (Gaskin, 2012).

Table 4.12: Goodness-of-fit test for adequacy

Goodness-of-fit test		
Chi-square	Df	Sig.
31482	849	.00

Source: prepared by researcher from data analysis (2020)

4.4.3.1 The tests for convergent validity post-measurement validation

The test for convergent validity seeks to establish whether scale items load highly on their factors in the pattern matrix (Gaskin, 2012). A pattern matrix is the main link between factor analysis in SPSS and confirmatory factor analysis in AMOS.

Table 4.13: The pattern matrix to establish convergent and discriminant validity.

	Component
	1
Our company gets the target market information.	.792
Our company can anticipate the actions of competitors.	.777
Our company predicts consumer demand.	.810
Our company establishes a customer service database.	.856
Our company unifies market information and technology.	.795

Source: prepared by researcher from data analysis (2020)

4.4.4 Exploratory factor analysis for Sustainable Competitive Advantage

Using Maximum Likelihood., the summary of results was showed in Table (5.5) and the SPSS output attached in appendix B3. As shown in Table (4.14) below all the remaining items has more than recommended value of at least 0.45 in measure of sample adequacy (MSA) with (KMO) (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 4.14 : KMO and Bartlett's measure of sample adequacy

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.883
Bartlett's Test of Sphericity	Approx. Chi-Square	340.278
	df	15
	Sig.	.000

Source: prepared by researcher from data analysis (2020)

Table 4 .14 depicts a good result for KMO and Bartlett's test of 0.883 which is significant (0.00). This result shows that the sample size is adequate for structural equation modelling (Gaskin, 2012, Kenny and McCoach, 2003).

The communalities in Table 4.15 are equally important in the determination of sample adequacy. They represent the proportion of variance of each variable

that are explained by the factors. Therefore, based on condition those variables with high values under communalities are well represented in the common factor space, while variables with low values are not well represented. Thus, to support sample adequacy none of the communalities must be less than 0.30 (Gaskin, 2012). Table 4.15 shows that extractions are above minimum value of 0.30.

Table 4.15: Communalities for determination of sample adequacy

	Initial	Extraction
The quality of services provided by our company is better than that of competing companies.	1.000	.617
Our company is more capable of research and development than competing companies.	1.000	.681
Our management capabilities are better than competitors.	1.000	.734
Our company profits are better compared to competitors.	1.000	.689
My company's image is better compared to competitors.	1.000	.694
It is difficult for competitors to match our competitive advantage.	1.000	.575

Source: prepared by researcher from data analysis (2020)

Total variance explained table confirms sample adequacy as shown in Table 4.16 where variance of 66.508 per cent is explained after several iterations to determine a clean pattern matrix shown in Table 5.7 , (Gaskin, 2012). The fact that more variance is explained as shown in the 'Cumulative % Variance' column means that the extraction achieved from the data is good.

Table 4.16 : Total variance explained for determination of sample adequacy

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.991	66.508	66.508	3.991	66.508	66.508
2	.588	9.792	76.300			
3	.461	7.677	83.977			
4	.392	6.528	90.505			
5	.330	5.495	95.999			
6	.240	4.001	100.000			

Source: prepared by researcher from data analysis (2020)

In the wake of exploratory factor analysis, the goodness-of-fit test (Table 4.17) confirms that it is significant which is attributable to a large sample size (Gaskin, 2012).

Table 4.17 : Goodness-of-fit test for adequacy

Goodness-of-fit test		
Chi-square	Df	Sig.
42487	248	.00

Source: prepared by researcher from data analysis (2020)

4.4.4.1 The tests for convergent validity post-measurement validation

The test for convergent validity seeks to establish whether scale items load highly on their factors in the pattern matrix (Gaskin, 2012). A pattern matrix is the main link between factor analysis in SPSS and confirmatory factor analysis in AMOS.

Table 4.18: The pattern matrix to establish convergent and discriminant validity.

	Component
	1
The quality of services provided by our company is better than that of competing companies.	.785
Our company is more capable of research and development than competing companies.	.825
Our management capabilities are better than competitors.	.857
Our company profits are better compared to competitors.	.830
My company's image is better compared to competitors.	.833
It is difficult for competitors to match our competitive advantage.	.759

Source: prepared by researcher from data analysis (2020)

4.4.5 Exploratory factor analysis for innovation capabilities

Using Maximum Likelihood., the summary of results was showed in Table (4.18) and the SPSS output attached in appendix B3. As shown in Table (4.19) below all the remaining items has more than recommended value of at least 0.45 in measure of sample adequacy (MSA) with (KMO) (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 4.19 : KMO and Bartlett's measure of sample adequacy

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.855
Bartlett's Test of Sphericity	Approx. Chi-Square	602.135
	Df	55
	Sig.	.000

Source: prepared by researcher from data analysis (2020)

Table 4.19 depicts a good result for KMO and Bartlett's test of 0.855 which is significant (0.00). This result shows that the sample size is adequate for structural equation modelling (Gaskin, 2012, Kenny and McCoach, 2003).

The communalities in Table 4.20 are equally important in the determination of sample adequacy. They represent the proportion of variance of each variable that are explained by the factors. Therefore, based on condition those variables with high values under communalities are well represented in the common factor space, while variables with low values are not well represented. Thus, to support sample adequacy none of the communalities must be less than 0.30 (Gaskin, 2012). Table 4.20 shows that extractions are above minimum value of 0.30.

Table 4.20: Communalities for determination of sample adequacy

	Initial	Extraction
Our company is the first to introduce new products.	1.000	.594
Customers often view our new products as innovative.	1.000	.571
New products in our company often set us apart from competitors.	1.000	.641
Our company has introduced innovative products during the past five years, compared to competitors.	1.000	.646
We constantly stress the need to develop new products.	1.000	.491
Our company has successfully met the market requirements.	1.000	.590
Our company was able to provide special products according to the requirements of customers.	1.000	.605
Our company is constantly developing channels for its products and services.	1.000	.620
Our company deals with customer suggestions and complaints quickly and with the utmost care.	1.000	.732
With regard to marketing creativity, our company is better compared to competitors.	1.000	.699
Our company constantly provides and emphasizes administrative creativity.	1.000	.757

Source: prepared by researcher from data analysis (2020)

Total variance explained table confirms sample adequacy as shown in Table 4.21 where variance of 63.153 per cent is explained after several iterations to determine a clean pattern matrix shown in Table 5.7 , (Gaskin, 2012). The fact that more variance is explained as shown in the 'Cumulative % Variance' column means that the extraction achieved from the data is good.

Table 4.21 : Total variance explained for determination of sample adequacy

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	5.540	50.362	50.362	5.540	50.362	50.362	4.913
2	1.407	12.791	63.153	1.407	12.791	63.153	4.350
3	.893	8.120	71.273				
4	.695	6.314	77.587				
5	.570	5.184	82.771				
6	.503	4.575	87.346				
7	.403	3.659	91.005				
8	.345	3.138	94.143				
9	.261	2.369	96.512				
10	.213	1.934	98.446				
11	.171	1.554	100.000				

Source: prepared by researcher from data analysis (2020)

In the wake of exploratory factor analysis, the goodness-of-fit test (Table 4.22) confirms that it is significant which is attributable to a large sample size (Gaskin, 2012).

Table 4.22 : Goodness-of-fit test for adequacy

Goodness-of-fit test		
Chi-square	Df	Sig.
2357	942	.00

Source: prepared by researcher from data analysis (2020)

4.4.5.1 The tests for convergent validity post-measurement validation

The test for convergent validity seeks to establish whether scale items load highly on their factors in the pattern matrix (Gaskin, 2012). A pattern matrix is the main link between factor analysis in SPSS and confirmatory factor analysis in AMOS.

Table 4.23: The pattern matrix to establish convergent and discriminant validity.

	Component	
	1	2
Our company is the first to introduce new products.	.804	
Customers often view our new products as innovative.	.758	
New products in our company often set us apart from competitors.	.804	
Our company has introduced innovative products during the past five years, compared to competitors.	.872	
We constantly stress the need to develop new products.	.637	
Our company has successfully met the market requirements.	.715	
Our company was able to provide special products according to the requirements of customers.	.527	
Our company is constantly developing channels for its products and services.		.744
Our company deals with customer suggestions and complaints quickly and with the utmost care.		.893
With regard to marketing creativity, our company is better compared to competitors.		.835
Our company constantly provides and emphasizes administrative creativity.		.893

Source: prepared by researcher from data analysis (2020)

4.4.6 Confirmatory Factor Analysis CFA

Once exploratory factor analysis is complete (which yields a 'clean' pattern matrix) the next logical step for this researcher is to undertake confirmatory factor analysis. Confirmatory factor analysis makes it possible to develop a measurement model that is explicit using the factor structure underlying the data (Matsunaga, 2010, Russell et al., 2011). This researcher also utilises AMOS software package to test for model fit for each latent variable and the entire data set to develop a

complete measurement model before moving into structural equation modelling. This is a precursor to the design of the questionnaires.

The measurement model (i.e. confirmatory model) can be developed in AMOS using two approaches. The first approach is manual orientated (Gaskin, 2012). This involves the researcher applying tools on the interface in AMOS. The second approach (adopted in this research) uses a plug-in called a 'Pattern Matrix Model Builder' (Gaskin, 2012). The procedure involves copying the pattern matrices generated in SPSS (during exploratory factor analysis) and pasting it into the 'Pattern Matrix Model Builder' in AMOS software package. This creates a measurement model diagram. This is then followed by selection of parameters of choice estimates and then running the model. The process of checking for model fit is done after running the measurement model (Kline, 2005, Gaskin, 2012). The model validation process undertaken by this researcher involved use of the correlation and regression weights from the generated output from the measurement model into the 'Validity Master Tab' in the 'Stats Tools Package'. This process is important and this researcher it to establish if there was any validity concerns.

4.4.7 Measurement and Validation

Measurement is a process through which an abstract concept is quantified, classified and interpreted (Carmines and Zeller, 1979; Hinkin and Schriesheim, 1989). It can be defined as a scientific process of assigning some numbers to some of the attributes of an abstract concept (Cronbach, 1955; Nunnally, 1978; Cherryholmes, 1988; Sireci, 1998). The focus of the measurement is on the crucial relationship between the empirically grounded indicators and the underlying unobservable concept (Schmidt *et al.,* 1985, 1991; Cherryholmes, 1988;

Schriesheim et al., 1993). The very basic idea of measurement is to obtain a true score for an event or phenomena.

Validation is a process which evaluates the degree to which a measure succeeds in measuring what it intends to measure (Campbell and Fiske, 1959; Schriesheim et al., 1991). It is a process of evaluating the extent to which observed empirical indicators represent the underlying theoretical construct i.e. extent to which the observed score reflected through empirical indicators give the true reflection of theoretical perspective. Although the purpose of validation is to minimize the difference between the observed score of an object and its true score, but it has been usually seen that every instrument contains some degree of error i.e. the observed score differs from the true score. Bagozzi et al. (1991) have affirmed the above argument by quoting that "a measure often reflects not only a theoretical concept of interest but also measurement error". Measurement error is the extent to which an instrument captures some extraneous construct rather than capturing the true meaning of the underlying construct. The extent of measurement error, contained by an instrument, has often been assessed by looking at the degree of the random error and systematic error (Fiske, 1982; Bagozzi et al., 1991).

In the context of present study, following criteria (Table 4.24) has been adopted for the measurement and validation of various constructs:

Table 4.24 Criteria

S. No.	Parameter	Criteria
1	Normed Chi-square (ratio of Chi-square to degrees of freedom)	**Less than 3**
2	Goodness-of-Fit Index (GFI)	**At least .90**
3	Adjusted Goodness-of-Fit Index (AGFI)	**At least .90**
4	Normed Fit Index (NFI)	**At least .90**
5	Comparative Fit Index (CFI)	**At least .90**
6	Root Mean Square Residual (RMR)	**Less than .10**
7	Root Mean Square Error of Approximation (RMSEA)	**Less than .08**
8	Standardized Residuals	**Less than 2.5**
9	Standardized factor loadings (SFL)	**At least .50**
10	Average Variance Extracted (AVE)	**At least .50**
11	Composite Reliability (CR)	**At least .70**

Source: prepared by researcher from data analysis (2020)

4.4.7.1 Measurement and Validation for Supply chain orientation

To assess the degree of correspondence between the **Supply chain orientation** variables and latent construct of **Supply chain orientation** Mulit-dimensional CFA model (Figure 4.1) has been conceptualized and tested for its psychometric properties. Table (5.25) show CFA result.

Figure 4.1 CFA Model for Supply chain orientation

The structural model of Confirmatory Factor Analysis (CFA) reveals the same measures that can be calculated to determine goodness of fit show in Table (4.25) The result of the unidimensional CFA to Supply chain orientation .

Table 4.25 Model Fit Indices of Supply chain orientation

Measure	Estimate	Threshold	Interpretation
CMIN	89.634	--	--
DF	41	--	--
CMIN/DF	2.186	Between 1 and 3	Excellent
CFI	0.912	>0.95	Acceptable
SRMR	0.089	<0.08	Acceptable
RMSEA	0.107	<0.06	Terrible
PClose	0.002	>0.05	Terrible

Source: prepared by researcher from data analysis (2020)

The convergent validity of the construct of hypotheses one has been assessed through standardized factor loadings, AVE and CR. Table 4.6 reveals that standardized factor loadings for all items were above the suggested cut-off of 0.50 (Hatcher, 1994), with a minimum of 0.65, and were all significant at 1% level of significance. The AVE meets the criterion of .50. High score of CR (i.e.0.7) confirms the internal consistency of the scale items.

Table 4.26 Psychometric Properties of Supply chain orientation

	CR	AVE	MSV	MaxR(H)	Organizational Compatibility	Commitment	Top management
Organizational Compatibility	0.842	0.645	0.228	0.880	0.803		
Commitment	0.876	0.639	0.551	0.896	0.384	0.800	
Top management	0.768	0.455	0.551	0.775	0.478	0.742	0.674

Significance of Correlations: *† p < 0.100 * p < 0.050 ** p < 0.010 *** p < 0.001*

Source: prepared by researcher from data analysis (2020)

4.4.7.2 Measurement and Validation of Marketing Sensing Capability

To assess the degree of correspondence between the **Marketing Sensing Capability** variables and latent construct of **Marketing Sensing Capability** uni-dimensional CFA model (Figure 4.2) has been conceptualized and tested for its psychometric properties. Table (4.27) show CFA
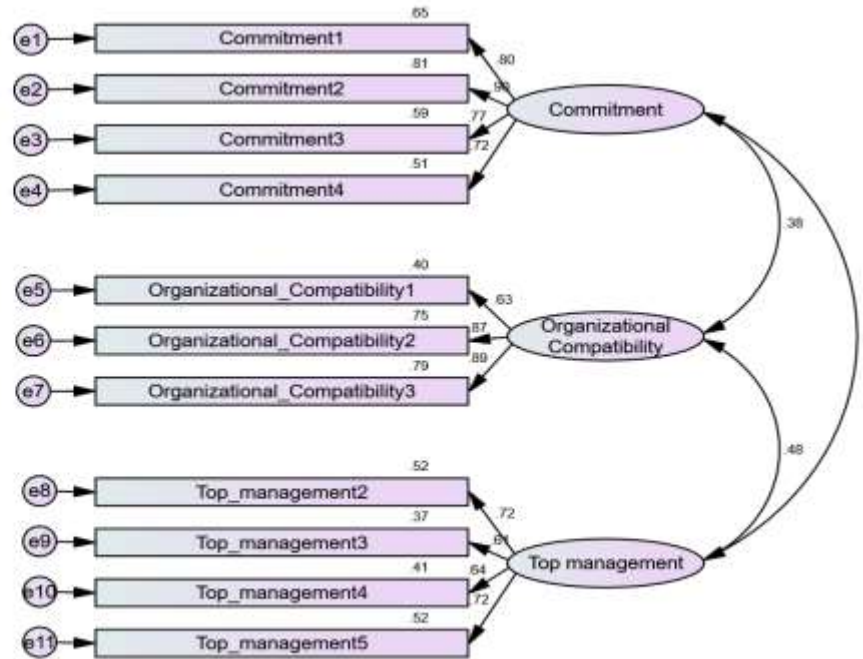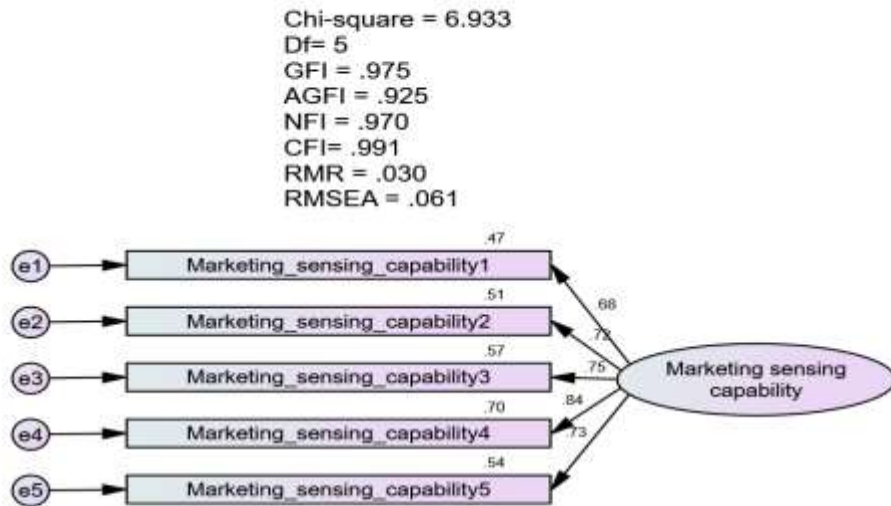
Figure 4.2 CFA Model for Marketing Sensing Capability

The structural model of Confirmatory Factor Analysis (CFA) reveals the same measures that can be calculated to determine goodness of fit show in Table (4.27) The result of the unidimensional Marketing Sensing Capability.

Table 4.27 Model Fit Indices of Marketing Sensing Capability

Measure	Estimate	Threshold	Interpretation
CMIN	6.933	--	--
DF	5	--	--
CMIN/DF	1.387	Between 1 and 3	Excellent
CFI	0.991	>0.95	Excellent
SRMR	0.036	<0.08	Excellent
RMSEA	0.061	<0.06	Acceptable
PClose	0.360	>0.05	Excellent

Source: prepared by researcher from data analysis (2020)

The convergent validity of the construct of brand usage intention has been assessed through standardized factor loadings, AVE and CR. Table 4.6 reveals that standardized factor loadings for all items were above the suggested cut-off of 0.50 (Hatcher, 1994), with a minimum of 0.65, and were all significant at 1% level of significance. The AVE meets the criterion of .50. High score of CR (i.e.0.7) confirms the internal consistency of the scale items.

Table 4.27 Psychometric Properties of Marketing Sensing Capability.

4.4.7.3 Measurement and Validation for Sustainable Competitive Advantage

To assess the degree of correspondence between the **Sustainable Competitive Advantage** variables and latent construct of **Sustainable Competitive Advantage** uni-dimensional CFA model (Figure 4.3) has been conceptualized and tested for its psychometric properties. Table (4.28) show CFA result.

Chi-square = 16.375
Df= 9
GFI = .952
AGFI = .889
NFI = .954
CFI= .978
RMR = .038
RMSEA = .089

Figure 4.3 CFA Model for Sustainable Competitive Advantage

The structural model of Confirmatory Factor Analysis (CFA) reveals the same measures that can be calculated to determine goodness of fit show in Table (4.28) The result of the unidimensional CFA to Sustainable Competitive Advantage

Table 4.28 Model Fit Indices of Sustainable Competitive Advantage

Measure	Estimate	Threshold	Interpretation
CMIN	16.375	--	--
DF	9	--	--
CMIN/DF	1.819	Between 1 and 3	Excellent
CFI	0.978	>0.95	Excellent
SRMR	0.040	<0.08	Excellent
RMSEA	0.089	<0.06	Terrible
PClose	0.160	>0.05	Excellent

Source: prepared by researcher from data analysis (2020)

The convergent validity of the construct of brand usage intention has been assessed through standardized factor loadings, AVE and CR. Table 4.6 reveals that standardized factor loadings for all items were above the suggested cut-off of 0.50 (Hatcher, 1994), with a minimum of 0.65, and were all significant at 1% level of significance. The AVE meets the criterion of .50. High score of CR (i.e.0.7) confirms the internal consistency of the scale items. Table 4.28 Psychometric Properties of Sustainable Competitive Advantage

4.4.7.4 Measurement and Validation for innovation capabilities

To assess the degree of correspondence between the manifest variables and latent construct of **innovation capabilities** uni-dimensional CFA model (Figure 4.4) has been conceptualized and tested for its psychometric properties. Table (4.29) show CFA result.
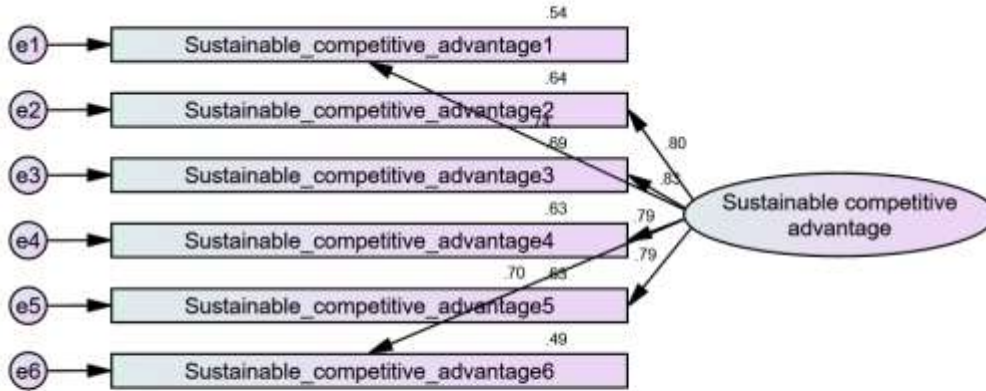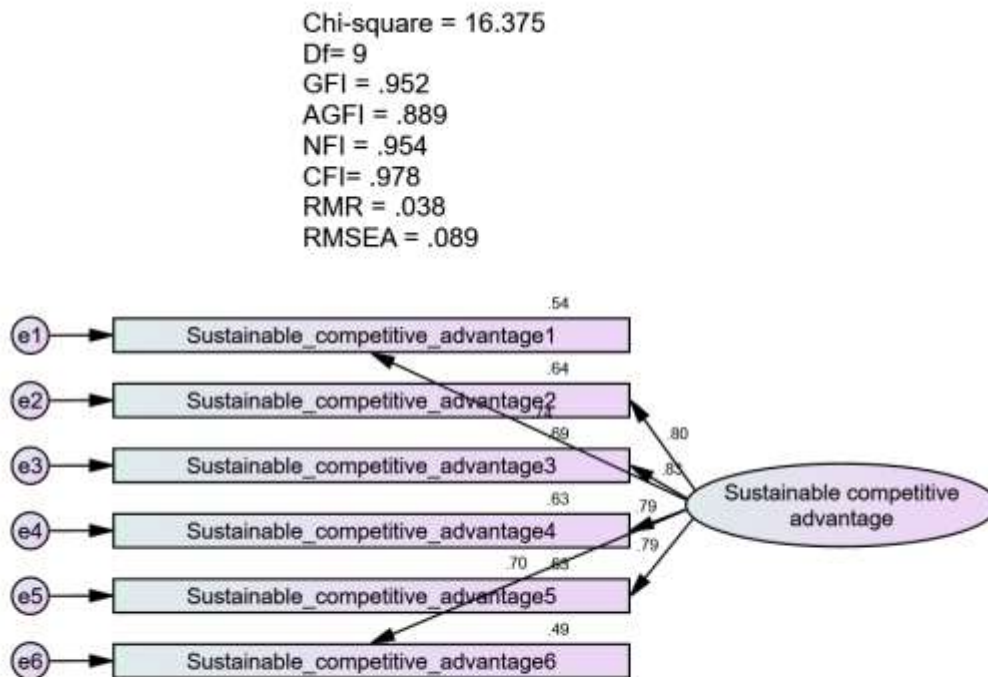

Figure 4.4 CFA Model for innovation capabilities

The structural model of Confirmatory Factor Analysis (CFA) reveals the same measures that can be calculated to determine goodness of fit show in Table (4.29) The result of the unidimensional CFA to innovation capabilities.

Table 4.29 Model Fit Indices of innovation capabilities

Measure	Estimate	Threshold	Interpretation
CMIN	16.375	--	--
DF	9	--	--
CMIN/DF	1.819	Between 1 and 3	Excellent
CFI	0.978	>0.95	Excellent
SRMR	0.040	<0.08	Excellent
RMSEA	0.089	<0.06	Terrible
PClose	0.160	>0.05	Excellent

Source: prepared by researcher from data analysis (2020)

The convergent validity of the construct of brand usage intention has been assessed through standardized factor loadings, AVE and CR. Table 4.6 reveals that standardized factor loadings for all items were above the suggested cut-off of 0.50 (Hatcher, 1994), with a minimum of 0.65, and were all significant at 1% level of significance. The AVE meets the criterion of .50. High score of CR (i.e.0.7) confirms the internal consistency of the scale items. Table 4.29 Psychometric Properties of innovation capabilities

4.5 Descriptive Statistics of Variables

In this section descriptive statistics such as mean and standard deviation was used to describe the characteristics of surveyed to all variables (Independent, dependent, and mediators) under study. Table   shows the means and standard deviations.

Table 4.30 Descriptive Statistics to all variables

	Mean	Std. Deviation
Process innovation	1.8737	.63227
Product innovation	2.2445	.70156
Competitive advantage	2.0795	.69559
Marketing sensing	2.0550	.66491
Top management	2.2289	.75331
Organizational Compatibility	1.9157	.64681
Commitment	1.9829	.80934

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

Source: prepared by researcher from data analysis (2020)

Table 4.30 shows the means and standard deviations of all variables in framework: Determinants of entrepreneurial intentions. The table reveals that the Product innovation the highest value (mean= 2.2445, standard deviation= .70156), whoever the lost value is Process innovation equal (mean= 1.8737, standard deviation=.63227).

4.6 Correlation Analysis

Table 4.33 presents the results of the intercorrelation among the variables. The correlation analysis was conducted to see the initial picture of the interrelationships among the variables under the study. Therefore, the importance of conducting correlation analysis is to identify any potential problems associated with multicollinearity (Sekaran, 2000). Table 4.14 represents the correlation matrix for the constructs operationalized in this study. These bivariate correlations allow for preliminary inspection and information regarding hypothesized relationships. In addition to that, correlation matrix gives information regarding test for the presence of multicollinearity. The table shows that no correlations near 1.0 (or

approaching 0.8 or 0.9) were detected, which indicate that multicollinearity is not a significant problem in this particular data set.

Table 4.31 Person's Correlation Coefficient for All Variables

			Estimate
Commitment	<-->	Organizational_Compatibility	.378
Commitment	<-->	Top_management	.732
Organizational_Compatibility	<-->	Top_management	.480
Commitment	<-->	Marketing_sensing	.500
Organizational_Compatibility	<-->	Marketing_sensing	.506
Top_management	<-->	Marketing_sensing	.518
Commitment	<-->	competitive_advantage	.474
Commitment	<-->	Product_innovation	.384
Commitment	<-->	Process_innovation	.553
Organizational_Compatibility	<-->	competitive_advantage	.270
Organizational_Compatibility	<-->	Product_innovation	.310
Organizational_Compatibility	<-->	Process_innovation	.362
Top_management	<-->	competitive_advantage	.383
Top_management	<-->	Product_innovation	.424
Top_management	<-->	Process_innovation	.603
Marketing_sensing	<-->	competitive_advantage	.722
Marketing_sensing	<-->	Product_innovation	.590
Marketing_sensing	<-->	Process_innovation	.594
competitive_advantage	<-->	Product_innovation	.819
competitive_advantage	<-->	Process_innovation	.666
Product_innovation	<-->	Process_innovation	.668

Source: prepared by researcher from data analysis (2020)

The table shows that no correlations near 1.0 (or approaching or 0.9) were detected, which indicate that multicollinearity is not a significant problem in this particular data set. The highest correlations between competitive advantage and Product innovation equal 0.819

4.7 Model Fit and hypotheses testing

The fit index statistic tests the consistency between the predicted and observed data matrix by the equation (Keith, T,2006). One of the differences that exist between the SEM technique and regression method is that the former one does not have any single statistical test applicable for evaluation of model predictions "strength" (Hair, J.F., et al,1988). In this regard, Kline (Kline, R.B,1988) believed that there are "dozens of fit indexes described in SEM literature, more than any single model-fitting program reports". However, according to Hair, Black (Hair, J.F., et al,1988) and Garson (Garson, G.D, et al 2007), the chi-square fit index, also known as chi-square discrepancy test, is considered as the most fundamental and common overall fit measure. Thus, in a good model fit the value of chi-square should not be very significant, i.e., $p>0.05$ (Hair, J.F., et al,1988). However, one problem usually experienced through this test relates to the rejection probability of the model having direct interaction with the sample size. Moreover, the sensitivity level of chi-square fit index is very high, especially, towards the multivariate normality assumption violations (Garson, G.D, et al 2007).

Many indexes have been introduced and developed to avert or reduce the problems related to the chi-square fit index. Some of the indexes included in the absolute fit indexes are as follows:

a) "**Normal Chi-Square Fit Index**" (CMIN/DF):

Normal chi-square fit index, $\chi2/df$, serves to adjust the testing of chi-square according to the sample size (Byrne, B.M 2007). A number of researchers take 5 as an adequate fit value, while more conservative researchers believe that chi-square values larger than 2 or 3 are not acceptable (Garson, G.D, et al 2007).

b) "Goodness-of-Fit Index"[30]:

GFI is utilized for gauging the discrepancy level between the estimated or predicted covariance and resulted or observed ones (Jöreskog, K.G,1993).

$$GFI = 1 - [\ max[(\chi 2 - df)/n\ ,\ 0/\ max[(\chi null\ 2 - df\ null)/n\ ,\ 0]\ ]$$

The allowable range for GFI is between 0 and 1, where 1 indicates a perfect fit, which demonstrates that measures equal to or larger than 0.90 signify a 'good' fit (Garson, G.D, et al 2007).

a) Adjusted Goodness-of-Fit Index"(AGFI) (Jöreskog, K.G.,1993):

AGFI is utilized for adjustment of the GFI relating the complexity of the model.

$$AGFI = 1 - [(1 - GFI)\ d\ null\ /\ ]$$

The measuring of AGFI is between 0 and 1, in which 1 or over 1 (AGFI>1.0) signifies a perfect fit, nevertheless, it cannot be bounded below 0, i.e., (AGFI<0). As in the case of GFI, AGFI values equal to or bigger than 0.90 signify a 'good' fit (Garson, G.D, et al 2007).

b) "Root Mean Square Residual" (RMR):

RMR shows the mean squared amount's square root, which distinguishes the sample variances and covariances from the corresponding predicted variances and covariances (Hu, L. and P.M. Bentler,1995). The assessment relies on an assumption that considers the model to be correct. The smaller the RMR, the more optimal the fit is [Garson, G.D, et al 2007].

c) "Root Mean Square Error of Approximation" (RMSEA) (Steiger, J.H 1990):

RMSEA is employed to gauge the approximation error in the population.

$$RMSEA = [(\chi 2 - df)/ (n - 1)df] 1/ 2$$

In cases where the RMSEA value is small, the approximation is believed to be optimal. An approximately 0.05 or smaller value of RMSEA means a more appropriate and closer model fit in connection with the degrees of freedom. Nevertheless, between 0.05 and 0.08 displays the most preferable status and the more optimal fit results (Browne, M.W. and R. Cudeck 1970).

In addition, the following indexes are also included in the incremental fit measures:

a) "Normed Fit Index or Bentler Bonett Index" (NFI):

Normed Fit Index or Bentler Bonett Index or NFI is applicable to contrast and compare the fit of a suggested model against a null model (Bentler, P.M. and D.G. Bonett,1980).

$$NFI = [\chi 2/(Null\ Model)\ \chi 2 //df(Proposed\ Model) / [\chi 2/df(Null\ Model) - 1]$$

This index defines all the observed variables as uncorrelated. The values of NFI range between 0 and 1, where 0.90 signifies an optimal fit (Garson, G.D, et al 2007).

a) "Tucker Lewis Index or Non-Normed Fit Index" (TLI or NNFI):

The TLI or NNFI index is used to gauge parsimony, which is applicable through the evaluation and assessment of the degrees of freedom of the suggested model to the degrees of freedom of the null model (Bentler, P.M. and D.G. Bonett,1980) .

$$NFI = [\chi\,2/(Null\,Model)\,\chi\,2\,//df(Proposed\,Model)\,/\,[\chi\,2/df(Null\,Model) - 1]$$

However, it is not certain whether TLI can vary from 0 to 1. A fit of model is required to possess a TLI that is larger than 0.90 (Bentler, P.M. and D.G. Bonett,1980, Tucker, L.R. and C. Lewis 1970).

b) **"Comparative Fit Index**" (CFI) (**Bentler, P.M.,1998**):

CFI is not only less affected by the sample size, but also based on comparison of the hypothesized model to the null model (Kline, R.B,1998).

$$CFI = 1 - [\,max[(\chi\,2 - df),\,0]\,max[(\chi\,2 - df),\,(\chi null\,2 - dfnull),\,0]\,]$$

The values of CFI range between 0 and 1. However, its values need to be a minimum of 0.90 to be usable for a model fit (Garson, G.D, et al 2007).

4.7.1 Relationship between Supply chain orientation (Multi-dimensional) and Sustainable Competitive Advantage

To assess the impact of Supply chain orientation on Sustainable Competitive Advantage, structural equation modeling has been employed and a measurement model of these constructs has been assessed. Figure 4.5 Reveals that reflective indicators have been used for the measurement of latent constructs and non-causal relationship has been studied among different constructs, by drawing path.

Figures 4.5 Structural model estimation for Supply chain orientation on Sustainable Competitive Advantage
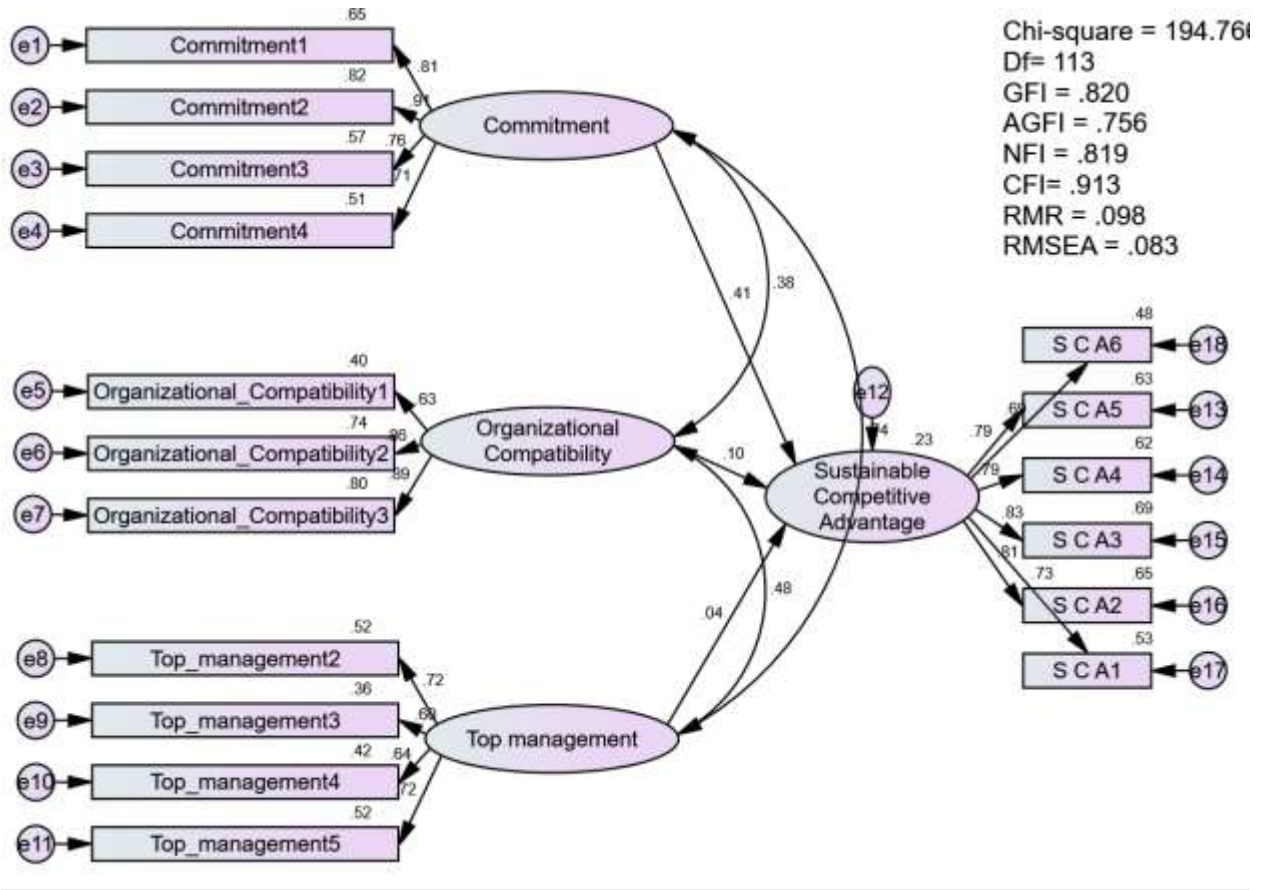
The structural model reveals the same value of model fit shown in Table …. , all the model fit indices for the structural model were not only significant but remain same as in the measurement model. The low index of R square (i.e. 0.49, 0.34, 0.38, 0.42) justifies the underlying theoretical model.

The probability of getting a critical ratio as large as 2.25 in absolute value is .024. In other words, the regression weight for Commitment in the prediction of competitive_advantage is significantly different from zero at the 0.05 level (two-tailed).

The probability of getting a critical ratio as large as 0.786 in absolute value is .432. In other words, the regression weight for Organizational_Compatibility in the prediction of competitive_advantage is not significantly different from zero at the 0.05 level (two-tailed).

The probability of getting a critical ratio as large as 0.184 in absolute value is .854. In other words, the regression weight for Top_management in the prediction of competitive_advantage is not significantly different from zero at the 0.05 level (two-tailed). All Details are shown in the (Table 4.32). The full AOMS output is displayed in Appendix BA1.

Table 4.32 Path Coefficients of Supply chain orientation on Sustainable Competitive Advantage

			Estimate	S.E.	C.R.	P	Result
competitive_advantage	<---	Commitment	.356	.158	2.250	.024	Support
competitive_advantage	<---	Organizational_Compatibility	.103	.131	.786	.432	Not Support
competitive_advantage	<---	Top_management	.033	.179	.184	.854	Not Support

*** Significant at .001 level ** Significant at .01 level   NS Not Significant

Source: prepared by researcher from data analysis (2020)

4.7.2 Relationship between Marketing Sensing Capability (Multi-dimensional) and Sustainable Competitive Advantage

To assess the impact of Marketing Sensing Capability on Sustainable Competitive Advantage, structural equation modeling has been employed and a measurement model of these constructs has been assessed. Figure 4.6 reveals that reflective indicators have been used for the measurement of latent constructs and non-causal relationship has been studied among different constructs, by drawing path .

99

Figures 4.6 Structural model estimation for Marketing Sensing Capability on Sustainable Competitive Advantage
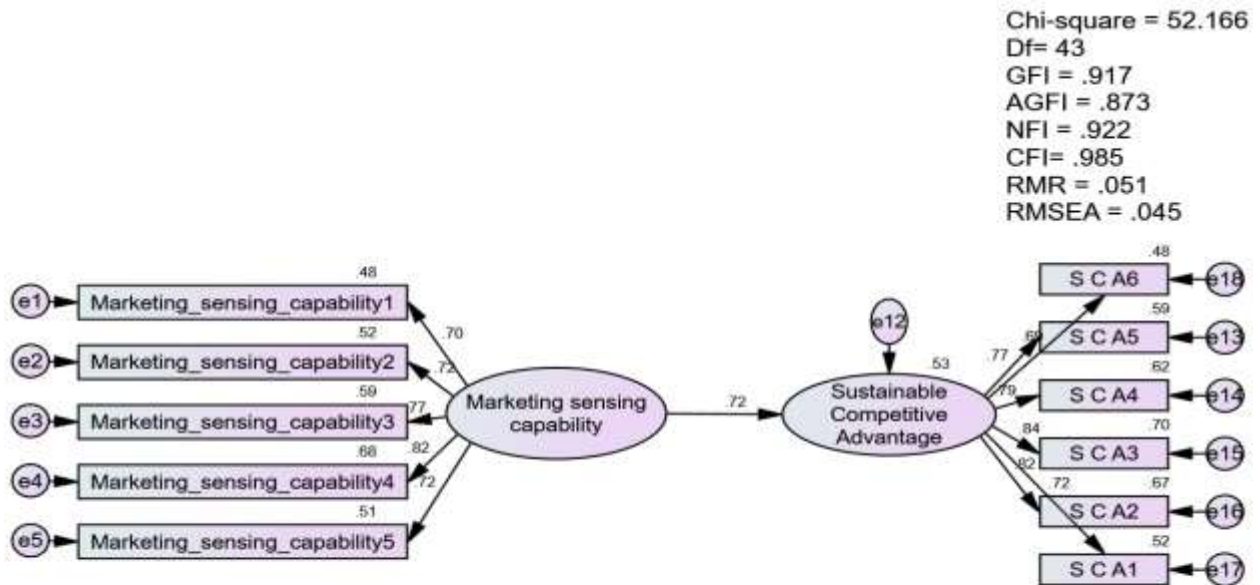
The structural model reveals the same value of model fit shown in Table ….
, all the model fit indices for the structural model were not only significant but remain same as in the measurement model. The low index of R square (i.e. 0.32, 0.35, 0.23) justifies the underlying theoretical model.

The probability of getting a critical ratio as large as 5.532 in absolute value is less than 0.001. In other words, the regression weight for Marketing_sensing in the prediction of competitive_advantage is significantly different from zero at the 0.001 level (two-tailed).

Table 4.33 Path Coefficients of Marketing Sensing Capability on Sustainable Competitive Advantage

|	Estimate	S.E.	C.R.	P	Result
competitive_advantage <--- Marketing_sensing	.757	.137	5.532	***	Support

*** Significant at .001 level ** Significant at .01 level   NS Not Significant

Source: prepared by researcher from data analysis (2020)

4.7.3.The interaction Supply chain orientation and Marketing Sensing Capability (Multi-dimensional) on Sustainable Competitive Advantage

To assess the impact of **interaction Supply chain orientation and Marketing Sensing Capability** on Sustainable Competitive Advantage , structural equation modeling has been employed and a measurement model of these constructs has been assessed. Figure 4.7 reveals that reflective indicators have been used for the measurement of latent constructs and non-causal relationship has been studied among different constructs, by drawing path .

Figures 4.7 Structural model estimation for interaction Supply chain orientation and Marketing Sensing Capability on Sustainable Competitive Advantage
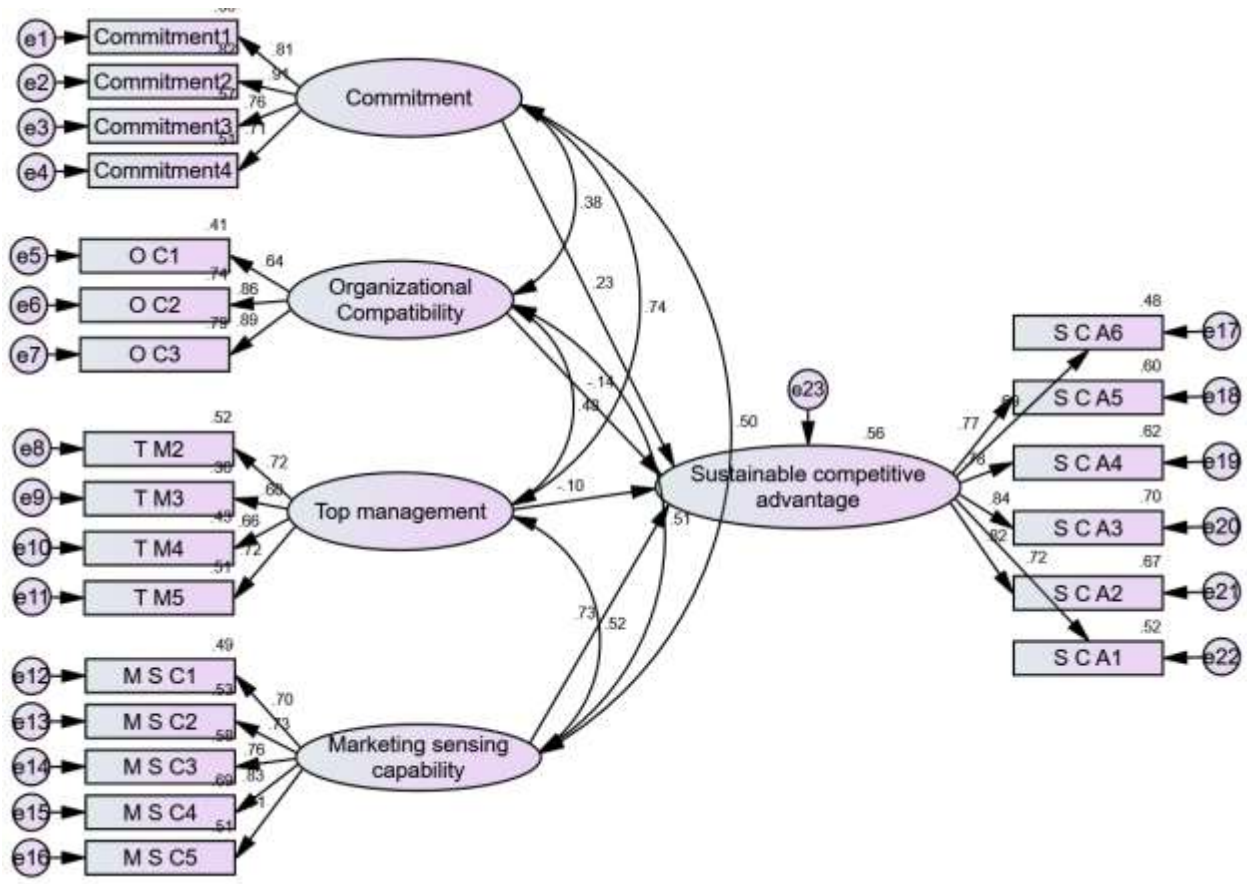
The structural model reveals the same value of model fit shown in Table 4.34 , all the model fit indices for the structural model were not only significant but remain same as in the measurement model. The low index of R square (i.e. 0.33, 0.26, 0.39, 0.34) justifies the underlying theoretical model.

The probability of getting a critical ratio as large as 1.534 in absolute value is .125. In other words, the regression weight for Commitment in the prediction of

competitive_advantage is not significantly different from zero at the 0.05 level (two-tailed).

The probability of getting a critical ratio as large as 1.254 in absolute value is .210. In other words, the regression weight for Organizational_Compatibility in the prediction of competitive_advantage is not significantly different from zero at the 0.05 level (two-tailed).

The probability of getting a critical ratio as large as 0.557 in absolute value is .578. In other words, the regression weight for Top_management in the prediction of competitive_advantage is not significantly different from zero at the 0.05 level (two-tailed).

The probability of getting a critical ratio as large as 4.829 in absolute value is less than 0.001. In other words, the regression weight for Marketing_sensing in the prediction of competitive_advantage is significantly different from zero at the 0.001 level (two-tailed).

Table 4.34 Path Coefficients of Marketing Sensing Capability on Sustainable Competitive Advantage

|		Estimate	S.E.	C.R.	P	Label
competitive_advantage <---	Commitment	.201	.131	1.534	.125	NS
competitive_advantage <---	Organizational_Compatibility	-.148	.118	-1.254	.210	NS
competitive_advantage <---	Top_management	-.083	.149	-.557	.578	NS
competitive_advantage <---	Marketing_sensing	.748	.155	4.829	***	SUPPORT

*** Significant at .001 level ** Significant at .01 level   NS   Not Significant

Source: prepared by researcher from data analysis (2020)

4.7.4The interaction Supply chain orientation and Marketing Sensing Capability (Multi-dimensional) on Sustainable Competitive Advantage

To assess the impact of **interaction Supply chain orientation and Marketing Sensing Capability** on Sustainable Competitive Advantage , structural

equation modeling has been employed and a measurement model of these constructs has been assessed. Figure 4.8 reveals that reflective indicators have been used for the measurement of latent constructs and non-causal relationship has been studied among different constructs, by drawing path .

Figures 4.8 Structural model estimation for interaction Supply chain orientation and Marketing Sensing Capability on Sustainable Competitive Advantage
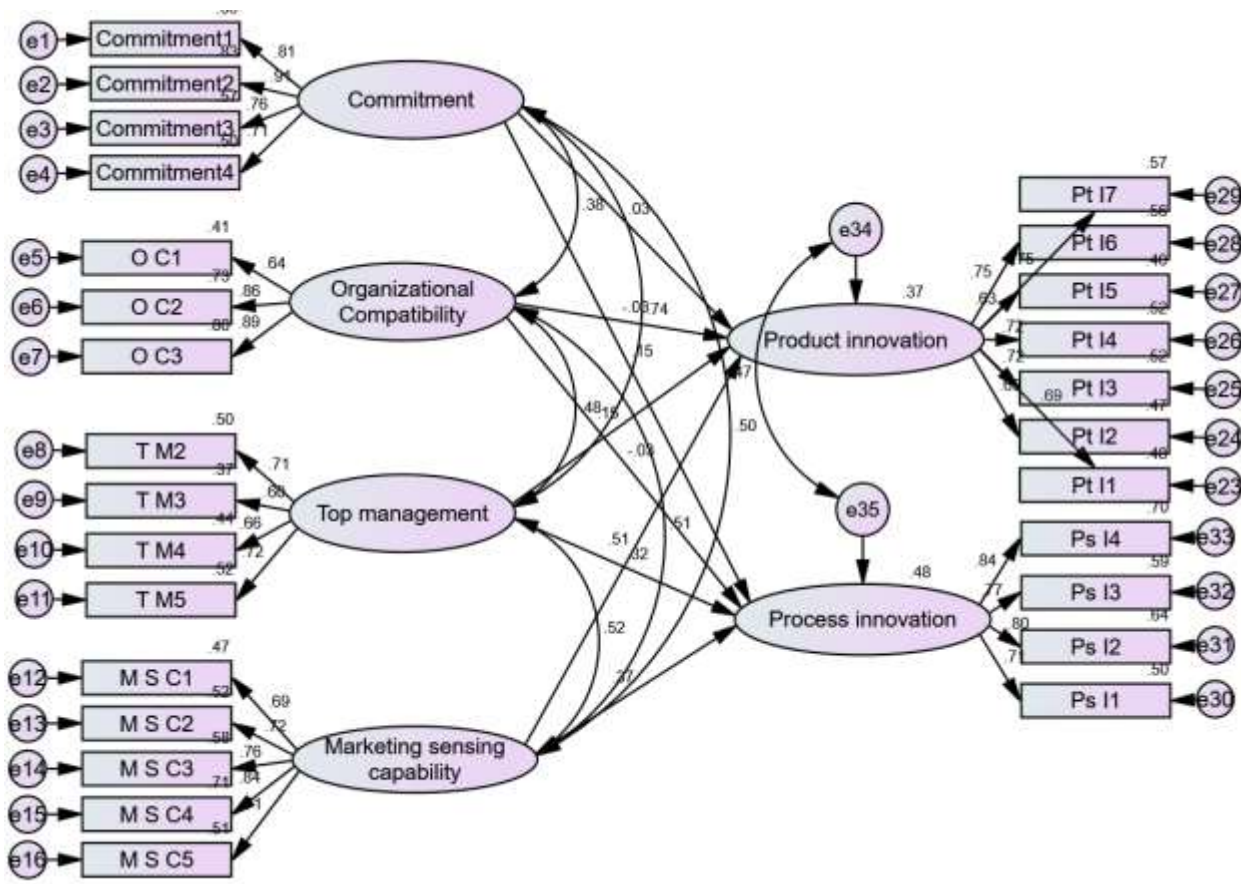
The structural model reveals the same value of model fit shown in Table 4. 35 , all the model fit indices for the structural model were not only significant but remain same as in the measurement model. The low index of R square (i.e. 0.33, 0.26, 0.39, 0.34) justifies the underlying theoretical model.

The probability of getting a critical ratio as large as 0.195 in absolute value is .845. In other words, the regression weight for Commitment in the prediction of Product_innovation is not significantly different from zero at the 0.05 level (two-tailed).

The probability of getting a critical ratio as large as 0.235 in absolute value is .814. In other words, the regression weight for Organizational_Compatibility in the prediction of Product_innovation is not significantly different from zero at the 0.05 level (two-tailed).

The probability of getting a critical ratio as large as 0.743 in absolute value is .457. In other words, the regression weight for Top_management in the prediction of Product_innovation is not significantly different from zero at the 0.05 level (two-tailed).

The probability of getting a critical ratio as large as 3.345 in absolute value is less than 0.001. In other words, the regression weight for Marketing_sensing in the prediction of Product_innovation is significantly different from zero at the 0.001 level (two-tailed).

The probability of getting a critical ratio as large as 0.917 in absolute value is .359. In other words, the regression weight for Commitment in the prediction of Process_innovation is not significantly different from zero at the 0.05 level (two-tailed).

The probability of getting a critical ratio as large as 0.285 in absolute value is .775. In other words, the regression weight for Organizational_Compatibility in the prediction of Process_innovation is not significantly different from zero at the 0.05 level (two-tailed).

The probability of getting a critical ratio as large as 1.654 in absolute value is .098. In other words, the regression weight for Top_management in the prediction of

Process_innovation is not significantly different from zero at the 0.05 level (two-tailed).

The probability of getting a critical ratio as large as 2.825 in absolute value is .005. In other words, the regression weight for Marketing_sensing in the prediction of Process_innovation is significantly different from zero at the 0.01 level (two-tailed).

Table 4. 35 Path Coefficients of Marketing Sensing Capability on Sustainable Competitive Advantage

		Estimate	S.E.	C.R.	P	Label
Product_innovation <---	Commitment	.028	.144	.195	.845	par_29
Product_innovation <---	Organizational_Compatibility	-.030	.129	-.235	.814	par_30
Product_innovation <---	Top_management	.128	.172	.743	.457	par_31
Product_innovation <---	Marketing_sensing	.533	.159	3.345	***	Support
Process_innovation <---	Commitment	.116	.127	.917	.359	par_33
Process_innovation <---	Organizational_Compatibility	-.033	.115	-.285	.775	par_34
Process_innovation <---	Top_management	.259	.157	1.654	.098	par_35
Process_innovation <---	Marketing_sensing	.365	.129	2.825	.005	Support

*** Significant at .001 level ** Significant at .01 level   NS   Not Significant

Source: prepared by researcher from data analysis (2020)

4.7.5 The interaction Supply chain orientation and Marketing Sensing Capability (Multi-dimensional) on Sustainable Competitive Advantage

To assess the impact of **interaction Supply chain orientation and Marketing Sensing Capability** on Sustainable Competitive Advantage , structural equation modeling has been employed and a measurement model of these constructs has been assessed. Figure 4.9 reveals that reflective indicators have been used for the measurement of latent constructs and non-causal relationship has been studied among different constructs, by drawing path .

Figures 4.9 Structural model estimation for interaction Supply chain orientation and Marketing Sensing Capability on Sustainable Competitive Advantage
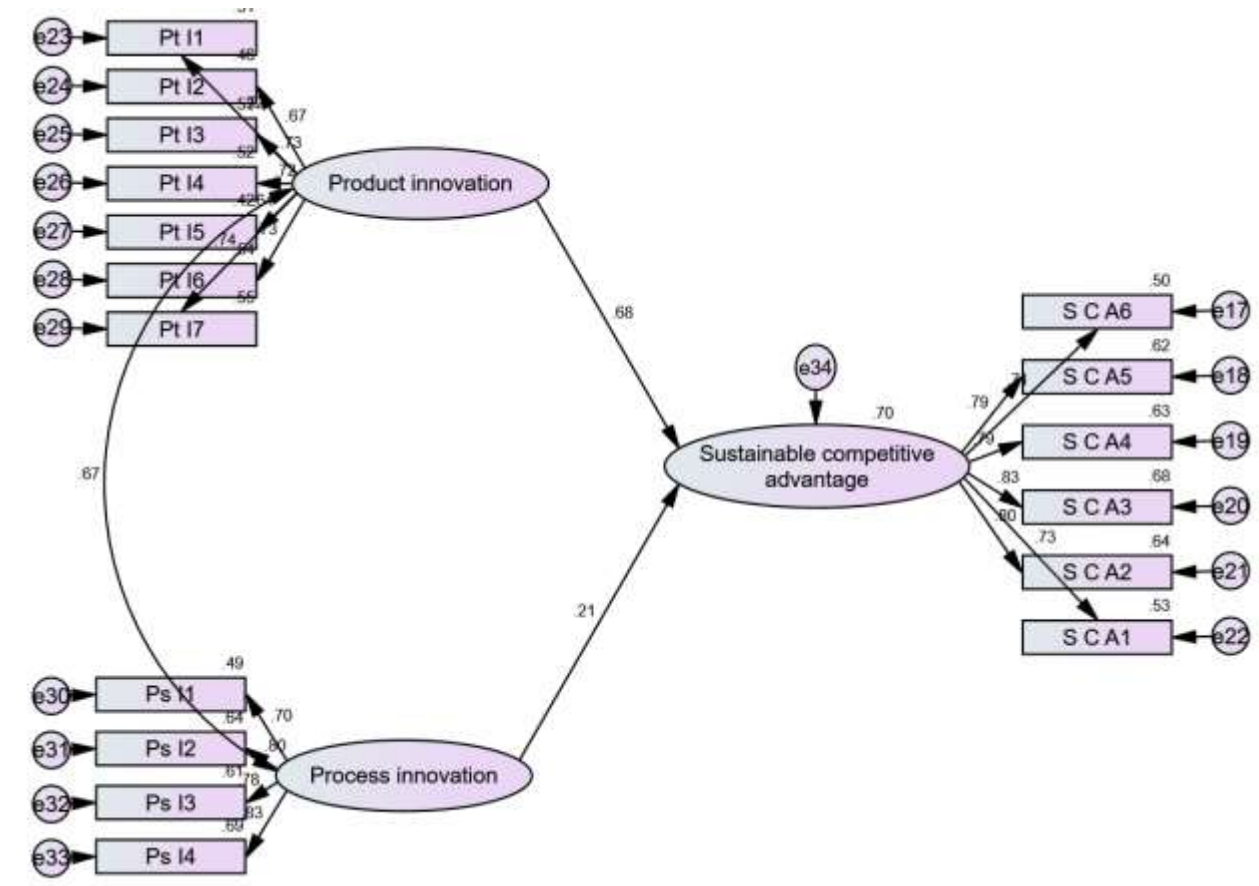
The structural model reveals the same value of model fit shown in Table **4. 36** , all the model fit indices for the structural model were not only significant but remain same as in the measurement model. The low index of R square (i.e. 0.33, 0.26, 0.39, 0.34) justifies the underlying theoretical model.

The probability of getting a critical ratio as large as 4.847 in absolute value is less than 0.001. In other words, the regression weight for Product_innovation in the prediction of competitive_advantage is significantly different from zero at the 0.001 level (two-tailed).

The probability of getting a critical ratio as large as 1.843 in absolute value is .065. In other words, the regression weight for Process_innovation in the prediction of competitive_advantage is not significantly different from zero at the 0.05 level (two-tailed).

Table 4. 36 Path Coefficients of Marketing Sensing Capability on Sustainable Competitive Advantage

|	Estimate	S.E.	C.R.	P	Label
competitive_advantage <--- Product_innovation	.673	.139	4.847	***	Support
competitive_advantage <--- Process_innovation	.234	.127	1.843	.065	par_17

*** Significant at .001 level ** Significant at .01 level   NS   Not Significant

Source: prepared by researcher from data analysis (2020)

4.7.6.1 Mediation of Product innovation on the Relationship between Supply chain orientation (Multi-dimensional) on Sustainable Competitive Advantage

To assess the mediate of **Product innovation** in relationship between Supply chain orientation (Multi-dimensional) on Sustainable Competitive Advantage , structural equation modeling has been employed and a measurement model of these constructs has been assessed. Figure 4.10 reveals that reflective indicators have been used for the measurement of latent constructs and non-causal relationship has been studied among different constructs, by drawing path.

Figure 4.10: The Standardized Path Coefficient for mediations
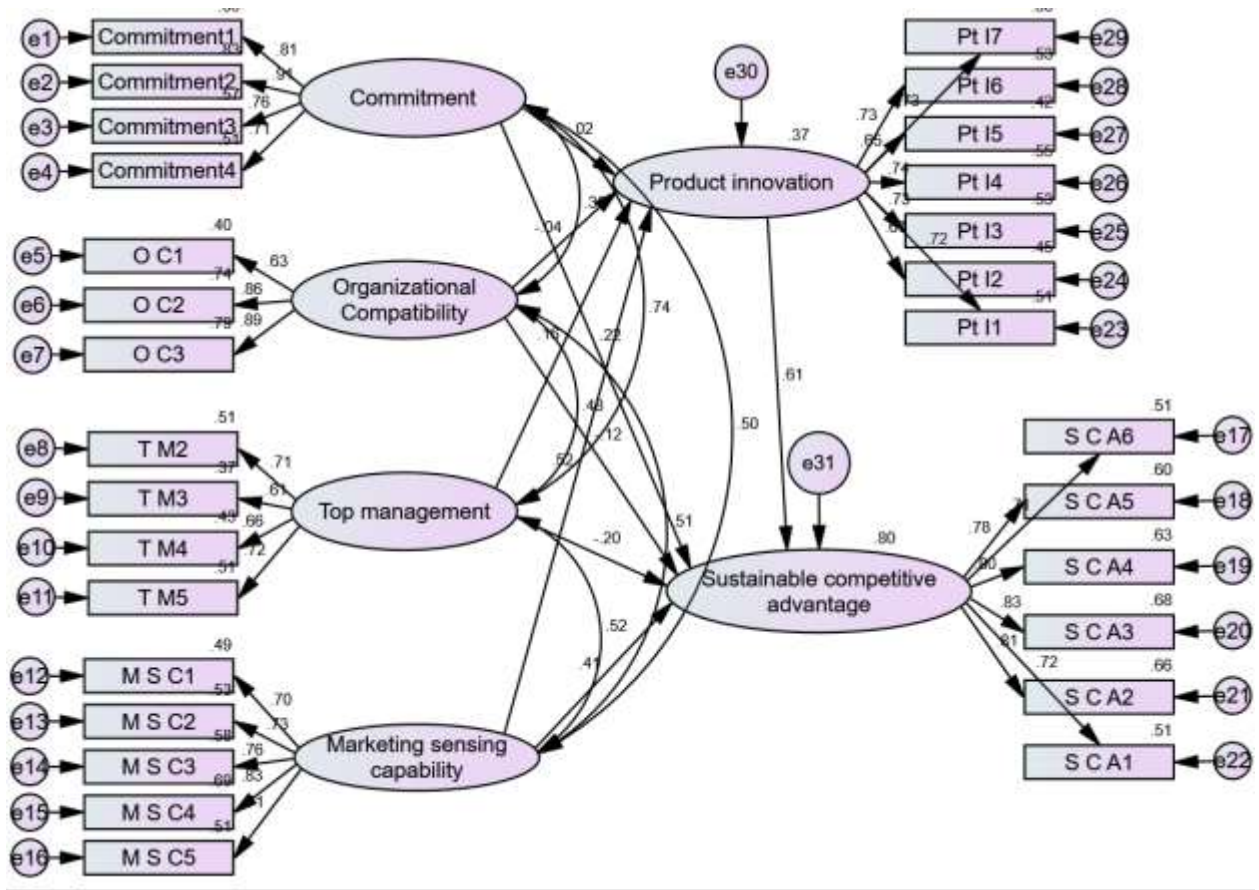
The structural model reveals the same value of model fit shown in Table 4.37 , all the model fit indices for the structural model were not only significant but remain same as in the measurement model. The low index of R square in model one just equal (.51) and middle in model two equal (i.e. .31 for mediation variable and 0.41,0.37,0.41 and 0.43) justifies the underlying theoretical model.

Table 4.37 : The model fit estimates for structural model with the mediator

Measure	Estimate	Threshold	Interpretation
CMIN	1275.119	--	--
DF	664	--	--
CMIN/DF	1.920	Between 1 and 3	Excellent
CFI	0.929	>0.95	Acceptable
SRMR	0.049	<0.08	Excellent
RMSEA	0.050	<0.06	Excellent
PClose	0.504	>0.05	Excellent

Source: prepared by researcher from data analysis (2020)

The results for direct effects without mediator

Table shows the estimates to be extracted to check for direct effects without mediator after establishing model fit. The process is done by observing standardized regression weights and regressions weights in Table . The significant relationships(i.e. based on p-values and the estimates) are extracted to explain the direct effectswithout mediator as shown in Table 4.38: These are compared with direct effect results when the mediator is added on.

Table 4.38: The standardised regression weights for path model without mediator

			Estimate	S.E.	C.R.	P
Product_innovation	<---	Commitment	.018	.150	.117	.907
Product_innovation	<---	Organizational_Compatibility	-.041	.134	-.307	.759
Product_innovation	<---	Top_management	.146	.178	.819	.413
Product_innovation	<---	Marketing_sensing	.545	.159	3.416	***
competitive_advantage	<---	Commitment	.189	.105	1.810	.070
competitive_advantage	<---	Organizational_Compatibility	-.121	.094	-1.283	.200
competitive_advantage	<---	Top_management	-.171	.124	-1.377	.168
competitive_advantage	<---	Marketing_sensing	.420	.122	3.451	***
competitive_advantage	<---	Product_innovation	.595	.120	4.969	***

Source: prepared by researcher from data analysis (2020)

The mediation tests: indirect effects using the bootstrap approach

The indirect effects using the bootstrap approach (Bollen and Stine, 1990, Preacher and Hayes, 2004, Shrout and Bolger, 2002) it's different from Baron-Kenny (1986) approach. the evidence are shows in the next Table.

Table 4.39 : The standardised indirect effects-two tailed significance

Indirect Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	Marketing sensing	Top management	Organizational Compatibility	Commitment
Product innovation	...	...	...	...
Competitive advantage	.005	.180	.578	.934

Source: prepared by researcher from data analysis (2020)

The indirect (mediated) effect of Marketing_sensing on competitive_advantage is significantly different from zero at the 0.01 level (p=.005 two-tailed). This is a bootstrap approximation obtained by constructing two-sided bias- corrected confidence intervals.

The indirect (mediated) effect of Top_management on competitive_advantage is not significantly different from zero at the 0.05 level (p=.180 two-tailed).

The indirect (mediated) effect of Organizational_Compatibility on competitive_advantage is not significantly different from zero at the 0.05 level (p=.578 two-tailed).

The indirect (mediated) effect of Commitment on competitive_advantage is not significantly different from zero at the 0.05 level (p=.934 two-tailed).

4.7.6.2 Mediation of Process innovation on the Relationship between Supply chain orientation (Multi-dimensional) on Sustainable Competitive Advantage

To assess the mediate of Process innovation in relationship between Supply chain orientation (Multi-dimensional) on Sustainable Competitive Advantage , structural equation modeling has been employed and a measurement model of these constructs has been assessed. Figure 4.11 reveals that reflective indicators have been used for the measurement of latent constructs and non-causal relationship has been studied among different constructs, by drawing path.

Figure 4.11: The Standardized Path Coefficient for mediations
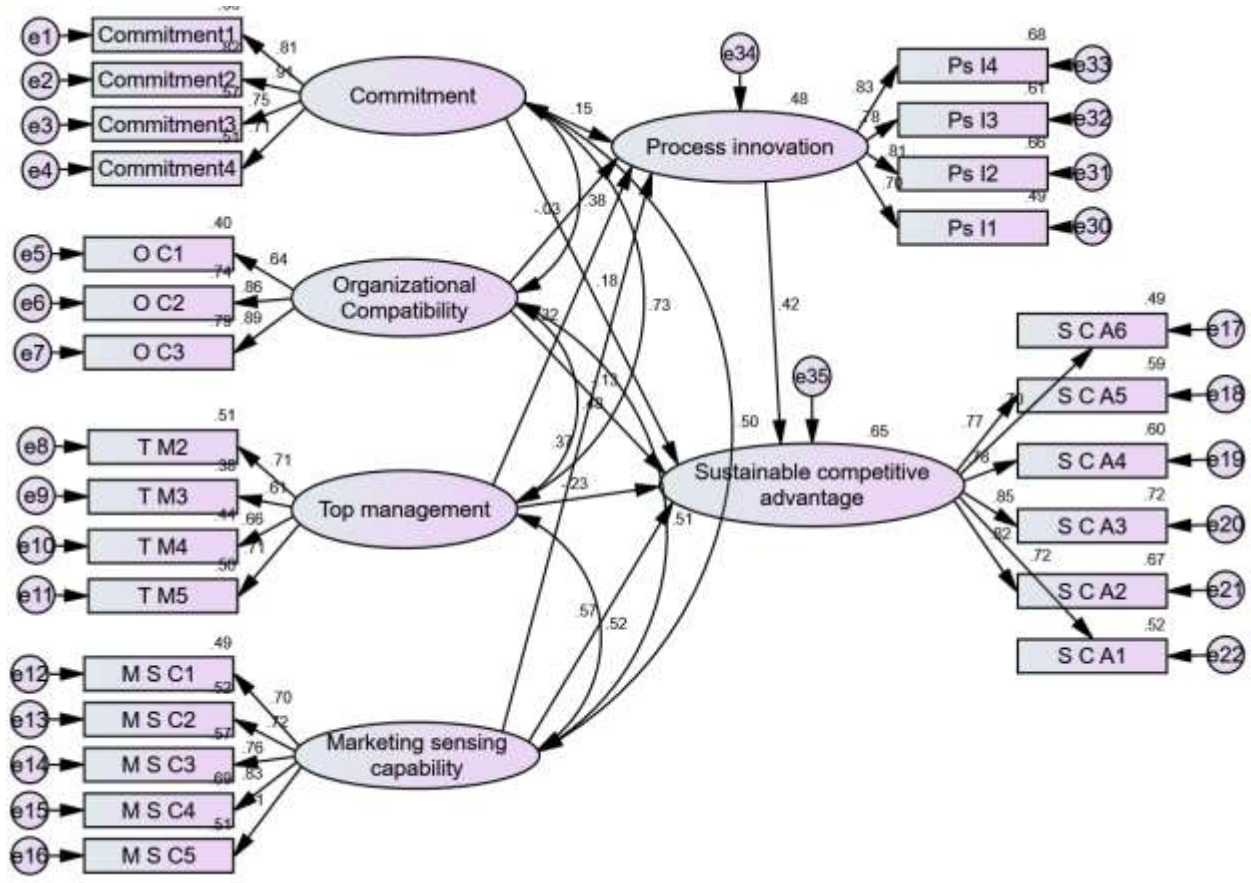
The structural model reveals the same value of model fit shown in Table ….
, all the model fit indices for the structural model were not only significant but
remain same as in the measurement model. The low index of R square in model
one just and middle in model two equal (i.e. .35 for mediation variable and
0.46,0.36,0.46 and 0.49) justifies the underlying theoretical model.

Table 4.40: The model fit estimates for structural model with the mediator

Measure	Estimate	Threshold	Interpretation
CMIN	1164.843	--	--
DF	592	--	--
CMIN/DF	1.968	Between 1 and 3	Excellent
CFI	0.935	>0.95	Acceptable
SRMR	0.047	<0.08	Excellent
RMSEA	0.051	<0.06	Excellent
PClose	0.318	>0.05	Excellent

Source: prepared by researcher from data analysis (2020)

The results for direct effects without mediator

Table shows the estimates to be extracted to check for direct effects without
mediator after establishing model fit. The process is done by observing
standardisedregression weights and regressions weights in Table . The significant
relationships (i.e. based on p-values and the estimates) are extracted to explain the
direct effects without mediator as shown in Table 4.41: These are compared with
direct effect results when the mediator is added on.

Table 4.41: The standardised regression weights for path model without mediator

			Estimate	S.E.	C.R.	P
Process_innovation	<---	Commitment	.115	.124	.924	.355
Process_innovation	<---	Organizational_Compatibility	-.033	.114	-.288	.773
Process_innovation	<---	Top_management	.252	.152	1.665	.096
Process_innovation	<---	Marketing_sensing	.352	.125	2.822	.005
competitive_advantage	<---	Commitment	.151	.120	1.264	.206
competitive_advantage	<---	Organizational_Compatibility	-.136	.109	-1.243	.214
competitive_advantage	<---	Top_management	-.203	.149	-1.361	.174
competitive_advantage	<---	Marketing_sensing	.589	.144	4.089	***
competitive_advantage	<---	Process_innovation	.459	.148	3.105	.002

Source: prepared by researcher from data analysis (2020)

The mediation tests: indirect effects using the bootstrap approach

The indirect effects using the bootstrap approach (Bollen and Stine, 1990, Preacher and Hayes, 2004, Shrout and Bolger, 2002) it's different from Baron-Kenny (1986) approach. the evidence are shows in the next Table.

Table 4.42 : The standardised indirect effects-two tailed significance

Indirect Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	Marketing sensing	Top management	Organizational Compatibility	Commitment
Process innovation	...	...	...	...
Competitive advantage	.103	.128	.571	.285

Source: prepared by researcher from data analysis (2020)

The indirect (mediated) effect of Marketing_sensing on competitive_advantage is not significantly different from zero at the 0.05 level (p=.103 two-tailed).

The indirect (mediated) effect of Top_management on competitive_advantage is not significantly different from zero at the 0.05 level (p=.128 two-tailed).

The indirect (mediated) effect of Organizational_Compatibility on competitive_advantage is not significantly different from zero at the 0.05 level (p=.571 two-tailed).

The indirect (mediated) effect of Commitment on competitive_advantage is not significantly different from zero at the 0.05 level (p=.285 two-tailed). This is a bootstrap approximation obtained by constructing two-sided bias- corrected confidence intervals.

Summary of the chapter:

The above discussion on data analysis talk about process of data analysis followed by measurement and validation of various constructs. Started by describe the descriptive statistics of the sample data then respondent's demographic information, section two The measurement and validation process of constructs, section three the results of the path analysis and hypotheses testing. The proposed research discussion and conclusion designed is the focus of the next chapter.

CHAPTER FIVE
RESULTS AND RECOMMENDATIONS

5.0 Chapter Overview

This chapter presents the discussion of findings and the conclusion of the research. The first sections reveal the recapitulation of the study and present the discussion of findings in light of theories and previous literature. Then implications of findings for theory and management are developed. After that, directions for future research based on limitations were identified. Lastly, an overall conclusion of the study is made.

5.1 Recapitulation of the Study Findings

This study aimed to investigating the interaction effect of the relationship between market sensing and supply chain orientation on sustainable competitive advantage. Moreover, the study tried to determine the mediating effect of innovation capability in the relationship between market sensing and sustainable competitive advantage also, between supply chain orientation and sustainable competitive advantage. Sudanese manufacturing sector were chosen because they are vital role it plays in the economy, despite the constant deterioration of the economic environment in Sudan. Eight research questions were outlined to achieve the aims of the study. The questions are as follows:

1. What is the influence of supply chain orientation on sustainable competitive advantage ?

2. What is the impact of the individual dimensions of supply chain orientation (top management support, commitment and compatibility) on sustainable competitive advantage ?

3. What is the influence of marketing sensing on sustainable competitive advantage ?

4. What is the effect of innovation capability on sustainable competitive advantage ?

5. What is the impact of the individual dimensions of innovation capability (product innovation capability and process innovation capability) on sustainable competitive advantage?

6. How would mediator role of innovation capability explain the relationship between Supply chain orientation and sustainable competitive advantage ?

7. How would mediator role of innovation capability explain the relationship between marketing sensing and sustainable competitive advantage ?

8. To what extend the interaction of   supply chain orientation and marketing sensing can contribute in creating sustainable competitive advantage ?

Based on literature review, the study identified the variables to be focused on and to include three components of supply chain orientation (commitment, top management support, and compatibility) and marketing sensing as unidimensional variable. As well, sustainable competitive advantage as unidimensional variable.

This is in addition to tow types of innovation capability (product innovation and process innovation). The researcher employed convenient sample where self-administrated survey was used to distribute 170 questionnaires to the manufacturing companies across the capital , the overall response rate was 62 % which counted as a high rate for the purpose of this study.

Concerning the hypotheses testing, the first hypothesis predicts that there is a positive relationship between SCO and IC. However, the results revealed that the SCO dimensions were found to have negative influence on product and process innovation. The second hypothesis in this study predicts that the marketing sensing positively affect innovation capability. The results of path analysis showed that the two component of innovation capability was positively significant related with marketing sensing capability. The third hypothesis predicts that innovation capability have a positive relationship with SCA. The results indicate that the

innovation capability partially effect sustainable competitive advantage. The results show that product innovation has a positive effect on SCA, while process innovation don't have any effect on the SCA. The forth hypothesis predicts that the SCO dimensions have a positive relationship with SAC. However, the findings reveal that (top management support and compatibility) have negative influence on SCA only commitment was to found positive influence on SCA. The fifth hypothesis predicts that MS positively related with SCA. The result indicate that marketing sensing has a significant positive influence on sustainable competitive advantage.

The sixth hypothesis predicts that the two types of innovation capability (product innovation, process innovation) mediate the relationship between SCO components (commitment, top management support and compatibility) and SCA. The result in this study confirmed that there is no positive and significant role for innovation as a mediator variable between SCO and SCA. The seventh hypothesis predicts that the two types of innovation capability (product innovation, process innovation) mediate the relationship between MS and SCA. The result shows that innovation partially mediate the relationship between marketing sensing and sustainable competitive advantage through product innovation. The last hypothesis predicts that The interaction between SCO an MS will positively affect the firm SCA **.** the results show that the interaction between them makes the market sensing affect the sustainable competitive advantage, while the supply chain orientation has had no effect on the sustainable competitive advantage.

5.2 Discussion of Findings

This section presents the discussion of the findings in lights of related empirical evidence and theoretical background of prior literature. The following subsections**.**

come as a result of pursuing the research objectives and responding to research questions which were stated in the first chapter of this study. The discussion covers the interaction effect between supply chain orientation and marketing sensing on sustainable competitive advantage. Furthermore, the discussion will extends to cover the mediating effect of innovation capabilities in the relationship between supply chain orientation and sustainable competitive advantage, as well as the mediating effect of innovation capabilities in the relationship between marketing sensing and sustainable competitive advantage.

5.2.1 The Influence of Supply Chain Orientation on Innovation Capability

The relationship between strategic SCO and SCA has been rarely studied in previous research (e.g hult et al , 2008; Tutara et al , 2015), who indicated a positive and significant relationship between SCO and the innovation. In contrary, the results show that the SCO dimensions were found to have negative influence on product and process innovation. In the following subsections the discussion of findings which are partially consistent with the previous studies and contradicted in other parts.

5.2.1.1 The Influence of Supply Chain Orientation on Product Innovation

The result shows the path between supply chain orientation dimensions (top management support, commitment and compatibility) and product innovation is not significant. These results can be justified by companies' lack of awareness of the various sources of innovation, which supply chains are an important source of them. Furthermore, in order to attain SCO initiatives, firm should Dealing with the supply chain system as a whole. Therefore, if the results of implementing these initiatives are not positive, that mean the culture inside the organization doesn't

strong enough to see supply chain as a whole system rather than a fragment portion. So, it should firstly begin with the top management personal commitment to innovation, by possessing enthusiasm and constant encouragement the need for continuous communication with suppliers and customers, as an important norm. (Neely and Hii, 1998). Because to be an innovative firm, lounging new high quality product that fit consumer needs, firm should deal with supplier as a sources for new ideas. That transitioning to an SCO mandated a multi-organization effort. (omar et al , 2012). In addition, merely involving any supplier in design programs does not guarantee direct improvements in innovation performance Choosing a supplier with the wrong capabilities can lead to lower innovation performance or even project obstruction (Pulles et al. 2014).

5.2.1.2 The Influence of Supply Chain Orientation on Process Innovation

The result shows that there is insignificant relationship between supply chain orientation dimensions (top management support, commitment and compatibility) and process innovation. This result may have appeared due to the partners' lack of commitment to the development of new cross-organizational capabilities, or not receive sufficient top management support. Therefore, because the company was unable to see the supply chain as a whole and of recognizing the need for cooperative efforts. These culture norms found to have positive effect on innovation as knowledge sharing becomes more frequent, richer in content, and the exchange of informations is promoted (defee and Fugate, 2010). In addition for this, the difficulty of establishing strong long term relationships and differences in technology used by actors among supply chain members could be barriers to the innovation process (*Zimmermann et al , 2015*). Hence, Without the commitment of innovative suppliers to exclusive relationships with specific buyers, firms might

fail to obtain innovation contributions from their suppliers and therefore lose the ability to differentiate themselves from their competitors (Pulles et al. 2014).

5.2.2 The Relationship between Marketing Sensing and Innovation Capability

The regression weight for Marketing sensing in the prediction of Process and product innovation is significantly different from zero at the 0.01 level. The results of path analysis showed that the two component of innovation capability was positively significant related with marketing sensing capability. This result Correspond with previous studies. According to (Alshanty and Emeagwali, 2019; Alshanty et al , 2019; Ahmed et al , 2017; Mahmoud et al , 2015) there is a positive and significant correlation between marketing sensing and product and process innovation, as well (Ardyan, 2016) indicate that marketing sensing capability has a positive influence on product innovation. This suggests that a firm with marketing sensing capability would be more innovative than those that do not. Hence, the higher the ability of an enterprise to sense the market, the better and the more effective it becomes at being innovative (Alshanty et al, 2019). The understanding of the marketing environment may make the firm gain new resources or ideas that effect the firm innovation positively, hence reduce the failure of new products and achieve superior performance (Mahmoud et al , 2015).

5.2.3 The Impact of Innovation Capability on Sustainable Competitive Advantage

The results indicate that the innovation capability partially effect sustainable competitive advantage. The results show that product innovation has a positive effect on SCA, while process innovation don't have any effect on the SCA. In literature, there is a wealth of evidence demonstrating a positive relationship between innovation capability and sustainable competitive advantage (e.g Atalay

et al ,2013; Prajogo, 2016; Muhammad et al , 2017; adryan, 2016; De Guimarães, 2019 ; Yu et al , 2017) beside others. A firm's innovative capability is the sole most significant characteristic a firm needs, to ensure growth and preserve competitive advantage. The firm's innovative capability is an important strategic asset for the creation of sustainable competitive advantage that is likely to generate greater performance (Ilmudeen et al , 2016).

The following subsections present the influence of the individual dimensions of Innovation capability on SCA. The findings offer interesting insight; while some findings agree with prior literature, inconsistency was also found. Therefore, these subsections provide a more detailed discussion of the main result.

5.2.3.1 The impact of Product Innovation Capability on Sustainable Competitive Advantage .

The regression weight for Product innovation in the prediction of competitive advantage is significantly different from zero at the 0.001 level (two-tailed). The result shows the positive impact of product innovation on SCA. Significant body of literature emphasizes the positive relationship between product innovation and SCA (Atalay et al ,2013; Prajogo, 2016; Muhammad et al , 2017; adryan, 2016; De Guimarães, 2019 ; Yu et al , 2017)beside others. The result confirm that innovation capability broadens the possibility of obtaining SCA (De Guimarães, 2019). Firms with superior effective dynamic capabilities such as greater product innovation and alliances are likely to have a competitive advantage over firms with less effective capabilities. Product innovation could increase sales as they have a better performance and better features compared to the existing products offered by competitors in the market. The product and process innovation capability is recognized as one of the most significant internal resources that can result in superior firm performance (Ilmudeen et al , 2016).

5.2.3.2 The Impact of Process Innovation Capability on Sustainable Competitive Advantage .

The regression weight for Process innovation in the prediction of competitive advantage is not significantly different from zero at the 0.05 level. The result shows that there is no positive relationship between process innovation and SCA. And this result cames in contrast to the results of previous studies that confirmed the positive effect of process innovation on SCA (e.g. Atalay et al ,2013; Prajogo, 2016; De Guimarães, 2019 ; Yu et al , 2017). According to (Mooi ,Rudd & Jong 2019) process innovations have the potential to influence performance, through create advantages that are difficult for competitors to observe and imitate. So, it is treat like one of the most important sources of sustainable competitive advantage. However, because of the difficulties in properly implementing process innovations, the advantage may disappear and the literature on process innovations. Therefore In order to enhance firm capability to innovate products and achieve sustainable competitive advantage firm should Improve their process innovation capability, and optimization of the product development process (Yu et al , 2017). In Addition, there is lack of knowledge about the effect of external factors on innovation. Firm's actions including their innovative activities are contingent up on and are sometimes driven by external factors including customer (market) demand, competitors' actions, or even government's legislations (pargago, 2016).

5.2.4 The Influence of Supply Chain Orientation on Sustainable Competitive Advantage

The findings reveal that (top management support and compatibility) have negative influence on SCA. only commitment was to found positive influence on SCA. Even though most prior research found support for positive relationship between SCO and SCA (e.g Acar et al, 2016; Hult et al ,2008; Sriyakul, Prianto,

and Jermsittiparsert, 2019). In contrary, (Gligor, 2014) indicate that there is insignificant relationship between SCO and SCA. Whoever, according to this study SCO partially support the relationship between SCO and SCA through the commitment .

The following subsections present the influence of the individual dimensions of Supply chain orientation on sustainable competitive advantage. The findings offer interesting insight; while some findings agree with prior literature, inconsistency was also found. Therefore, these subsections provide a more detailed discussion of the main result.

5.2.4.1 Commitment and SCA

As sub-hypothesis of the main relationship between SCO and SCA The regression weight for Commitment in the prediction of competitive advantage is significantly different from zero at the 0.05 level. The results of the model reveal out that Strategic SCO partially effect on sustainable competitive advantage, particularly Commitment positively effect on SCA. These results are consistent with what the previous studies mentioned. According to (Bagdoniene and Zilione 2009) in most business to business exchanges, the absolute need for building and sustaining long-term relationships consider as crucial factor for successful business activities. Companies more often pay attention to the successful relationships among interacting parties for mutual benefit, this enables them to reduce costs and improve performance by engaging with customers and suppliers. Hence cooperating with external agents firm can generate a competitive advantage (Yuan, 2018). The commitment of SCO by the entire supply chain members will lead to higher performance and sustainable competitive advantage. (Dhaigude and kapoor , 2017).

5.2.4.2 Top Management Support and SCA

The regression weight for top management in the prediction of competitive advantage is not significantly different from zero at the 0.05 level. Interestingly, the results did not provide support for a direct and positive impact of TMS on *SCA* This was an unexpected finding since prior research found support for this relationship (Acar et al , 2016). The explanation for this result is Managed supply chains are not simply functions or processes, but critical elements of strategy that must be viewed as a managerial philosophy (SCO) to enable organizational partners to see the implications and significance of an integrated systems approach. However, Many supply chain failures may occur if top management does not understand the challenge involved as supply chain managers try to grasp a change they did not design and to coordinate the details with others equally removed from the strategic decision making (omar et al, 2012). Therefore managers should be supply chain oriented, because in today's changing market environment the SCO brings competitive advantages to firms, including being credible and benevolent, which provide closer and sustainable relationships between contractors (Acar et al , 2016). Top management support provides supporting information for planning, resource allocation and performance improvement of internal supply chain capability (Jadhav, Orr & Malik, 2019).

5.2.4.3 Organizational Compatibility and SCA

The regression weight for Organizational Compatibility in the prediction of competitive advantage is not significantly different from zero at the 0.05 level. The results found that there is no positive effect for organizational compatibility on sustainable competitive advantage. However, these results can be explained by the company's inability to perceive importance of the opportunities resulting from cooperation with its strategic supply chain partners, indicates that an SCO inside

the firm isn't being implemented or not being aligned with the operational supply chain activities (omar et al, 2012). Supply chains that built and depend on a foundation of inter organizational culture (shared values and goals) makes the firm perform supply chain activities in best way (defee and Fugate, 2010). Moreover, these culture will affect the whole firm performance and enable them sustain their competitive advantage (mello and stank, 2005). According to (Rajaguru and Matanda, 2019), organizational compatibility as an organizational culture is key element in any successful alliance formation. Values, norms and beliefs of supply chain partners compatible with their purpose of doing business. When these attributes exist in partner relationships, the partner businesses recognize their interdependence and are committed to work towards beneficial relationships (Bagdoniene and Zilione 2009). And another reason for this result might be organizational compatibility did not affect sustainable competitive advantage is because that the company may did not choose the optimal company that fits with it in the goals and visions. According to (Defee and stank, 2005) it is necessary to identification of firms that share a mutual tenet in the value of the supply chain as an unrivaled and unique source for competitive advantage. Establishing ties to other firms that do not value the supply chain as highly will reduce the effectiveness of the supply chain.

5.2.5 *Relationship between Marketing Sensing Capability and Sustainable Competitive Advantage*

This study shows the regression weight for Marketing sensing in the prediction of competitive advantage is significantly different from zero at the 0.001 level (two-tailed). So, marketing sensing has a significant positive influence on sustainable competitive advantage. In line with this finding, many prior studies have also found that marketing sensing capability positively influences sustainable competitive advantage (Day, 1994; Tseng & Lee, 2014; Wilden, Gudergan, &

Lings, 2009; Lindblom, et al 2008). Yet, there is also some previous study indicate the non significant relationship between marketing sensing and sustainable competitive advantage (e.g Sugiyarti and ardyan, 2017; Ardyan, 2016). A possible explanation for this result could be that Sensing capability contribute to sustainable competitive advantage by the firm ability to survey market trends and new technologies to seize new opportunities and dedicate resources to reassure that their products/service can fulfill customer requirements. and construe, analyze many information and behavior of anticipating environmental change better than before (adryan, 2016).

5.2.6 The Mediation Role of Innovation Between Supply Chain Orientation and Sustainable Competitive Advantage

In previous studies, there are hardly any studies on the innovation capability as a mediator variable between supply chain orientation and sustainable competitive advantage. Moreover, the result in this study confirmed that there is no positive and significant role for innovation as a mediator variable between SCO and SCA. The following subtitles present the results discussion of mediating effects to the tow dimensions of innovation capability in the exchange between supply chain orientation and sustainable competitive advantage.

5.2.6.1 The Mediation Role of Product Innovation between Supply Chain orientation and Sustainable Competitive Advantage.

Regarding the mediating effect of product innovation in the relationship between SCO and SCA the results obtained from summing up the direct and indirect effect indicates no mediation effect to product innovation capability in this relationship. this result didn't Correspond with Previous studies suggestion which indicate that strategic orientation are an important source of firm innovation, which in turn helps the firm to achieve a sustainable competitive advantage.

According to (omar et al, 2012) implementing supply chain management entails extending the behavioral guidelines of internal firm SCO externally to key firms in the supply chain to improve the competitiveness of each firm and the supply chain as a whole. So, these results may be caused by the insufficiency of the firm and supply chain members to improve their ability to share and combine resources and knowledge in novel ways, in order to achieve innovative capabilities as result. The synergies produced by supply chain partners co-evolving to create new firm-specific and cross-organizational capabilities makes the supply chain more competitive and less susceptible to rival (defee, and Fugate, 2010). In addition, suppliers represent a key input to a buyer's product innovations. However, the value that a supplier offers cannot be effectively leveraged absent the right conditions (Jajja et al,2017).

5.2.6.2 The Mediating Role of Process Innovation Between Supply Chain Orientation and Sustainable Competitive Advantage

Regarding the mediating effect of process innovation in the relationship between SCO and SCA the results obtained from summing up the direct and indirect effect indicates no mediation effect to process innovation capability in this relationship. The indirect (mediated) effect of supply chain orientation dimensions is not significantly on sustainable competitive advantage. Organization's strategy, structures, support mechanisms, and behavior that encourages innovation will either support or hinder creativity and innovation in the organization. Variables such as the type of innovations being implemented, and the cultural context play a role in influencing the innovation-performance relationship (Lee, Hallak and Sardeshmukh, 2019). In addition, the innovation process largely depends on the situation with the rest of supply chain partners and the nature of relationship between them, whereas   the ability to work in partnership with other supply chain

actors allows companies to integrate their operations, generating greater efficiency and facilitating innovation. Therefore, it becomes crucial that companies align their internal research and development strategies with the knowledge available in the supply chain to achieve better performance with regard to innovation (*Zimmermann et al, 2015*). Another factor that may limit the innovation process isn't only the technical aspect but also aspects of the supplier's attitude towards the collaboration should be considered as well, because supplier might possess innovative capabilities, but without the willingness to collaborate, these capabilities might not be utilized effectively (Pulles et al. 2014).

5.2.7 *The Mediating Effect of Innovation Capability between Marketing Sensing and Sustainable Competitive Advantage*

The following subtitles present the results discussion of mediating effects to the two dimensions of innovation capabilities in the exchange between market sensing and sustainable competitive advantage. The result shows that innovation partially mediate the relationship between marketing sensing and sustainable competitive advantage through product innovation. Whoever, innovation capability was found to have a mediate role between MS and SCA in prior research(Alshanty et al, 2019 ; Ahmed et al 2017).

5.2.7.1 *The Mediation Effect of Product Innovation Capability between Marketing Sensing and Sustainable Competitive Advantage*

This sub-section concerns with the mediating effect of innovation capability in the relationship between market sensing and sustainable competitive advantage. Regarding the mediating effect of product innovation in the relationship between marketing sensing and sustainable competitive advantage the results obtained from summing up the direct and indirect effect indicates partial mediation effect to product innovation capability in this relationship. This confirms the result obtained

by (Ahmed et al 2017) that indicate that innovation have a mediate role between marketing sensing and firm performance. As well, Regarding product innovation (Ardyan, 2016) confirm that product innovativeness success mediates the relationship between MS and firm performance. The logic behind this result is that the higher ability of an enterprise to sense the market, the better and the more effective it becomes at being innovative (Alshanty et al, 2019). Hence, when the firm implementing something new or different in response to market conditions and costumer need, that will enhance the level of innovation and therefore enjoy greater success when in the marketing of new products (Mahmoud et al , 2015). Empirically, this research shows that the owners' success to create innovative product will affect firm performance . This new innovative product must be needed by consumer So that it can achieve a sustainable competitive advantage (Ardyan , 2016).

5.2.7.2 *The Mediation Effect of Process Innovation Capability between Marketing Sensing and Sustainable Competitive Advantage*

This part discusses the mediating effect of process innovation capability in the relationship between market sensing and sustainable competitive advantage. The result shows The indirect (mediated) effect of Marketing sensing on competitive advantage is not significantly different from zero at the 0.05 level. In another word, process innovation doesn't has a mediate role between MS and SCA. This finding is in contradiction with a number of scholars for example (Ahmed et al, 2017; Alshanty et al, 2019) asserted that organizational innovativeness, as a firm's capacity to lead an industry in innovations by launching new products or services, was found to be positively associated with overall firm performance. The reasoning behind this discrepancy is due to the internal and external barriers that prevent the company from being innovative. The external

barriers include the lack of infrastructure, deficiencies in education and training systems, inappropriate legislation, an overall neglect and misuse of talents in society. Some major internal barriers include rigid organizational arrangements and procedures, hierarchical and formal communication structures, conservatism, conformity and lack of vision, resistance to change, and lack of motivation and risk-avoiding attitudes and so on (Neely and Hii, 1998).

5.2.8 *The Interaction of Supply Chain Orientation and Marketing Sensing Capability on Sustainable Competitive Advantage*

The regression weight for (Commitment , Organizational Compatibility and Top management) in the prediction of competitive advantage is not significantly different from zero at the 0.05 level. Also, marketing sensing in the prediction of competitive advantage is significantly different from zero at the 0.001 level**.** This means that the interaction between them makes the market sensing affect the sustainable competitive advantage, while the supply chain orientation has had no effect on the sustainable competitive advantage. Previous studies have suggested that marketing sensing and supply chain orientation should be linked together to achieve a competitive advantage for the company**.** (Gligor, 2014) Confirmed that MO contributes directly and positively to SCO It was also found that the strength of this relationship increases in environments characterized by higher levels of munificence, dynamism, and complexity. As well, according to (Yusoff, Ashari and Salleh, 2016) MO must be supported by SCO. It can be considered that the market orientation is an external orientation of the enterprise whose goal is to provide a greater understanding of the market. As for the supply chain orientation, it is an internal orientation aimed at improving the relationship of the supply chain.Therefore, market-oriented firms cannot meet their customers' expectations alone, in isolation from their supply chain members. Firms that recognize the

importance of managing their supply chains can develop relationships with their supply chain members that allow them to collect information about their customers' preferences (Gligor, 2014). However, the weak aspect of the supply chain is that it neglects competitors 'actions in return, the market trend neglects the importance of the supply chain and the channel's value chain and the impact of non-marketers for the creation of competitive advantage (Warnakulasooriya, 2007).

5.3 Implications of the Study

This section discusses the impacts which the findings might have on theory and practice. The theoretical implications for this study will be discussed firstly, and then the practical implications are also explained.

5.3.1 Theoretical Implications

The findings of this study provide several implications for the existing knowledge. **The first theoretical contribution** of this study is the current findings add to a growing body of literature on SCO and MS; by providing an empirical examination of the framework linking the interaction relationship between SCO and MS on SCA; in the existence of innovation capability as a mediator.

Second theoretical contribution, this study makes a unique contribution to the literature by examining the mediating impact of innovation capability between supply chain orientation and sustainable competitive advantage and also, between marketing sensing and sustainable competitive advantage.

Third theoretical contribution, the findings reveal that not all SCO dimensions are equally valuable to firms; because two of SCO (top management support and organizational compatibility) dimensions appeared to have a no significant impact on SCA. In contrast, one of these dimension (commitment) was found to have a positive impact on SCA. Accordingly, the current findings confirm the results of

prior literature which indicate that certain SCO dimensions may vary across countries, sectors and bossiness environment (Acar et al , 2016).

forth theoretical contribution, it attempts to bridge the knowledge gap by addressing these variable as they are hardly ever examined together in privies literature.

Fifth theoretical contribution, this study explains how intangible resources and capabilities particularly those related to the firm culture and philosophy can greatly influence the firms sustainable competitive advantage.

Finally, the results of this study provide comprehensive insight and directions to future studies, which in turn contribute to tackling the limitations of the current study, and offer a clear interpretation for the relationship between existing variables through the mechanism of mediation variables.

5.3.2 Practical Implications

The findings of the proposed framework provide a number of valuable implications for managerial practice. **First,** managers of companies operating in Sudan badly need to adopting the initiatives of supply chain orientation, which is refer to the essential role of top management support to the significance of the concept of supply chains, as well as urging commitment to the relationships that exist between members of the supply chain and the need to work in compatible way to enable the companies attaining sustainable competitive advantage.

Second, this study suggests that firms can develop market sensing as an adaptive tool for innovation capabilities and SCA to face the business environmental changes.

Third, a further implication of the findings is that managers should give special attention to innovation capability because it was found to has a positive influence on SCA. Managers, therefore, need to encourage creative initiatives and motivate

employees to enhance their problem-solving skills, along with introducing novel ideas.

Fourth, managers need to pay greater attention to the importance of the interaction relationship between SCO and MS and how could they make a benefits from adopting them together in the firm in the same time.

Fifth, Managers should focus on process innovation more as the results of this study showed the lack of a mediating role for it between the independent variables and the sustainable competitive advantage.

sixth, firms must devote a great efforts to overcome the major internal barriers that may hinder the firm from adopting or implication of the variables (i.e, supply chain orientation, marketing sensing and innovation capability) like, hierarchical and formal communication structures, conservatism, conformity and lack of vision, resistance to change, and lack of motivation and risk avoiding attitude and so on.

Finally, The results obtained from testing the conceptual framework of in this study will improves the common understanding among decision makers, which makes the firm more likely to be able to effectively respond to environmental changes.

5.4 Limitations of the Study.

Similar to any other researches, this study also confronted by a number of limitations that should be took about in order to be path for future study regarding this theme.

First, while the convenience sample chosen in this study was easy to access and not time-consuming, however, the possibility of bias always associated with it.

Second, the focus of this study is to examine the mediating effect of innovation capability between MS and SCA and between SCO and SCA , this study was not

exploring other possible antecedents to the relationship between the independent variables and SCA.

Third, this study conducted a convenience sampling where the size of sample is restricted to 170 questionnaires. This as such, might decrease the opportunity to generalize findings. Moreover, as this study is conducted in the context of the manufacturing firms situated in Sudan, it is indefinite whether the findings are generalizable to firms in other sectors or other countries.

Finally, although the cross-sectional data used by this study is time efficient and cost-effective, yet, it limits the ability to determine causality between the variables.

5.5 Suggestions for Future Research

Drawing on the findings and limitations mentioned above, this study offers several suggestions for future research as follows:

First, instate of cross-sectional data a longitudinal data was suggested as an opportunity for future research project to determine the causality of understanding the exchange and interactive nature of the relationship between market sensing, supply chain orientation, innovation capability and sustainable competitive advantage.

Second, to increase the generalization, it is suggested that future researches conduct this analysis in all over Sudan or even various international companies on a large scale.

Third, as the variables in this study were rarely studied together in available literature, the variables used in the conceptual model of this study can also be applied to other firms operating different environments of the world.

Fourth, also, the topic of dynamic capabilities is a complex and renewable one, so it is suggested to include new capabilities and measure their impact as a moderator variables for the study model in future research.

Finally, it is imperative that future research should be distinguish between the concepts of sustainable competitive advantage, competitive advantage and firm performance in order to obtain more accurate, realistic and detailed results, which would greatly will serve scientific research.

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APPENDICES

Appendix A1: Arabic Questionnaire

جامعة السودان للعلوم والتكنولوجيا

كلية الدراسات العليا

السلام عليكم ورحمة الله وبركاته

أخي وأختي الكرام أضع بين أيديكم استبانه بحث بعنوان (إثر تفاعل استشعار السوق مع توجه سلسلة التوريد في الميزة التنافسية المستدامة: الدور الوسيط للقدرات الإبداعية).

ويهدف هذا البحث إلى معرفة ما إذا كان تبني شركات الأعمال لتوجه سلسلة التوريد مع قدرات استشعار السوق سيمكنها من تحقيق الاستدامة لميزتها التنافسية، وكيف يمكن للقدرات الإبداعية أن تفسر العلاقة بينهم

نرجو تعاونكم في الإجابة على الأسئلة الموجودة في هذه الاستبانة، علما بأن مساهمتكم الكريمة في الإجابة على هذه الأسئلة ستساعد في الوصول إلى النتائج العلمية المرجوة، ونلفت انتباهكم إلى أن المعلومات التي ستدلون بها ستستخدم لأغراض البحث العلمي فقط، لذا نأمل منكم الإجابة بدقة وحياد ونشكركم مقدما على حسن تعاونكم.

الباحث

أميمه كهلان كاظم

السيناريو

الشركة (X) تعمل في مجال الصناعات ألغذائية، تقوم بتبني توجه سلسلة التوريد في تعاملها مع شركائها الرئيسيين في سلسلة ألتوريد لإدراكها أهمية تعاونها والتزامها مع الشركاء الرئيسيين في سلسة ألتوريد في تحقيق ميزة تنافسية لأعمالها والمحافظة عليها في الأجل ألطويل. كما تقوم بتطوير قدرات استشعار الأسواق لديها والتنبؤ بالتغيرات التي قد تحصل في الأسواق لمواكبة رغبات واحتياجات العملاء، وتوقع حركات وردود أفعال ألمنافسين في الصناعة والتعامل معها والاستجابة لها بسرعة ومرونة. ونتيجة لهذا تقوم وباستمرار بالبحث والتطوير لقدراتها الإبداعية لتقديم منتجات مبتكره وعالية الجودة تلبي رغبات عملائها وتميزها عن منافسيها وتضمن لها تحقيق ميزه تنافسيه مستدامة.

من خلال ما تقدم نرجو شاكرين التكرم بالإجابة على الأسئلة التالية مع التأكيد على أن هذه البيانات ستستخدم لأغراض البحث فقط وسيتم توظيف الإجابات لهذا الغرض:

1_ المعلومات ألشخصيه :

أ – النوع :

☐ ذكر ☐ أنثى

ب – العمر :

☐ أقل من 25 سنه ☐ من 25 سنة – 35 سنة

☐ من36 سنة – 45 سنة ☐ اكبر من 46 سنة

ج – الخبرة :

☐ من 1 _ 5 سنة ☐ من 5 سنة – 10 سنة

☐ أكثر من 10 سنه ☐ بدون

د – المهنة :

ه – الاختصاص

– هذا ألجزء يتعلق بمتغير توجه سلسلة ألتوريد (ألتوجه الاستراتيجي) ويتضمن(دعم الإدارة العليا , ألالتزام , ألتوافق التنظيمي) في شركتكم , لذلك نرجو وضع علامة (√) أمام ألخيار الذي تراه مناسبا .

أوافق بشده	أوافق	محايد	لا أوافق	لا أوافق بشده	دعم الإدارة العليا	
					تؤمن ألشركه (X) بان بقائها مرتبط بتبني إدارتها العليا توجه سلاسل التوريد	1
					تعتقد الإدارة العليا بالشركة (X) بان المحافظة على سلسلة توريدها يقوم على إقامة علاقات طويلة الأجل مع شركائها الرئيسيين في سلسلة ألتوريد .	2
					تؤمن الإدارة العليا في الشركة (X) بضرورة مشاركة المعلومات الإستراتيجية مع شركائها الرئيسيين في سلسلة التوريد.	3
					تعتقد الإدارة العليا في الشركة (X) أن مشاركة المخاطر مع شركائها الرئيسيين في سلسلة التوريد أمر ضروري لنجاح الشركة .	4
					تؤمن الإدارة العليا في الشركة (X) أن مشاركة المكاسب مع أعضاء سلسلة ألتوريد أمر مهم لنجاح ألشركه .	5
					توفر الإدارة العليا في الشركة (X) فرص متعدد لتعليم الموظفين عن إدارة سلسلة التوريد .	6
أوافق بشده	أوافق	محايد	لا أوافق	لا أوافق بشده	ألالتزام	
					تعتقد الشركة (X) أن عليها ألعمل بجد للحفاظ على العلاقات مع شركائها الرئيسيين في سلسلة التوريد .	1
					تعتقد الشركة (X) أن استمرار علاقتها مع شركائها الرئيسيين في سلسلة التوريد مهمة جدا بالنسبة لها.	2

أوافق بشده	أوافق	محايد	لا أوافق	لا أوافق بشده		
					تعتقد الشركة (X) أن تستمر في علاقاتها مع شركائها ألرئيسيين في سلسلة التوريد لفترة طويلة.	3
					تعتقد الشركة (X) أنها ملتزمة جدا بعلاقتها مع شركائها الرئيسيين في سلسلة التوريد .	4

أوافق بشده	أوافق	محايد	لا أوافق	لا أوافق بشده	التوافق ألتنظيم	
					تعتقد ألشركه (X) أن أهدافها متسقة مع أهداف ألشركاء الرئيسيين في سلسلة التوريد.	1
					تعتقد ألشركه (X) أن لديها فلسفه تشغيلية مشابهه لشركائها الرئيسيين في سلسلة التوريد .	2
					تعتقد ألشركه (X) أن لديها نمط إداري مقارب لشركائها الرئيسيين في سلسلة التوريد .	3

– هذا ألجزء يتعلق بقياس متغير قدرات استشعار السوق , لذلك نرجو وضع علامة (√) أمام ألخيار الذي تراه مناسبا .

أوافق بشده	أوافق	محايد	لا أوافق	لا أوافق بشده	قدرات استشعار السوق	
					تعتقد الشركة (X) أنها تحصل على معلومات الأسواق المستهدفة .	1
					تعتقد الشركة (X) أنها تستطيع توقع أفعال المنافسين.	2
					تعتقد الشركة (X) أنها تستطيع التبؤ بطلب المستهلك.	3
					تؤمن الشركة (X) بان لديها قاعدة بيانات لخدمة العملاء .	4
					تعتقد الشركة (X) أنها توحد معلومات السوق والتكنولوجيا .	5

- هذا ألجزء يتعلق بقياس متغير ألميزة ألتنافسية ألمستدامة، يرجى الإجابة على هذا وفقا لاعتقاداتكم عن ألشركه (X) .

أوافق بشده	أوافق	محايد	لا أوافق	لا أوافق بشده	ألميزة ألتنافسية ألمستدامة	
					تعتقد الشركة (X) أن جودة الخدمات التي تقدمها أفضل من التي تقدمها الشركات المنافسة.	1
					تعتقد الشركة (X) بأنها قادرة على البحث والتطوير أكثر من الشركات المنافسة.	2
					تعتقد الشركة (X) أن القدرات الإدارية لديها أفضل من الشركات المنافسة.	3
					تعتقد الشركة (X) أن أرباحها أفضل مقارنة بالمنافسين.	4
					تعتقد الشركة (X) أن صورتها أفضل مقارنة بالمنافسين.	5
					تعتقد الشركة (X) بأنه من الصعب على المنافسين مجاراة ميزتها التنافسية.	6

- هذا ألجزء يتعلق بقياس متغير ألقدرات الإبداعية ويتضمن (إبداع ألمنتج , إبداع ألعمليه) في شركتكم , لذا يرجى تقدير مستوى إبداع ألشركه (X) .

أوافق بشده	أوافق	محايد	لا أوافق	لا أوافق بشده	إبداع المنتج	
					تعتقد الشركة (X) أنها الأولى في تقديم المنتجات الجديدة.	1
					غالبا ما ينظر العملاء لمنتجات الشركة (X) الجديدة على أنها مبتكره.	2
					تعتقد الشركة (X) بأن منتجاتها ألجديدة غالبا ما تميزها عن المنافسين .	3
					تعتقد الشركة (X) أنها قدمت منتجات إبداعيه خلال الخمس	4

					سنوات الماضية مقارنتا مع المنافسين.	
					اعتقد أن الشركة (X) تؤكد وباستمرار على ضرورة تطوير منتجات جديدة.	5
					أعتقد أن الشركة (X) نجحت في تلبية متطلبات السوق.	6
					أعتقد أن الشركة (X) تمكنت من تقديم منتجات خاصة وفقا لمتطلبات الزبائن.	7
					أعتقد أن الشركة (X) تقوم بتحسين المنتجات القديمة ورفع جودة المنتجات الجديدة.	8
أوافق بشده	أوافق	محايد	لا أوافق	لا أوافق بشده	إبداع العملية	
					تؤمن ألشركه (X) أن عليها وباستمرار تطوير قنوات لمنتجاتها وخدماتها .	1
					تعتقد الشركة (X) أن عليها التعامل مع اقتراحات وشكاوى العملاء بسرعة وبأقصى درجات العناية.	2
					في ما يخص الإبداع التسويقي تعتقد الشركة (X) أنها أفضل مقارنتاً بالمنافسين .	3
					تعتقد الشركة (X) أن عليها وباستمرار التأكيد علي الإبداعات الإدارية.	4

161

AppendixA.2: Validator's Names

Names of the questionnaire's validators

	Names	Qualification level	Department
1	Maisoon Ali	Assistant professor	Marketing
2	Emad Aldeen Essa	Assistant professor	Management
3	Ibrahim Fadel AL moula	professor	Management
4	Afraa Mohammad Khalid	Assistant professor	Marketing