UNIVERSITY OF CAPE COAST

ORGANISATIONAL CULTURE AND INNOVATION CAPABILITY AMONG FREIGHT FORWARDING FIRMS IN GHANA

STEWART SELASE LLOYD TANYO HEVI

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Stewart Selase Lloyd Tanyo Hevi

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BY

STEWART SELASE LLOYD TANYO HEVI

Thesis submitted to the Department of Management of the School of Business, College of Humanities and Legal Studies, University of Cape Coast, in partial fulfillment of the requirements for the award of Doctor of Philosophy degree in Business Administration

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DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate Signature ……..…….. Date: ……

Name: Stewart Selase Lloyd Tanyo Hevi

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature …… Date: ……

Name: Prof. (Mrs.) Abigail Opoku Mensah

Co-Supervisor's Signature …….. Date: ……

Name: Prof. Nicodemus Osei Owusu

ABSTRACT

This study assesses the mediating role of business ecosystem learning between dimensions of organisational culture and innovative capability. Further the study explores the moderating role of perception of procedural fairness between business ecosystem learning and innovative capability among freight forwarding firms in Ghana. Grounded in the positivist philosophical paradigm, a quantitative approach was adopted. A simple-random sampling technique was used in the selection of 327 employees of freight forwarding firms who answered questions on organisational culture, business ecosystem learning, perception of procedural fairness and innovative capability. A structured, pre-tested, self-administered and validated questionnaire was employed for data collection. Further, a simple random sampling technique, as well as, a convenience sampling technique were employed in the thesis. The findings reveal that business ecosystem learning mediates between all dimensions of organisational culture and innovative capability. Further, the results show that perception of procedural fairness significantly moderates between business ecosystem learning and innovative capability among freight forwarding firms. The study concludes that clan, adhocracy and market cultures may deliver positive learning outcomes for adaptation among firms. The study adds that perception of procedural fairness may further enhance these positive outcomes of relational embeddedness among freight forwarding firms. The study recommends that owners and managers of freight forwarding firms in Ghana should build firm value systems and normative guidelines that promote clan, adhocracy and market cultures.

KEYWORDS

Firms' Innovative Capability

Freight Forwarders

Organisational Culture

Business Ecosystem Learning

Procedural Fairness

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DEDICATION

To my late wife, Caroline Hevi and my mother, Fidelia Akuvi Hevi

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LIST OF ACRONYMS

ADH	Adhocracy Culture
AFCFTA	African Continental Free Trade Area
AGR	Agreeableness
AVE	Average Variance Extracted
BES	Business Ecosystem Learning
CNL	Clan Culture
FHT	Fairness Heuristic Theory
GEN	General Information
GIFF	Ghana Institution of Freight Forwarders
GPHA	Ghana Port Harbour
GRA-CTSB	Ghana Revenue Authority-Customs Technical Service Bureau
HR	Human Resource
HRC	Hierarchy Culture
HRM	Human Resource Management
INV	Innovative Capability
IQR	Interquartile Range
MKT	Market Culture
OECD	Organisation for Economic Co-Operation and Development
PPCS	Paperless Port Clearance System
PPF	Perception of Procedural Fairness
PPP	Public Private Partnership
SME	Small and Medium Sized Firms

S-O-R	Stimulus Organism Response
UNCTAD	United Nations Conference on Trade and Development
US	United States
VAF	Variance Accounted For

CHAPTER ONE

INTRODUCTION

The first chapter presents the research background and concisely explains the context and concepts of interest in the study. Several countries all over the globe have embraced digital evolution and accordingly devoted significant quantum of resources to enhance technological drive in their governance structure for efficiency. Digital evolution in the maritime transport industry is an essential pillar that complements operational functioning of governmental agencies and business entities within the maritime transport industry. Digitalisation acts as the bridge that connects all relevant stakeholders within the maritime transport space for operational efficiency.

Digital technologies deployed at seaports offer timely, reliable and cost-effective affordances to seaport administration in contemporary times. The chapter provides response to calls by scholars for future studies to 'rethink digital technologies' and their application to firm dynamics. Further, the chapter highlights the relevance of digital technologies through the assumption of fairness in curbing unethical behaviour among collaborators within the maritime transport industry. Also, factors that hinder technology adoption within the maritime transport industry such as organisational culture, business ecosystem learning and development of innovative capabilities were discussed.

Drawing on the theoretical assumptions of stimulus organism response (S-O-R) theory, the chapter draws direct link between organisational culture and innovative capability among freight forwarding firms. Consequently, gaps between organisational culture and innovative capability were highlighted and action plans determined for investigation.

Additionally, this study draws on the S-O-R theory to explain the relevance of learning through informal channels for the purposes of building innovative capabilities among freight forwarding firms. The chapter highlights gaps in learning and innovation management literature. It is noteworthy to add that this thesis is grounded in both S-O-R and fairness heuristics theory (FHT). The S-O-R theory draws its cognitive underpinnings from the combination of internal and external environmental determinants that affect business entities' operations. The use of digital technologies at seaports are fast becoming an integral part of routine operations. Nevertheless, digital evolution is capital intensive, fast paced and requires planned organisational development policies that promote adaption, efficient selection of strategic choices and actions that reflect exigencies of contemporary times. Further, the fairness heuristics theory extends the understanding of the study by integrating cognitive tenets of justice in business operations in the maritime industry.

Motivation for the thesis stems from a number of relevant issues. First, the chapter is driven by post COVID-19 pandemic and the resuscitation of international trade with focus on developing countries such as Ghana. Second, this chapter delivers multi-disciplinary perspectives on some key areas of study, namely, management, innovation and organisational justice. The chapter also provides justification for the context being examined and the reason for the choice. Third, the chapter highlights the succinct contributions of the study by the integration of stimulus organism response, as well as fairness heuristics theories within the context of management science in the maritime transport industry of an emerging economy.

In providing contextual relevance of the study in this chapter, this thesis posits that in the ever-increasing relevance of maritime transportation globally, Ghana remains part of about two-thirds of African countries that are not landlocked and engaged in maritime trade. As at 2019, African countries accounted for 7% of world maritime exports and 4.6% of imports (UNCTAD, 2020). Also, Ghana is one of the African countries with a well-defined port and trade management policy, strategies, action plans for implementation, as well as, corresponding policy reforms (GPHA, 2021). Despite this well-structured policy procedures, the complex nature of its practical application leaves some significant gaps necessitating a need for scientific inquiry.

The chapter then rationally follows standard practice by developing research aim, objectives and questions as the fulcrum on which the study revolved. In addition, the study explains the reasoning behind the methodology employed. Finally, the chapter concludes with planned structure of the thesis and summarises all contents in this chapter.

Background of the Study

Globally, efficient management of seaports have become a major subject of interest among academics and practitioners (Cuong et al., 2022; Nguyen et al., 2023). Over decades, maritime transport has been touted as the mainstay of global trade for global economic prosperity among countries (Gu & Liu, 2023). Even in the midst of global economic ravage caused by COVID-19 pandemic, the World Trade Organisation (WTO) estimates that merchandise across the globe is predicted to surge by 1.7% in 2023, and then increase by 3.2% in 2024 (WTO, 2023). The WTO report further stated that value of global merchandise appreciated in value to the tune of 12% that is 25.3 trillion United States dollars

in 2022. In similar vein, the WTO report adds that technology driven maritime transport services for exports alone was worth 3.82 trillion dollars in 2022. More specifically, in Africa, the African Continental Free Trade Area (AfCFTA) agreement, which is an intra-continental trade policy drive is expected to increase trade among African countries (UNCTAD, 2023). Based on its non-tariff-based initiative, UNCTAD estimates that the arrangement could enhance trade among African countries by 33%.

According to a technical report published by the UN Economic Commission for Africa, it was projected that by 2030 cargo transport services through vessels is likely to increase astronomically to 132 million tons from a baseline value of 58 million tons as at 2021 due to the implementation of AfCFTA. Thus, the relevance of maritime transport industry to global gross domestic product cannot be overemphasized.

Maritime transport has primarily been facilitated by interconnectivity of seaports across the globe (Ducruet & Notteboom, 2022). Governance within the maritime industry is described as a complex system. This is due to the fact that seaports have several governance models, functionalities and collaborators (Singh, 2022). Based on the open systems and stakeholder theories of management, administrative and work designs at seaports have been modelled on varying combinations of inputs, design components, outputs and degrees of stakeholder influence. Premised on the aforementioned assertion, several governance models have been established and deployed over the years. They include public service port, the tool port, corporatized port and private service port. Despite the prowess of these seaport management models, the current state

of maritime transport literature posit that the evolution is now centered on what is termed the landlord model.

The landlord model of seaport management has been established in contemporary literature as widely accepted and most deployed across the globe. It draws its foundation from public-private participation (PPP). The model draws on the stakeholder theory to emphasize the relevance on key actors within a firm's industry. This thesis projects shared stakeholder interactions in which key collaborators in the maritime industry such as governmental agents and freight firms are deemed as co-creators of value in quest for operational efficiencies (Freudenreich et al., 2020).

Notwithstanding the relevance of this landlord model to maritime transport operations, some scholars argue that the model ought to be enhanced with smart and sustainable components (Khanh et al., 2023; Yen et al., 2023; Zhang et al., 2023). This assertion has brought to the fore exploration of concepts such as 'internet of things', big data analytics, block-chain technology and renewable energy use within contemporary seaport system designs. Consequently, this has ignited the development of intellectual capital, procedural fairness in public-private related embeddedness and building of innovation capabilities among industry players such as the port authorities and freight forwarding firms. The study draws strength from UN Sustainable Development Goals (SDGs) 9 and 16 to explain the collaboration between public agencies (seaport authorities) and private firms (freight forwarders) within the domain of marine transport.

The UN SDG 9 has become a major goal for freight forwarding firms as they attempt to use varying approaches of learning to promote ideation,

incubation and implementation of novel processes for business success (Caliskan, 2022). Also, the UN SDG 16 posit that countries must build credible public institutions that enforce fairness in any given business situation (Knapp et al., 2021). Indication of this development can be traced to digital technologies adopted at several seaports for operational efficiency. For example, in Malaysia, Port Kelang is rapidly transitioning into industrial revolution 4.0 for seaport management (Chandrasekaran et al., 2023). In China, the Mawan seaport has adopted technologically enhanced twinning management system to facilitate cargo and freight services (Klar et al., 2023). It is noteworthy to state that these digital evolutions in the maritime transport sector are also evident in African seaports. For instance, in Ghana, the seaport authority has implemented a 'paperless policy' to digitalise cargo and freight services processes (Acheampong et al., 2022).

Notwithstanding the major successes gained through innovative capacity building in the maritime industry, seaport systems have been plagued with public-private related embeddedness challenges, distrust among key stakeholders and strong norms that resist change. Additionally, factors such as technological advancement, digital communication, and cultural dynamics have also plagued effective administration of seaports across the globe (Bai et al., 2019; Fischer et al., 2020; Martínez-Rodriguez et al., 2020).

This thesis deploys the cognitive assumptions of open system model of administration (Katz & Kahn, 1966) to elucidate on the role of firm culture as internal controllable determinant of innovative capacity development among freight firms. Organisational culture is a wide and evolving concept, hence has been discussed in varying dimensions by organisational researchers. It is a term

that has been explored from the perspective of shared belief systems, value systems and assumptions for easy comprehension and explanation (Wei et al., 2022).

In this thesis, the functionalist perspective of organisational culture was adopted. The functionalist outlook posits that the values and belief systems of an organisation form the basis of employee behaviour and this may directly and significantly influence an organisation's adaptation to new strategic policies (Mayne & Hakhverdian, 2017; Pettigrew, 2020). Henceforward, there are several scholarly views on culture as an organisational tool, and this have been coined as typologies of organisational culture (Cameron & Quinn, 1999; Zammuto & Krakower, 1991). In the work of Cameron and Quinn (1999) which has been the most explored typology, the authors developed a framework termed 'Competing Values Framework' (CVF). From the CVF, culture is sub-classified into four dimensions, which is clan, hierarchical, market and adhocracy. Each cultural sub-classification is traceable to varying organisational elements and helps in learning and formation of coping strategies for adaptation in times of new policy directions.

On the same tangent of drawing cognitive assumptions of the open system theory of administration (Katz & Kahn, 1966), the current study argues that a firm may harness innovative ideas from external collaborators within an industry. Thus, intellectual capital development could be harnessed through learning and engagements with partners, competitors and regulators.

Organisational learning (OL) is a multifaceted subject matter underpinned by cultural contexts, and may directly influence a firm's human capital, effectiveness and capacity to compete in an industry (Muniz, 2019).

Organisational learning may manifest through variety of behavioural patterns that can be explained by cultural dynamics (Patel, 2017). Organisational learning relates to quite a number of issues, spanning from learning orientation, learning processes, organisational learning capability, and learning organisations (Zgrzywa-Ziemak & Walecka-Jankowska, 2021). Henceforward, organisational learning is thought out as a major success in the appreciation of business and management philosophy (Garratt, 1999).

Additionally, Garratt (1999) asserts that "as our world becomes more complex and uncertain it is essential that the aptitude of both individuals and business entities to learn on a regular basis and meticulously from their work environment must be invigorated so that they may be able to adapt promptly and unceasingly to their ever-changing environments" (p. 203). The relevance of organisational learning cannot be overemphasized as it has been established as major contributor to firms' productivity, innovative capability, new product development, as well as, human capital growth (Muniz, 2019). The author added that organisational learning is grounded in knowledge sharing among a firm's employees, and may span from implicit to explicit formats. In furtherance, organisational learning arouses mutual cooperation and ignites the spirit of teamwork. This may be evident in continual employee interactions in problem solving processes inspired by learning. Thus, organisational learning is a unique strategic fit that helps organisations to scan and understand the dynamics of their internal and external business environments (Darwish et al., 2018; Zhu et al., 2018).

In quest to strengthen the importance of organisational learning in this thesis, it is imperative to reiterate conclusions of most organisational learning

researchers who argue that organisational learning theories are progressively fundamental and essential to firm success in a rapidly evolving and scientifically driven business environment (Reese, 2019). In an editorial work by Huber (2019), the author states that "business entities must be ready today, and for the future so that they can swiftly and effectually evaluate the necessity for survival through enabling actions, the author adds that in doing this, firms must proactively take part in intelligence gathering through interactions with ecosystem partners" (p. 4). On this note, the thesis delves into understanding the constitution and effectiveness of knowledge gathering through business ecosystem.

Business ecosystem learning has been pivotal in the creation of novel ideas and their subsequent implementation since the beginning of open innovation research in the last two decades. The subject matter has been employed by organisations seeking to have a better understanding of industry specific best practices that yield optimum efficiency. The business ecosystem provides a knowledge exchange abstract platform for firms and their partners such as labour unions, suppliers, academia and customers to pursue shared purposes and mutual benefits (Chesbrough & Bogers, 2014; Liu et al., 2019).

As the cost of organising formal training continue to rise, small and medium organisations are increasingly finding it difficult to pursue opportunities for growth (Benassi et al., 2022; OECD, 2019). A collaborated business ecosystem with loosely synchronized development and experimentation may help absorb uncertainties in a much effective way other than heeding to traditional hierarchies. Further, the business ecosystem is characterised by interdependence, linkages, self-interest and value co-creation

among industry players (Nambisan & Baron, 2013), hence creates a good platform to harness opportunities for growth pursuit by firms. Owing to the relevance of business ecosystem learning in contemporary business operations, the thesis explores its strength in building firms' innovation capability.

Further, the study is undertaken within the domain of public-private exchanges, hence, fair treatment by authorising bodies (government) and key ecosystem actors are critical to how private firms perceive and embrace an implemented policy, bringing to light the concept of procedural fairness. Consequently, this thesis employs the stimulus-organism-response theory which draws its theoretical foundation from the open system model (internal-external-behaviour modification) to explain the influence of organisational culture (organism) and learning (stimulus) on innovative capability (response) of freight firms. The thesis further examined relational embeddedness of collaborators within the maritime industry, as this is a precondition for effective learning and behaviour modification (Melis et al., 2023; Yan et al., 2023). Thus, the study explores the role of perception of fairness in explaining the influence of business ecosystem learning in building innovative capability among freight firms.

In contemporary business settings, organisational justice/fairness has gained some considerable research attention among management scholars and practitioners due to its propensity to promote positive behaviour of workers (Kim & Beehr, 2020). The concept refers to how decision-making entities such as authorising institutions, managers and supervisors discharge responsibilities and duties devoid of biases. Decision-making processes in line with duty performance are vital to employees; these processes affect routine interactions

or exchanges and are crucial in delivering organisational goals (Nathan et al., 2020). Employees' perception of procedural fairness relates to the certainty that decision-making policies are crystal clear and are applied devoid of personal or group preferences (Cropanzano et al., 2002; De Clercq et al., 2020).

Drawing on the intellectual foundation of the agency theory (Jensen & Meckling, 1976), this thesis argues that administrators of seaports are prone to self-seeking behaviour and may consequently compromise laid down procedures due to personal gains. The current study argues that perception of fairness is mutually beneficial to both government agents and freight firms in the advancement of efficient management of seaports in Ghana. In the light of cognitive assumptions of the fairness heuristics theory (Tyler & Lind, 1992) within the work environment, procedural fairness encompasses consistency, precision, inclusiveness and demand for ethical uprightness (Pathardikar et al., 2022; Roberson & Stewart, 2006).

The study also projects the relevance of bounded rationality in procedural engagements among collaborators (Hevi et al., 2023). Thus, the study emphasizes the significance on perception of cargo and freight customers, as well as the dutiful and fair conduct of government agents. It is noteworthy to state that perception of process fairness resonates with judgment of legitimacy of an authorising entity, hence may affect other outcomes such as amenableness, acceptance of decisions and stakeholder confidence (Van de Graaf, 2021).

Also, the rapid evolution and complexity of business trends across all spectrum of industries have led to more academic and practitioner attention on the subject matter of innovation, which has been touted as a major determinant of firms' long-term success (Darwish et al., 2018; Trantopoulos et al., 2017).

Within management and organisational research, there is a unanimity among scholars that innovation is a comprehensive concept which comprises numerous facets, for instance, products, processes and human capital management practices (Boon et al., 2019; Sanders & Lin, 2016).

Drawing on the S-O-R theory (Mehrabian & Russell, 1974) (grounded in the open system theory), the thesis explains relevance of building innovative capability among freight firms as a consequence of internal and external environmental determining factors. In the study, innovative capability is thought-out as a major determinant of firm sustainability, therefore the quest to understand elements which can meaningfully contribute to building innovative capabilities have assumed a great dimension in management studies (Colakoglu et al., 2019; Wright & Ulrich, 2017). Thus, innovation is a vital component through which organisations can enhance growth potentials, deliver business value and gain competitive edge (Damanpour, 1991; Mendoza-Silva, 2020).

In the last decade, more research attention has been given by scholars and practitioners on the relevance of innovation capability (Samson et al., 2017). Innovation capacity is a term that describes the capability of firms to consistently use knowledge to advance product development, functional procedures, and system designs for the purposes of firm effectiveness, as well as, stakeholder satisfaction (Lawson & Samson, 2001). Thus, innovation capability is the aggregation of technical skills and competencies harnessed by firms as a result of the implementation of variety of advance technologies that are in existence or novel to a specific industry (Haider & Mishra, 2021). Developing capabilities to innovate is fundamental to the survival of business

entities, hence, Hamel (2012) points out that firms owe their existence, progressiveness, happiness and future to innovation.

In summary, this study is unique because it explores the inferential relationships among internal and external environmental influences that could stimulate or hamper digital transformation (innovative capability) of freight firms within the maritime industry. Thus, the study further explores the effect of firm culture and innovative capability development among Ghanaian freight firms with undertones of business ecosystem learning and procedural fairness. Research in this field of managerial studies, most often than not, have investigated this concept separately (Isensee et al., 2020; Rezai et al., 2016).

Statement of the Problem

Since the advent of COVID-19 pandemic, the United Nations Conference on Trade and Development (UNCTAD) projects that Africa's contribution to global maritime trade, in terms of inbounds and out-bounds have declined by 7.6% in 2020 (UNCTAD, 2023). Although, the report adds that there was quite a considerable improvement in trade volumes in 2021 with international cargo services, the improvement has been described as uneven with Africa still seen as under pressure. Africa's contribution to international containerised trade lingered relatively low in 2020, accounting for only 3.9% of port traffic across the globe. A major hindrance accounting for this relatively poor port traffic statistics is process delays.

According to UNCTAD (2023) comparative analysis on process time efficiencies reveal that seaports in Africa have the longest periods of processing. The report noted that seaports in Nigeria, Ghana, Sudan and Tanzania have the worse operational efficiency in the world. This cargo process delay challenge

has necessitated the adoption of several digital tools across seaports in Africa. Nevertheless, digital transformation comes with its own concomitant problems, particularly with industry collaborators where resource constrains significantly hinders technology adoption.

Due to resource and competency constrains, freight firms in developing countries such as Ghana have found it difficult to keep up pace with digital transformation in the maritime industry. It is noteworthy to add that seaport operational activities have significantly been migrated onto technology enhanced systems, prompting a change in routine freight and cargo operations. Indeed, several freight firms have been taken aback by the scope and speed of digital transformation within the maritime industry. This study draws on the challenges identified by planned change experts. For example, Freeman and Perez (1988) who developed the neo-Schumpeterian framework and highlight that building innovative capability is complex because any novel idea has its unique dynamics and associated implications. The scholars add that incremental variations that take place on routine operations of a firm may result in only minimal procedural improvements, whereas radical changes may completely alter an operational process.

It is noteworthy to state that digital transformation is commonly associated with ununiformed changes (Kaplinsky & Kraemer-Mbula, 2022). The authors add that digital transformation is characterised by several related actors, and generally takes the form of both incremental and radical innovations. Consequently, the diffusion of technology-enhanced innovative offerings is crucial that they have the propensity to alter every sector of any given economy. Additionally, these technology-enhanced innovations provoke instantaneous

responses from all major players, such as private enterprises, government agencies, and the populace.

Also, this thesis deploys the techno-economic theory (Solomou, 2008) cognitive assumptions to explain several infrastructural predicaments faced by most developing countries such as Ghana. The theory asserts that developing nations struggle to build structures such as digital workstations that help in sustainable development. The theory adds that the incapacity of firms to embrace these fast-paced digital transformations may result in disruptive and inefficient adoption of digital technologies. Furthermore, this thesis is in response to the call by organisational management researchers to explore dynamics associated with open innovation, as it is inimical to the sustainable growth of firms.

Although, several empirical studies have projected the relevance of open innovation, which thrives on informal learning and engagements. Notwithstanding, some scholars have bemoaned the dire challenges firms could face due to open innovation (Chaudhary et al., 2022; Stefan et al., 2022). The deployment of open innovation by a firm means there are no boundaries that guide information flow (Madanaguli et al., 2023). Thus, information and the locus of control of interactions may drift off the firm's mission. As a result, a firm may lose its inimitable and rare knowledge that could help it gain competitive edge. The authors claim that though past studies have established the relevance of open innovation in organisational literature, the studies failed to explore the associated risks that firms may face due to their knowledge exposure. Consequently, some scholars opine that firms ought to identify and

build value systems and normative assumptions that may help them to remain focused on their core mandates.

The current study argues that although organisational culture has been established as having positive effect on innovative capabilities (Daronco et al., 2023; Naveed et al., 2022). There are insufficient empirical evidences that explored effect of internal (dimensions of culture) and external (business ecosystem learning) factors that influence the building of firms' innovative capabilities.

Finally, premised on the contemporary issues relating to the dark side of open innovation, this thesis investigates challenges that impede relational embeddedness in the service engagements processes (Nicolaisen & Hansen, 2023). The thesis argues that limited capacity to build an ambidexterity firm culture has stagnated innovation adoption at several seaports including Ghana's seaports (Wang et al., 2023). This thesis further highlights the need to explore distrust and corruption related activities that have the propensity to stifle learning through social networks. Therefore, this thesis is an attempt to identify specific value systems that promote or impede innovative capacity building among freight forwarding firms in Ghana.

Aim of the research

On the basis of the discussions advanced, this thesis investigates dimensions of organisational culture, business ecosystem learning and procedural fairness on innovative capability building among freight forwarding firms in Ghana. Accordingly, to the research aim drawn above, the study extrapolated the following objectives.

Research Objectives

1. To examine the effect of dimensions of organisational culture (clan, adhocracy, market and hierarchy) on building innovative capability among freight forwarding firms in Ghana.
2. To examine the effect of business ecosystem learning on building innovative capability among freight forwarding firms in Ghana.
3. To examine the mediating effect of business ecosystem learning between dimensions of organisational culture (clan, adhocracy, market and hierarchy) and business ecosystem learning among freight forwarding firms in Ghana.
4. To examine the moderating effect of perception of procedural fairness between business ecosystem learning and innovative capability among freight forwarding firms in Ghana.

Research Questions

1. Do dimensions of organisational culture (clan, adhocracy, market and hierarchy) affect the development of innovative capability among freight forwarding firms in Ghana?
2. Do business ecosystem learning affect the development of innovative capability among freight forwarding firms in Ghana?
3. What is the mediating effect of business ecosystem learning between dimensions of organisational culture (clan, adhocracy, market and hierarchy) and development of innovative capability among freight forwarding firms in Ghana?

4. What is the moderating effect of perception of procedural fairness between business ecosystem learning and development of innovative capability among freight forwarding firms in Ghana?

Research Hypotheses

Research Objective 1

H_1: Clan culture has a positive effect business ecosystem learning,

H_2: Adhocracy culture has a positive effect business ecosystem learning,

H_3: Market culture has a positive effect business ecosystem learning,

H_4: Hierarchy culture has a negative effect business ecosystem learning,

Research Objective 2

H_5: Business ecosystem learning has a positive effect firms' innovation capability,

Research Objective 3

H_6: Business ecosystem learning mediates between clan culture and development of innovative capability,

H_7: Business ecosystem learning mediates between adhocracy culture and development of innovative capability,

H_8: Business ecosystem learning mediates between market culture and development of innovative capability,

H_9: Business ecosystem learning mediates between hierarchy culture and development of innovative capability,

Research Objective 4

H_{10}: Perception of procedural fairness moderates between business ecosystem learning and the development of firms' innovative capability.

Significance of the Study

The relevance of this study is evident in diverse ways. First, the current study delivers practical insights to freight firm owners and managers on the development of innovative capabilities through the role of aligning organisational culture, business ecosystem learning and perception of procedural fairness (Ismail & Umar Baki, 2017). Thus, the study jointly projects the role of internal (organisational culture) and external (business ecosystem learning and perception of procedural fairness) environmental factors in enhancing the capacity of firms to innovate.

Second, the deployment of policy initiatives that encourage digital transformation in the maritime transport industry could affect the operations of freight firms. This study offers an understanding into cultures that stimulate open innovation, while simultaneous assessing cultures that impede planned change among collaborators at Ghana's seaports. In addition, experts and scholars alike should note that by the scope and dynamics of digital transformation, freight firms may have to rely on internally built mechanisms to spontaneously respond to fast-paced digital evolution.

Also, the thesis highpoints the prominence of perception in the functional processes at Ghana's seaports. Thus, the study projects the role of institutional credibility in delivering efficient operational systems at Ghana' seaports. The study asserts that utilities derived by freight firms from engaging in informal interactions could lead to the development of idea incubators for firm growth. Additionally, this is an awakening call to governmental agencies at Ghana's seaports of the relevance of maintaining integrity in their routine operations.

Furthermore, this research solidifies the crux of deploying perception of fairness to explain relationship between social network learning and agility among freight forwarding firms at Ghana seaports. The study posits that owners and managers of freight firms may obtain accurate feedback through relational embeddedness as stakeholder engagements broadens. The study highlights the need for managers to consider employee voice as a reflection of their vigor to attain the desired outcomes (Cui et al., 2021). Once this organisational climate is created, learning and knowledge sharing is ignited for the purposes of innovative capacity building.

Further, this study reinforces the assertion that, maintaining positive behavioural attitudes towards innovation is premised on a firm's overt and covert resources and competencies. The critical assessment of the study variables can unearth the areas that require planned change in order to promote innovative capability development. More so, this thesis would be useful to researchers, sector agencies, port authorities, GIFF executives and regulators in the understanding of public-private partnerships. In all, this thesis is unique, original, and integrated with empirical backings that ignite significant contribution to knowledge development.

Additionally, as Ghana hosts African Continental Free Trade Area (AfCFTA) Secretariat, a regional body mandated to pursue African Union's Agenda 2063. AfCFTA is a regional bloc which is expected to offer opportunities to over 1.2 billion consumers, business owners and investors in Africa and beyond. The findings of the study will therefore be an additional source of scientific information for both indigenous and multinational firms with intention of investing in Ghana. This assertion is corroborated by Murray

and Chao (2005), who posited that multinational business entities should obtain local market intelligence before exploring opportunities in foreign markets.

On the bases of the aforementioned assertions, the researcher projects outcomes of this study to be a reference point for further exploration and/or examination of the phenomenon across other industries. The outcomes of this study may additionally, ignite further research interests that are likely to span across the country particularly in the context of policy reforms and implementation strategies.

Delimitation of the Study

There are two main categories of freight forwarding firms in Ghana. However, this thesis focuses on only registered corporate freight forwarding firms in Ghana. Furthermore, the employees sampled comprise supervisors and operational officers. Accordingly, this thesis pays particular attention to supervisors and operational officers of freight forwarding firms located the 5 district councils in Ghana. The constructs deployed in the study were organisational culture; business ecosystem learning, perception of procedural fairness and innovative capability. Nevertheless, organisational culture was explored from the dimensions of clan, adhocracy, market and hierarchy cultures. In the study innovative capability was used as the target endogenous latent variable, while the exogenous latent variable was dimensions of organisational culture.

Furthermore, business ecosystem learning was employed by the study as a mediator, while the perception of procedural fairness functioned as moderators. As a mediator, business ecosystem learning performed two roles, thus it served as both exogenous latent construct to innovative capability and

endogenous latent construct to dimensions of organisational culture. Finally, this thesis is grounded the research philosophical paradigm of positivism, which states that truth is objective.

Limitations of the Study

Despite several pertinent recommendations made in this paper, there are few methodological limitations necessitating the need for further investigation of the phenomenon. By this assertion, it may be inferred that in every empirical study, the methods employed may pose some level of weaknesses, which may have implications on the findings of the thesis. Also, scientific inquirers must be conscious of probable boundaries of their empirical works and in all conscience share them with prospective readers.

This empirical study deployed the quantitative research approach and, accordingly any misrepresentation of the target population could pose significant errors in the study's findings that may be misleading. The scientific inquirer resolved this potential drawback my certifying that only respondents who were deemed legitimate contributors were captured in the study. Also, respondents' opinions captured in the dataset emerged from self-reported inventories. Although, the self-reported inventories are established in literature, contextual dynamics of the instruments may pose some analytical inconsistencies. The researcher addressed this challenge by pretesting the research instrument for internal consistency of loaded items on each construct. The study also performed confirmatory factor analysis to authenticate the validity of the questionnaire deployed.

Further, the study is restricted in terms of generalisation of its outcomes to cover freight forwarding firms in Ghana. Consequently, there is a need to be

cautious in the interpretation of the study findings. Also, generalisation of the outcomes may only be applicable to corporate freight forwarding firms and not individual registered freight forwarding firms in Ghana. Furthermore, the architecture of the research is grounded in cross-sectional design. Although it is an efficient study design, it is unsuccessful in taking into account varying dynamics of events and corresponding variations in respondents' opinions over a long period. In addition, the current study illuminates on theoretical concepts of organisational culture, business ecosystem learning, procedural fairness and innovative capability through S-O-R and fairness heuristic theoretical lenses. Nevertheless, the thesis predominantly concentrated on inferential analysis of the study variables. Consequently, the empirical evidence was restricted in delivering narrations that give in-depth understanding of marine transport operational dynamics.

Definition of Terms

This section defined and explained terms, key words and variables as explored within the context of the current thesis. Terms, key words and concepts explained under this section were freight forwarders; policy implementation; organisational culture; organisational learning; and innovation capability.

Freight forwarder: They are principally involved in consolidating containerised cargo from SME size and complete business transactions in a more economical and efficient ways (Huang et al., 2019). Freight forwarders discharge a valuable role in shipping and trade process in order to complete a chain of economic activities that render support to SMEs with varying logistics solutions (Lloyd's List, 2014).

Perception of Procedural Fairness: It refers to what is considered by freight forwarders as just; thus, is free from prejudice and favouritism by key stakeholders such ports authorities, revenue authorities and labour unions in discharge of work routines and information sharing in light of the PPCS policy at Ghana's Ports. The concept was deployed as a moderator in the thesis.

Organisational Culture: In this thesis, organisational culture is used in line with Cameron and Quinn (1999) organisational culture typology, known as 'Competing Values Framework' (CVF). From the CVF, culture is sub-classified into four dimensions, which is clan, hierarchical, market and adhocracy. Each cultural sub-classification is traceable to varying organisational elements and helps in the formation of coping strategies for adaptation in times of new policy directions. The concept was deployed as an independent variable in the study.

Business Ecosystem learning: Organisational learning was explored form the perspective of business ecosystem learning. Ecosystem is an organic communal physical space that promotes interactions among organisms through series of nodes (Haghshenas & Richards, 2016). In organisational literature context, it includes persons, bodies, activities, conditions and interactions in an organisation's environment. The concept was deployed as a mediator in the study.

Innovative capability: It refers to all resources of freight forwarding firms that are fundamental to gaining and sustaining competitive edge in the shipping and logistics industry (Aljanabi, 2020; Ferreira & Coelho, 2020). Innovation capability empowers organisations to apply essential and suitable technologies in the development of new products, processes, markets, as well as, firm

capacity to thrive in competitive industries (Rajapathirana & Hui, 2018). The concept was deployed as the dependent variable in the study.

Organisation of the Study

To ensure clarity, the content of this study was organised into six chapters. A glimpse of each chapter highlights the following:

The thesis is an investigation of the relationships that exists between policy implementation and organisational culture of freight forwarding firms in Ghana. Chapter one of the thesis provides vivid description of the research background and context of the study. It pinpoints and clarifies aspects of policy implementation which have not received much scholarly attention. In furtherance, gaps associated with policy implementation and organisational culture literature were addressed. Also, the thesis' contributions, scope and justification of context of the study were discussed. Finally, the chapter projects the research aim, objectives questions and identifies research methodological concerns of the study.

The second chapter addresses theoretical gaps through an extensive review of literature on the components and approaches of procedural fairness, organisational learning, innovative capability development as well as, organisational culture typologies. Also, the chapter presents the conceptual framework of the study. In addition, relevant transmission theories such as The Fairness Heuristic Theory [FHT] and Stimulus-Organism-Response Theory [S-O-R] were explored through the researcher's analytical lenses to study the relationships among the study variables. The importance of these theories was explored in-depth in the chapter.

The third chapter projects the methodological map adopted and the reasons for the choice. These choices include philosophical world views, designs adopted, and strategies of inquiry. The study draws its philosophical strength from positivism. In furtherance, the chapter illustrates the methods of data collection and analyses. Accordingly, the study adopts a quantitative approach; henceforward, a quantitative survey design was used to investigate statistical inferences among the study variables. The chapter further discussed reasons that informed the choice of research design, participants employed for the study, sampling technique and sample size, data collection instruments and data collection procedure.

The forth chapter presents results of quantitative data collected from respondents of the study. Thus, results obtained from statistical examination of study hypotheses and inferences drawn were highlighted. These examinations were done to fill the gaps acknowledged in literature. The chapter further details the discussions and interpretations of the findings obtained from quantitative analyses of the study objectives.

The fifth chapter is the concluding chapter and thus deliberates on strategic findings of the study. More so, the chapter summarises and concludes on major outcomes that have arisen through analysed quantitative data, whilst making recommendations for practice. The chapter concludes by pointing out the study limitations, whilst making some recommendations for future research.

Chapter Summary

The first chapter gave a detailed background of this thesis and briefly discussed the variables of interest. Further, the chapter highlighted statement of the problem and gaps in knowledge on procedural fairness, organisational

culture, organisational learning and innovative capability, and also highlighted relevance and contributions of this research. Then a discussion about scope of the study within the Ghanaian context was explored. The chapter then builds research aim, objectives, questions and hypotheses to fill the identified gaps in policy and organisational culture and related fields' literature. Finally, importance and limitations of the study was articulated.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter entails the literature review of this thesis. Literature review involves exploring in-depth knowledge to provide a workable foundation for a study. Literature pertaining to the subject matter was explored chronologically. Specifically, theoretical foundations of the transmission theories employed in the study (stimulus-organism-response theory and fairness heuristic theory) were deeply explored so as to have a good appreciation of the phenomenon dynamics. The chapter outlines theoretical, empirical and conceptual issues that have received some research interest, however has substantial gaps that needs scientific inquiry. Thus, the chapter throws lights on what has been learnt, and what needs to be learnt on the phenomenon.

This study assessed the mediating role of business ecosystem learning between dimensions of organisational culture and innovative capability development among freight forwarding firms in Ghana. Further, the study explored moderating role of perception of procedural fairness between business ecosystem learning and innovative capability among freight forwarding firm in Ghana. The literature review engages readers on contemporary issues in organisational culture and how they affect the development of innovative capability. Also, the literature review highlights other concepts such as business ecosystem learning and procedural fairness which have the propensity to influence organisational culture and its concomitant issues such as innovative capability.

Theoretical Review

The Stimulus-Organism-Response Theory (S-O-R)

The current research is grounded in the S-O-R framework advanced by Mehrabian and Russell (1974). The S-O-R model was originally developed and used in conservational psychology (Tang et al., 2015). However, the theory has gained attention in other fields overtime, notable among them are online marketing, consumer behaviour and brand loyalty (Jeong et al., 2020; Zhiyuan et al., 2021). Mehrabian and Russell (1974) asserts that the S-O-R framework helps elucidate on means by which organisms facilitate connections between stimulation and response through various mechanisms that stimulate a person's cognitive and emotional status. More specifically, the S-O-R theory is grounded on three key elements, that is, stimulus, organism and response (Tang et al., 2015).

Stimulus is a description of an influence element in an external environment that has the propensity to change a person's intellectual or cognitive state (Lin & Lo, 2016). The S-O-R framework, describes "stimuli" as situation specific elements that influence a person's reasoning and affective responses (Eroglu et al., 2001). Further, the framework describes "organisms" as internal elements which cause variations in a person's affective and intellectual conditions owing to some intriguing factors (Zhiyuan et al., 2021). Lastly, 'response' in the model reflects a person's attitude and its corresponding effect on behaviour (Mehrabian & Russell, 1974).

In the field of behavioural science, the S-O-R model may be useful in explaining the concept of personality. Nolan and Garavan (2016) posits that the 'S-O-R' model helps in understanding how an environment influences and

individual's behaviour. Thus, actors and conditions present within a given business ecosystem could affect an individual's psychological state with cascading effects, and may prompt the individual to produce corresponding behavioural responses. The model may be conceptualised as environment-traits-interactions (Buxbaum, 2016). Relationship among elements of the model describes the process by which environmental factors influence personality traits, which intend affect human interactions within the business ecosystem.

Within context, the study operationalises 'stimuli' as business ecosystem learning. 'Organisms' refers to organisational oriented culture, which defines personality traits. Lastly, firms' innovation capability denotes firms' interactivity with business ecosystem in motion through idea generation, incubation and implementation. In summary, empirical studies in organisational literature have predominantly been explained by organisational management theories, however not much is known about how other theories in related fields such as marketing could help address organisational concerns (Kim et al., 2021).

In the maritime industry, institutional cultures have shaped the deployment of technology-enhanced work designs that promote process efficiency in particular. A number of seaport operations have been digitalized to ensure speedy cargo and freight transitions (Minh & Noi, 2023; Nguyen et al., 2023). Consequently, freight forwarding firms have to rapidly adapt to digital transformation in order to stay afloat with contemporary dynamics. These transformational processes have largely been influenced by the level of firm cultures that promote learning, dynamism and creativity (Kuo et al., 2022). The current study argues that culture is an antecedent of innovative capability among firms. The study draws on S-O-R theory to explain links between

organisational culture and innovative capability. S-O-R-T has been extensively deployed in organisational literature to explain links between firm culture and innovation. The theory is commonly deployed to explain organisational value systems that thrive on development of skills and competences through a firm's external engagements. Also, S-O-R theory posits that employee behaviour modification is dependent on norms, symbols and values developed by firms over time.

The current study argues that development of innovative capability is a consequence of firm value systems that are adaptive in nature. The study makes empirical reference to a study conducted by (Scaliza et al., 2022), where a positive link was established between dimensions of organisational culture and open innovation. In another study Achdiat et al. (2023) draws positive association between dimensions of organisational culture and innovation through a review of 42 empirical studies. Therefore, the current thesis extends the S-O-R theory to explain the effect of dimensions of organisational culture and innovation capability among firms.

Additionally, the theory was deployed in the study to explain the mediating role of business ecosystem learning between dimensions of organisational culture and innovative capability among freight forwarding firms in Ghana. Business ecosystem learning (BEL) is a process of knowledge acquisition through relational embeddedness within a firm's industry (Boxu et al., 2022; Zhang et al., 2022). BEL is a concept that thrives on both informal and formal learning. Despite its theoretical grounding, the concept has not received much research attention (Huber, 2019). Consequently, the examination of BEL as a mediating variable in organisational literature is limited.

Notwithstanding this gap in literature, closely related terms to BEL such as relational embeddedness have been explored as a mediator in organisational studies. For example, Ariadi et al. (2021) in an empirical paper concludes that relational embeddedness through strategic supplier and customer integration mediates lean supply chain strategies and firm performance. In the current study, BEL is contextualised as both informal and formal learning that takes place between freight forwarding firms, governmental agencies in-charge of freight and cargo, as well as, regulatory actors in the maritime industry.

The study draws on the S-O-R theory to explain links between business ecosystem learning, dimensions of organisational culture and innovative capability. The theory posits that learning from industry actors in a firm's ecosystem is a prerequisite for the development of emotional and intellectual capabilities (Olfat et al., 2022).

The Fairness Heuristic Theory (FHT)

To enhance efficiency at seaports, a credible governance system that ensures fairness must be built. Promotion of sustainable seaports through digitalisation and clean energy usage have become a major design component in seaport system administration across the globe (Matt et al., 2023). Accordingly, limitations of traditional governance models have significantly evolved through technology-enhanced port functionalities that deliver fast and efficient berthing, as well as, cargo and freight transitions. Yet, some scholars argue that corruption and distrust between governmental agencies and freight forwarders inadvertently weaken efficiency of digital work systems. For example, in a study undertaken by Okpara and Enyioko (2022) to unravel waning number of vessels calling at Nigeria's seaports in comparison to other

African countries. The researchers' unearthed challenges such as poorly configured computerized database systems and technological infrastructure. Further, the study highlights corruption, governmental interferences and disregard for regulations in seaport operations by port authorities. Consequently, it has become necessary to integrate procedural fairness into the dealings of government agents performing operational functions at seaports.

Colquitt (2001) describes procedural fairness (PF) as the evenhandedness associated with processes that guide implementation of decisions and assignment of outcomes. It is observed that corruption and cheating often increases when dishonest behaviour are less detected in an institution's operations (Jacquemet et al., 2020). Granting, there is some appreciable scholarly interest in procedural fairness in recent years, however, several seaports are yet to harness its benefits in addressing digitalized work system design limitations (Okpara & Enyioko, 2022). Accordingly, the current study draws on the fairness heuristics theory (FHT) to explain role of procedural fairness in improving process efficiency at seaports.

The Fairness Heuristic Theory (FHT) was propounded by Tyler and Lind (1992). FHT involves people's perception of procedural fairness in their work environment (Cropanzano et al., 2001). More specifically, the term heuristic is used to describe the simplification of a decision-making process in response to an otherwise complex business situation (Shah & Oppenheimer, 2008). Historically, FHT is an upgrade of the relational model and group-value model (Tyler & Lind, 1992). With regards to the relational model, the scholars hypothesised that the more workers develop a sense of identity with a firm, and the higher the nondiscriminatory treatment meted out by a firm's managerial

team, workers disposition to function effectively increases. Similarly, the group-value model posits that individuals interpret nondiscriminatory treatment and procedures accorded to them by a group as evidence of respect and appreciation.

FHT has been explored in variety of fields, such as social justice, digital transformation, marketing, innovation and criminology (Belarmino et al., 2020; McLean, 2020; Solomon & Chenane, 2021; Song et al., 2021). Heuristics are decision-making models that manifest in business situations of restricted facts and process capabilities, and these models are grounded in experimental psychological studies that are premised on bounded rationality (March, 1978). FHT has evolved over the years but its empirical significance commenced in the 1970s in the works of Kahneman and Tversky. Furthermore, Gigerenzer and colleagues also made significant contributions to the theory in the 1990s when they attempted to influence literature on management studies (Guercini & Milanesi, 2020).

In the last decade, studies in strategic leadership and private business enterprises have laid credence on the relevance of heuristics. Most of these studies made specific allusion to the practices that affect private business enterprises (Artinger et al., 2015; Guercini, 2019). In all these empirical studies, it can be inferred that heuristic literature is grounded in cognitive science, and more specifically, heuristics are targeted at providing operative resolutions to multifarious problems (Katsikopoulos & Gigerenzer, 2013).

The FHT postulates that people face fundamental social dilemma whiles having collaborative exchanges with persons in position of authority (Lind, 2001). These collaborative exchanges are intended to produce constructive

outcomes; however, they can also be counterproductive. The FHT argues that people formulate, and consequently use perceived overall justice system within an establishment as a heuristic in the determination of whether persons in authority can be trusted for the purposes of cooperation. Fundamental to FHT is the creation of evenhandedness verdicts that are episodic, thus, these verdicts are employed more recurrently than they are subjected to revision (Lind, 2001). Hence, fairness heuristic theory posits that individual's employ judgment of fairness as a heuristic blueprint for decision-making, and determination of their appropriate level of subjective investment and participation in groups, organisations (Van den Bos et al., 2001).

Furthermore, FHT argues that fairness heuristic is initiated when people anticipate considerable interactions with an individual or group, hence may be opened up for exploitation (Lind et al., 2001). Therefore, when fairness heuristic processes are employed, an individual may use facts from multiplicity of sources, for example, relational familiarities of 'identity-enhancing' or 'identity-diminishing' treatments; features of official regulations and the dissemination of results to entities within a group to develop a comprehensive impression of treatment meted to them. It is imperative to state that once an individual builds a fair state-of-mind, the said individual will then employ this fairness judgment in decision-making with regards to respect of authorities. In context, when freight forwarders build a state-of-mind of fairness with regards to the processes that underline the paperless port clearance system policy, then key issues such as acceptance of compromises in the resolution of disputes, reposing trust in authorities, as well as, respect for competitive rivalry is assured.

Summary of the Theories Adopted

Two main theories that informed this thesis were examined. The role of Stimulus Organism Response Theory (S-O-R) in explaining firms' capacity to innovate through business ecosystem learning and organisational culture was explored. Further, the Fairness Heuristic Theory (FHT) was employed to throw more light on perception of procedural fairness in the discharge of responsibilities by persons in authority. This thesis conjectures that both theories primarily explain the level of acceptance of a new public policy among private business enterprises. In context, the higher freight forwarding firms perceive administrative authorities work process as fair, the higher their acceptance of the paperless port clearance system policy.

Review of Related Concepts

This section reviewed related literature, focusing on the relationship among procedural fairness, organisational culture, business ecosystem learning and innovation capability, separately and jointly. More specifically, the study is centered on procedural fairness of policy implementation, organisational culture from the competitive value framework dimensions, organisational learning from the perspective of ecosystem, as well as, innovation capability of firms within changing dynamics of public policy reviews.

Perception of Procedural Fairness

The moderating role of perception of procedural fairness in this study projects the relevance of evenhandedness in the administration of seaport systems in Ghana. As seaports in Ghana continue to enact policies that promote digital transformation for efficiency, the administration of such technology-enhanced seaport designs must be perceived as fair by collaborators such as

freight forwarding firms. Thomas R. Dye describes policy implementation as a process that encompasses several activities and stages premeditated to advance an enacted piece of legislation. These undertakings consist of the creation of novelty among firms, departments and agencies (Dye, 2005). In essence, policy implementation serves as the bridge that allows goals of a policy to be realised as outcomes of governmental activity. Implementation encompasses all operations related to the establishment of the paperless port clearance system in Ghana, including infrastructure development, budgeting, and essential institutional reforms. It is essential that transportation and logistics policies rolled out at the ports appropriately consider the analysis of political and social acceptability and sensibility of experts, journalists, politicians and citizens in relation to policy goals before, during and after the policy implementation.

In this study, an assessment of perceived fairness of the paperless policy was carried out to establish how impartiality strengthens the relationship between business ecosystem learning and innovative capital development. Procedural fairness is a concept which is enshrined in organisational justice. There are quite a number of procedural fairness definitions in organisational literature. Lind and Tyler (1988) assert that it encompasses verdicts about the impartiality of a procedure by which policy pronouncements are made. The current study adopts the definition by Magalhães (2017) who asserts that procedural fairness is the implementation of guidelines and processes that permit real or perceived handling of persons by governing establishments that can be judged as transparent, impartial and the right to air ones views. Hence, the current study stresses on perception of fairness in approaches employed by authorising institutions when executing tasks or responsibilities (Colquitt et al.,

2001). There are six elements that constitute procedural fairness, namely; regularity, correctness, ethicality, representativeness, predisposition suppression, and correct-ability (Leventhal, 1980).

Historically, studies on procedural fairness in social psychology dates back to the works of Thibaut and Walker (1975). The scholars demonstrated that a major determinant of effective decision-making is perceived fairness of procedures executed in the build-up to the decision itself. Thus, the study established procedural fairness as vital to outcome satisfaction (Martin et al., 2020). The current thesis, employs perception of procedural fairness as a mediator to assess the relationship between organisational culture and innovation capability of freight forwarding firms with regards to the paperless port clearance system policy implemented at Ghana's ports. By employing FHT, the study seeks to explain perception of absolute fairness regarding seaport operations. FHT posits that stakeholders such as workers of business entities promptly form cognitive judgments about impartiality in service delivery processes based on interactive exchanges (Lazauskaite-Zabielske et al., 2023). These assumptions of impartiality serve as grounds for developing mental shortcuts that provide guidance on behavioural patterns and the control of emotional involvement in related embeddedness. On the bases of these arguments advanced, the current study argues that interpretation of fairness is influenced by a person's level of intellectual capacity which is developed through learning cultures. This study argues that perceived procedural fairness influences ecosystem learning for the development of innovative capabilities.

Organisational Culture

Various scholars have defined culture in a number of ways (Martin, 2001; Warrick et al., 2016). Culture is seen as the main belief systems, value systems, attitudes, behaviour, and practices that is traceable to a group of persons (Warrick, 2015). When defining organisational culture what is of topmost importance is the term 'group' to denote social units of varying scopes (Schein, 1992). As a result, the word "group" can apply to a whole organisation or a small number of persons, such as a football team, students, family or country. That is to say any group of people, regardless of size, is likely to have its own culture. Scholars frequently deploy the term "organisational culture" to denote the manner in which things are done collectively by a group of people who work together (Warrick, 2017).

Organisational culture, in practical terms, relates to people's working environment and the influence it has on how they think, behave, and their daily experiences on the job (Warrick et al., 2016). Culture may vary within and/or outside the organisation. An organisation's culture may either bring out the best in people or produce wonderful working conditions, or it can bring out the worst in people and generate unfriendly, stressful, and dysfunctional workplaces.

The term organisational culture (OC) is used to describe a firm's value systems that serve as guiding principles for desired behaviour and norms among workers (Momos & Tsuma, 2020). It comprises intensely embedded patterns of behaviour that reflect shared expectations, standards and philosophies among employees in a firm. Thus, organisational culture considerably influences thought processes, attitudes, design procedures and results (Ma et al., 2023).

The current study contextualise organisational culture from the well acclaimed scholarly piece of Cameron and Quinn (1999), where the authors established 4 main elements of organisational culture (OC). Despite the research insight gained on the organisational culture elements (clan, adhocracy, market and hierarchy), the studies have not received much attention from marine transport industry. Thus, this thesis explores dimensions of organisational culture jointly with other contextual issues such as business ecosystem learning and innovative capability. This attempt is relevant in contemporary times because organisational culture and informal learning are some of the most significant factors that have the propensity to enhance or impede a firm's readiness for change (Wijethilake et al., 2023). The study further explains the dimensions of organisational culture from the perspective of competing value framework (Cameron & Quinn, 1999).

Types of Organisational Culture- The Competing Values Framework

Studies on culture and organisational effectiveness have led to many scholars conceptualising models that best explain the phenomenon. Key among these models is the CVF; proposed by Quinn and Rohrbaugh (1983). Effectiveness is an essential concept, although its meaning has long been a topic of debate in the organisational literature. Following an extensive review of literature by Campbell (1977), the scholar identifies 30 distinct effectiveness criteria. In similar vein, Quinn and Rohrbaugh (1983) contended that personal views with regards to emphasis on effectiveness are generally reflected in the criteria employed. This study led to the identification of three value dimensions: internal-external, control-flexibility, and means-ends. Quinn and Rohrbaugh (1983) arrived at these conclusions when they enlisted with the help of 52

organisational experts to evaluate Campbell (1977) criteria. The CVF was developed by integrating the third dimension into the other two (Quinn & Rohrbaugh, 1983). It might be argued that judging organisational cultural values just on the basis of two or three criteria is insufficient. Thus, the CVF does not seek to cover the entirety of organisational culture, instead, it looks at the effectiveness of certain organisational culture value elements. Furthermore, this model is capable of integrating the majority of organisational culture values described in organisational literature.

Four effectiveness criteria, often known as four organisational culture types form the basis of CVF. Cameron and Quinn (2006) established four organisational cultural values: Clan, Adhocracy, Market, and Hierarchy, based on previous organisational culture research. Regardless of the fact that each company has its own culture, they can generally be categorised under four broad groups. Understanding these groups is crucial for making successful recruiting and selections; be it hiring as professional or for personal human resource needs, and may also help managers lead human capital in a more effective way (Zeb et al., 2021; Seo & Lee, 2021). This thesis provides an analysis and implications of each cultural value in the CVF.

Clan Culture

Clan culture describes how an organisation functions as family or tribe, in furtherance, it denotes how individuals who share similar beliefs and interests work together in a work environment (Yu & Wu, 2009). Within the group, collaboration and consensus are strongly prioritised, while rivalry is minimised. Clan culture promotes a sense of enablement by permitting members of a group to feel appreciated (Ahmed, 1998). There is some degree of liberty on the side

of employees to take initiatives without feeling alienated since they know they have their "work family" in support.

Variables such as shared interests, common goals, spirit of collaboration and a focus on worker empowerment explains the general description of clan culture. Wilkins and Ouchi (1983) describes clan culture as an organisational culture type that emanates from conditions, such as a longevity of service, permanency of association, non-existent alternatives, and deep-rooted interactions among members.

Adhocracy Culture

Adhocracy places considerable emphasis on a firm's ability to become accustomed to change (Balogh et al., 2011). Adhocracy in the workplace describes the manner in which employees adapt proactively to changing events, aims, or organisation's standards, which is reflective in their flexibility towards new approaches. As a result, organisations with an adhocracy culture encourage workers to think creatively (Reis et al., 2016). The adhocracy is less constrained by norms and tradition, which permits it to acclimatise to changing situations and developments rapidly. However, because adhocracy organisations place a high value on adapting to changing conditions, there may be a lack of structure, leaving expectations undefined and job descriptions ambiguous (Balogh et al., 2011). The adhocracy culture is akin to that of a transient entity that comes to an end when organisational responsibilities are fulfilled and swiftly reloads when new responsibilities arise. The adhocracy culture usually thrives in industries such as software development, space flight, consulting, filming, among others.

Market Culture

Market culture places high value on individual achievements (Gallagher et al., 2008). It promotes competition among workers, as well as, among external organisations. On issues with regards to human capital management such as employee remuneration, development, and termination; individual performance is the most important determinant. An organisation may encourage each employee to be as productive as possible by recognising success at the individual level.

The benefits of a successful employee in this pursuit may inure not only to the employee's feeling of achievement but also to effectiveness of the organisation. It is imperative to admit that individual employee performance can motivate others to work harder, however, it can also create tension among teams and/or team members. In the worst-case situation, it can also encourage unethical behaviour and erode confidence (Yu & Wu, 2009). Thus, market culture focuses on relationships of organisations with the outside world, rather than focus on internal management. Accordingly, goal of the organisation is to make money through competing in the market. This concept was born out of Ouchi's (1984) work on market management systems.

Hierarchy Culture

It places high value on levels of rank and associated responsibilities (Yu & Wu, 2009). Employees at all levels of an organisation are required to follow specific guidelines that regulate work conduct, for example, reporting lines and decision-making authority. Hence, organisations are generally characterised by rigorous monitoring with the assumption that subordinates would follow instructions of superiors (Rai, 2011). A major strength of the hierarchy culture

is that it has clear expectations for each job title (Ikramullah et al., 2016). Workers are informed of the chain of command and who reports to whom, thus, there is clarity of purpose for each job position, thereby leading to productivity and operational efficiency. The capacity of employees to create and self-direct might be hampered by a hierarchical culture.

An organisation might be restricted to the ideas of its highest levels of leadership if each subordinate does not have the flexibility to make independent decisions (Yu & Wu, 2009). Therefore, hierarchical culture projects a well-defined organisational structure, clear duties, established rules and processes, and a rigorous control system. This concept may be traced back to Weber's early research on modern organisational administration, which included the concept of 'bureaucracy', published in 1947 (Weber, 1947).

Business Ecosystem Learning

The moderating role of business ecosystem learning in this study projects the relevance of relational embeddedness in technology-enhanced system adoption at seaports in Ghana. As seaports in Ghana continue to enact policies that promote digital transformation for efficiency, collaborators such as freight forwarding firms and governmental agencies must find means through which learning for adaptation can be enhanced within the maritime port industry.

Organisational leaning is encompasses processes through which firms modify or alter their intellectual models, rulebooks, procedures and techniques to maintain or improve their productive efficiency (Chiva et al., 2014). It is a purposeful attempt by firms to adapt to organisational processes via some directed actions (Templeton et al., 2002). Thus, organisational learning is a

necessity for firms that operate within modern business environments, which is characterised by market volatility and unpredictable trends (Garvin et al., 2008). Organisational learning offers firms the opportunity to create novel perspectives, hence, a catalyst for enhancing firm know-how (Cheng et al., 2014).

Organisational learning is assumed to be a management task that encompasses strategic creation, capture, and internalisation of knowledge (Basten & Haamann, 2018). Nevertheless, there is a need for management of organisational learning if a positive outcome on performance is purposed by a firm (Cheng et al., 2014). Accordingly, organisational learning has been established as a vital means for incessant advancement of knowledge conception and usage (Wu & Chen, 2014). In the study, two main approaches to organisational learning that have not received scholarly attention over the years was explored, they are ecosystem and organisational intelligence (Huber, 2019).

An ecosystem is an organic open society of intermingling organisms in their physical habitat, or it may be described in general as a multifarious system or interrelated system (Haghshenas & Richards, 2016). It includes persons, bodies, activities, conditions and interactions in an organisation's environment. In this context, the most important bodies of attention to organisations are commonly other organisations in the ecosystem (Pfeffer, 1987; Pfeffer & Salancik, 1978).

In today's world, the ecosystem of businesses have become more multifaceted, whilst exhibiting tendencies of rapid evolution (Friedman, 2016; Kelly, 2017). Consequently, there is need for organisations to effectively design

and manage their intelligence systems in pursuit of growth. With reliance on business ecosystem learning, a person's emotional and intellectual capabilities may change due to dynamisms in a firm's ecosystem, consequently manifesting in behaviour modification. Context wise, the understanding of business ecosystem learning through cognitive assumptions of S-O-R theory is deemed imperative in explaining learning culture and innovative capability among freight forwarding firms in Ghana. Thus, the study posits that organisational culture influences firm innovative capability, however, this may be realised through deployment of business ecosystem learning.

Innovative Capability

Innovation is associated with terminologies such as creative ideas and profit motivated ideation (Dadfar et al., 2013). Innovation capability is term used to describe the aptitude to unrelentingly transform ideas into novel offerings, deliverables and structures for mutual benefits among business entities and their stakeholders (Lawson & Samson, 2001). Saunilla (2014) asserts that innovation may commonly be recognised as a firm capability primarily because it involves the deployment of resources in quest to create value. Consequently, building innovation capability is crucial to firm existence and progression (Francis & Bessant, 2005). Thus, innovation capability has been established as fundamental to gaining and sustaining competitive edge in an industry (Aljanabi, 2020; Ferreira & Coelho, 2020).

Innovation capability empowers organisations to apply essential and suitable technologies in the development of new products, processes, markets, as well as, firm capacity to thrive in competitive industries (Rajapathirana & Hui, 2018). In the work of Dahlgaard-Park and Dahlgaard (2010), the authors

assert that there are key factors necessary for innovation process implementation, they are enhanced leadership, motivated employees, productive partnership and firm capability. This thesis' focus is more on process innovation because service offerings and markets are having same characteristics.

Process innovation is a term used in describing a new and improved approach in service provision (Expósito & Sanchis-Llopis, 2019). These may manifest in varying ways, such as variations in modus operandi and equipment (Obeng & Boachie, 2018; OECD, 2005). Accordingly, it entails small, incremental advances during employee routine tasks performance, and may not necessarily be inspired by managers or supervisors (YuSheng & Ibrahim, 2020). The European Union (2013) states that manifestation of process innovation is seen in appreciation or increase in level of output, that is, quality of service delivery or reduction of service cost or both.

Empirical Review

This section encapsulates the empirical review of the study. It is an aspect of literature review, and entails documented outcomes of prior related studies for the purposes of drawing similarities and variations in order to address gaps in literature. This chapter presents a review of literature in the following areas: (a) dimensions of organisational culture and innovative capability (b) business ecosystem learning and innovative capability; (c) mediating role of business ecosystem learning; (d) moderating role of perception of procedural fairness.

Relationship between dimension of organisational Culture and Innovative Capability

Hofstede and Hofstede (2005) assert that organisation culture is the collective perceptual software of people identified in a unit of common goal. The scholars stressed that though it is deemed as a soft concept, it has proved to be a hard concept with tangible consequences that reflect in performance of organisations. Within the context of organisational literature, organisational culture is seen as a salient phenomenon which creates a socialisation process that either encourages or discourages interactions among employees (Aboramadan et al., 2019).

In line with the objectives of the thesis, the investigator explored the linear relationship between organisational culture, organisational learning (business ecosystem) and innovation capability. First, the study highlights empirical evidences from organisational literature showing the relationship between organisational culture and organisational learning (Al Dari et al., 2020; Chatterjee et al., 2018). Some scholars have therefore described organisational culture as the most important barrier to building and leveraging knowledge assets (Chatterjee et al., 2018). Therefore, this thesis explores some empirical evidences on the relationship between organisational culture and innovative capability development.

Clan culture has been well-thought-out to be valuable for organisational learning due to its traits of creating friendly work settings, which is a prerequisite for team-building (Bremer, 2016). Clan culture promotes collectivism; therefore, it focuses on work dynamics that are based on traditions and group-based involvement. In a study conducted by Jabeen and Isakovic

(2018), the findings reveal that clan culture as compared to the other dimensions, builds trust among employees in top executives. Another dimension of firm cultures examined in the current thesis is adhocracy culture. This type of culture works effectively in industries that are characterised by constant and rapid changes, which are often triggered by a firm's external environmental forces (Chang, 2010). Adhocracy culture draws strength from the theoretical assumptions of an open system approach; thus, it thrives on self-awareness, business ecosystem awareness and creativity at the individual level, which is advanced through externalisation, which explains transformation process from an individual tacit knowledge perspective to an explicit knowledge of a team (Takeuchi & Nonaka, 2004).

This thesis also examines a third organisational culture dimension known as the market culture. Market culture is defined by values that resonate with logical thinking, productive effectiveness, industry competitiveness and clarity in goal setting (Oh & Han, 2020). Based on its assumption of competitiveness, market culture primarily promotes learning activities, enrich and monitor learning processes for the purposes of optimising outmost dependability of knowledge output (Rai, 2011). Also, hierarchy culture is grounded in the use of formal structures and regulations. Policies and rules of engagement are controlled through procedures. In this culture, firms thrive to measure their effectiveness through indicators such as functionality and efficiency, as well as, stability and predictability are long-term concerns of firms (Alexakis et al., 2006). Hierarchy culture lays emphasis on control, institutionalisation and a pre-determined structure for the sake of power and influence (Tharpe, 2009).

The CVF model postulates that clan and adhocracy cultures support flexibility, hence are conjectured as cultures which are receptive to advancing organisational learning (Cameron & Quinn, 1999). Further, Robbins and Decenzo (2001) revealed that the relevance of collaborative and flexible social exchanges may enhance organisational learning. They added that clan and adhocracy cultures correlate positively with knowledge acquisition in firms. In a related study, Dajani and Mohamad (2017) established clan, adhocracy and market cultures as significant predictors of learning capabilities among firms. Oh and Han (2020) reports a positive association between clan culture and organisational learning among Korean firms. Finally, based on its high levels of rigidity and consequently limited degrees of tolerance for innovation, hierarchy culture has been established as not supportive to organisational learning (Al Dari et al., 2020). Empirical studies have established a negative relationship between hierarchy culture and organisational learning (Alsabbagh & Khalil, 2017; Lee & Chen, 2005; Oh & Han, 2020).

More specifically, the current study provides empirical evidences of studies that investigated organisational culture and innovative capability. In a study undertaken by Naqshbandi and Tabche (2018), which explores how leadership engagements with absorptive capacity and organisational learning culture to influence open innovation outcomes. The outcomes revealed that empowering leadership is a catalyst for enriching or promoting open innovation. In a similar study undertaken by Yang et al. (2018), as well as Naqshbandi and Tabche (2018), which explores the mediating effect of knowledge sharing in between collaborative culture and two dimensions of innovation. The outcomes revealed that knowledge sharing mediates the relationship between

collaborative culture and two dimensions of innovation, they are; product innovation and process innovation.

In a study undertaken by Liao et al. (2017), which explores the relationships among leadership, organisational learning, and organisational innovation in Taiwan. The study outcomes show that organisational learning acts as a full mediator between leadership and organisational intelligence. In a study undertaken by Shahzad et al. (2017), which explores relationship between organisational culture and innovation performance of software firms in Pakistan. The outcomes revealed that a strong positive relationship exists between organisational culture and knowledge sharing, as well as, innovation performance among software firms in Pakistan. In a study undertaken by Al Dari et al. (2020). The authors developed a theoretical framework based on clan culture, hierarchy culture and knowledge technological capabilities on organisational learning innovation. The outcomes revealed that hierarchy culture positively predicts organisational learning, whereas, clan culture had a negative effect on organisational learning. In a study undertaken by Lam et al. (2021), which explores the association between firm culture, idea management and innovative capability in n open innovation space to deliver value-driven suggestions for administrative practices within a high-tech industry. The outcomes revealed in general that an open innovation culture of a firm; underpinned by mutual trust, collaboration and learning are enhanced by supportive and participative leaders, and these may increase the efficiency of knowledge management practices.

In addition, efficient knowledge management practices are major determinants of a firm's innovation capability. In a related study by Shahriari

and Allameh (2020), which explores effect of organisational culture on organisational learning and innovation among workers of electricity distribution firms in Isfahan province. The outcomes revealed that all dimensions of organisational culture had a positive effect on learning and innovation. In another study undertaken by Chatterjee et al. (2018), which explores perceptions of organisation culture, by employing the Organisational Culture Assessment Instrument (clan, adhocracy, market or hierarchy). The outcomes revealed that perceived flexible organisations, that is, organisations with clan and adhocracy cultures create a supportive learning transfer environment. Additionally, hierarchy culture, which is deemed as internally focused prove to be more resistant to change than externally focused organisational cultures such as adhocracy and market. In a research undertaken by Chang et al. (2017), which explores relationships among organisational culture, knowledge sharing, and innovation capability. The outcomes revealed that organisational culture was significantly and positively related to knowledge sharing and innovation capability.

Considering results unearthed from these studies, inferences could be drawn that dimensions of organisational culture constitute major determinants of innovation among firms. Although the study offers insight into dimensions of organisational culture and its capacity to deliver innovative outcomes, the study fails to highlight exogenous psychological factors that promote or hinder firm learning such as perception of operational fairness. The current study identifies this gap as worthy of scientific inquiry.

Relationship between Business Ecosystem Learning and Innovative Capability

Management and organisational studies have established innovation as a critical success factor for most firms, hence several researchers attempted to explore its antecedences (Crossan & Apaydin, 2010). Innovation management literature over the years has shown that researchers or practitioners that are oriented towards learning have a better understanding and appreciation of novel ideas (Hurley & Hult, 1998; Migdadi, 2019). Thus, the authors' added, organisational learning is an antecedent of innovation. Jiménez-Jiménez and Sanz-Valle (2011) asserts that organisational learning paves ways for developing, acquiring, transforming and exploiting new knowledge that have the capacity to enhance organisational innovation. The current thesis, thus, reviewed empirical studies to establish the link between organisational learning and innovation capability.

In a study undertaken by Yang et al. (2022), the study explores relationships among business intelligence, learning and innovation. The study outcomes show that business intelligence has a positive association with organisational learning outcomes. Additionally, organisational learning has a positive relationship with innovation. This result implies that intelligence gathering through firm learning is an antecedent of innovation among firms. Although the study offers insight into organisational learning and its capacity to deliver innovative outcomes, the study fails to highlight factors that necessitate firm learning. The current study identifies this gap as worthy of scientific inquiry.

In a related study, Liu et al. (2022) conducted a research and explores the means by which businesses can fast-track innovation to address rapidly changing societal problems amid covid-19 pandemic. The study developed a framework which transcends out-of-date industry boundaries. Further, the study draws important and pragmatic lessons from employing business ecosystem strategies for innovative initiatives to address multifarious social and business difficulties. This result implies that business ecosystem intelligence gathering is useful for accelerated innovation among firms. Nevertheless, the study fails to highlight factors that necessitate firm learning. The current study identifies this gap as worthy of scientific inquiry.

In a study undertaken by Romanelli and Ferrara (2022), the authors explored the role of information technology in creating an innovative environment. The study outcomes show that innovation is a major driver of museum tourism. The source of innovation has largely been attributed to development of value creation processes through organisational learning (information technology). This result implies that business ecosystem intelligence gathering is useful for value creation among firms. Nonetheless, the study fails to highlight factors that necessitate firm learning such as organisational culture. The current study identifies this gap as worthy of scientific inquiry.

In a study undertaken by Farzaneh et al. (2021), the authors explored how organisational learning delivers to organisations the needed tools to create dynamic capabilities, which is a necessity for innovation performance. The study outcomes show that organisational learning positively influences dynamic capabilities, as well as, integrating and reconfiguring capabilities. In

furtherance, these dynamic capabilities were established as significant determinant of innovation performance. This result implies that business ecosystem intelligence gathering is useful for the creation of dynamic capabilities among firms. Even so, the study fails to explore factors that demand firm learning such as organisational culture. The current study identifies this gap as worthy of scientific inquiry.

In a study undertaken by Gomes et al. (2021), which investigates the relationship between entrepreneurial orientation, organisational learning capability and service innovation. A positive effect was established firm learning and innovative capability building. This result implies that learning builds intellectual capital base for innovation among firms. Although the study offers insight into organisational learning and its capacity to deliver innovative outcomes, the study fails to highlight factors that necessitate firm learning such organisational culture. The current study identifies this gap as worthy of scientific inquiry.

In a study undertaken by Ghasemzadeh et al. (2021), which explores how organisational learning and dynamic capabilities as antecedent CSR, as well as innovation performance. The study outcomes reveal that there is a positive relationship between organisational learning and innovation. This result implies that business ecosystem intelligence gathering is useful for the creation of dynamic capabilities among firms. Even so, the study fails to explore factors that ignite firm learning such as organisational culture. The current study identifies this gap as worthy of scientific inquiry.

In a study undertaken by Tambosi et al. (2020), which explores effect of learning capability on innovation performance among some regional cluster of firms. The study outcomes reveal that there is a positive relationship between organisational learning and innovative performance of firms. This result implies that learning is a pre-requisite for intelligence gathering for value creation among firms. However, the study fails to highlight factors that necessitate firm learning such as organisational culture. The current study identifies this gap as worthy of scientific inquiry.

In a study undertaken by Migdadi (2019), which explores the relationships among organisational learning capability, innovation and organisational performance. The study outcomes show that organisational learning positively affects innovation, which in turn affects operational performance. This result implies that business ecosystem intelligence gathering is useful for the creation of dynamic capabilities among firms. Even so, the study fails to explore factors that ignite firm learning such as organisational culture. The current study identifies this gap as worthy of scientific inquiry.

In a study undertaken by Gomes and Wojahn (2019), which explores the influence of learning capability on innovative performance among small and medium-sized enterprises. The study outcomes reveal that there is a positive link between firm learning and innovation in the context of small and medium-sized textile enterprises. This result implies that learning is relevant in building firm intelligence for harnessing dynamic capabilities among firms. However, the study fails to explore factors that ignite firm learning such as organisational culture. The current study identifies this gap as worthy of scientific inquiry.

In a study undertaken by Ganguly et al. (2019), which explores the role of tacit knowledge sharing in the determination of innovation capability in an organisation. Precisely, the study assesses social capital from three main dimensions (relational, cognitive and structural) as an antecedent to tacit knowledge sharing, which is a key determinant of innovation capability of an organisation. The study outcomes show that knowledge reciprocity, relational social capital and cognitive social capital were positively linked to tacit knowledge sharing. However, structural social capital could not statistically predict tacit knowledge. This result implies that the varying forms and nature of knowledge acquisition are necessary for the development of innovative ideas among firms. Even so, the study fails to explore factors that ignite firm learning such as organisational culture. The current study identifies this gap as worthy of scientific inquiry.

In a study undertaken by Hartley and Rashman (2018), which explores the relationship between innovation and inter-organisational learning in the context of public service reforms. The study outcomes show that inter-organisational learning is a major determinant of innovation. The study outcomes further add that the approach to innovation changed from learning to imitate, to learning to innovate. In a related study undertaken by Thomas et al., (2017), the study reveals that enhanced organisational learning capabilities optimised levels of organisational innovation, and better-quality supply chain collaboration. Similarly, Podrug et al. (2017), explore the influence of individual factors, organisational factors and technological factors on knowledge-sharing processes. The study outcomes show that enjoyment individual factors, organisational factors, and ICT use significantly predicts

knowledge-sharing processes. Further, the outcome reveals that willingness of employees' to mutually share knowledge enhances innovation capability. These admittedly tout the role of organisational learning in promoting innovation among firms. The studies highlight the relevance of building firm dynamic capabilities through relational embeddedness. However, these studies fail to explore factors that ignite firm learning such as organisational culture and learning climate. The current study identifies this gap as worthy of scientific inquiry.

Mediating Role of Business Ecosystem Learning

Business ecosystem learning (BEL) is a process of knowledge acquisition through relational embeddedness within a firm's industry (Boxu et al., 2022; Zhang et al., 2022). BEL is a concept that thrives on both informal and formal learning. Despite its theoretical grounding, the concept has not received much research attention (Huber, 2019). Consequently, the examination of business ecosystem learning as a mediating variable in organisational literature is limited. Notwithstanding this gap in literature, closely related terms to business ecosystem learning such as relational embeddedness have been explored as a mediator in organisational studies. For example, Ariadi et al. (2021) in an empirical paper concludes that relational embeddedness through strategic supplier and customer integration mediates lean supply chain strategies and firm performance.

Similarly, in a study undertaken by Bilan et al. (2020), which explores mediating role of organisational learning on firms' capabilities, corporate governance, leadership styles, as well as, the firms' sustainability. The outcomes revealed that organisational learning significantly mediates between

organisational capabilities, corporate governance, leadership styles, and the firms' sustainability. In a related study undertaken by Arefin et al. (2021), the researchers established a significant indirect effect of business intelligence between firm learning culture and performance within the domain of health-care.

In the current study, business ecosystem learning is contextualised as both informal and formal learning that takes place between freight forwarding firms, governmental agencies in-charge of freight and cargo, as well as, regulatory actors in the maritime industry. Context wise, the understanding of business ecosystem learning through cognitive assumptions of S-O-R theory is deemed imperative in explaining learning culture and innovative capability among freight forwarding firms in Ghana. Thus, the study posits that organisational culture influences firm innovative capability, however, this may be realised through deployment of business ecosystem learning.

Empirical studies have established a significant indirect effect of business ecosystem learning between organizational learning culture and innovation among firms (Rehman, 2023; Tang et al., 2023). This suggests that business ecosystem learning indirectly and positively links organisational culture and innovative capability. In providing justification for the indirect effect of business ecosystem learning; 2 different hypothetical paths must be established. First is there must be a positive relationship between dimensions of organisational culture and business ecosystem learning. Organisational culture is largely seen as a major influencer of effective learning among firms because culture defines firms' values, norms and belief systems that have the propensity to boost or hinder business ecosystem learning (Ahmadi et al., 2019; Shahriari

& Allameh, 2020). Second, there must be a positive relationship between business ecosystem learning and innovative capability (Lee & Roh, 2023; Liu et al., 2023).

Moderating Role of Procedural Fairness

Procedural fairness has widely been defined as the degree to which a body of authority employs precise and just processes in assigning performance processes and outputs (Farid et al., 2019). Perception of procedural fairness is relevant in the determination of firm worthiness, and may account for employees' degree of work inputs. Possessing core assumptions of the social exchange theory, perception of fairness creates reciprocal effects, which have the propensity to influence behaviour modifications in organisations (Ramdeo & Singh, 2019).

Extant studies on the moderating role of procedural fairness has been situated within varying fields of contexts and concepts in literature. In the current study, the moderating effect of perception of procedural fairness was established between business ecosystem learning and innovative capability of freight forwarding firms in Ghana. The reason for this moderation analysis is as follows; business ecosystem learning has been proved to have a positive relation with innovative capability (Lee & Roh, 2023; Liu et al., 2023). Further, these studies argue that freight forwarders' perception of operational neutrality by governmental agencies at seaports in Ghana may help in the digital adaptation processes. The study adds that if freight forwarding firms perceive the operational procedures as unbiased, then their relational embeddedness would be heightened. However, if the digital operational work systems are deemed as not fair, then ecosystem learning would be difficult to achieve.

Perception of procedural fairness serve as grounds for developing mental shortcuts that provide guidance on behavioural patterns and the control of emotional involvement in related embeddedness. On the bases of these arguments advanced, the current study argues that interpretation of fairness is influenced by a person's level of intellectual capacity which is developed through learning cultures. This study argues that perceived procedural fairness influences ecosystem learning for the development of innovative capabilities.

Lastly, the call for moderation analysis in the current study was necessitated by the established relationship between business ecosystem learning, procedural fairness and innovative capability. Motivation for learning is stronger, when learners perceive the learning environment to be devoid of biases (Belitz et al., 2022; Ernst & Fuchs, 2022). Further, in contemporary organisational literature, there is growing research attention on developing frameworks of fairness within work settings which employ algorithmic models to lessen or eliminate biases (Kleanthous et al., 2022). However, there seems to be limited research attention on perceive complex business situations with limited information for decision-making (heuristics) through fairness.

Thus, the current thesis, investigates how perception of procedural fairness mediates between organisational culture dimensions and business ecosystem learning among freight forwarding firms in Ghana. Though, procedural fairness has been found to moderate between some organisational elements, processes and outcomes, the current study is one of the first studies to explore procedural fairness between business ecosystem learning and innovative capability.

Empirical support for moderating role of procedural fairness in organisational literature is highlighted as follows; procedural fairness between inclusive leadership and work engagement (Cenkci et al., 2021); procedural fairness between job analysis and employee performance (Khtatbeh et al., 2020); procedural fairness between target setting and performance measurement (Mucci et al., 2022); procedural fairness between ethical leadership, organisational citizenship behaviour and turnover intentions (Seth et al., 2022); procedural fairness between servant leadership and organisational citizenship behaviour (Qiu & Dooley, 2022).

Objective 1

H_1: Clan culture has a positive effect on innovative capability,

H_2: Adhocracy culture has a positive effect on innovative capability,

H_3: Market culture has a positive effect on innovative capability,

H_4: Hierarchy culture has a negative effect on innovative capability,

Objective 2

H_5: Business ecosystem learning has a positive effect on innovative capability,

Objective 3

H_6: Business ecosystem learning mediates between clan culture and innovative capability,

H_7: Business ecosystem learning mediates between adhocracy culture and innovative capability,

H_8: Business ecosystem learning mediates between market culture and innovative capability

H_9: Business ecosystem learning mediates between hierarchy culture and innovative capability

Objective 4

H_{10}: Perception of procedural fairness moderates between business ecosystem learning and firms' innovative capability.

Conceptual Framework of the Study

This section projects the conceptual framework of the current thesis. Conceptual framework describes the investigator's idea on how the study hypotheses were explored from an outlook of symbolic mappings. From the research objectives of the thesis, through corresponding hypotheses formulated by the investigator, to developing foundation through various reviews of literature to establish bases for examining the study, the study mapped out symbolic interrelationships. The conceptual framework has following latent variables; perception of procedural fairness, organisational culture, business ecosystem learning and innovation capability.

First, the conceptual model suggests a relationship between organisational culture and innovation capability, and this relationship is grounded in the S-O-R theory (Mehrabian & Russell, 1974). Second, the conceptual model suggests that business ecosystem learning mediates between dimensions of organisational culture and innovative capability, and this is grounded in the S-O-R theory. Third, the conceptual model suggests that perception of procedural fairness moderates between business ecosystem learning and innovative capability, and this is grounded in the fairness heuristic theory (Tyler & Lind, 1992). In summary, the thesis' conceptual framework,

shown in Figure 1, was grounded in two transmission theories, namely; stimulus organism response theory and fairness heuristic theory.

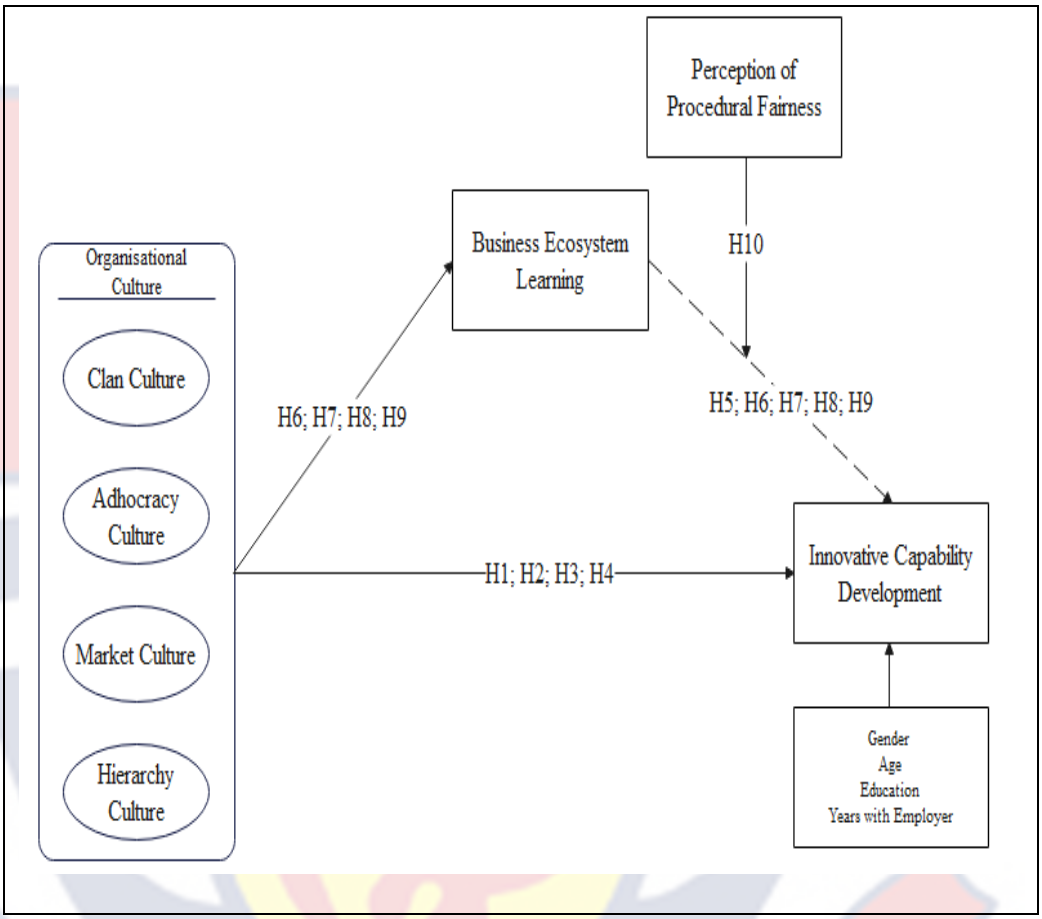

Figure 1: Conceptual Framework of the key variables of the study
Source: Author's Own Conceptual Framework (2022)

Chapter Summary

The current chapter addressed the theoretical review, related concepts, empirical review, and conceptual framework of the study. The theoretical review explored the underpinning theories grounding the thesis. The two theories that were employed as the transmission mechanism to explain relationships among the study variables are Stimulus Organism Response Theory and Fairness Heuristic Theory. After that, a review of related concepts

was undertaken to explain key concepts and variables used in the study, namely; perception of procedural fairness, organisational culture, business ecosystem learning and innovative capability. The investigator undertook an empirical review to ascertain outcomes of closely related studies to draw inferences and differences constituting gaps in literature. The empirical review was organised based on the research objectives of the thesis and it was conducted in chronological manner. Finally, a conceptual framework, which is a symbolic description of the investigator's idea of how the study was explored was developed. The conceptual framework was developed on time tested theories (S-O-R-T and FHT) employed as transmission mechanisms between the independent, dependent, mediating and moderating variables.

CHAPTER THREE

RESEARCH METHODOLOGY

Introduction

The third chapter of the study is a holistic description of methodology employed in the current research. The chapter encapsulates philosophical keystones of the study. After which the research design employed for Study was discussed. In furtherance, the reason for the selection of quantitative approach was justified. It is noteworthy to state that the choice of quantitative research approach for the study was premised on the objective inclination of the study objectives. For example, objective 1 examines the effect of dimensions of organisational culture and innovative capability among freight forwarding firms in Ghana. Objective 2 examines the effect of business ecosystem learning on building innovative capability among freight forwarding firms in Ghana. Objective 3 examines the mediating effect of business ecosystem learning between dimensions of organisational culture and business ecosystem learning among freight forwarding firms in Ghana. Finally, objective 4 examines the moderating effect of perception of procedural fairness between business ecosystem learning and innovative capability among freight forwarding firms in Ghana.

It is imperative to state that based on the nature of the objectives stated, the researcher selected inferential statistics as the most suitable method to tests relationships among the study variables mappings. Further, the study offers explanation on the choice of analytical tools employed in the study. Also, it is noteworthy to add that thorough presentation of the research methodology employed in the study was duly captured in the chapter.

Philosophical Worldviews

Denzin and Lincoln (2000), define paradigms as a scholar's mental projections and buildups, which are in line with underlining principles that define their background and accordingly guide data collection process. Paradigms are therefore, a guide or map that shapes how scholars pursue or advance inquiry in their fields of specialisation. Based on the importance of the concept, many scholars have come up with different terms for its description, whilst some termed it as worldviews (Creswell, 2014), others deem it as basic beliefs guiding research in motion (Guba, 1990), some other researchers term it as paradigms (Lincoln et al., 2011), whereas others describe it as ontology and epistemology (Saunders et al., 2009).

Creswell (2014) describes worldviews as wide-ranging logical alignments that pertain to the nature of scientific inquiry and how it is unearthed to bring about advancement in knowledge. It imperative to note that, the aforementioned terminologies are situated on some philosophical rulebooks, research design and methods that are in consonance with specific research approaches (Creswell, 2014). This assertion was also highlighted in the work of Hughes (2010), where the author posits that research is undertaken based on a explicit way of viewing the world and making cognitive interpretations out of it (Mukherji & Albon, 2015). Thus, researchers' appreciation of what constitute knowledge and truth determines their philosophy (Chilisa & Kawulich, 2012). Therefore, the research paradigm poses consequences for every decision-making point in the scientific inquiry procedure (Kivunja & Kuyini, 2017). There are a number of paradigms in social science research, however, the

current study discusses three major paradigms with a justification of one which drives the current study.

Social Constructivism

The underlining thought process of an interpretivism paradigm is founded in understanding reality and truth from subjective human experience (Guba & Lincoln, 1989). Also termed naturalistic paradigm or interpretive paradigm (Merriam & Tisdell, 2016). This paradigm explains the opinionated stance of a researcher on a subject matter of interest. In this paradigm, the focus is to understand the subjective stance of the persons and the way they appreciate and interpret the world around them. Thus, precept of interpretivism paradigm is that truth is socially built (Bogdan & Biklen, 1998). This paradigm normally is attributed to qualitative research (Creswell, 2014).

Creswell (2014) asserted that social constructivism is informed by varying and multiple shared experiences and their corresponding subjective interpretation of reality. On the bases of the views expressed by participants in a given study, a researcher may make meanings after a careful thematic analysis of the data. This paradigm allows researchers to explore beyond direct data collection such as interviews or the use of open-ended questions to indirect data collection methods such as observation. Thus, the paradigm is not merely etched on personalities but it is designed to promote interactions with others and engagement with traditional norms that operate in daily livelihood of people (Creswell, 2014).

Pragmatism

Pragmatism worldview is founded on the principle that factual scientific objectivity is unobtainable because human behaviour is a product of social

dynamics. In the view of a pragmatist, the instruction of science is not engrossed in truth discovery; the reality of which are unendingly in differences of opinion, but then again to expedite human problem-solving skills, as specified by Powell (2001). Pragmatism is research paradigm in which the researcher begins the study focusing entirely on the problem and ways in which those problems can be practically solved in the future. Thus, belief system of a researcher determines direction of the inquiry process, which is first and foremost instigated by a sense that something is not right, and a renewed belief is arrived at when the problem is deemed solved (Elkjaer & Simpson, 2011).

This paradigm came about as philosophers' debate the most appropriate method of making a scientific inquiry. Some philosophers disagree with the two main continuums established in social science inquiry; that is, accessing 'truth' about the world from the natural science viewpoint as advocated by the positivists, or the belief that social phenomenon is too complex to lend itself to definite laws as claimed by interpretivists. Hence, some scholars have argued that what is important is to adopt a paradigm that provides alternative research methods that support any direction an investigation of concepts leads to in the quest of finding practical solutions to a given problem (Biesta, 2010). Pragmatism therefore, is not wholly aligned to any one system of philosophy.

Also, the paradigm is accredited as the footing of mixed-method research (Teddlie & Tashakkori, 2003), as it lends itself to the employment of both quantitative and qualitative approaches in the investigation of a phenomenon (Creswell, 2014). In accordance with the paradigm, there is freedom of choice of any research approach, techniques and procedures deemed appropriate in unravelling solutions (Creswell, 2014). In addition, researchers

may employ mixed methods, specifically, they are at liberty to use varying paradigms, multiple methods and/or employ different sources of data and methods of analysis (Creswell, 2014). In conclusion, this worldview delivers experience-based, action-oriented outline that may propel a researcher to investigate reality from practical sense (Hothersall, 2019). The study therefore employed pragmatism paradigm assumptions, that is, a combination of positivism and constructivism worldviews.

Positivism

Positivism is a philosophical worldview that shot to fame in the early nineteenth century, its prominence was credited to French philosopher by name Auguste Comte (Richards, 2003). Comte (1856) postulated that experimentation, observation and decision-making as a product of experiences should be the determinant of understanding human conduct, and should be the only valid means of outspreading knowledge and thoughtfulness. Positivism posits that truth is probable to determine (Mukherji & Albon, 2015), because human behaviour can be estimated, triggered and could be influenced by both internal forces (for behaviourist psychologists) and external forces (for positivistic sociologists). Some claims advanced by proponents of positivism include; investigation of reality must be done based on laborious procedure of scientific investigation (Gray, 2014). It must be characterised by quantitative inclinations and methods which emphasises the need to generalise opinions and behaviour due to its objective underpinning of accurate measurement (Mukherhi & Albon, 2015).

This research adopted the positivists' philosophical perspective. Positivism draws its theoretical foundations from a combination of

foundationalism and empiricism. Foundationalists have the belief that hypothetical statements should be given credence via value-free, well-ordered experiments or observations. Foundationalism posits that true knowledge must possess qualities of truth that is time tested and cannot be wrong (Howell, 2013). Also, empiricism underpins the assumptions of foundationalists' philosophical viewpoint. Empiricism asserts that knowledge must be unbiased and free from prejudice (Phillips & Burbules, 2000). This positivists' paradigm proved to be suitable because its values approval or disapproval of conjectured statements in the form of hypothetical paths.

Furthermore, this study adopted the positivism paradigm because it is grounded in objectivism, which states that there is only one version of truth in any real-life situation. The proponents of positivism argue that the only means by which truth can be ascertained is through the testing of credible data devoid of researcher manipulations (Ryan, 2018). Thus, deploying quantitative research in this study is deemed appropriate because the role of the researcher in influencing the data analysis process is minimal.

Research Approach

Research can be undertaken through varying approaches. There are three main approaches to conducting research; namely, qualitative, quantitative and the mixed-method. Any of the approaches adopted is based on the researcher's worldview and/or aim of the study. In the context of this study, the researcher employed the quantitative research approach. Studies that adopt quantitative research approach are commonly deployed in the natural sciences, and they rely on numerical data to measure constructs (Leppink, 2016). This research approach focuses on the examination of mathematically inclined hypothesised

statements (Howell, 2013). Empirical studies conducted through the lenses of quantitative research typically may manifest in surveys with the use of established questionnaires (Creswell & Creswell, 2017). The use of quantitative research approach in the study helped the researcher to test the hypothesised paths between perception of procedural fairness, dimensions of organisational culture, business ecosystem learning and innovative capability.

Research Design

Research design is a blueprint spelt out by a person who undertakes a research, it comprises the connection of philosophical issues, strategies of investigations, and precise methods (Creswell, 2009). It is therefore a rational and methodical means by which researchers adopt and synergise data collection and analysis so as to effectively address research questions in a study (Trochim, 2006). Malhotra and Birks (2006) stressed that a suitable research design is necessary and critical in quest to effectively and efficiently undertake a scientific inquiry. Creswell (2009) established that the criteria for choosing a research design is founded on three determinants; the problem under investigation, personal experience of the researcher, and the targeted beneficiaries of the research. Notwithstanding the three key determinants of choosing a research design, what cannot be overlooked in the research objective of the study (Creswell, 2009).

Research design is commonly categorised into 3 main classifications, namely; exploratory, descriptive and causal (usually referred to as explanatory) (Malhotra & Birks, 2006). Exploratory research design is targeted at discovering notions and intuitions, as against the gathering of mathematically precise data. An example of exploratory research is the gathering of open-ended

questions. Although, it does not make mathematical inferences to give objective views on a phenomenon, it provides quality in-depth information that may lead to novel initiatives to solve challenges (Yin, 2017).

Descriptive research is pre-planned and well-thought-out in design, accordingly, the data gathered can be mathematically tested and inferences drawn from a population. The relevance of descriptive research is grounded in its efficacy to analyse opinion and attitudes of people on a phenomenon of interest (Robson, 1993). Descriptive research is generally seen as conclusive in nature because the data gathering process is well tailored to meet its intended purpose. Descriptive research provides the justification for a study through the clarification and explanation of inner properties of a phenomenon (Buchanan & Huczynski, 2004).

Similar to descriptive research is explanatory research, it draws its foundation from positivism and it is also pre-planned and well-structured. Quantitative research design encompasses investigating objective theories by assessing associations among constructs (Creswell, 2009). Creswell (2009) asserted that study variables can be examined by employing numerically coded instruments that lend themselves to statistical analysis. This form of investigation is underpinned by theory testing in a deductive manner, developing while regulating biases, guiding for alternate justifications, and having the capacity to generalise and replicate the results (Creswell, 2014). Explanatory research varies from descriptive research because it provides a cause-effect explanation between variables (Yin, 2017). This study adopts the explanatory research design because its research objectives seek to measure the causes-effect association among the study's constructs.

As stated earlier, the dynamics and purpose of the study propels the adoption of quantitative research approach. Thus, data was collected through the use of a questionnaire. The research used questionnaire to collate the opinions of 327 corporate freight forwarders in Ghana to investigate the perception of procedural fairness, organisational culture, business ecosystem learning and firms' innovative capability.

Study Design

A study design encompasses the broad plan of a researcher's means of providing answers to study objectives (Saunders & Lewis, 2012). In the work of Bryman and Bell (2015), they established 5 types of study designs, namely; experimental, cross-sectional study, longitudinal, case study, and comparative designs. Furthermore, Yin (2017) asserts that 3 main conditions act as prerequisites for selecting a study design: objective type, the level of control a researcher has over realistic behavioural events, and the degree of balance between contemporary and historical events.

Based on these assumptions, the study design suitable for this thesis is cross-sectional study design. In this design, the researcher assesses results and opinions of a given study participants at snapshot (Setia, 2016).

Study Unit

This study was conducted among freight forwarders in Ghana. The study focused on only registered members of Ghana Institute of Freight Forwarders (GIFF). GIFF was established on August, 5, 1985 by 16 promoters, and was initially called National Association of Custom House Agents (NACHA) (GIFF, 2022). GIFF is a non-profit organisation, and is governed by a 19-member Executive Council; its executive composition includes president, vice

president, a treasurer, 5 district council chairmen, and the others (GIFF, 2022). Furthermore, GIFF has been a member of FIATA since 1997, and has been operating from a permanent Secretariat that is led by an Executive Secretary. The aim of GIFF is "to provide a quality, accessible service to its members; to maintain strong links with Government, parastatals and other institutions that influence the industry and to promote the industry in the wider environment" (GIFF, 2022).

According to Ghana Institute of Freight Forwarders (GIFF), their membership base can largely be found in Accra, Tema, KIA, Takoradi and Aflao (5 main National Councils) (GIFF-NC, 2022). GIFF membership can be generally categorised into two main streams; namely corporate freight forwarding firms and individual freight forwarders. As at January 2021, there were four hundred and sixty-four corporate freight forwarding firms 'in good standing', as well as, nine hundred and twenty-six individual freight forwarders 'in good standing' (GIFF, 2021).

Population

Population is the number of elements eligible for investigation in research from which findings could be unearthed and/or conclusions drawn (Cooper & Schindler, 2011). In the study, the target population focuses on corporate freight forwarding firms under GIFF. Thus, the study population includes managers, supervisors and field staffs of corporate freight forwarding firms. The membership of corporate freight forwarding firms as at January 2021, stood at four hundred and sixty-four (GIFF, 2021).

Sampling Procedure and Sample Size

Sampling process entails gathering data from a model target population based on certain characteristics such as research purpose and time constrictions (Saunders et al., 2009). Sample maybe described as a subcategory of a target population under focus for a scientific inquiry (Adler & Clark, 2011; Bryman & Bell, 2007). Deciding on an appropriate sampling method is based on certain major determinants such as suitability, degree of exactitude and sample frame (Hair et al, 2003). Sampling maybe categorised into probability and non-probability forms (Rahi, 2017). Whereas, probability sampling method is based on chance and known elements as a determinant on sample selection, non-probability method does not offer equal opportunity to all elements because the sample frame is non-existent. Therefore, employing a non-probability sampling method may limit the generalisation capacity of a study (Etikan & Bala, 2017).

Non-probability sampling methods are named as follows; quota, accidental/convenience, purposive and snowball sampling strategies. Whereas probability sampling method, the most widely used sampling method (Sarstedt et al., 2017) includes; systematic, stratified, cluster, and multistage sampling strategies. The strength of both methods is enshrined in their capacity to unearth representative responses; probability sampling is known to be preferred by statistical organisations, while non-probability sampling methods are most accepted among business entity researchers (Etikan & Bala, 2017). Amongst the merits of non-probability sampling methods include; usability friendly, enhanced cooperation with respondents and cost reduction. However, the method is limited by absence of representativeness and generalisability of findings (Sarstedt et al., 2017).

More specifically, this thesis adopted a probability simple random sampling method. Simple random sampling is primarily employed as a sampling method itself or as a stepping stone for more complex sampling methods (Meng, 2013). Simple random sampling denotes a method of selection where a sample 'c' of 'n' units from a population Ω of size 'N' by providing equal probability of selection to all units (Singh, 2003). It is noteworthy that in this method, a sampling frame is a prerequisite (Acharya et al., 2013). In addition, all entities in the study population have to be itemised either in ascending or descending order. Merits of this method includes; the researcher needs not know much about the population under study; also, the internal and external validity of the method is high, hence data analysis is much easy (Acharya et al., 2013). Nevertheless, there are some limitations to this method as well. Cost of conducting a simple random sampling is high, and the researcher is required to obtain a sampling frame (Acharya et al., 2013).

Sample Size Determination

Cochran's (1977) formula for calculating sample size when population size is finite (Study One):

Pre-calculations

In the measurement of a sample that has an unknown degree of variability, a maximum variability, that is, 50% (p =0.5) must be chosen. Additionally, with 95% confidence level with ±5% precision is appropriate to warrant a scientific determination of an adequate sample size. p = 0.5 and hence q =1-0.5 = 0.5; e = 0.05; χ =1.96

$n_0 = \chi^2 pq / e^2$

$n_0 = (1.96)^2(0.5)\ (0.5) / (0.3)^2$

n_0 =1067

where, n_0 = sample size, z = selected critical value of desired confidence level, p = the estimated proportion of an attribute that is present in the population, q p = −1 and e = desired level of precision.

Cochran (1977) asserted that when the population of a study is known, then there is some leverage to lessen the sample size. Thus, the author proposed a correction formula to estimate the sample size.

$n_0 = n_0 /1+ n_0 -1/N$ (1.2)

Here, n_0 is the sample size derived from equation (1.1) and N is the population size. The population size of the current study is known, that is, a total of 464 corporate freight forwarding companies in good standing as January 2021. From the formula in 1.1, the sample size will be 1067 at 95% confidence level with margin of error equal to (0.03). If n_0 / N is negligible then n_0 is a satisfactory approximation to the sample size. But in this case, the sample size (1067) exceeds 5% of the population size (464). Consequently, the correction formula must be employed to calculate the final sample size. Here, N = 464, n_0 = 1067.

n = 1067 / 1+ (1067-1) / 464

n = 324 is the minimum sample size to be used for the study, nonetheless the study used 370 respondents. The study sample size of 370 exceeds sample size adequacy threshold of 300 respondents established by Krejcie and Morgan, 1970; as well as, Yamane (1967).

Ethical Considerations

Approval of research ethical permission by the Institutional Review Board of the University of Cape Coast commenced with the investigator

submitting a written application on September 26, 2021. Data collection started after a revised version of the ethical clearance application was granted approval by the Board on the 12th of April, 2022 (Appendix A). Other ethical issues considered were free will involvement, right to discretion, concealment and secrecy of information. Pertaining to free will involvement, all persons sampled were allowed to only make contributions to the study through the data collection process at will, and without any form of intimidation or coercion.

For the purposes of outmost good faith, full disclosure of all terms guiding the thesis was made known to the Ghana Institute of Freight Forwarders. This was to provide assurance to participating entities on the confidentiality and preservation of data protection rights. In furtherance, concerns for anonymity were addressed by employing only questions that are directly linked to the study.

Personal details such as names, phone numbers and personal contact information were excluded from the data collection instruments employed by the study. The researcher also stated with clarity the voluntary nature of the data collection process; hence, respondents were free to participate or not in the exercise. It is imperative to note that the researcher also operated within the boundaries specified by the 'Code of Ethics of University of Cape Coast' which orders complete confidentiality. A consent form was also issued along with the data collection instruments, reiterating the respondents' rights.

Data Collection Methods

In quest to gather quantitative data for analysis and interpretation, a cross-sectional survey was employed by the researcher. The survey includes both closed and open-ended questions that provide a vivid description of the

scaled adapted instruments for data gathering. This method was the medium through which the understanding of the concepts that underpin the research was investigated and inferences drawn for meaningful interpretation.

Data Collection Instrument

Structured Questionnaire

A structured questionnaire (see Appendix B) was employed as the data gathering instrument; since its first-time collection, the data source is known as primary source. Questionnaire is commonly employed as quantitative tool in surveys (Picardi & Masick, 2014), and it is most appropriate when data gathering is targeted at assessing attitudes and/or behaviour (Sekaran & Bougie, 2016). Among its merits include precise data capturing (Collis & Hussey, 2013); largely less time for completion; and comparatively less cost effective than interviews and observations (Sekaran & Bougie, 2016).

The study employed the structured closed-ended questionnaire with relatively few open-ended questions for data collection due to following reasons. First, the thesis seeks to ascertain some extremely subtle information from study respondents, that is, their perception of procedural fairness, organisational culture, business ecosystem learning and innovative capability. In the view of the investigator, respondents might not provide accurate answers if interviews are used for gathering this kind of sensitive data due to social desirability concerns. Hence, the study employed questionnaires to increase privacy and maintain anonymity in the data gathering process.

Second, the thesis is desirous of consistency in data gathered. Data gathered from questionnaires can be analysed based on consistency parameters (Malhotra & Birks, 2006). Thus, by using questionnaires, the investigator may

harness consistency in collected data. Third, the investigator was constrained by time, as well as, financial support, particularly during the data collection process. One of the benefits of using questionnaires is its capacity to save time and resources (Sekaran & Bougie, 2016), hence the study used a questionnaire. Scholars have established questionnaire-based survey method as frequently employed technique in quantitative inquiry for examining causal relations (Cohen et al., 2013).

More specifically, the thesis employed self-administered questionnaires because of the following reasons. First, the investigator can visit respondents in person, an approach that has the propensity to optimise response rate. It is noteworthy to state that because of the sensitive nature of questions posed by the study, the response rate could be very low when any other means of questionnaire administration such as mail/email or telephone is used. Second, the investigator projects that there would be some initial queries from respondents which may warrant direct and swift responses, hence a self-administered questionnaire is most suitable for the study data gathering process. Nevertheless, the investigator remained extremely careful in answering queries to avoid any form of bias or influence that may arise from such interactions.

With 62 item and categorised into 5 sections (Section A to E), the questionnaire mimicked standard designs employed in previous studies. 'Section A' is targeted at collecting demographic data. Section 'B' collected data on perception of procedural fairness. The study assessed fairness by employing Colquitt's (2001) seven-item procedural justice/fairness scale (see Section 'B' of Appendix 'B' for itemised details of the construct). 'Section C' encompass statements that relate to innovation capability of the freight

forwarding firms. Since the study is centered on assessing perceived process innovation capability, the study used a 10-item scale adapted from Camison and Villar-Lopez (2014). Process innovation capability measures the organisations' ability to develop novel and enhanced service procedures through technological advancements for customers. (see Section 'C' of Appendix 'B' for itemised details of the construct). 'Section D' detailed statements that relate to organisational learning among the freight forwarding firms. Organisational learning was assessed with a 10-item business ecosystem scale developed by Tsou, Chen and Yu (2018) (see Section 'D' of Appendix 'B' for itemised details of the construct). Finally, 'Section E' collected data on organisational culture among the freight forwarding firms. Organisational culture was sub-classified into four dimensions, namely; adhocracy, clan, market and hierarchy. The 'Organisational Culture Assessment Instrument' (OCAI) is 24-item scale (six-item scale for each sub-construct) developed by Cameron and Quinn (1999) to assess organisational culture (see Section 'E' of Appendix 'B' for itemised details of the construct).

All items were anchored on a five-point Likert scale, with score 1 = least agreement to score 5 = strong agreement. The measurement scales were selected based on balance between length and psychometric properties. Additionally, statements that define each item on all construct scales were written in English language this was necessitated because English is the national language of Ghana, and is the mode of communication among the working class.

Common Method Variance (CMV)

The study employed self-reported questionnaire for the purposes of data collection from all respondents at the same time. This data gathering technique

is prone to challenges of common method bias, hence, the need to proactively address it. CMV explains variance, which is linked to the assessment method rather than to the construct the items represent (Nougarou, 2017). Despite growing concern about usefulness of common method variance, there is no agreeable stance among scholars with regards to the legitimacy and extent of its impact. For instance, Spector (2006) argues that CMV is an 'urban legend' that is either an overestimation or overly simplification of the true state of issues. Increasingly, most academics have adopted common method variance as the main statistical technique for treating response bias. Harman one-factor analysis is a post hoc technique employed after completion of data gathering to ascertain if a single factor is answerable for variance in collected data (Chang et al., 2010). This statistical technique allows the summation of all items explaining each construct included in the study to check if a single factor explains greater covariance among the measures.

In this thesis, (Harman, 1960) common method variance analysis through the adoption of exploratory factor analysis, with loading of all construct items were loaded and reserved to disallow rotation (Podsakoff et al., 2003). In view of this, if the common latent factor accounts for more than 50% of variance, then CMV is likely to be in existence.

Also, the study used varying formats in the questionnaire design to reduce respondents' possibility of repeating previous responses in addressing subsequent questions, thereby, lessening chances of the consistency theme, as well as, item demand characteristic. For example, if a freight forwarder is asked to rate statements on policy procedural fairness, using an agreement scale, the response to each statement is likely to have an effect on proceeding statements.

But, if an initial statement asks for 'agreement' and proceeding statement asks for a 'frequency', respondents are less probable to contemplate the preceding response in quest to answer the statement.

Another technique employed by the current thesis to reduce common method variance is different instruction-based formats. This technique identifies whether a respondent has actually read a statement on the questionnaire or not (Podsakoff et al., 2003). Thus, there were random variations of instructions; such as 'tick', 'asterisk' and 'circle' provided on the questionnaire. These proactive steps are relevant because of data credibility, reason Kock (2015) argues that greater collinearity levels might overestimate path coefficients, an analytical deficiency that may arise from common method bias.

Pre-testing of Questionnaire

Creswell (2014) asserts that pre-testing a research instrument is critical in establishing content validity of items on a scale. Malhotra and Birks (2006) argue that pre-testing a research instrument yields benefits such as the identification of any likely problematic issues with regards to question content and wording. Some scholars contend that pre-testing a research instrument is a prerequisite to commencement of data collection from respondents (Saunders et al., 2009).

The current study conducted a pre-test, using 10 lecturers in the department of Procurement at Ghana Communication Technology University, an academic institution of higher learning, who made contributions to instrument modification. Thereafter, the instrument was tested on 36 individual freight forwarders to ascertain the instrument's reliability and validity. The sample size determination of the pre-testing was grounded on recommendations

made by Preneger et al. (2014), where the scholars conjectured that a minimum of 30 respondents to a pre-test is likely to produce yield 80% high power of accuracy. Henceforward, pre-test copies of the research instrument sealed in brown envelops were self-administered to the 11 lecturers in their various offices on the University campus, whereas 36 individual freight forwarders were sampled at a popular location called 'car pack' in Tema community 2 (a location where freight forwarders converge before accessing the Tema Port). All recipients of the questionnaires were given an expected ten days period of collection.

Nevertheless, questionnaire retrieval took a little more day (5 additional days) than expected. The investigator attributed this delay to busy schedules of the lecturers. It is noteworthy to state that only 30 questionnaires out 36 administered were recovered. The investigator made some revelations upon retrieval of the questionnaires; notable among them are phrases that were not written with clarity. Consequently, some statements were paraphrased for purposes of clarity. For instance, 'Modification of freight clearing services' was replaced with 'Our company has modified and/or improved existing freight clearing services since the commencement of the paperless port clearance system' (INN4). 'We frequently work as the information hub of our collaborative partners' (BES10) was also replaced by 'We frequently work as the information centre of our collaborative partners'. Finally, the pre-test unearthed the significance of all the items, hence, no item was dropped.

Data Collection Procedures

The prior approval was granted by Ghana Institute of Freight Forwarders. The researcher made contacts with the administrative department

of the GIFF to seek authorisation in order to conduct the study. All participants were given official invitation to respond to questions which bother on 'paperless port clearance system' policy implementation at Ghana's Ports, as well as, its implication on organisational culture, business ecosystem learning, procedural fairness and innovation capability of their respective firms.

The researcher obtained the lists of participants from the GIFF. Copies of questionnaires, which numbered 370, were tidily parceled and sealed in brown envelopes with pens and were self- administered to the various 'corporate' freight forwarding firms after approval and commencement notification were obtained from the National Secretariat- Ghana Institute of Freight Forwarders, Tema. This procedure was employed because unionism is a strong and formidable concept within the shipping and logistics industry in Ghana. It is imperative to note that Ghana Institute of Freight Forwarders act as an intermediary between policy makers (Government) and privately-owned freight forwarding firms.

The investigator made significant effort to reach as many as possible 'corporate' freight forwarders so as to gather large volumes of data in order to attain an adequate level of precision. First and foremost, the investigator obtained a sample frame from the National Secretariat of which details of all members in good standing were listed. Second, in-person contacts and follow-up calls were made to the various freight forwarding firms in all 5 district councils (Tema, KIA, Takoradi, Elubo and Aflao). With the assistance of mostly front desk executives, the researcher retrieved 332 completed questionnaires on July 8, 2022 (Deadline for collection).

In all, data collection period lasted for almost two months (April 12, 2022 to July 8, 2022). Out of the 332 questionnaires retrieved, 5 were exceptionally incomplete (missing values > 5%), henceforth they were excluded. The remaining 327 completed questionnaires were deployed for data analysis and interpretation. The study had a response rate of 88.38% (327/370*100%) was achieved. Hence, the non-response rate was 11.62%. It is imperative to state that although the investigator provided contact information to address any unforeseen challenges with the administered questionnaire, no respondent reached out to the researcher. Thus, it can be inferred that respondents understood the construct indicators on the questionnaire and that responses provided are true reflection of their opinion.

An examination of the completed questionnaires show that respondents carefully read the itemised statements on the questionnaire and their responses were in submitted accordingly, hence, there were no suspicion of common method variance on the face value. Completed questionnaires were placed back into the brown envelops and shelved in the researcher's locker. Thereafter, data was entered, coded, cleaned and stored on an external hard drive, as well as, personal computer of the researcher for the purposes of security and backup.

Factor Analysis

Factor analysis (FA) encompasses a wide collection of multivariate techniques employed to describe the manner in which principal factors affect a set of observed variables (Alavi et al., 2020). Alavi et al. (2020) asserts that when a scientific inquiry is purposed on identifying underlying factors, then exploratory factor analysis (EFA) is most appropriate. However, when the research is purposed to test whether a set of observed variables have influence

on responses based on an existing conceptual basis, then a confirmatory factor analysis is suitable. Primarily, the difference between test scores and item scores is a good illustration of the appropriate choice of FA to employ (Ferrando, 2021). Thus, it is imperative to note that when the units being measured are test scores, then the purpose of FA is certainly to examine the dimensionality and relational structure among these scores (Ferrando, 2021). Nevertheless, if FA is employed for the purpose of item analysis, then measurement of dimensionality and structure can only be well-thought-out as intermediate (Muñiz & Fonseca-Pedrero, 2019). Thus, factor analysis (EFA and CFA) was employed in the current thesis for the purposes of deriving latent variables that share a common cause and are interrelated for further statistical analysis.

Validity and Reliability Tests Procedures

Validity and reliability are two major data credibility tests that are fundamentally relevant to the authentication of a constructed instrument. Brennan et al. (2007) posit that it is important to examine a research instrument's validity before its reliability, the scholar argues that there is no point ascertaining a perfectly reliable data when the instrument is invalid.

Validity

Saunders et al. (2009) describes a research instrument's validity as the ability of the instrument to measure what it is intended to truly measure. Over the years, scholars have proposed variety of means by which researchers can assess validity (Diamantopoulos, 2005; Rossiter & Bellman, 2005). However, there is a major before distinction in the measurement; pre-measurement validity, which is conducted before data collection (formative validity), and post-measurement validity, which is undertaken after assessment (construct

validity). A distinction was made between pre and post validity assessment by Brennan et al. (2007).

Formative Validity: Rossiter (2002) asserts that construct is a conceptual term which describes phenomena of conjectural interest. These may take the form of setting out appropriate research questions that reflect assessment of varying constructs through the use of loaded items (Diamantopoulos, 2005). There are two types of formative validity, namely; content and face validity. Content validity assures that the assessment scale entails sufficient and descriptive set of items that denotes the concept under investigation (Saunders et al., 2009).

Face validity shows that developed items intended to assess a concept, appear in a manner that seemingly authenticate the concept under scrutiny (Sekaran, 2006). In the work of Saunders et al. (2009), they argue that content validity could be established through scholarly descriptions found within the reviewed literature.

In the current thesis, content validity was established by careful and thoughtful reviewing of literature on constructs, with additional insights gained through use of instruments from prior literature. Also, Saunders et al. (2009) propose that a search of comments through experts' advice on the representativeness and appropriateness of questions, as well as, agreeing to structural modification of research questions, constitute an establishment of content validity. Further, feedback concerning representativeness, appropriateness and structure of the questionnaire was examined by collecting expert opinions from 30 lecturers from Ghana Communication Technology University during pre-testing. Additionally, instruments were submitted to three

senior researchers/academics who are experts in the field of management for scholarly inputs to be made, as recommended by Saunders et al. (2009).

Construct Validity

Construct validity provides insight on the degree to which the measurement questions in reality assess those constructs which are projected to be measured (Saunders et al., 2009). There are two main ways of assessing construct validity, namely; convergent and discriminant validity (Sekaran, 2006).

Convergent validity

It explains construct measures which are theoretically supposed to be connected, being truly observed as linked, that is, there is presence of correlation or convergence between similar constructs (Brennan et al., 2007). Hair et al. (2014) argue that a study may use AVE and outer loadings of pointers of a construct to establish convergent validity. Thus, this thesis establishes convergent validity by employing AVE and outer loadings of all study constructs.

Discriminant validity

It explains construct measures which are theoretically not supposed to be connected, and truly observed as not linked, that is, the observed outcome discriminates between unrelated constructs (Brennan et al., 2007). Thus, discriminant validity is proven when on the basis of a conceptual model, study constructs are expected to be uncorrelated and is confirmed by empirical tests (Sekaran, 2006).

Reliability

Crossman (2020) describes reliability as the point at which a quantifying instrument delivers the same outcomes each time that it is deployed, with the assumption that the fundamental phenomenon being assessed does not vary. Reliability relates to stability and consistency when an instrument is used to assessment a concept (Sekaran, 2006). Thus, reliability is generally assessed by internal consistency of a measuring instrument (Saunders et al., 2009). Internal consistency of a research instrument is usually assessed by employing Cronbach's alpha (Saunders et al., 2009). Accordingly, the current thesis assesses internal consistency and composite reliability by employing Cronbach's alpha (Cronbach, 1951).

Multicollinearity

Another basic evaluation criterion for testing robustness of the structural model were the multicollinearity valuation. Thus, in the current thesis, the examination of the structural model commenced with a test of possible multicollinearity among the exogenous latent variables, in quest to contain what (Hair et al., 2018) term reduction or elimination of potential biases that are likely to affect the regression outcomes. Wong (2013) established a rule of thumb by stating that Variance Inflator Factor (VIF) values must be below 5 to ward off any probable collinearity problems among the predictor constructs. Hence, the current thesis applied this rule of thumb to guard against potential biases. After collinearity was checked and no potential biases were found, the next step was to assess the R^2 values of the endogenous constructs.

In the work of Shmueli and Koppius (2011), the scholars assert that R^2 assesses the variance explained in endogenous constructs, hence it is regarded as a measure a model's explanatory power. It is imperative to note that the goal of predictive PLS-SEM approach is to explain the endogenous latent variables' variance, thus, the higher the degree of R^2 of the target constructs, the higher R^2 objective is realised. Henseler et al. (2009) argues that R^2 values that range between 0.70, 0.50, and 0.20 may denote substantial, moderate, and weak effect sizes respectively. Accordingly, Sharma et al. (2019), added that substantial R^2 is an indication that the model fits the data gathered and mirrors the overall population.

Lastly, the indicators' weights and loadings, each path coefficient's significance was measured by statistical test procedure called bootstrapping. Non-significant paths or paths that depict signs contrary to the hypothesised directions, are deemed not support a prior hypothesis, whereas significant paths depicting the hypothesised directions, provides an empirical support to the proposed causal relationships.

Data Processing and Analysis

Analysis of the study began with testing of general information of respondents, using frequency tables found in IBM SPSS Statistics for Windows, version 23. Thereafter, the study examined normal distribution of the data in order to inform suitable choice of measure of central tendency and dispersion to be employed for variable investigation through Kolmogorov-Smirnov test and Normal Q-Q Plots. Henceforward, the researcher undertook a correlation matrix test KMO, and Bartlett's test of sphericity. Then, PLS-SEM was

employed as the appropriate analytical technique to assess the measurement and structural model of the study.

Partial Least Squares-Structural Equation Modelling (PLS-SEM)

In recent times PLS-SEM has been applied in several published works in social science, some of which include; management (Sosik et al., 2009), marketing (Ringle et al., 2019) and strategic management (Hair et al., 2012). Principally, PLS-SEM has the capacity to measure models with varying levels of complexities, several constructs, items in a construct and structural paths devoid of imposition of distributional principles on the data. Additionally, PLS-SEM helps in examining cause and effect relationships, as well as, predictive capabilities that help estimate statistical models developed to explain causal relationships (Sarstedt et al., 2017). The technique by this means overpowers the seeming irreconcilable difference between explanations (theoretical assumptions) and prediction, that is, its corresponding managerial implications (Hair et al. 2019).

Also, Gefen et al. (2000) stressed that there is likelihood of differentiating between measurement and structural models, whilst consideration is given to the measurement error. The authors posited that SEM is an analytical tool which has widely been used by several scholars in the establishment and validation of scales in the quest to test relationships among constructs. Lastly, with the availability of user-friendly software packages, researchers require only minimal skills to navigate through the test statistics. PLS-SEM is also compatible with much complex statistical computations such as 'R' (Monecke & Leisch, 2012).

The study purpose necessitates examination of relationships among latent variables which make up the research. This is in line with assumptions of partial least squares-Structural Equation Modeling. Therefore, the study hypothesized relationships between policy implementation, organisational culture, organisational learning and innovation capability.

The employment of PLS-SEM in the current study is owed to a multiplicity of reasons. For instance, despite having lesser statistical requirements in comparison to covariance structure analysis, PLS-SEM has been established as consistent estimator of outcomes (Götz et al., 2010). The authors added that the PLS-SEM technique is capable of dealing with reflective and formative item loadings in a latent variable. In addition, PLS-SEM may be used in path model estimations even under conditions of small sample sizes with several construct and lots of items (Willaby et al., 2015; Hair et al., 2017).

However, PLS-SEM does not lend itself to hard-modelling which is defined by high degrees of distributional assumptions (Tenenhaus et al., 2005). As a result, PLS algorithm was employed in the current study with reliance on default settings; initial weights calibrated at 1.0 maximum iterations of 500 and a stop criterion of < 0.00001. Thus, PLS-SEM served as a much more useful technique than CB-SEM in the examination of the hypothesised relationships established in the study.

Mediation Analysis

There are variety of means by which mediation analysis can be conducted. It is noteworthy that each statistical software has its own tailored program for testing mediation. In STATA, 'sgmediation' (Ender, 2012), 'medeff' and mediation approach by Baron and Kenny (1986) are commonly

used. Nevertheless, there are multiplicity of problems associated with these approaches (MacKinnon et al., 2004). One of the major recommendations by methodological scholars is that mediation analysis has to be grounded on a formal significance test of the indirect effect' 'ab' (Preacher & Hayes, 2004), thus, providing a justification for a Sobel test. Sobel test is founded on postulation that the indirect effect 'ab' has a normal distribution, but empirical tests have consistently established 'ab' as lacking normality characteristics, even in cases where distributions of variables that form the construct 'ab' meets normality criteria (Edwards & Lambert, 2007). Henceforward, Iacobucci et al. (2007) by employing series of Monte Carlo simulations demonstrated that regression (REG) technique is plagued with serious drawbacks, no matter how simple the mediation is compared to the SEM technique. In conclusion, PLS-SEM technique is the standard framework for conducting mediation analysis (Mehmetoglu, 2018). Accordingly, modification of the 'B-K approach' was conducted and established through a series of steps by Iacobucci et al. (2007) and authenticated by Zhao et al., (2010).

In the current study, a combination of verified series of steps proposed by the aforementioned scholars and harmonised by Mehmetoglu (2018) (termed 'medsem') was employed. 'Medsem' is beneficial in the study because it potentially contributes to the estimation of mediational models in an optimal way by means of structural equation framework whilst establishing a proper and complete outcome (Mehmetoglu, 2018). Additionally, 'medsem' facilitates mediational analysis using observed or latent variables and/or a combination of both at the same time (Mehmetoglu, 2018).

Moderation Analysis

With regards to the moderating effect, Hair et al. (2014) posits that the link between two variables (Y_1 and Y_2) is deemed as not constant, however, this relationship is dependent on a moderator variable (M), which has the capacity to alter the direction of a relationship. The scholar added that this type of moderation is termed a two-way interaction, for the reason that, apart from the endogenous variable (Y_2), the moderator interrelates with another variable termed exogenous latent variable (Y_1). The path from Y_1 to Y_2 is termed main effect, whereas the path from Y_1 to Y_2 moderated by M is known as a simple effect (Figure 2).

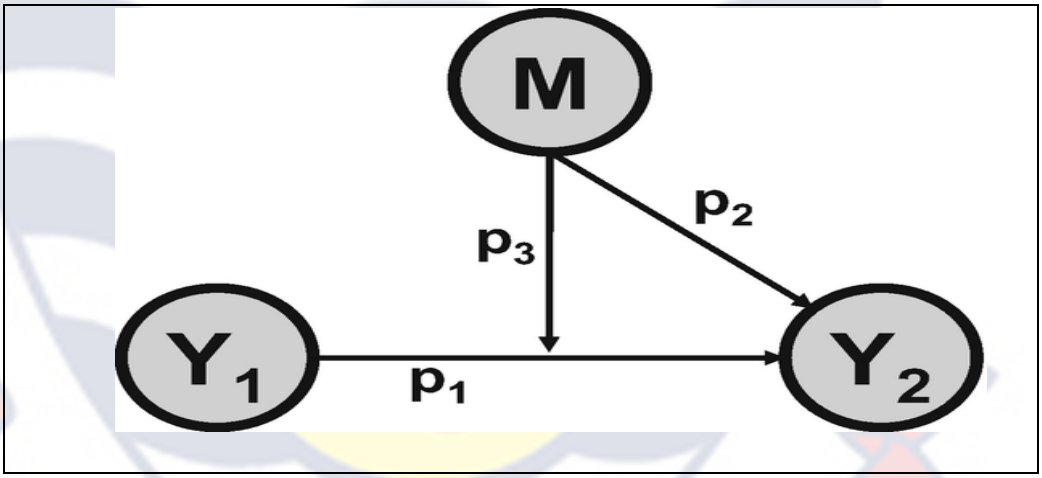

Figure 2: An example of moderating effect
Source: Adopted from Hair et al. (2014, p. 259)

More specifically, the study examines the moderating effect of perceived procedural fairness. The test for moderation is set when a dependent variable equals an interaction between explanatory variables; for example, Y= X*M. Particularly, the analysis was undertaken to explore the linear, as well as, interaction effects of business ecosystem learning (BES) and perception of procedural fairness (PPF). Accordingly, the study proposes that the interaction term BES*PPF will positively predict the relationship between business

ecosystem learning and innovative capability. Further, the conditional and total effects from business ecosystem learning to innovative capability will be tested against specific moderator values of perceived procedural fairness ($M \pm 1\ SD$). The result will illustrate the indirect effect and its significance within $\pm 1\ SD$. Thus, the study conjectures that the prediction of innovative capability by business ecosystem learning is possible within the perceived procedural fairness range of $M \pm 1\ SD$ and that the indirect effect from business ecosystem learning to innovative capability is higher for respondents with high perception of procedural fairness compared to respondents with low perception of procedural fairness.

Chapter Summary

The third chapter discussed a number of issues pertaining to research methodology and philosophical underpinnings of the thesis. Some of the relevant areas addressed in this chapter include research designs and data collection methods. The study further provided justifications for the choices made. Assessment scales employed by the study were expounded and rationalised. Preliminary robust tests such as validity and reliability of scales were discussed. Pre-testing procedure and feedback was explored in this chapter. Sampling method employed, determination of sample size in the study was clarified. Data collection and its ethical appropriateness was explored in this chapter as well. Lastly, quantitative method is suitable for testing the study's hypothesised paths were explored in the chapter.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter shows and discusses results of the general information of workers of freight forwarding firms that took part in the study. Further, the chapter highlights key statistically robust tests such as; test of normality of the data to help determine the appropriate measure of central tendency and dispersion to be employed for descriptive statistics presentation. After which the data is subjected to factor analysis with statistical undertones; for example, Correlation Matrix, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy test, and Bartlett test of sphericity. Sequentially, the measurement and structural model are assessed, using STATA 14. Results are presented in tables and figures.

General Information of Respondents

This section entails the demographic profile of respondents for the purposes of analysing individual attributes of the study respondents. Additionally, descriptive statistics is conducted to analyse individual attributes of the respondents. The detailed information on the 327 respondents is appended in below table 2.

Table 1: Demographic profile of respondents

Items	Categories	Frequency	%
Gender	Male	242	74.0
	Female	85	26.0
Age (In years)	≤ 30	184	56.3
	31-50	122	37.3
	>50	21	6.4
Education	Pre-tertiary	217	66.4
	Tertiary	110	33.6
Employment type	Full time	289	88.4
	Part time	38	11.6
Number of years with employer	≤5	132	40.4
	>5	195	59.6

Source: Field survey (2022)

In all, 327 valid responses were gathered and used in the statistical analysis. Of the 327 respondents, males were 74.0% (n=242) and females were 26.0% (n=85), indicating that males were slightly more than females.

The current study operationalised age classification in accordance with Yarlagadda et al. (2015) approach; 56.3% (n=184) of the respondents were revealed as young adults, 37.30% (n=122) were middle-aged adults, and 6.4% (n=21) were senior adults, as shown in Table 1.

With regards the respondents' employment type, majority were full time workers 88.4% (n=289) and the remaining were part-time workers 11.6% (n=38), as depicted in Table 1. Jabeen et al. (2015) argue that workers who are not offered permanent appointments are less likely to be committed to an organisation. The authors added that part time workers receive fewer job incentives and most often not considered for neither promotion and/or long-term or permanent job. On the other side, (Niesen et al., 2018) argue that permanent

workers are usually committed to their employers; notably, in form of spending much time at work, and exhibiting productive work behaviour.

Lastly, the investigator assessed the number of years that the respondents have worked with their employer, which is employees' tenure in office. It was revealed that 59.6% (n=195) of the respondents have worked with their organisations for less than 5 years, whereas, 40.4% (n=132) have worked with their organisation for 5 years or less (see Table 2). Niesen et al. (2018) argue that longer organisational tenure is positively associated with better good employee-organisation behaviour.

Test of Normality in the Data

Saunders et al. (2009) asserts that examining normal distribution of data is a relevant procedure conducted prior to any major statistical test such as regression. The graphical display and corresponding data results that characterised the distribution shape of variables help to understand patterns and nature of collected data (Hair et al., 2010). Normal distribution of data is said to have been established if data is equally distributed on each side of the highest frequency, this is called symmetrical distribution. Within the context of symmetrical distribution, data is plotted in a bell-shaped curve (Saunders et al., 2009). Checking for normal distribution of data is a vital pre-conditional statistical procedure in regression analysis, as well as, other multivariate data analytic techniques. Nevertheless, if this normal distribution condition is not met, an alternative approach may be employed (Henseler et al., 2009). Thus, Hair et al. (2014) suggests that examination of normality of data can be done by employing two measures of distribution, namely; Skewness and Kurtosis.

Skewness measures the degree of symmetrical distribution of a variable's data. When distributed data responses for a variable drift towards the right or left tail, then it can be interpreted as skewed (Hair et al., 2014). Kurtosis measures how narrow distribution of responses are within a dataset. The rule of thumb for assessing skewness; any number greater than +1 or lower than -1 is an indication of a considerably skewed distribution. Similarly, the rule of thumb for kurtosis; states that any number greater than +1 is deemed peaked distribution, whereas any number less than -1 denotes a flat distribution (Hair et al., 2014). Pallant (2007) established alternative means by which Kolmogorov-Smirnov and Shapiro-Wilk tests can be employed to measure the normality of distribution of scores. These tests are designed to test normality by benchmarking data to a normal distributed dataset with the same mean and standard deviation as stated in a sample (Pallant, 2007). A non-significant result (Sig. value; >.05) shows data normality.

Table 2: Test of Normality

	Kolmogorov-Smirnov Test			Shapiro-Wilk Test		
Construct	Statistics	Df	Sig.	Statistics	df	Sig.
Perception of Procedural Fairness	0.084	327	0.000	0.980	327	0.000
Business Ecosystem	0.106	327	0.000	0.960	327	0.000
Innovative Capability	0.097	327	0.000	0.982	327	0.000
Clan Culture	0.126	327	0.000	0.968	327	0.000
Adhocracy Culture	0.155	327	0.000	0.943	327	0.000
Market Culture	0.122	327	0.000	0.977	327	0.000
Hierarchy Culture	0.268	327	0.000	0.868	327	0.000

Source: Field survey (2022)

Table 4, the result indicates that the Kolmogorov-Smirnov Z test values for all the seven constructs were less than the alpha threshold of 0.05, hence, the null hypothesis was rejected in favour of the alternate and concluded that the datasets for clan culture, adhocracy culture, market culture, hierarchy culture, business ecosystem learning, perception of procedural fairness and innovation capability were significantly different from a normally distributed data.

Examining the Level of Perception of Procedural Fairness

This section sought to examine the level of perception of procedural fairness among freight forwarders in Ghana. Observing Table 4, a majority of 6 out of the 7 indicators of perception of policy procedural fairness showed a median of 4, signaling strong agreement to perception of policy procedural fairness. The remaining 1 indicator showed a median of 3, suggesting moderate agreement to perception of policy procedural fairness. These findings suggest that majority of the respondents expressed strong agreement to perception of policy procedural fairness, providing evidence of a strong perception of policy procedural fairness among freight forwarders in Ghana.

Table 3: Level of Perception of Policy Procedural Fairness among Freight Forwarders in Ghana

SRL	Indicators	Mean	Median	IQR	Skewness	Kurtosis
PPF1	I am able to express my views when interacting with officers' in-charge of the paperless port procedures.	3.656	4.000	2.000	-0.732	-0.812
PPF2	I can influence the decisions arrived at by those procedures.	3.260	4.000	2.000	-0.459	-0.990

Table 3 Cont'D

PPF3	I know that the paperless port clearance procedures are applied consistently to all freight forwarders/clearing agents.	3.499	4.000	1.000	-0.544	-0.736
PPF4	I know that the paperless port clearance procedures are free from bias.	3.064	3.000	2.000	-0.069	-1.206
PPF5	I know that the paperless port clearance procedures are based on accurate information.	3.725	4.000	2.000	-0.889	-0.156
PPF6	I am able to appeal decisions that have been made by government agents in charge of the process.	3.263	4.000	3.000	-0.280	-1.432
PPF7	The paperless port clearance procedures uphold ethical and moral standards.	3.309	4.000	2.000	-0.423	-1.252

Source: Field survey (2022)

The interquartile range (IQR) ranged from 1 to 3, connoting that respondents' responses to perception of policy procedural fairness were less variegated. Skewness ranged from -0.889 to -0.069 and kurtosis ranged from -1.432 to -0.156, confirming that the data on perception of policy procedural fairness was not normally distributed, because, some of the values were not closer to zero, as presented in Table 4.

Examining the Level of Business Ecosystem Learning

This section sought to examine the level of organisational learning among freight forwarders in Ghana. Observing Table 5, all 10 indicators measuring organisational learning showed a median of 4, signaling strong agreement to organisational learning. These findings suggest that majority of

the respondents expressed strong agreement to the concept of organisational learning, providing evidence of a strong organisational learning attribute among freight forwarders in Ghana.

Table 4: Level of Organisational Learning among Freight Forwarders in Ghana

SRL	Indicators	Mean	Median	IQR	Skewness	Kurtosis
BES1	We have more cooperative partners.	3.370	4.00	2.00	-0.520	-0.925
BES2	There has been an increased in the number of cooperative partners.	3.460	4.00	2.00	-0.477	-0.913
BES3	We have more interactive frequency with our partners.	3.240	4.00	2.00	-0.452	-0.834
BES4	We have a longer relationship with our partners.	3.100	4.00	2.00	-0.147	-1.310
BES5	We are constantly working with our partners.	3.830	4.00	2.00	-0.922	-0.075
BES6	We have a high levels of close working relations with our associates.	3.350	4.00	3.00	-0.374	-1.230
BES7	We have a high levels of work relations with associates in a diverse industry.	3.760	4.00	2.00	-0.752	-0.423
BES8	We have a high range of associates.	3.710	4.00	2.00	-0.772	-0.434
BES9	We are prepared in working with enterprises in varying industries.	3.980	4.00	1.00	-1.198	0.976
BES10	We frequently work as the information centre of our collaborative partners	3.750	4.00	2.00	-0.778	-0.271

Source: Field survey (2022)

The interquartile range (IQR) ranged from 1 to 3, connoting that respondents' responses to organisational learning were less variegated. Skewness ranged from -0.147 to -1.198 and kurtosis ranged from -1.310 to 0.976, confirming that the data on business ecosystem learning was not normally distributed, because, some of the values were not closer to zero, as presented in Table 5.

Examining the Level of Innovative Capability

This section sought to examine the level of firms' innovative capability among freight forwarders in Ghana. Observing Table 6, a majority of 6 out of the 10 indicators of innovative capability showed a median score of 4, signaling strong agreement to innovative capability. 2 indicators revealed a median score of 3, indicating moderate agreement to innovative capability. 1 indicator showed a median score of 5, indicating strongest agreement to innovative capability, whereas the remaining indicator; showed a median score of 2, suggesting less agreement to innovative capability. These findings suggest that majority of the respondents expressed strong agreement to innovative capability, providing evidence of a strong innovative capability among freight forwarders in Ghana.

Table 5: Level of Innovative Capability among Freight Forwarders in Ghana

SRL	Indicators	Mean	Median	IQR	Skewness	Kurtosis
INC1	Our firm creates and manages a range of synchronised technologies.	4.140	4.00	1.00	-1.256	1.828
INC2	Our firm masters and absorbs basic technologies.	4.110	4.00	1.00	-1.262	1.753

Table 5 Cont'D

INC3	Our firm persistently advances programs to lessen production expenses.	3.420	3.00	1.00	-0.076	-0.528
INC4	Our firm has priceless novel ideas to improve service offerings through technology.	3.400	3.00	1.00	-0.455	-0.086
INC5	Our firm has priceless knowledge on best practices for work.	3.830	4.00	2.00	-0.802	0.444
INC6	Our firm organises productive activities efficiently	4.110	5.00	2.00	-1.036	-0.092
INC7	Our firm assigns funds to operational needs of departments efficiently.	2.660	2.00	3.00	0.292	-1.159
INC8	Our firm offers ecologically sound processes.	3.500	4.00	1.00	-0.503	-0.436
INC9	Our firm manages operational deliverables well.	4.130	4.00	1.00	-1.493	2.473
INC10	Our firm synchronises service management activities efficiently.	3.940	4.00	1.00	-1.155	2.313

Source: Field survey (2022)

The interquartile range (IQR) ranged from 1 to 3, connoting that respondents' responses to innovative capability were less variegated. Skewness ranged from -0.076 to 0.292 and kurtosis ranged from -1.159 to 2.473, confirming that the data on innovative capability was not normally distributed, because, some of the values were not closer to zero, as presented in Table 6.

Examining the Level of Organisational Culture

This section sought to examine the level of organisational culture among freight forwarders in Ghana. Observing Table 7, all 24 indicators of organisational culture showed a median score of 4, signaling strong agreement to organisational culture. These findings suggest that respondents expressed strong agreement to organisational culture in their various firms, providing evidence of a strong organisational culture among freight forwarders in Ghana.

Table 6: Level of Organisational Culture among Freight Forwarders in Ghana

SRL	Indicators	Mean	Median	IQR	Skewness	Kurtosis
CLN1	I feel like I own this firm. The firm is more of an extended family to me. My colleagues and I share mutual benefits and challenges.	3.920	4.00	1.00	-1.179	0.705
CLN2	Leaders in the firm are commonly considered to epitomise mentoring, and facilitating.	3.790	4.00	2.00	-1.038	0.041
CLN3	Managerial style in the firm is characterised by joint effort.	3.690	4.00	2.00	-0.914	-0.165
CLN4	The bond that unites this firm is loyalty and trust. Obligation to this firm is deemed as high.	3.800	4.00	2.00	-0.710	-0.454
CLN5	The firm places emphasis on human capital growth. High conviction, sincerity, and participation.	3.660	4.00	1.00	-0.744	-0.405
CLN6	The firm defines goal attainment as human capital development, teamwork, employee satisfaction and well-being.	3.860	4.00	2.00	-0.864	-0.195
ADH1	The firm is extremely dynamic and business focused. My colleagues and I are ready to stick our necks out for risk-taking.	3.660	4.00	2.00	-0.752	-0.404

Table 6 Cont'D

ADH2	Leadership in the organisation is generally considered to exemplify entrepreneurship, innovation, or risk taking.	3.600	4.00	2.00	-0.658	-0.691
ADH3	Managerial style in the firm is grounded in applauds for risk-taking behaviour, novelty and distinctiveness. ing, innovation, freedom, and	3.390	4.00	2.00	-0.302	-1.026
ADH4	The bond that unites this firm is commitment to create new things. There is high weight on cutting-edge pragmatic solutions.	3.890	4.00	2.00	-0.997	0.393
ADH5	The firm places emphasis on the acquisition of new resources and taking on uncharted paths to success. Exploring novel ventures and searching for opportunities.	3.620	4.00	3.00	-0.769	-0.615
ADH6	The firm defines success as having the most exceptional or novel initiatives. Thus, must be a leader in innovation.	3.870	4.00	2.00	-0.856	0.013
MKT1	The firm is extremely result-oriented. All we think about is getting the job done. It is a competition driven and achievement-oriented firm.	3.930	4.00	1.00	-1.105	0.411
MKT2	Leaders in the firm are commonly deemed to epitomise aggressiveness in the delivery of outcomes.	3.790	4.00	2.00	-0.673	-0.595

Table 6 Cont'D

MKT3	Managerial style in the firm is grounded in competitiveness and goal attainment.	3.640	4.00	2.00	-0.500	-0.756
MKT4	The bond that unites this firm is the weight on goal attainment and completion.	3.780	4.00	2.00	-0.691	-0.530
MKT5	The firm places emphasis on competitiveness and achievement-driven initiatives. Working to meet stretched targets and winning deals in the market space.	3.770	4.00	2.00	-0.897	-0.052
MKT6	In the view of this firm, success means to market leadership and being ahead of competition.	3.960	4.00	1.00	-1.171	1.001
HRC1	The firm is an extremely structured place. Official policies generally govern prescribed conducts.	3.860	4.00	1.00	-1.191	0.389
HRC2	Leaders in the firm are commonly considered to epitomise coordination and organisational efficiency.	3.820	4.00	2.00	-0.735	-0.163
HRC3	Managerial style in the firm is grounded in security of tenure and relationship stability among partners.	3.520	4.00	1.00	-0.835	-0.203
HRC4	The bond that unites this firm is formal regulations and codes of conduct. This maintains smooth-running of the firm.	3.650	4.00	2.00	-0.745	-0.493

Table 6 Cont'D

HRC5	The firm places emphasis on permanence and steadiness. Efficiency, well-controlled conduct and smooth operations are key.	3.800	4.00	2.00	-0.955	0.035
HRC6	The firm defines success as being efficient in all operations. Reliable provisions, providing smooth scheduling, and low-cost productive activities are crucial.	3.910	4.00	1.00	-1.041	0.533

Source: Field survey (2022)

The interquartile range (IQR) ranged from 1 to 3, connoting that respondents' responses to organisational culture were less variegated. Skewness ranged from -1.191 to -0.302 and kurtosis ranged from -0.052 to -1.001, confirming that the data on dimensions of organisational culture was not normally distributed, because, some of the values were not closer to zero, as presented in Table 7.

Factor Analysis

This sub segment discusses results of the Correlation Matrix, Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO), and Bartlett test of sphericity. First, the Correlation Matrix of all the variables were computed and tested. The investigator commenced with analysing the Correlation Matrix of perception of policy procedural fairness (PPF). The most suitable range of correlation matrix should be between 0.2 and 0.4 values; because if it is less than 0.1, then there is a high possibility that a single total score might not be able to satisfactorily represent the complexity of the item (Briggs & Cheek,

1986). The scholars added that values above 0.5, signifies that the items are exceedingly redundant and the construct assessment is too specific.

Also, the inter-item correlation matrix result of perception of perception of procedural fairness is illustrated in Appendix D. The result shows that correlation values of 4 out of 7 indicators significantly loaded within the recommended threshold values of 0.2 to 0.50. Consequently, the 4 indicators were retained and used in measuring perception of perception of procedural fairness.

Second, the inter-item correlation matrix result of business ecosystem learning is illustrated in Appendix F. The result shows that correlation values of 5 out of 10 indicators significantly loaded within the recommended threshold values of 0.2 to 0.50. Consequently, the 5 indicators were retained and used in measuring business ecosystem learning.

Third, the inter-item correlation matrix result of innovative capability is illustrated in Appendix P. The result shows that correlation values of 5 out of 10 indicators significantly loaded within the recommended threshold values of 0.2 to 0.50. Consequently, the 5 indicators were retained and used in measuring innovative capability.

Forth, the inter-item correlation matrix result of clan culture is illustrated in Appendix H. The result shows that correlation values of 2 out of 6 indicators significantly loaded within the recommended threshold values of 0.2 to 0.50. Consequently, the 2 indicators were retained and used in measuring clan culture.

Fifth, the inter-item correlation matrix result of adhocracy culture is illustrated in Appendix J. The result shows that correlation values of 2 out of 6 indicators significantly loaded within the recommended threshold values of 0.2

to 0.50. Consequently, the 2 indicators were retained and used in measuring adhocracy culture.

Sixth, the inter-item correlation matrix result of market culture is illustrated in Appendix L. The result shows that correlation values of 2 out of 6 indicators significantly loaded within the recommended threshold values of 0.2 to 0.50. Consequently, the 2 indicators were retained and used in measuring market culture.

Seventh, the inter-item correlation matrix result of hierarchy culture is illustrated in Appendix N. The result shows that correlation values of 5 out of 6 indicators significantly loaded within the recommended threshold values of 0.2 to 0.50. Consequently, the 5 indicators were retained and used in measuring hierarchy culture.

After testing the inter-item Correlation Matrix of each construct, Kaiser-MeyerOlkin Measure of Sampling Adequacy, and Bartlett Test of Sphericity of all 7 established constructs were tested and reported. These 7 variables are perception of procedural fairness, business ecosystem, innovation capability, clan culture, adhocracy culture, market culture and hierarchy culture. All the 7 study variables recorded significant scores, additionally, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy for all study variables were above 0.6 as recommended by Scheridan and Lyndall (2001).

Partial Least Squares- Structural Equation Model

Hair et al. (2014) asserts that PLS-SEM estimator is an ordinary least squares (OLS) regression-based method that is different from the maximum likelihood (ML) estimator for CB-SEM. PLS-SEM estimate coefficients maximises the R-squared values of endogenous constructs. This built-in

function helps PLS-SEM estimator to achieve its predictive capacity. Thus, PLS-SEM acts as a predictive oriented variance-based approach, which is centered on endogenous (target) constructs in a model and seeks to optimise their explained variance (Hair et al., 2012).

Hair et al. (2014) establishes two stages in conducting PLS-SEM analysis; that is, measurement model and structural model. Measurement model focuses on the establishment of latent variables by using some process defined indicator variables, they are also termed outer models in PLS-SEM. Measurement model could either be reflective, where the model has mapped out linkages from the latent variable to its indicators, or formative measurement model, where there are links from the indicators to the latent variables. On the other hand, structural model signifies the theoretical or conceptual component of the path model. The structural model consists of latent variables and corresponding path linkages (Hair et al., 2014). Model estimation boosts realistic assessment of links between pointers and their overall constructs (measurement models) and among the study constructs (structural model) (Hair et al., 2014). Therefore, a specific model estimation defines theory-data fitness and encompasses valuation of both measurement and the structural models.

Table 7: Systematic Evaluation of PLS-SEM Results

Stage 1: Evaluation of the Measurement Models

Stage 1a:- Reflective Measurement Mode	Stage 1b:- Formative Measurement Model
1. Internal consistency (composite reliability) 2. Indicator reliability (factor loading)	1. Convergent validity (average variance extracted) 2. Collinearity among indicators (VIF)

Table 7 Cont'D

3. Convergent validity (average variance extracted) 4. Discriminant validity (cross loading, Fronell Larcker, HTMT).	3. Significance and relevance of outer Weights

Stage 2: Evaluation of the Structural Models

1. Coefficients of determination (R^2)
2. Predictive relevance (Q^2)
3. Size and significance of path coefficient
4. f^2 effect sizes
5. q^2 effect sizes

Adopted from Hair et al. (2014)

Measurement Model Analysis

A PLS path modeling application software; STATA 14 was employed to build and test the path model. After the model was constructed in STATA 14 statistical software, estimation of the model was undertaken by running a PLS-SEM algorithm. Assessment of measurement model enable the investigator to test for reliability and validity of the study constructs. This assertion is corroborated by Hair et al. (2014), where the scholars argue that in the assessment of measurement models, inquirers should differentiate between reflective and formative constructs.

Reflective Measurement Model

Generally, arrows define links from constructs to the observed indicators. In accordance, variations in construct values leads to a corresponding and simultaneous variations in all items, which define the measurement model. Thus, it shows all indicators and their correlation values (Hair et al., 2014). The authors recommend the following steps for evaluating reflective model; test reliability, measure convergent validity and finally assess discriminant validity.

Internal Consistency Reliability

Internal consistency reliability has been conventionally tested through Cronbach's alpha interpretation, and delivers estimate of item or construct reliability on the basis of inter-correlations among observed indicator variables (Hair et al., 2014). Cronbach's alpha values must be equal to or greater than 0.70 to meet its acceptable threshold (Vinzi et al., 2010). Nevertheless, Hair et al. (2014) argues that cronbach's alpha is underpinned by numerical sensitivity of items loaded on a research instrument, and thus may affect the measurement of internal consistency. Thus, the scholars recommend that it can be deployed as a conservative assessment of internal consistency. The scholars' further recommend based on this limitations that a more robust technique called composite reliability may be deployed (Hair et al, 2014). Chin (1998) corroborates this assertion by stating that composite reliability is more suitable than Cronbach's alpha because in the former, there is a parallelity.

Table 8: Showing internal consistency reliability

Construct	Cronbach's Alpha	Composite Reliability
Perception of Procedural Fairness	0.759	0.906
Business Ecosystem	0.759	0.937
Innovative Capability	0.766	0.936
Clan Culture	0.790	0.805
Adhocracy Culture	0.769	0.801
Market Culture	0.760	0.818
Hierarchy Culture	0.790	0.904

Source: Field survey (2022)

Evidence from the table shows that all the measures loaded above 0.70, which is the Cronbach's alpha value threshold for adequacy (Vinzi et al., 2010). Additionally, composite reliability loadings for all constructs met the recommended threshold of 0.7 (Hair et al., 2014).

Validity

Proceeding the examination of reliability comes validity of the research instrument for onward analyses. Hair et al. (2014) suggests that convergent validity and discriminant validity are necessary preliminary tests to authenticate the credibility of a research instrument.

Convergent Validity

Convergent validity denotes the degree a measure positively correlates with other measures of the same construct (Hair et al., 2014). Hair et al. (2014) suggests that AVE and outer loadings of construct pointers are prerequisites in establishing convergent validity. The scholars add that AVE value of 0.50 or greater as adequacy threshold value for acceptability. The scholars explain that AVE threshold values must explain at least half the variance in their indicators. Also, with regards to outer loadings, the scholars suggest that higher outer loadings on a construct are indicative of significant association between study constructs (Hair et al., 2014). The authors recommend a value of 0.7 or greater as adequate for standardised outer loading. Nevertheless, Hulland (1999) asserts that in social and behavioural sciences, weaker outer loadings may be acceptable. Hair et al. (2014) recommends exclusion of indicators with very low outer loadings, that is, below 0.40. Thus, indicators between the values of 0.40 to 0.70 are acceptable as they are noted for content validity contribution.

Table 9: Values for Average Variance Extracted (AVE)

Construct	Average Variance Explained (AVE)
Perception of Procedural Fairness	0.533
Business Ecosystem	0.516
Innovative Capability	0.741
Clan Culture	0.546
Adhocracy Culture	0.540
Market Culture	0.562
Hierarchy Culture	0.522

Source: Field survey (2022)

Results for the AVE values are shown in the Table 10. The AVE values for all constructs were greater than the threshold value of 0.5; hence convergent validity of the study instrument has been established. Also, in connection with outer loadings, the algorithm for this thesis' outer loadings ranged from 0.506 to 0.970. An illustration of items that were adequately loaded are illustrated in Table 11.

Table 10: Items with Factor Loading Adequacy

SRL	Scale Items	Outer Loadings
	Policy Procedural Fairness	
PPF1	I am able to express my views when interacting with officers' in-charge of the paperless port procedures.	0.722
PPF2	I can influence the decisions arrived at by those procedures.	0.592
PPF3	I know that the paperless port clearance procedures are applied consistently to all freight forwarders/clearing agents.	0.709
PPF6	I am able to appeal decisions that have been made by government agents in charge of the processes.	0.781
PPF7	The paperless port clearance procedures uphold ethical and moral standards.	0.826
	Organisational Learning- Business Ecosystem	
BES1	We have more cooperative partners.	0.952
BES2	There has been an increased in the number of cooperative partners.	0.596
BES3	We have more interactive frequency with our partners.	0.839
BES4	We have a longer relationship with our partners.	0.506
BES6	We have a high levels of close working relations with our associates.	0.889
BES8	We have a high range of associates.	0.580
BES9	We are prepared in working with enterprises in varying industries.	0.683
BES10	We frequently work as the information centre of our collaborative partners	0.718
	Innovative Capability	
INC1	Our firm creates and manages a range of synchronised technologies.	0.846
INC2	Our firm masters and absorbs basic technologies.	0.790
INC4	Our firm has priceless novel ideas to improve service offerings through technology.	0.778
INC5	Our firm has priceless knowledge on best practices for work.	0.904
INC9	Our firm manages operational deliverables well.	0.970
	Organisational Culture- Clan Dimension	
CLN2	Leaders in the firm are commonly considered to epitomise mentoring, and facilitating.	
CLN6	The firm defines goal attainment as human capital development, teamwork, employee satisfaction and well-being.	

Table 10 Cont'D

	Organisational Culture- Adhocracy Dimension	
ADH1	The firm is extremely dynamic and business focused. My colleagues and I are ready to stick our necks out for risk-taking.	0.789
ADH3	Managerial style in the firm is grounded in applauds for risk-taking behaviour, novelty and distinctiveness.	0.677
	Organisational Culture- Market Dimension	
MKT2	Leaders in the firm are commonly deemed to epitomise aggressiveness in the delivery of outcomes.	0.746
MKT3	Managerial style in the firm is grounded in competitiveness and goal attainment.	0.553
	Organisational Culture- Hierarchy Dimension	
HRC1	The firm is an extremely structured place. Official policies generally govern prescribed conducts.	0.719
HRC3	Managerial style in the firm is grounded in security of tenure and relationship stability among partners.	0.716
HRC4	The bond that unites this firm is formal regulations and codes of conduct. This maintains smooth-running of the firm.	0.723
HRC5	The firm places emphasis on permanence and steadiness. Efficiency, well-controlled conduct and smooth operations are key.	0.725
HRC6	The firm defines success as being efficient in all operations. Reliable provisions, providing smooth scheduling, and low-cost productive activities are crucial.	0.729

Source: Field survey (2022)

Discriminant validity of the reflective constructs

Discriminant validity relates to the degree to which a construct is unique and different from other constructs empirically (Hair et al., 2014). In the current thesis, the Fornell-Larcker criterion for assessing discriminant validity was employed. With regards to this criterion, the square root of Average Variance Extracted (AVE) values are matched with correlations of latent variables. The square root of each variables' AVE should be greater than its highest correlation with any other variable (Hair et al., 2014). The current study employed excel spreadsheet to calculate discriminant validity of all study constructs.

Table 11: Descriptive statistics, bivariate correlation and composite reliability coefficient variables

Items	CR	AVE	1	2	3	4	5	6	7
P. Procedural Fairness	0.906	0.533	0.730						
Business Ecosystem	0.937	0.516	0.700**	0.736					
Innovation Capability	0.963	0.741	0.103	0.175**	0.861				
Clan Culture	0.805	0.546	0.304**	0.429**	0.216**	0.739			
Adhocracy Culture	0.801	0.540	0.388**	0.403**	0.441**	0.246**	0.735		
Market Culture	0.818	0.562	0.576**	0.545**	0.113*	0.374**	0.172**	0.750	
Hierarchy Culture	0.904	0.522	0.141*	0.135*	0.390**	0.157**	0.458**	0.127*	0.722
Mean			2.770	2.698	4.021	2.884	3.479	2.541	3.551
SD			0.750	0.616	0.704	0.679	0.690	0.709	0.683
Median			2.750	2.625	4.000	2.750	3.500	2.833	3.750
IQR			1.00	0.88	0.50	0.75	0.90	1.00	0.75

Notes: Diagonal (bolded) figures are the square root of AVE. Off-diagonal figures are the correlations between the constructs. Furthermore, n =327, p<0.05; p<0.01***

Structural Model Evaluation

Structural model denotes the conceptual elements of the path model, and comprises latent variables and their path relations (Hair et al., 2014). Structural model outcomes encompass assessing the model's predictive capacity and associations among the constructs, and illustrates fitness between empirical data and theory/concept (Hair et al., 2014). The scholars propose 'a five-step procedure' for testing a structural model.

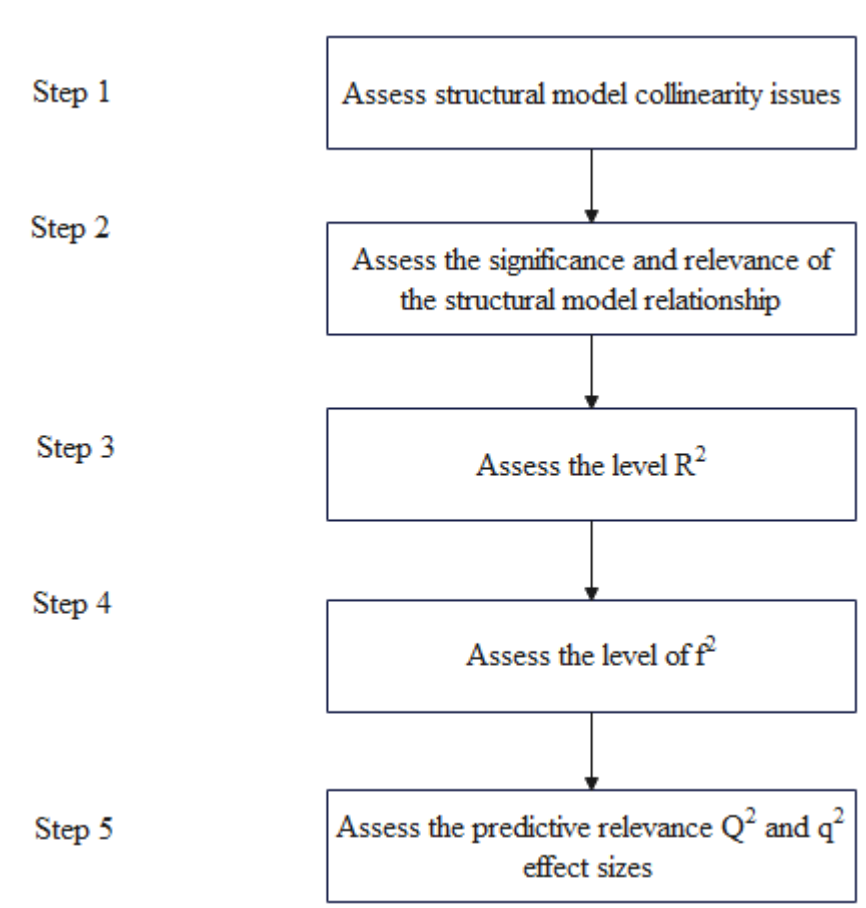

Figure 3: Steps involved in analysis of structural model- adopted from Hair et al (2014) (p.169).

Collinearity

The goal is to test for significant levels of Collinearity among explanatory variables to avoid situations where two or more variables in a structural model are established to be highly correlated; an antecedent of biasness in path coefficients. Hair et al. (2014) opines that approximation of path coefficients in a statistical model may be grounded in OLS regression of every endogenous latent variable that corresponds with antecedent constructs. Testing for Collinearity encompasses separate measurement of each set of explanatory variables for every sub-part of the structural model. The test of measure is VIF; Hair et al. (2014) consequently recommends that VIF values of each explanatory variables should be less than 5.

Table 12: Dependent variable = Innovative Capability

Construct	VIF	1/VIF
Perception of Procedural Fairness	2.41	0.414
Business Ecosystem	2.67	0.375
Clan Culture	1.40	0.715
Adhocracy Culture	1.65	0.607
Market Culture	1.75	0.570
Hierarchy Culture	1.29	0.774
Mean VIF	1.84	

Source: Field survey (2022)

The structural model shows that all VIF values were within the recommended threshold; that is below the value of 5. Therefore, there was no Collinearity among explanatory variables in the structural model.

Structural Model Path Coefficients

The estimates for the direct effect path coefficients are shown in the Tables 14, and Figure 5. The result illustrates that all direct paths between four dimensions of organisational culture; that is, clan, adhocracy, market and hierarchy and business ecosystem learning are statistically significant. The direct effect paths between three dimensions of organisational culture (that is, clan, adhocracy and market) and business ecosystem learning are positive. However, the direct path relationship between hierarchy dimension of organisational culture and business ecosystem is significantly negative.

Table 13: Hypotheses testing

Hypothesis	Beta coefficients	SE	Z	P>|z|	Proposed effects	Results
Direct effect Paths						
Clan Culture > Innovative Capability (H1)	0.186***	0.041	4.49	0.000	+	Supported
Adhocracy Culture > Innovative Capability (H2)	0.299***	0.043	6.80	0.000	+	Supported
Market Culture > Innovative Capability (H3)	0.370***	0.039	9.46	0.000	+	Supported
Hierarchy Culture > Innovative Capability (H4)	-0.090**	0.042	-2.13	0.033	-	Supported
Business Ecosystem Learning > Innovative Capability (H5)	0.199***	0.062	3.12	0.001	+	Supported
Overall Coefficient of determination (R^2)	0.437					
Indirect effect Paths						
Clan Culture > Business Ecosystem Learning > Innovative Capability (H1d)	0.173***	0.032	5.43	0.000	+	Supported
Adhocracy Culture > Bus. Eco. Learning > Innovative Capability (H2d)	0.222***	0.033	6.81	0.000	+	Supported
Market Culture > Bus. Eco. Learning > Innovative Capability (H3d)	0.289***	0.033	8.86	0.000	+	Supported
Hierarchy Culture > Bus. Eco. Learning > Innovative Capability (H4d)	0.088**	0.035	2.55	0.011	+	Supported
Overall Coefficient of determination (R^2)	0.519					

Note(s): ***$p \leq 0.001$, **$p \leq 0.01$, *$p \leq 0.05$

Source: Field survey (2022)

Hypotheses testing

Regarding direct effect relationships, five hypotheses were developed. The study establishes positive relationship between 3 out 4 dimensions of organisational culture (clan, adhocracy and market) and innovative capability, thereby rendering support to H1 ($\beta = 0.186$, $p < 0.001$); H2 ($\beta = 0.299$, $p < 0.001$); and H3 ($\beta = 0.370$, $p < 0.001$). However, the study results show that there was a negative relationship between hierarchical culture and innovative capability, hence H4 was not supported ($\beta = -0.090$, $p < 0.001$). In accordance with the proposed model, 4 out 5 direct effect paths conjectured by the study were supported; see Table 15.

Hypotheses testing

Regarding indirect effect relationships, 4 hypotheses were developed. Accordingly, the study establishes positive relationship between all dimensions of organisational culture (clan, adhocracy, market and hierarchy), business ecosystem learning and innovative capability, thus rendering support to H1d ($\beta = 0.173$, $p < 0.001$); H2d ($\beta = 0.222$, $p < 0.001$); H3d ($\beta = 0.289$, $p < 0.001$); and H4d ($\beta = 0.088$, $p < 0.05$) (see Table 15).

Coefficient of Determination (R^2 Value)

The structural model's predictive precision was tested by employing coefficient of determination (R^2 value). The R^2 denotes a combination of all indicators of exogenous latent variables and how they affect the endogenous latent variable. The coefficient of determination is also an estimation of real and latent values. Further, R^2 value possess the capacity to explain the amount of variations in an endogenous construct, acting as a consequence of a predetermined exogenous construct (Hair et al., 2014). R^2 values generally

range from 0 to 1, nevertheless, Hair et al. (2014) posit that R^2 values equal to or above 0.20 are deemed as high.

Table 14: R-Squared Values of Study Variables

Direct effects- Construct	R-squared values
Business Ecosystem Learning	0.437
Innovation Capability	0.031
Overall	0.437
Indirect effects- Clan Culture	R-squared values
Business Ecosystem Learning	0.541
Perception of Procedural Fairness	0.093
Overall	0.184
Indirect effects- Adhocracy Culture	R-squared values
Business Ecosystem Learning	0.510
Perception of Procedural Fairness	0.151
Overall	0.184
Indirect effects- Market Culture	R-squared values
Business Ecosystem Learning	0.520
Perception of Procedural Fairness	0.332
Overall	0.371
Indirect effects- Hierarchy Culture	R-squared values
Business Ecosystem Learning	0.491
Perception of Procedural Fairness	0.020
Overall	0.022

Source: Field survey (2022)

Table 15, adequately explains modification in the endogenous latent variables of the current study. In the context of direct effect endogenous variables, business ecosystem learning accounted for a total R-squared variance of 43.7%, whereas innovation capability explained a total R-squared variance of 3.1%. Finally, the overall total R-squared variance of the direct effects is 43.7%. Regarding indirect effects, business ecosystem learning accounted for a

total R-squared variance of 54.1%, whereas perception of procedural fairness explained a total R-squared variance of 9.3. Finally, the overall total R-squared variance of the direct effects is 18.4%.

Effect Size f^2

The effect of a definite exogenous construct on an endogenous construct is estimated by employing the f^2 effect size ration. Effect size may be assessed as $f^2 = R^2$ included - R^2 excluded / 1- R^2 included in the model. The change in R^2 value is measured by the estimation of the PLS path model in a dual dimensional manner (Hair et al., 2014). The f^2 values are interpreted as of 0.02 (small), 0.15 (moderate), and 0.35 (large) for the exogenous latent construct (Cohen, 1988).

Table 15: f^2 values of direct relationships

Construct	Effect size values
Clan Culture	0.058
Adhocracy Culture	0.124
Market Culture	0.215
Hierarchy Culture	0.014
Business Ecosystem	0.030

Source: Field survey (2022)

Predictive Relevance Q^2

Hair et al. (2014) posits that the measurement of predictive validity of specific model may be undertaken through Stone-Geisser's Q^2 value (Geisser, 1975). Predictive relevance is a measure that assists in determining data accuracy. This measure is relevant as it delivers verdict on each reflective assessment indicator of the endogenous constructs (Hair et al., 2014). The rule

of thumb states that predictive validity is deemed to be proven if the Q^2 values of the endogenous constructs are well above 0.

Table 16: Variance Predictive Relevance

Construct	Q^2 (mc)
Direct effects	
Business Ecosystem Learning	0.379
Innovative Capability	0.493
Indirect effects	
Perception of Procedural Fairness	0.240
Business Ecosystem Learning	0.217

Source: Field survey (2022)

As depicted in Table 17, all the endogenous constructs in the model possess values which are greater than 0, therefore predictive relevance of the study constructs is established.

Model Fit

Henseler and Sarstedt (2013) asserts that the nonexistence of world-wide accepted scalar functional tools and the consequent limited globally acceptable goodness-of-fit (GoF) measures have been deemed as major drawbacks of PLS path modeling. Therefore, Tenenhaus, Vinzi et al. (2005) argues that GoF signifies a functioning resolution to this challenge as it is designed to validate the PLS model. A number of goodness of fit indices have been discussed in literature over the years, with no consensus on the most appropriate (Marcoulides & Yuan, 2020; Marcoulides et al., 2020). Generally, valuation of the model fit is classically deployed assess the test statistic through a technique known as the likelihood ratio statistic T_{ML}. The overall model fit estimation is undertaken through the comparism of likelihood ratio statistic and the nominal chi-square distribution. It is noteworthy to add that the likelihood

ratio statistics can also be benchmarked against several alternative fit indices (e.g. the root mean square error of approximation – RMSEA; the comparative fit index – CFI; Steiger & Lind 1980; Bentler 1990), and the more recently proposed equivalence testing indexes (Yuan et al. 2016; Marcoulides & Yuan 2017; Marcoulides & Yuan, 2020, p. 2). Acceptable thresholds include a non-significant $\chi 2$ goodness-of-fit value; a CFI > 0.90; and an RMSEA below 0.05 with the left endpoint of its 95% confidence interval including 0 (Marcoulides & Yuan, 2020; Raykov & Marcoulides, 2006).

The CFI (Bentler, 1990) measures the relative improvement in fit going from the initial model to the hypothesised model. The TLI (Tucker & Lewis, 1973) assesses the comparative decrease in misfit per degree of freedom. The RMSEA is a badness-of-fit assessment, producing lower values for an improved fit. Browne and Cudeck (1993), RMSEA values ≤ .05 can be considered as a good fit, values between 0.05 and 0.08 as an adequate fit, and values between .08 and .10 as a mediocre fit, whereas values > 0.10 are not acceptable. The three indices discussed above have been commonly employed in reporting model fit indices in PLS-SEM using computer software (Hancock & Mueller, 2010; Shi et al., 2019). Nevertheless, the current thesis assessed SRMR; its rule of thumb states that it should be less than 0.05 so as to be established as a good fit (Hu & Bentler, 1995).

Table 17: Model Fit Indices

Fit Statistics- Model 1	Value Description
Chi-Square	232.335
RMSEA	0.002
CFI	0.997
TLI	0.994

Table 17 Cont'D

SRMR	0.002
Fit Statistics- Model 2 (With Mediator)	Value Description
Chi-Square	351.882
RMSEA	0.001
CFI	0.998
TLI	0.997
SRMR	0.002
Fit Statistics- Model 3 (With Moderator)	Value Description
Chi-Square	411.731
RMSEA	0.002
CFI	0.999
TLI	0.997
SRMR	0.003

Source: Field survey (2022)

Mediation Analysis

The mediating role of business ecosystem learning was tested between organisational culture dimensions and innovative capability through 'medsem' approach on STATA 14 statistical package. Medsem is an improved version of the Sobel and Monte Carlo simulations, thus, it is built to eliminate drawbacks encountered in the aforementioned approaches. 'Medsem' is a modification of the 'B-K approach', which was established through series of steps by Iacobucci et al. (2007) and authenticated by Zhao et al. (2010). 'Medsem' is beneficial in the study because it potentially contributes to the estimation of mediational models in an optimal way by means of PLS-SEM whilst establishing proper and complete outcomes (Mehmetoglu, 2018). Additionally, 'medsem' facilitates mediational analysis using observed or latent variables and/or a combination of both at the same time (Mehmetoglu, 2018).

Table 18: Hypotheses testing- Clan Culture, Business Ecosystem Learning and Innovative Capability

Paths			B	SE	z	*P*
'a' Independent Variable		Mediating Variable				
Clan Culture	>	Business Ecosystem Learning	0.338***	0.058	5.78	0.000
'b' Mediating Variable		Dependent Variable				
Business Ecosystem Learning	>	Innovative Capability	0.513***	0.032	15.95	0.000
'c' Independent Variable		Dependent Variable				
Clan Culture	>	Innovative Capability	0.216***	0.045	8.58	0.000

Note(s): ***$p \leq 0.001$, **$p \leq 0.01$, *$p \leq 0.05$

Source: Field survey (2022)

Table 19: CC, BES & INC Significance testing of indirect effect (unstandardised)

Estimates	Delta	Sobel	Monte Carlo
Indirect effect	0.173	0.173	0.172
Standard Error	0.032	0.032	0.032
z-value	5.434	5.434	5.337
p-value	0.000	0.000	0.000
Confidence interval	0.111 0.236	0.111, 0.236	0.109, 0.236

Source: Field survey (2022)

The study employs mediation mechanism to assess clan culture, business ecosystem learning and innovative capability. The study hypothesised that clan culture will positively influence business ecosystem learning, whereas business ecosystem learning will positively influence innovative capability. The "total effects" reveal that clan culture significantly influence innovative capability ("c" path: B = 0.216, SE = 0.036, z = 6.04, p < 0.001). Clan culture has a positive effect on business ecosystem learning ("a" path: B = 0.338, SE = 0.058, z = 5.78, p < 0.001); whereas a positive effect of business ecosystem learning was established on innovative capability ("b" path: B = 0.513, SE = 0.032, z = 15.95, p < 0.001). Path 'a', 'b' and c are significant, hence the presence of mediation is evident. However, the mediating effect of business ecosystem learning is established as partial. Thus, H1d is supported.

The indirect effect of clan culture on innovative capability (0.173) was significantly positive. The formal two-tailed significance test reveals the significant indirect effect of clan culture on innovative capability (z = 5.434, p < 0.001) via business ecosystem learning. The 'medsem' result on 95%

confidence interval has no zero (0.111, 0.236), hence, business ecosystem learning (as a mediator) in context is authenticated by the Sobel test.

Finally, the result of the indirect effect (0.173) divided by total effect (0.389) is 0.446; this meant that about 44.6% of the effect of clan culture on innovative capability is mediated by business ecosystem learning. Also, the result of the indirect effect (0.173) divided by the direct effect (0.216) is 0.804; which meant that the mediated effect of business ecosystem learning is about 8 times as large as the direct effect of clan culture on innovative capability.

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Table 20: Hypotheses testing- Adhocracy Culture, Business Ecosystem Learning and Innovative Capability

Paths			B	SE	z	*P*
'a' Independent Variable		Mediating Variable				
Adhocracy Culture	>	Business ecosystem learning	0.424***	0.056	7.62	0.000
'b' Mediating Variable		Dependent Variable				
Business ecosystem learning	>	Innovative Capability	0.524***	0.034	15.23	0.000
'c' Independent Variable		Dependent Variable				
Adhocracy Culture	>	Innovative Capability	0.138***	0.038	3.68	0.000

Note(s): ***$p \leq 0.001$, **$p \leq 0.01$, *$p \leq 0.05$

Source: Field survey (2022)

Table 21: AC, BES & INC Significance testing of indirect effect (unstandardised)

Estimates	Delta	Sobel	Monte Carlo
Indirect effect	0.222	0.222	0.221
Standard Error	0.033	0.033	0.033
z-value	6.814	6.814	6.702
p-value	0.000	0.000	0.000
Confidence interval	0.158 , 0.286	0.158 , 0.286	0.158 , 0.286

Source: Field survey (2022)

The study employs mediation mechanism to assess adhocracy culture, business ecosystem learning and innovative capability. The study hypothesised that adhocracy culture will positively influence business ecosystem learning, whereas business ecosystem learning will positively influence innovative capability. The "total effects" reveal that adhocracy culture significantly influence business ecosystem learning ("c" path: B = 0.138, SE = 0.038, z = 3.68, $p < 0.001$). Adhocracy culture has a positive effect on business ecosystem learning ("a" path: B = 0.424, SE = 0.056, z = 7.62, $p < 0.001$); whereas a positive effect of business ecosystem learning was established on innovative capability ("b" path: B = 0.524, SE = 0.034, z = 15.23, $p < 0.001$). Path 'a', 'b' and c are significant, hence the presence of mediation is evident. Further, the mediating effect of business ecosystem learning is established as partial. Thus, H2d is supported.

The indirect effect of adhocracy culture on innovative capability (0.222) was significantly positive. The formal two-tailed significance test reveals the significant indirect effect of adhocracy culture on innovative capability (z =

6.814, $p < 0.001$) via business ecosystem learning. The 'medsem' result on 95% confidence interval has no zero (0.158, 0.286), hence, business ecosystem learning (as a mediator) in context is authenticated by the Sobel test.

Finally, the result of the indirect effect (0.222) divided by total effect (0.360) is 0.617; this meant that about 61.7% of the effect of adhocracy culture on innovative capability is mediated by business ecosystem learning. Also, the result of the indirect effect (0.222) divided by the direct effect (0.138) is 1.609; which meant that the mediated effect of business ecosystem learning is about 1.6 times as large as the direct effect of adhocracy culture on innovative capability.

Table 22: Hypotheses testing- Market Culture, Business Ecosystem Learning and Innovative Capability

Paths			B	SE	z	*P*
'a' Independent Variable		Mediating Variable				
Market Culture	>	Business ecosystem learning	0.612***	0.048	12.76	0.000
'b' Mediating Variable		Dependent Variable				
Business Ecosystem Learning	>	Innovative Capability	0.472***	0.038	12.31	0.000
'c' Independent Variable		Dependent Variable				
Market Culture	>	Innovative Capability	0.185***	0.041	4.53	0.000

Note(s): ***$p \leq 0.001$, **$p \leq 0.01$, *$p \leq 0.05$

Source: Field survey (2022)

Table 23: MC, BES & INC Significance testing of indirect effect (unstandardised)

Estimates	Delta	Sobel	Monte Carlo
Indirect effect	0.289	0.289	0.290
Standard Error	0.033	0.033	0.033
z-value	8.858	8.858	8.773
p-value	0.000	0.000	0.000
Confidence interval	0.225	0.225	0.226
	0.353	0.353	0.352

Source: Field survey (2022)

The study employs mediation mechanism to assess market culture, business ecosystem learning and innovative capability. The study hypothesised that market culture will positively influence business ecosystem learning, whereas business ecosystem learning will positively influence innovative capability. The "total effects" reveal that market culture significantly influence business ecosystem learning ("c" path: B = 0.185, SE = 0.041, z = 4.53, p < 0.001). Market culture has a positive effect on business ecosystem learning ("a" path: B = 0.612, SE = 0.048, z = 12.76, p < 0.001); whereas a positive effect of business ecosystem learning was established on innovative capability ("b" path: B = 0.472, SE = 0.038, z = 12.31, p < 0.001). Path 'a', 'b' and c are significant, hence the presence of mediation is evident. Further, the mediating effect of business ecosystem learning is established as partial. Thus, H3d is supported.

The indirect effect of market culture on innovative capability (0.289) was significantly positive. The formal two-tailed significance test reveals the

significant indirect effect of adhocracy culture on innovative capability ($z = 8.858$, $p < 0.001$) via business ecosystem learning. The 'medsem' result on 95% confidence interval has no zero (0.225, 0.353), hence, business ecosystem learning (as a mediator) in context is authenticated by the Sobel test.

Finally, the result of the indirect effect (0.289) divided by total effect (0.474) is 0.610; this meant that about 61.0% of the effect of market culture on innovative capability is mediated by business ecosystem learning. Also, the result of the indirect effect (0.289) divided by the direct effect (0.185) is 1.566; which meant that the mediated effect of business ecosystem learning is about 1.6 times as large as the direct effect of market culture on innovative capability.

Table 24: Hypotheses testing- Hierarchy Culture, Business Ecosystem Learning and Innovative Capability

Paths			B	SE	z	*P*
'a' Independent Variable		Mediating Variable				
Hierarchy culture	>	Business ecosystem learning	0.156**	0.060	2.58	0.010
'b' Mediating Variable		Dependent Variable				
Business Ecosystem Learning	>	Innovative Capability	0.568***	0.033	17.43	0.000
'c' Independent Variable		Dependent Variable				
Hierarchy culture	>	Innovative Capability	0.033	0.036	0.93	0.352

Note(s): ***$p \leq 0.001$, **$p \leq 0.01$, *$p \leq 0.05$

Source: Field survey (2022)

Table 25: HC, PPF & BES Significance testing of indirect effect (unstandardised)

Estimates	Delta	Sobel	Monte Carlo
Indirect effect	0.088	0.088	0.087
Standard Error	0.035	0.035	0.035
z-value	2.549	2.549	2.479
p-value	0.011	0.011	0.013
Confidence interval	0.020 , 0.156	0.020 , 0.156	0.022 , 0.153

Source: Field survey (2022)

The study employs mediation mechanism to assess hierarchy culture, business ecosystem learning and innovative capability. The study hypothesised that hierarchy culture will negatively influence business ecosystem learning, whereas business ecosystem learning will positively influence innovative capability. The "total effects" reveal that hierarchy culture did not influence innovative capability ("c" path: B = 0.033, SE = 0.036, z = 0.93, p > 0.1). Hierarchy culture has a positive effect on business ecosystem learning ("a" path: B = 0.156, SE = 0.060, z = 2.58, p < 0.001); whereas a positive effect of business ecosystem learning was established on innovative capability ("b" path: B = 0.568, SE = 0.033, z = 17.43, p < 0.001). Path 'a' and 'b' are significant. However, paths 'c' was not statistically significant. There is no significant direct path between hierarchy culture and innovative capability. Consequently, there was complete mediation effect, hence, H4d is not supported.

The indirect effect of hierarchy culture on innovative capability (0.088) was significantly positive. The formal two-tailed significance test reveals the significant indirect effect of hierarchy culture on innovative capability ($z = 2.549$, $p < 0.001$) via business ecosystem learning. The 'medsem' result on 95% confidence interval has no zero (0.020, 0.156), hence, business ecosystem learning (as a mediator) in context is authenticated by the Sobel test.

Finally, the result of the indirect effect (0.088) divided by total effect (0.122) is 0.726; this meant that about 72.6% of the effect of hierarchy culture on innovative capability is mediated by business ecosystem learning. Also, the result of the indirect effect (0.088) divided by the direct effect (0.033) is 2.643; which meant that the mediated effect of business ecosystem learning is about 2.6 times as large as the direct effect of hierarchy culture on innovative capability.

Table 26: Mediation Result Interpretation

Mediation Paths	Mediation effects	Hypotheses	Result
Clan Culture > Business Ecosystem Learning > Innovative Capability	Partial mediation	6	Supported
Adhocracy Culture > Business Ecosystem Learning > Innovative Capability	Partial mediation	7	Supported
Market Culture > Business Ecosystem Learning > Innovative Capability	Partial mediation	8	Supported
Hierarchy Culture > Business Ecosystem > Innovative Capability	Complete mediation	9	Not Supported

Source: Field survey (2022)

Moderation Analysis

Table 28, shows a regressed relationship between the independent variable (business ecosystem learning), moderating variable (perception of procedural farness) and the interaction term (business ecosystem learning*perception procedural fairness) on the dependent variable (firm' innovation capability). All variables were standardised before regression was conducted. Results show that the interaction term is significant, hence, H10 is supported.

Table 27: Moderation Result Interpretation

Moderation Path	Moderation effects	Hypotheses	Result
Business Ecosystem Learning > Perception of Procedural Fairness > Innovative Capability	Significant	10	Supported

Source: Field survey (2022)

Table 28: R-Squared and Effect sizes of Cultural dimensions on Innovation Capability

Construct	R^2
Innovation Capability	0.197

Source: Field survey (2022)

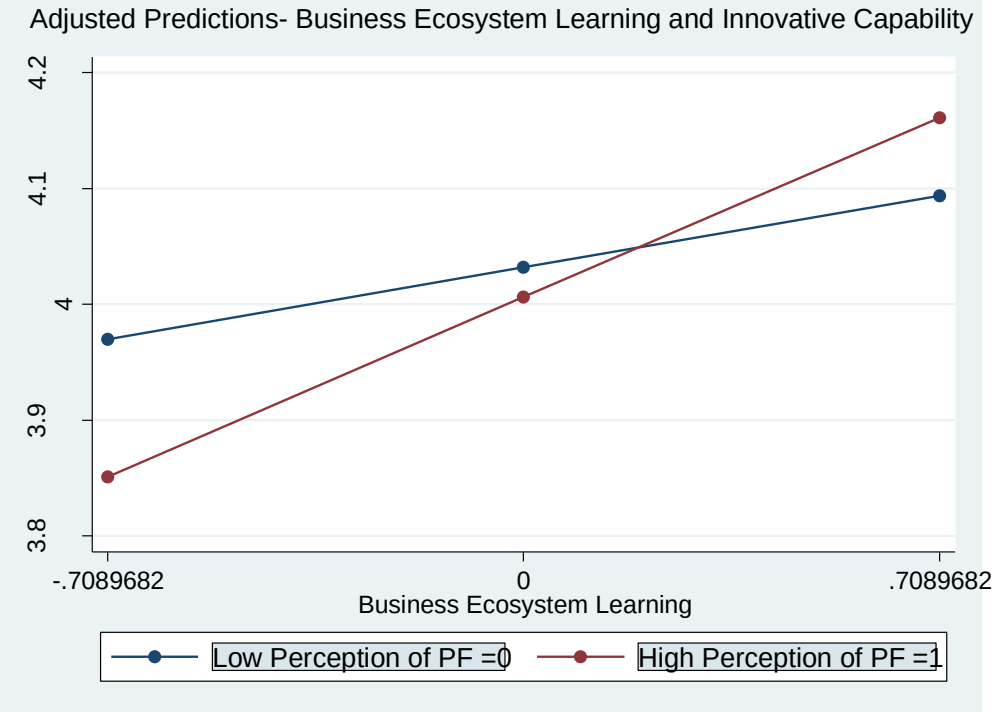

Figure 4: Graphical Presentation of Moderation Effect of Perception of Procedural Fairness

Source: Field survey (2022)

With the aid of STATA 14 statistical software, an analysis procedure was performed to test the moderation effects of age between business ecosystem learning and firms' innovation capability (H10). The results are presented in Table 29 and 30, as well as Figures 4. As indicated perception of procedural fairness positively moderated between business ecosystem learning and firms' innovative capability. The path of business ecosystem to firms' innovative capability development was significantly moderated by perception of procedural fairness (B = 0.287). This means that the perception of trustworthiness and corruption free operational procedures at Ghana seaports are akin to relational embeddedness for the development of firms' innovative capability. This result shows that H10 is supported.

Discussion of Study Results

This section engages with readers in discussing results of the current thesis with related literature backings presented in the second chapter. This chapter has been discussed within four segments based on some commonalities. In the first three segments, relevant literature that informed variable mappings, and led to the development of hypotheses were matched with support of empirical evidence from related studies.

The first segment discusses findings from literature about direct effect relationships between organisational culture dimensions, business ecosystem learning and innovation capability. The second section discusses the findings from literature about mediating role of business ecosystem learning dimensions of organisational culture and innovative capability. The hypothesised paths for indirect effect relationships were briefly discussed, and supported with theoretical and empirical backings. Third, segment discussed findings from literature about moderating effect of perception of procedural fairness between business ecosystem learning and innovative capability.

Conducting a detailed and extensive review of literature, the current thesis conceptualises organisational justice from the perspectives of procedural fairness within the context of public-private partnerships. It was revealed that literature acknowledges the influence of organisational culture as an influencer of business ecosystem learning and innovative capability development. It was also observed that although the influence of procedural fairness is well established both theoretically and empirically, this relationship has often been explained with the social exchange theory.

Within the scope of social exchange relationships, different resources are exchanged between employees and their authority organisations (Cropanzano & Mitchell, 2005). However, within the context of this thesis, perception of procedural fairness is viewed as a salient cognitive and behavioural resource which may generate positive attitudes towards acceptance of a new policy or work design.

It was also observed from extant literature that most of research findings regarding relationship between fairness and organisational outcomes have been predominantly conducted within western contexts, igniting a need for organisational justice researchers to ascertain validity of such instruments in the non-western contexts. The current study is in response to calls by scholars to validate research instruments within non-western contexts due to cultural differences, operational procedures and employee perceptions (Abbas et al., 2014; Nazarian et al., 2021). Nevertheless, not much is known about how work dynamics such as perception of fairness affects organisational outcomes such as performance and adjustment in collectivistic and high-power distance cultures such as Ghana. In light of the arguments advanced, the current study developed hypotheses to test relationships between, organisational culture, business ecosystem learning, perception of procedural fairness and firms' innovative capability within the socio-cultural context of Ghana.

Effect of organisational culture, business ecosystem learning and innovative capability (H1, H2, H3, H4 & H5)

The PLS-SEM path analysis results of the study confirm that dimensions of organisational culture influence business ecosystem learning. Further, business ecosystem learning has influence on innovative capability among

freight forwarding firms in Ghana. In delivering a good understanding of the study outcomes, first, the findings confirm that clan culture has a positive effect on business ecosystem learning of freight forwarding firms. It could be inferred that firm culture that is family-like in nature, hence built on collectivist ideals to promote specific strategic values may influence business ecosystem learning of firms. Clan culture stresses on suppleness and dependency of internal organisational strategic fits which are grounded in strong human relations (Khatami et al., 2020).

Also, owing to the relevance of innovation to contemporary business entities, there has been an increased in scholarly attention on determinants of innovation, such as business ecosystem learning. This has led to scholars establishing organisational culture as a key factor that has the propensity to build and sustain innovation among firms through ecosystem learning (Aboramadan et al., 2020). Notwithstanding, varying dimensions of organisational culture have been established in extant literature. Clan culture has been established as a positive predictor of organisational learning among firms (Chatterjee et al., 2018). Other studies which corroborate the outcome of the current study include; (Azeem et al., 2021; Cameron & Quinn, 1999; Lee & Chen, 2005; Nanjundeswaraswamy & Swamy, 2022; Rezaei et al., 2018; Sanz-Valle et al., 2011).

Second, the findings confirm that adhocracy culture has a positive effect on business ecosystem learning of freight forwarding firms in Ghana. It could be inferred that firm culture that is based on external orientation, hence grounded on creativity and building of novel idea is termed as adhocracy culture. It is an organisational culture type which involves risk-taking

initiatives, dynamic problem-solving skills, highly energised and committed employees with greater degrees of freedom of experimentation and promotion of growth through quicker adaptation to contemporary business changes and demands (Zeb et al., 2021).

Adhocracy culture has been established as a positive predictor of business ecosystem learning among firms. Studies that corroborate this assertion, as evidenced in the outcome of the current study include; (Ahn & Park, 2013; Chatterjee, Pereira & Bates, 2018; María del Rosario, Patricia & René, 2017; (Kiziloglu, 2021; Grover et al., 2022; Rezaei et al., 2018; Scaliza et al., 2022).

Third, the findings confirm that market culture has a positive effect on business ecosystem learning of freight forwarding firms in Ghana. It could be inferred that firm culture that is rooted in gaining and sustaining competitive edge is termed as market culture. Market culture is grounded in market forces of demand and supply, with particular interest in the firm's external environmental players such as customers and suppliers (Scaliza et al., 2022). Market culture has been established as a positive predictor of organisational learning among firms. Studies that corroborate this assertion, as evidenced in the outcome of the current study include; (Rai, 2011).

Fourth, the findings show that though hierarchy culture was hypothesised as negatively related to organisational learning among freight forwarding firms in Ghana, the observed outcome was significantly negative. It could be inferred that firm culture that is rooted in well-defined rules with strict adherence to organisational policy and structural guidelines is termed hierarchy culture. Within the hierarchy cultural setting, there is greater reliance on internal

control systems (Scaliza et al., 2022) with less attention or focus agility (Moonen, 2017). Hence, firms that are strong on power distance in hierarchical structures are likely to be less focused on learning and innovation (Saldanha et al., 2021).

Hierarchy culture has been established by the current study as a non-significant predictor of organisational learning among firms. Studies that corroborate this assertion include; (Dajani & Mohamad, 2017; Oh & Han, 2020). However, the current study unearthed a non-significant relationship between hierarchy culture and innovation capability. This may partly be explained by the context in which the study was undertaken.

Fifth, the findings show that business ecosystem learning has a positive effect on innovation capability of freight forwarding firms in Ghana. It could be inferred that freight forwarding firms rely on business ecosystem partners such as the implementing authority, labour unions, academics and consultants to understand the dynamics of the policy changes. Hence, the current study demonstrates that freight forwarding firms engage in collaborative exchanges with labour unions and research institutions. Further, it was established in the current study that these collaborative knowledge sharing engagements have a positive on innovation capability of the freight forwarding firms. It is imperative to state that knowledge accretion and application is vital for novel idea building, incubation and implementation (innovative capability) for optimised productivity. A number of empirical supports to give credence to this assertion is highlighted as follows; (Liu et al., 2022; Migdadi, 2019; Romanelli & Ferrara, 2022; Song, 2022; Yan & Azadegan, 2017; Yang et al., 2022). On the basis of

this findings and corresponding discussion, research objective 1 of this study is achieved.

Mediating effect of business ecosystem learning between dimensions of organisational culture and firm's innovative capability (H6; H7; H8; & H9)

The results show that business ecosystem learning significant mediates between dimensions of organisational culture and firms' innovative capability. The study outcome explains that organisational cultural dimensions that support learning encourages risk-taking behaviors, inspires intellectual stimulation and enhances employees' creative efficacy. Thus, organisational culture provides the transformational climate necessary for process innovative capacity building among freight forwarding firms in Ghana.

Also, organisational culture was found to be a positive predictor of business ecosystem learning among freight forwarding firms in Ghana. This implies that among the firms surveyed, intelligence gathering and ideation of novelty are significantly determined by learning through key stakeholders in the industry. This outcome infers that freight firms have to build an open system culture of knowledge acquisition overtime to advance productivity. This open system culture of learning also helps firms in building idea incubators to be deployed in times of uncertainties. The finding is in line with related empirical studies which posit that organizational culture has a positive influence on business ecosystem learning (Coetzer et al., 2023; Zia et al., 2022).

Thus, the current study posits that organisational culture has the tendency to promote business ecosystem learning among firms. Further, the statistical effect of business ecosystem learning on firms' innovative capacity was found to be significant and positive. This finding corroborates prior studies

undertaken by Chiu and Lin (2022), as well as, Najar (2022), where the studies established a positive link between relational embeddedness and innovative capacity building among firms. It is vital to state that both studies emphasize the relevance of informal and formal engagements with stakeholders as a necessary prerequisite for human capital development for innovation among firms.

Next, result of the mediation hypothesis shows that business ecosystem learning significantly mediates between organisational culture and innovative capability. The finding emphasizes the role of harnessing creative ideas through relational embeddedness as a bridge that connects dimensions of organisational culture and innovative capability among freight forwarding firms in Ghana. The finding projects that the relationship between organisational culture and innovative capability could be given meaning by firms' desire for knowledge acquisition through stakeholder engagements. This outcome corroborates prior empirical findings undertaken by Martín et al. (2022), as well as, Zhang et al. (2023), where both studies posit that networking with stakeholders and organisations ambidexterity act as indirect connection between organisational culture and firm innovative outcomes.

Capacity of business ecosystem learning to mediate between organisational culture dimensions and innovative capability in the study is given cognitive credence by the stimulus-organism-response theory (S-O-R). The theory posits that a firm's external environment offers incentives and opportunities that ignite spontaneous intrinsic emotional reactions, which may lead to behavior modification (Hameed et al., 2022). Therefore, the employment of business ecosystem learning as a mediator in the thesis is strengthened in

context. On the basis of these findings and corresponding discussion, research objective 2 and 3 of this study is achieved.

Moderating effect of perception of procedural fairness between business ecosystem learning and innovative capability (H10)

In the assessment of moderating effect, the result explains that interaction term 'BEL*PPF' significantly moderate between business ecosystem learning and innovative capability. This outcome resonates with findings obtained in previous studies, where perceived procedural fairness was observed as an integrated construct that strengthens the relationship between business ecosystem learning and innovative outcomes among firms (Akram et al., 2022; Lim et al., 2022). Thus, it is reasoned that the capacity of BEL*PPF to substantially moderate between business ecosystem learning and innovative capability could be explained by perceived procedural fairness.

A demonstration of procedural fairness by the policy authority, and the corresponding fairness perception by employees will amount to fair assessment efforts (Shoaib & Baruch, 2017), contrariwise a breach of fairness/justice principles indicate an unbalanced input versus output proportions, which leads to the quest by employees to reestablish equity by exhibiting retaliatory behaviour or non-conformity to procedures (Frey et al., 2013). Also, efficiency of public organisations and regulatory authorities, as well as, sustainable growth and competitive edge by private firms in a business world of constant evolution, depends on optimisation of mutual operational trust and organisational cultures that promote adaptation (Ha & Lee, 2022). Thus, perception of fairness is strengthened within context of digital policy reforms and adaptation.

Organisational fairness is a major driver of innovation within firms that have cultures that create and promote knowledge sharing and risk-taking climate (Nazir et al., 2019). Studies have also drawn links between organisational fairness and organisational citizenship behaviour by investigating the influential role of power distance culture (Jehanzeb & Mohanty, 2020). On the basis of these findings and corresponding discussion, research objective 3 of this study is achieved.

Chapter Summary

This chapter addresses the preliminary data treatment tests for robustness such as normality of data, and collinearity for the thesis. The demographic profile of respondents was illustrated. The reflective and formative measures for the scales were proven. Results from PLS-SEM path modeling were illustrated and interpreted for direct effect relationships between all four dimensions of organisational culture, business ecosystem learning and innovation capability. Further, the study tested the indirect relationships between organisational culture dimensions, perception of procedural fairness and business ecosystem learning. Then, the mediating role of business ecosystem learning between dimensions of organisational culture and innovative capability was conducted and established as generally significant. Finally, the study established the moderating effect of perception of procedural fairness between business ecosystem learning and firms' innovative capability development.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This research assesses the mediating role of business ecosystem learning between dimensions of organisational culture and innovative capability. Further, the study explores the moderating role of perception of procedural fairness between business ecosystem learning and innovative capability among freight forwarding firms in Ghana. This chapter provides highlights on summary of the study. Thus, the chapter details inferences and differences drawn from the study findings. The chapter also highlights the conclusions arrived at from the study's stated objectives. Key study recommendations were made to guide theory and practice among stakeholders in the maritime transport industry. Also, the chapter suggests possible lines of research exploration for future studies.

Summary of the Study

This study assesses the mediating role of business ecosystem learning between organisational culture dimensions and innovative capability, as well as, the moderating role of perception of procedural fairness between business ecosystem learning and innovative capability among freight forwarding firms in Ghana. In all, ten hypotheses were formulated.

The first set of hypotheses (H1-H5) include, "H1: clan culture has a positive effect innovative capability, H2: adhocracy culture has a positive effect innovative capability, H3: market culture has a positive effect innovative capability, H4: hierarchy culture has a negative effect innovative capability, and H5: business ecosystem learning has a positive effect firms' innovative capability", postulated a significant positive relationship between dimensions

of organisational culture and innovative capability, as well as, business ecosystem and innovative capability among freight forwarding firms in Ghana.

The second set of hypotheses (H6-H9); "H6: business ecosystem learning mediates between clan culture and innovative capability, H7: business ecosystem learning mediates between adhocracy culture and innovative capability, H8: business ecosystem learning mediates between market culture and innovative capability, and H9: business ecosystem learning mediates between hierarchy culture and innovative capability", conjectured that business ecosystem learning mediates between dimensions of organisational culture and innovative capability among freight forwarding firms in Ghana. The third distinct hypothesis is (H10) "perception of procedural fairness moderates between business ecosystem learning and firms' innovative capability.

The study was situated within the positivist philosophical paradigm, descriptive survey research design, and cross- sectional study design. The study was conducted in five district councils of Ghana Institute of Freight Forwarders; that is, Tema, KIA, Takoradi, Elubo and Aflao in Ghana. An application to obtain ethical clearance for data collection was granted by University of Cape Coast Institutional Review Board. Stated with clarity and practically observed were standards in adhering to ethical dilemmas in conducting a scientific inquiry such as request for voluntary participation, acknowledgement of right to privacy, preservation of anonymity and confidentiality of information.

Additionally, respondents' participation in the study was not induced by material rewards. A structured questionnaire was deployed as the instrument for data collection. Data credibility measures such as common method bias and Collinearity were employed in the study.

Tema, KIA, Takoradi, Elubo and Aflao district councils in Ghana formed the study area of the thesis. The study used the simple random sampling method to select 370 respondents, but only 327 correct responses were gathered for further analysis. Thus, the study had a response rate of 88.38% (327/370*100%). Hence, the non-response rate was 11.62%. The data was analysed using Microsoft excel and STATA 14 software.

The findings were written to correspond with the stated hypotheses and research questions. Regarding the first set of hypotheses, "H1: clan culture has a positive effect innovative capability, H2: adhocracy culture has a positive effect innovative capability, H3: market culture has a positive effect innovative capability, H4: hierarchy culture has a negative effect innovative capability, and H5: business ecosystem learning has a positive effect firms' innovative capability" which relates to direct and indirect effects among the study variables. It was found that 3 out 4 dimensions namely clan, adhocracy and market cultures were positively related to innovative capability, but hierarchy culture had a negative effect on business innovative capability. In furtherance, there were significantly positive effect between business ecosystem learning and innovative capability among freight firms in Ghana.

Concerning the second set of hypotheses, "H6: business ecosystem learning mediates between clan culture and innovative capability, H7: business ecosystem learning mediates between adhocracy culture and innovative capability, H8: business ecosystem learning mediates between market culture and innovative capability, and H9: business ecosystem learning mediates between hierarchy culture and innovative capability", the study found that business ecosystem partially mediates between clan, adhocracy and market

cultures. However, business ecosystem learning fully mediates between hierarchy culture and innovative capability. Also, in the third distinct hypothesis, the study found that young employee dynamics moderate between business ecosystem learning firms' innovation capability.

Conclusions

The evidence of this thesis significantly offers a thoughtful investigation on organisational justice phenomenon through exploring procedural fairness. The current study is empirical evidence to give credence to organisational justice research works conducted earlier, which were predominantly conducted in the western societies (Ahmed et al., 2018). This thesis differs within the socio-cultural context in which it was conducted, owing to cultural variations and employee dynamics (Eatough et al., 2016). The relevance of workplace learning was also examined within the study context.

This study concludes that perception of procedural fairness is crucial for firms' adaptation to digital transformation in the maritime industry. The study highlights the relevance of organisational learning through relational embeddedness. More specifically, the importance of business ecosystem learning was explored among the various organisational cultural dimensions to establish favourable matching relationships. Thus, organisational culture dimensions were explored to identify the dimensions that are likely to positively influence business ecosystem learning among freight forwarding firms in Ghana.

The study concludes that perception of procedural fairness with or without business ecosystem, would influence clan, adhocracy, market and hierarchy cultures. Again, the study concludes that aside hierarchy culture, the

mediating effect of business ecosystem learning was established either fully or partially between the four dimensions of organisational culture; namely clan, adhocracy market and hierarchy and innovative capability. Also, the study concludes that perception of procedural fairness enhances learning through social networks. The thesis thus concludes that freight firms and governmental agencies at seaports in Ghana must build mutually beneficial routine work systems to aid sustainable growth in the maritime industry.

Recommendations of the Study

After assessing the mediating role of business ecosystem learning between dimensions of organisational culture and innovative capability, as well as the moderating role of perception of procedural fairness between business ecosystem learning innovative capability development among freight firms in Ghana, it was apposite to make recommendations to improve the existing situation. Regarding objective 1 "To examine the effect of dimensions of organisational culture (clan, adhocracy, market and hierarchy) on building innovative capability among freight forwarding firms in Ghana", this study recommends owners and managers of freight forwarding firms in Ghana should build firm value systems and normative guidelines that promote clan, adhocracy and market cultures. These cultures thrive on family centred approaches to knowledge acquisition, the encouragement of risk-taking behaviour among employees, as well as, the promotion of healthy competition among staffs and rival businesses within the maritime transport industry. The aforementioned cultures will help freight firms to build a pool of novel ideas which can translate into productive ventures that may yield firm success.

With regards to objective 2 "To examine the effect of business ecosystem learning on building innovative capability among freight forwarding firms in Ghana", the study recommends that learning through relational embeddedness is the most cost effect means of upgrading employees' know-how in contemporary. Some researchers argue that training budgets in modern times have skyrocketed, hence there is a need for firms to deploy alternative means of upgrading the skills and competences of their employees (Jackson et al, 2022; Simba et al., 2023).

Concerning objective 3 "To examine the mediating effect of business ecosystem learning between dimensions of organisational culture (clan, adhocracy, market and hierarchy) and business ecosystem learning among freight forwarding firms in Ghana", this study recommends owners and managers of freight forwarding firms in Ghana to consider promoting activities that encourage relational embeddedness at the seaports. The study adds that improvement in relational embeddedness may include building social networks, taking part in social events and creating a conducive work climate for open engagements. The aforementioned approaches have the tendency to harness innovative ideation and implementation through continuous interactions and information seeking.

In reference to objective 4 "To examine the moderating effect of perception of procedural fairness between business ecosystem learning and innovative capability among freight forwarding firms in Ghana", this study recommends owners and managers of freight forwarding firms in Ghana to partner governmental agencies such as Ghana Ports and Harbours Authority, as well as, Customs Exercise and Preventive Services to improve operational

efficiencies of Ghana's seaports. The study adds that building institutions with integrity is a collaborative effort for all stakeholders.

Suggestions for Further Research

Despite noteworthy conclusions drawn from the study findings, a cross-section study design does not reflect changing opinions of respondents' overtime. This study suggests that a longitudinal design is deployed by future studies to explore the phenomenon as this study design has the capacity to input changing dynamics of respondents.

The current study illuminates on theoretical concepts of organisational culture, business ecosystem learning, procedural fairness and innovative capability through S-O-R and fairness heuristic theoretical lenses. Nevertheless, the paper predominantly focused on inferential analysis of the study variables. Consequently, the paper was limited in delivering narrations that give in-depth understanding of marine transport industry dynamics. Future studies should explore the phenomenon from an interpretivists' paradigm.

This study was restricted to freight forwarding firms in Ghana. Future studies could explore the relationship between organisational culture, business ecosystem learning, procedural fairness and innovative capability in other industries that are modelled public-private partnerships such as higher education institutions.

Finally, the current study conceptualise innovation capability from the outlook of process innovation. According to the OECD (2005) Oslo manual, there are four main types of innovation, namely, process, product, marketing and organisational innovations. Consequently, the current study employs process innovation as a consequence of organisational culture (internal),

business ecosystem learning (external) and percception of procedural fairness (internal & external) as key environmetal factors that influence decision-making among freight forwarding firms. Future studies could examine the other types of innovation (product, marketing or organisation) within different contexts that are applicable. For example product innovation within the manufacturing industry.

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APPENDICES

APPENDIX A: LETTER OF ETHICAL CLEARANCE

UNIVERSITY OF CAPE COAST
INSTITUTIONAL REVIEW BOARD SECRETARIAT
TEL: 0558093143 / 0508878309
E-MAIL: irb@ucc.edu.gh
OUR REF: UCC/IRB/A/2016/1320
YOUR REF:
OMB NO: 0990-0279
IORG #: IORG0009096

12TH APRIL, 2022

Mr. Stewart S. L. T. Hevi
Department of Management
University of Cape Coast

Dear Mr. Hevi,

ETHICAL CLEARANCE – ID (UCCIRB/CHLS/2021/59)

The University of Cape Coast Institutional Review Board (UCCIRB) has granted Provisional Approval for the implementation of your research **Policy Implementation and Firms' Culture: Ghana's Ports Under Perspective.** This approval is valid from 12th April, 2022 to 11th March, 2023. You may apply for a renewal subject to submission of all the required documents that will be prescribed by the UCCIRB.

Please note that any modification to the project must be submitted to the UCCIRB for review and approval before its implementation. You are required to submit periodic review of the protocol to the Board and a final full review to the UCCIRB on completion of the research. The UCCIRB may observe or cause to be observed procedures and records of the research during and after implementation.

You are also required to report all serious adverse events related to this study to the UCCIRB within seven days verbally and fourteen days in writing.

Always quote the protocol identification number in all future correspondence with us in relation to this protocol.

Yours faithfully,

Samuel Asiedu Owusu, PhD
UCCIRB Administrator

ADMINISTRATOR
INSTITUTIONAL REVIEW BOARD
UNIVERSITY OF CAPE COAST

APPENDIX B: QUESTIONNAIRE FOR FREIGHT FORWARDERS

ORGANISATIONAL CULTURE AND INNOVATIVE CAPABILITY

AMONG FREIGHT FORWARDING FIRMS IN GHANA

Dear Respondent,

My name is Stewart S.L.T. Hevi, a PhD Student at the Department of Management, School of Business, University of Cape Coast. This study forms part of requirement for the award of a PhD Degree in Business Administration and it seeks to assess the relationship between dimensions of organisational culture and firms' innovative capability. Further, the study seeks to explore the mediating role of business ecosystem learning between dimensions of organisational culture and innovative capability. Further, the study seeks to explore the moderating role of perception of policy procedural fairness between business ecosystem learning and innovative capability among freight forwarders in Ghana.

I seek your help through this letter as a means of soliciting your views for my thesis. It would be an honour done me if you could allot about 30 minutes of your time to provide responses to the questions for this scholarly work. Please note that there are no right or wrong responses, hence each response is just a reflection of sincere opinions expressed. The data gathered through this questionnaire is stringently confidential and will only be used for academic purpose by myself only. I must also state that your participation in this thesis as respondent is voluntary in its entirety. Further, any scholarly material that will be published from this thesis will not put out your details. It is the desire of this study that the findings will inure to the benefit of key stakeholders in the maritime transport industry such as GIFF members, GRA officials, and trade

and transportation policy makers. I would be delighted if I can get the response in 2 weeks. Please contact me if need be for any explanation on this questionnaire. Do not hesitate to contact me on *020-910-3585 or email: shevi@gctu.edu.gh.* Thank you for your valuable time and input.

Questionnaire

Section A: Perception of procedural fairness

This section sought to examine the level of perception of procedural fairness among freight forwarders in Ghana. In undertaking this, 7 indicators were measured on a 5-point Likert-type scale with score 1=least agreement, 2=less agreement, 3=moderate agreement, 4=strong agreement, and 5=strongest agreement. These scores were generalised on the basis of respondents' level of agreement to each of the statements under "Perception of Policy Procedural Fairness" on the questionnaire.

No.		SD	D	N	A	SA
9	I am able to express my views when interacting with officers' in-charge of the paperless port procedures.					
10	I can influence the procedural steps deployed by port officials.					
11	I know that the paperless port clearance procedures are applied consistently to all freight forwarders/clearing agents.					
12	I know that the paperless port clearance procedures are free from bias.					

13	I know that the paperless port clearance procedures is near perfect.					
14	I am able to appeal decisions that have been made by government agents in charge of the processes.					
15	The paperless port clearance procedures are built on moral ideals.					

1. Does your institution offer any training and/or development opportunities in times of policy changes? Yes ( ), No ( )

2. If yes, what kind(s) of offers?

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.....

.....

.....

18. What kind of training and change adjustment programs would you recommend for your organisation to help employees' cope with the paperless port clearance system policy?

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Section B: Business Ecosystem Learning

This section sought to examine the level of business ecosystem learning among freight forwarders in Ghana.

No.		SD	D	N	A	SA
BES1	We have more cooperative partners.					
BES2	We have enjoyed increased partnerships among industry associates.					
BES3	We have more collaborative exchanges with our associates.					
BES4	We have a longer bonds with our associates.					
BES5	We are relentlessly working with our associates.					
BES6	We have a high levels of close working relations with our associates.					
BES7	We have a high levels of work relations with associates in a diverse industry.					
BES8	We have a high range of associates.					
BES9	We are prepared in working with enterprises in varying industries.					
BES10	We often work as the information centre for our associates.					

1. What are some of the ways by which your organisation promotes learning?

.....

.....

.....

Section C: Firms' innovative capability

This section sought to examine the level of firms' innovative capability among freight forwarders in Ghana.

No.		SD	D	N	A	SA
INC1	Our firm creates and manages a range of synchronised technologies.					
INC2	Our firm masters and absorbs basic technologies.					
INC3	Our firm persistently advances programs to lessen production expenses.					
INC4	Our firm has priceless novel ideas to improve service offerings through technology.					
INC5	Our firm has priceless knowledge on best practices for work.					
INC6	Our firm organises productive activities efficiently					

INC7	Our firm assigns funds to operational needs of departments efficiently.					
INC8	Our firm offers ecologically sound processes.					
INC9	Our firm manages operational deliverables well.					
INC10	Our firm synchronises service management activities efficiently.					

1. Has your company offer any new clearing services since the paperless port clearance was implemented? Yes ( ), No ( )

2. If yes, what kind(s) of freight services?

……

……

……

Section D: Organisational Culture

This section sought to examine the level of organisational culture among freight forwarders in Ghana. In undertaking this, 24 indicators were measured on a 5-point Likert-type scale.

No.		**SD**	**D**	**N**	**A**	**SA**
CLN1	I feel like I own this firm. The firm is more of an extended family to me. My					

	colleagues and I share mutual benefits and challenges.					
ADH1	The firm is extremely dynamic and business focused. My colleagues and I are ready to stick our necks out for risk-taking.					
MKT1	The firm is extremely result-oriented. All we think about is getting the job done. It is a competition driven and achievement-oriented firm.					
HRC1	The firm is an extremely structured place. Official policies generally govern prescribed conducts.					
CLN2	Leaders in the firm are commonly considered to epitomise mentoring, and facilitating.					
ADH2	Leaders in the firm are commonly considered to epitomise entrepreneurship and risk-taking.					
MKT2	Leaders in the firm are commonly deemed to epitomise aggressiveness in the delivery of outcomes..					
HRC2	Leaders in the firm are commonly considered to epitomise coordination and organisational efficiency.					

CLN3	Managerial style in the firm is characterised by joint effort.					
ADH3	Managerial style in the firm is grounded in applauds for risk-taking behaviour, novelty and distinctiveness.					
MKT3	Managerial style in the firm is grounded in competitiveness and goal attainment.					
HRC3	Managerial style in the firm is grounded in security of tenure and relationship stability among partners.					
CLN4	The bond that unites this firm is loyalty and trust. Obligation to this firm is deemed as high.					
ADH4	The bond that unites this firm is commitment to create new things. There is high weight on cutting-edge pragmatic solutions.					
MKT4	The bond that unites this firm is the weight on goal attainment and completion.					
HRC4	The bond that unites this firm is formal regulations and codes of conduct. This maintains smooth-running of the firm.					
CLN5	The firm places emphasis on human capital growth. High conviction, sincerity, and participation.					

ADH5	The firm places emphasis on the acquisition of new resources and taking on uncharted paths to success. Exploring novel ventures and searching for opportunities.					
MKT5	The firm places emphasis on competitiveness and achievement-driven initiatives. Working to meet stretched targets and winning deals in the market space.					
HRC5	The firm places emphasis on permanence and steadiness. Efficiency, well-controlled conduct and smooth operations are key.					
CLN6	The firm defines goal attainment as human capital development, teamwork, employee satisfaction and well-being.					
ADH6	The firm defines success as having the most exceptional or novel initiatives. Thus, must be a leader in innovation.					
MKT6	In the view of this firm, success means to market leadership and being ahead of competition.					
HRC6	The firm defines success as being efficient in all operations. Reliable provisions, providing smooth scheduling, and low-cost productive activities are crucial.					

1. What would you term as norms and values in your company?

……

……

……

NOTE: This questionnaire is reproduced with appropriate references to the authors.

Section E: General Information

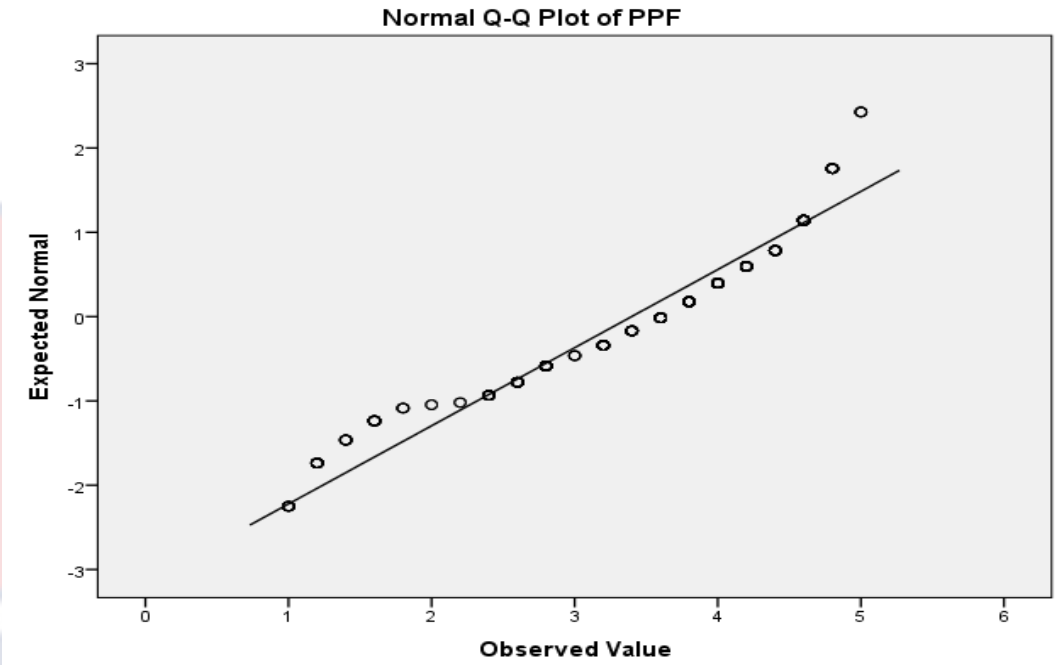
GEN1. Sex: a. Male [ ] b. Female [ ]

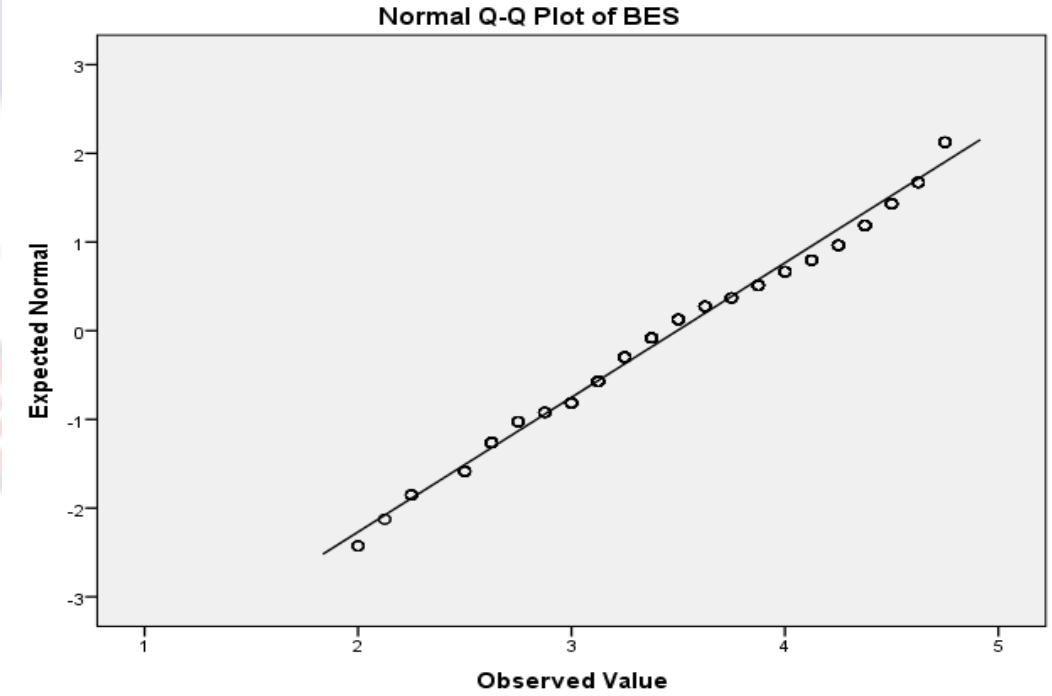
GEN2. Age in *years*:

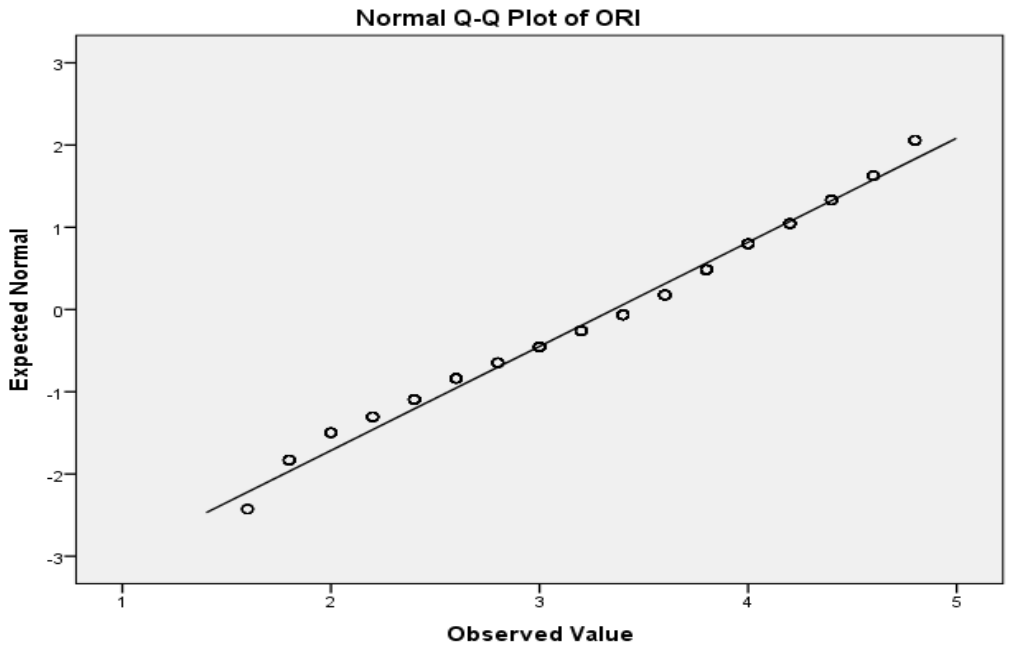
GEN3. Employment type: a. Full time [ ] b. Part time [ ]

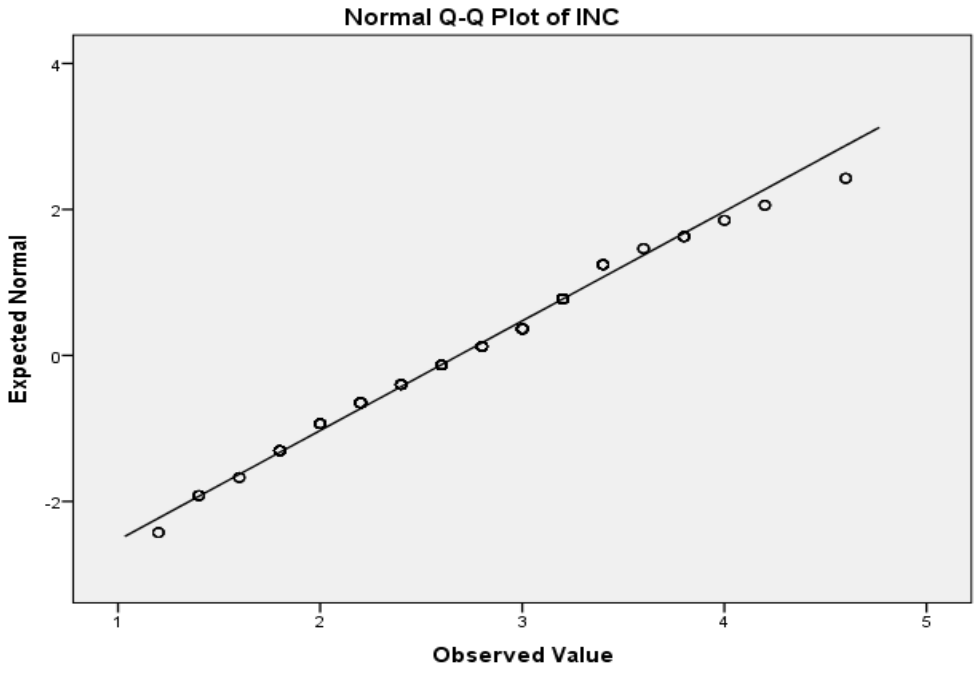
GEN4. How many *years* have you worked with your employer?

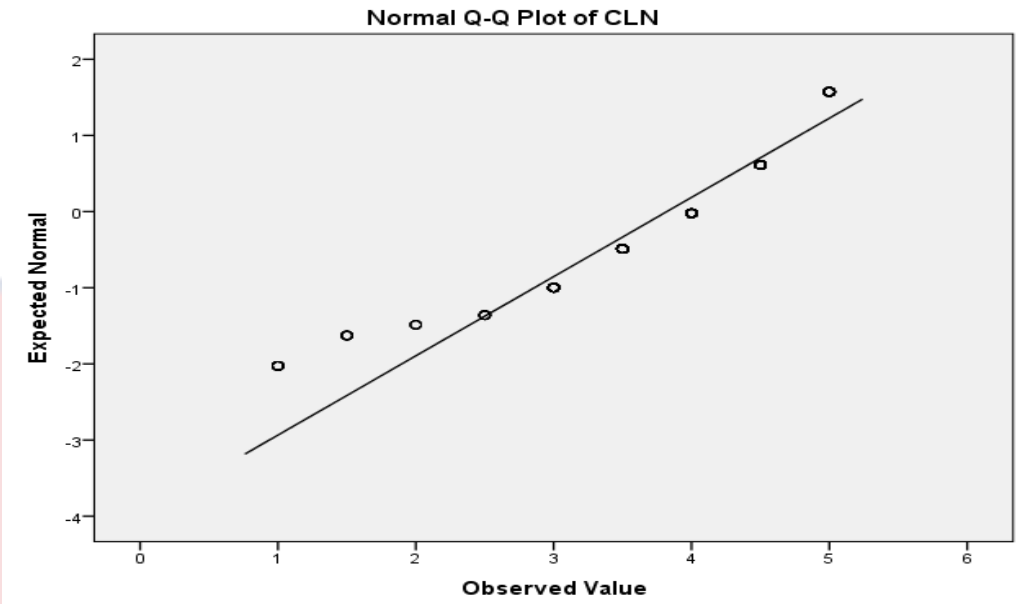
APPENDIX C: NORMAL Q-Q PLOTS

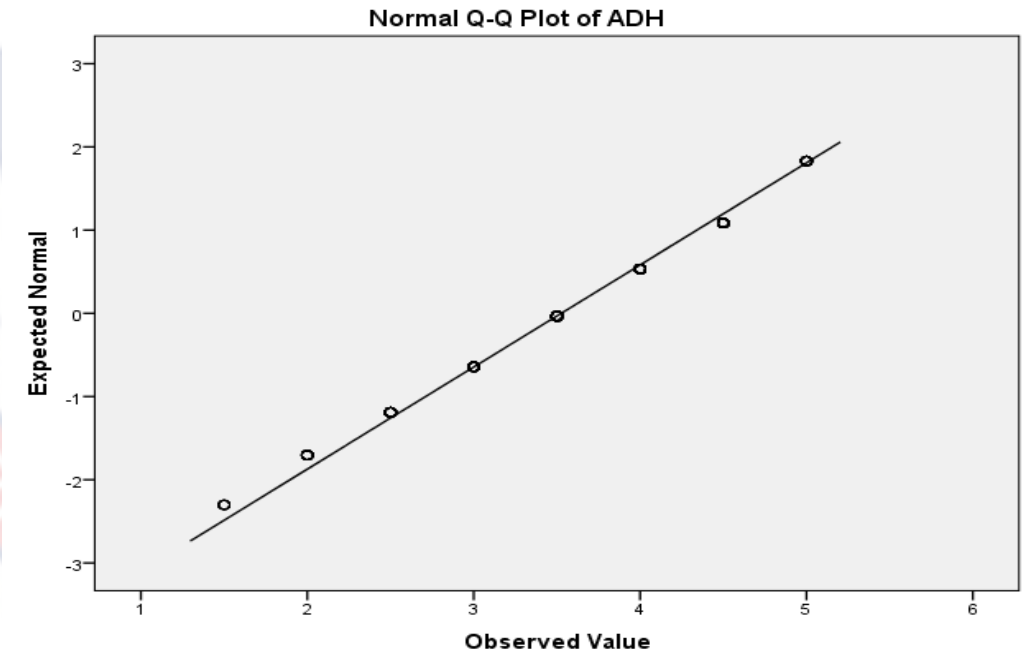


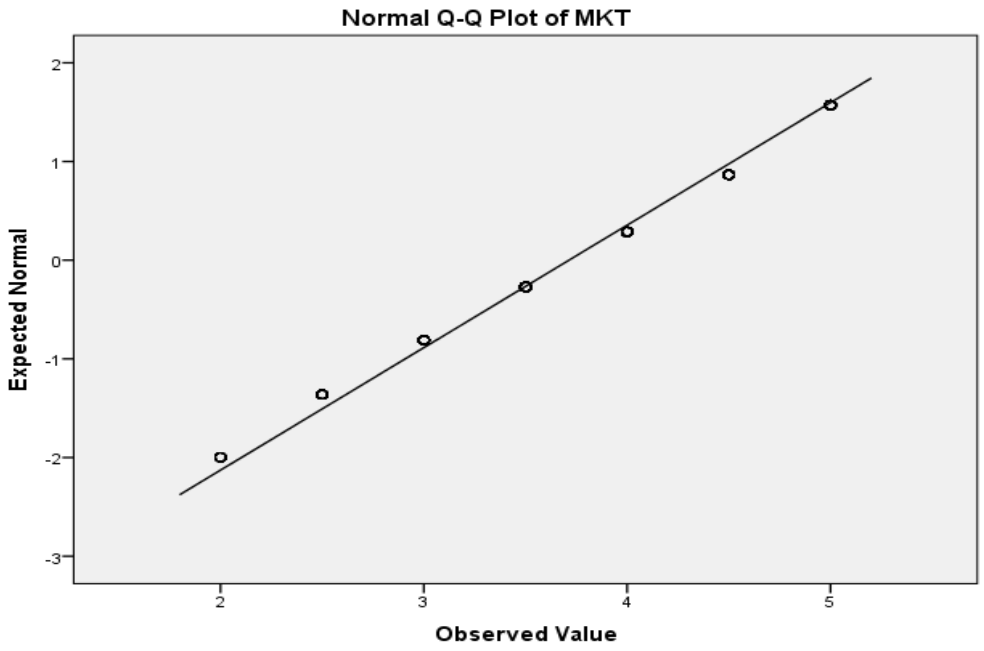


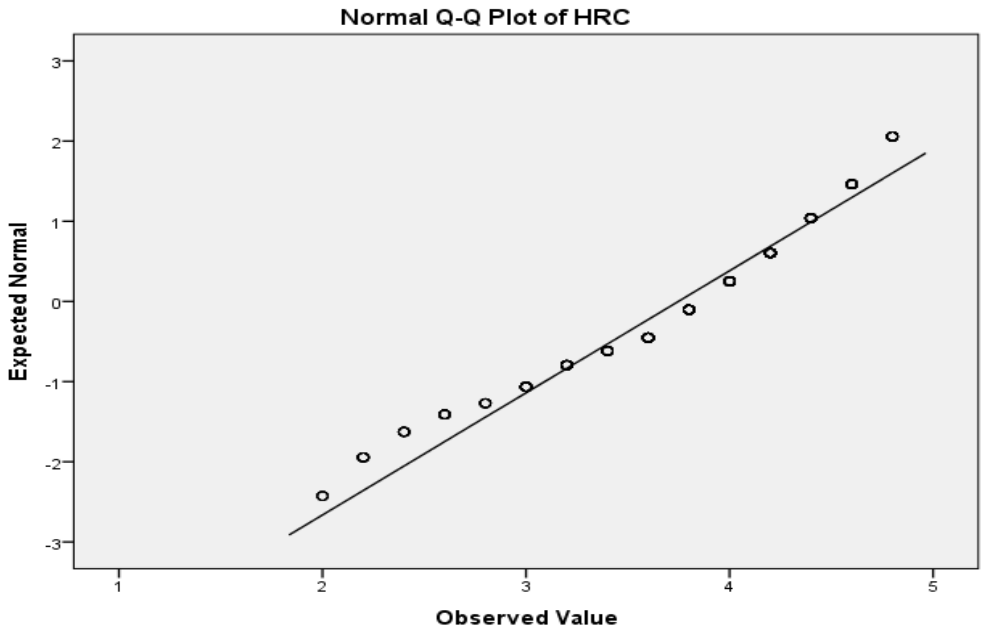












APPENDIX D: CORRELATION MATRIX OF PERCEPTION OF POLICY PROCEDURAL FAIRNESS

	PPF1	PPF2	PPF3	PPF4	PPF5	PPF6	PPF7
Correlation							
PPF1	1.000	0.610	0.614	0.134	0.311	0.567	0.431
PPF2	0.610	1.000	0.432	0.206	0.242	0.397	0.340
PPF3	0.614	0.432	1.000	0.312	0.255	0.514	0.290
PPF4	0.134	0.206	0.312	1.000	0.248	0.194	0.074
PPF5	0.311	0.242	0.255	0.248	1.000	0.378	0.239
PPF6	0.576	0.397	0.514	0.194	0.378	1.000	0.710
PPF7	0.431	0.340	0.290	0.074	0.239	0.710	1.000

Source: Field survey (2022)

APPENDIX E: CORRELATION MATRIX OF PERCEPTION OF POLICY PROCEDURAL FAIRNESS SIG. (1- TAILED)

	PPF1	PPF2	PPF3	PPF4	PPF5	PPF6	PPF7
Correlation							
PPF1	1.000	0.000	0.000	0.008	0.000	0.000	0.000
PPF2	0.000	1.000	0.000	0.000	0.000	0.000	0.000
PPF3	0.000	0.000	1.000	0.000	0.000	0.000	0.000
PPF4	0.008	0.000	0.000	1.000	0.000	0.000	0.090
PPF5	0.000	0.000	0.000	0.000	1.000	0.000	0.000
PPF6	0.000	0.000	0.000	0.000	0.000	1.000	0.000
PPF7	0.000	0.000	0.000	0.090	0.000	0.000	1.000

Source: Field survey (2022)

APPENDIX F: CORRELATION MATRIX OF BUSINESS ECOSYSTEM

	BES1	BES2	BES3	BES4	BES5	BES6	BES7	BES8	BES9	BES10
Correlation										
BES1	1.000	0.600	0.221	0.068	0.296	0.178	0.233	0.194	0.006	0.043
BES2	0.600	1.000	0.342	0.175	0.195	0.166	0.194	0.101	0.002	0.121
BES3	0.221	0.342	1.000	0.393	0.291	0.109	0.181	0.107	0.037	0.193
BES4	0.068	0.175	0.393	1.000	0.012	0.380	0.149	0.043	-0.089	0.075
BES5	0.296	0.195	0.291	0.012	1.000	0.193	0.240	0.316	0.066	0.271
BES6	0.178	0.166	0.109	0.380	0.193	1.000	0.474	0.133	0.006	0.155
BES7	0.233	0.194	0.181	0.149	0.240	0.474	1.000	0.276	0.146	0.412
BES8	0.194	0.101	0.107	0.043	0.316	0.133	0.276	1.000	0.440	0.380
BES9	0.006	0.002	0.037	-0.089	0.066	0.006	0.146	0.440	1.000	0.502
BES10	0.043	0.121	0.193	0.075	0.271	0.155	0.412	0.380	0.502	1.000

Source: Field survey (2022)

APPENDIX G: CORRELATION MATRIX OF BUSINESS ECOSYSTEM SIG. (1- TAILED)

	BES1	BES2	BES3	BES4	BES5	BES6	BES7	BES8	BES9	BES10
Correlation										
BES1	1.000	0.000	0.000	0.110	0.000	0.001	0.000	0.000	0.454	0.219
BES2	0.000	1.000	0.000	0.001	0.000	0.001	0.000	0.035	0.488	0.014
BES3	0.000	0.000	1.000	0.000	0.000	0.025	0.001	0.026	0.254	0.000
BES4	0.110	0.001	0.000	1.000	0.416	0.000	0.003	0.221	0.054	0.087
BES5	0.000	0.000	0.000	0.416	1.000	0.000	0.000	0.000	0.116	0.000
BES6	0.001	0.001	0.025	0.000	0.000	1.000	0.000	0.008	0.460	0.002
BES7	0.000	0.000	0.001	0.003	0.000	0.000	1.000	0.000	0.004	0.000
BES8	0.000	0.035	0.026	0.221	0.000	0.008	0.000	1.000	0.000	0.000
BES9	0.454	0.488	0.254	0.054	0.116	0.460	0.004	0.000	1.000	0.000
BES10	0.219	0.014	0.000	0.087	0.000	0.002	0.000	0.000	0.000	1.000

Source: Field survey (2022)

APPENDIX H: CORRELATION MATRIX OF ORGANISATIONAL CULTURE- CLAN DIMENSION

	CLN1	CLN2	CLN3	CLN4	CLN5	CLN6
Correlation						
CLN1	1.000	0.256	0.073	0.206	0.125	0.244
CLN2	0.256	1.000	0.361	0.305	0.236	0.289
CLN3	0.073	0.361	1.000	0.146	0.152	0.111
CLN4	0.206	0.305	0.146	1.000	0.194	0.017
CLN5	0.125	0.236	0.152	0.194	1.000	0.166
CLN6	0.244	0.289	0.111	0.017	0.166	1.000

Source: Field survey (2022)

APPENDIX I: CORRELATION MATRIX OF ORGANISATIONAL CULTURE- CLAN DIMENSION SIG. (1- TAILED)

	CLN1	CLN2	CLN3	CLN4	CLN5	CLN6
Correlation						
CLN1	1.000	0.000	0.095	0.000	0.012	0.000
CLN2	0.000	1.000	0.000	0.000	0.000	0.000
CLN3	0.095	0.000	1.000	0.004	0.003	0.022
CLN4	0.000	0.000	0.004	1.000	0.000	0.377
CLN5	0.012	0.000	0.003	0.000	1.000	0.001
CLN6	0.000	0.000	0.022	0.377	0.001	1.000

Source: Field survey (2022)

APPENDIX J: CORRELATION MATRIX OF ORGANISATIONAL CULTURE- ADHOCRACY DIMENSION

	ADH1	ADH2	ADH3	ADH4	ADH5	ADH6
Correlation						
ADH1	1.000	0.326	-0.076	0.344	0.297	0.253
ADH2	0.326	1.000	-0.067	0.202	0.190	0.194
ADH3	-0.076	-0.067	1.000	-0.005	-0.133	0.145
ADH4	0.344	0.202	-0.005	1.000	0.158	0.186
ADH5	0.297	0.190	-0.133	0.158	1.000	0.224
ADH6	0.253	0.194	0.145	0.186	0.224	1.000

Source: Field survey (2022)

APPENDIX K: CORRELATION MATRIX OF ORGANISATIONAL CULTURE- ADHOCRACY DIMENSION SIG. (1- TAILED)

	ADH1	ADH2	ADH3	ADH4	ADH5	ADH6
Correlation						
ADH1	1.000	0.000	0.084	0.000	0.000	0.000
ADH2	0.000	1.000	0.113	0.000	0.000	0.000
ADH3	0.084	0.113	1.000	0.463	0.008	0.004
ADH4	0.000	0.000	0.463	1.000	0.002	0.000
ADH5	0.000	0.000	0.008	0.002	1.000	0.000
ADH6	0.000	0.000	0.004	0.000	0.000	1.000

Source: Field survey (2022)

APPENDIX L: CORRELATION MATRIX OF ORGANISATIONAL CULTURE- MARKET DIMENSION

	MKT1	MKT2	MKT3	MKT4	MKT5	MKT6
Correlation						
MKT1	1.000	0.242	0.233	0.190	0.063	0.213
MKT2	0.242	1.000	-0.025	0.230	0.233	0.155
MKT3	0.233	-0.025	1.000	0.153	0.030	0.144
MKT4	0.190	0.230	0.153	1.000	0.137	0.154
MKT5	0.063	0.233	0.030	0.137	1.000	0.098
MKT6	0.213	0.155	0.144	0.154	0.098	1.000

Source: Field survey (2022)

APPENDIX M: CORRELATION MATRIX OF ORGANISATIONAL CULTURE- MARKET DIMENSION SIG. (1- TAILED)

	MKT1	MKT2	MKT3	MKT4	MKT5	MKT6
Correlation						
MKT1	1.000	0.000	0.000	0.000	0.128	0.000
MKT2	0.000	1.000	0.325	0.000	0.000	0.002
MKT3	0.000	0.325	1.000	0.003	0.296	0.004
MKT4	0.000	0.000	0.003	1.000	0.007	0.003
MKT5	0.128	0.000	0.296	0.007	1.000	0.038
MKT6	0.000	0.002	0.004	0.003	0.038	1.000

Source: Field survey (2022)

APPENDIX N: CORRELATION MATRIX OF ORGANISATIONAL CULTURE- HIERARCHY DIMENSION

	HRC1	HRC2	HRC3	HRC4	HRC5	HRC6
Correlation						
HRC1	1.000	0.257	0.245	0.136	0.022	0.243
HRC2	0.257	1.000	0.107	0.254	0.146	0.229
HRC3	0.245	0.107	1.000	-0.044	0.086	0.262
HRC4	0.136	0.254	-0.044	1.000	0.062	0.106
HRC5	0.022	0.146	0.086	0.062	1.000	0.349
HRC6	0.243	0.229	0.262	0.106	0.349	1.000

Source: Field survey (2022)

APPENDIX O: CORRELATION MATRIX OF ORGANISATIONAL CULTURE- HIERARCHY DIMENSION SIG. (1- TAILED)

	HRC1	HRC2	HRC3	HRC4	HRC5	HRC6
Correlation						
HRC1	1.000	0.000	0.000	0.007	0.345	0.000
HRC2	0.000	1.000	0.026	0.000	0.004	0.000
HRC3	0.000	0.026	1.000	0.216	0.061	0.000
HRC4	0.007	0.000	0.216	1.000	0.133	0.028
HRC5	0.345	0.004	0.061	0.133	1.000	0.000
HRC6	0.000	0.000	0.000	0.028	0.000	1.000

Source: Field survey (2022)

APPENDIX P: CORRELATION MATRIX OF INNOVATIVE CAPABILITY

	INC1	INC2	INC3	INC4	INC5	INC6	INC7	INC8	INC9	INC10
Correlation										
INC1	1.000	0.665	0.418	0.045	0.155	-0.182	0.014	0.186	-0.042	-0.095
INC2	0.665	1.000	0.454	0.218	0.220	-0.129	0.021	0.194	-0.009	-0.179
INC3	0.418	0.454	1.000	0.330	-0.003	-0.038	0.006	-0.040	0.045	-0.025
INC4	0.045	0.218	0.330	1.000	0.011	-0.005	0.127	-0.023	0.131	-0.072
INC5	0.155	0.220	-0.003	0.011	1.000	0.053	0.222	0.588	-0.001	-0.023
INC6	-0.182	0.129	-0.038	-0.005	0.053	1.000	0.048	0.010	-0.120	-0.090
INC7	0.014	0.021	0.006	0.127	0.222	0.048	1.000	0.230	-0.276	0.067
INC8	0.186	0.194	-0.040	-0.023	0.588	0.010	0.230	1.000	0.015	-0.032
INC9	-0.042	0.009	0.045	0.131	-0.001	-0.120	-0.276	0.015	1.000	-0.082
INC10	-0.095	-0.179	0.025	-0.072	-0.023	-0.090	0.067	-0.032	-0.082	1.000

Source: Field survey (2022)

APPENDIX Q: CORRELATION MATRIX OF INNOVATION CAPABILITY SIG. (1- TAILED)

	INC1	INC2	INC3	INC4	INC5	INC6	INC7	INC8	INC9	INC10
Correlation										
INC1	1.000	0.000	0.000	0.210	0.003	0.000	0.401	0.000	0.227	0.044
INC2	0.000	1.000	0.000	0.000	0.000	0.010	0.356	0.000	0.438	0.001
INC3	0.000	0.000	1.000	0.000	0.478	0.245	0.459	0.237	0.208	0.328
INC4	0.210	0.000	0.000	1.000	0.425	0.463	0.011	0.342	0.009	0.096
INC5	0.003	0.000	0.478	0.425	1.000	0.171	0.000	0.000	0.490	0.342
INC6	0.000	0.010	0.245	0.463	0.171	1.000	0.194	0.431	0.015	0.053
INC7	0.401	0.356	0.459	0.011	0.000	0.194	1.000	0.000	0.000	0.114
INC8	0.000	0.000	0.237	0.342	0.000	0.431	0.000	1.000	0.391	0.280
INC9	0.227	0.438	0.208	0.009	0.490	0.015	0.000	0.391	1.000	0.069
INC10	0.044	0.001	0.328	0.096	0.342	0.053	0.114	0.280	0.069	1.000

Source: Field survey (2022)

APPENDIX R: KAISER-MEYER-OLKIN MEASURE OF SAMPLING ADEQUACY AND BARTLETT'S TEST OF SPHERICITY

Variables			
PPF	Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.704
		Approx. ChiSquare	265.892
		df	10
		Sig.	0.000
BES	Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.619
		Approx. ChiSquare	780.399
		df	45
		Sig.	0.000
INC	Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.748
		Approx. ChiSquare	802.590
		df	21
		Sig.	0.000
CLN	Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.660
		Approx. ChiSquare	179.431
		df	55
		Sig.	0.000
ADH	Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.679
		Approx. ChiSquare	170.390
		df	15
		Sig.	0.000
MKT	Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.629
		Approx. ChiSquare	116.972
		df	15
		Sig.	0.000
HRC	Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.621
		Approx. ChiSquare	161.116
		df	
		Sig.	

Source: Field survey (2022)