UNIVERSITY OF GHANA

FACTORS AFFECTING ADOPTION AND USE OF INTTRA IN THE GHANAIAN SHIPPING INDUSTRY USING THE UTAUT MODEL

BY

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DECLARATION

I, the undersigned, declare that except for references to other people's works which are duly acknowledged in line with the ethics of academic honesty, this research on the topic "FACTORS AFFECTING ADOPTION AND USE OF INTTRA IN THE GHANAIAN SHIPPING INDUSTRY USING THE UTAUT MODEL" is my own work. All errors and omissions found in this work are my responsibilities.

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DEDICATION

I dedicate this work to John Robert Jenkins.

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My sincere gratitude goes to God for His guidance and care throughout my study at The Regional Maritime University.

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ABSTRACT

The purpose of this study was to explore the state of the art of existing shipping portals and other e-marketplaces in the shipping industry. The analysis was based on UTAUT model which was modified to suit the Ghanaian context in the study by exploring literatures on technology acceptance and adoption studies to have a broader perspective and adopt a literature survey approach to this study. The objectives of this study is therefore are to review literature regarding the usage of freight management systems; review theories and models used for studying Technology acceptance, use and adoption in general, identify factors that influence adopting INTTRA in the Ghanaian shipping industry. The study developed a modified model that explained the adoption and use of the INTTRA technology in the shipping industry in Ghana. This modified model can serve as a guide to strengthening the methods and factors that need improving in order to increase the use of INTTRA in Ghana. It will also provide a foundation for future research on technology adoption and use in other Sub-Saharan Countries.

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LIST OF ABBREVIATIONS

ATUI	-	Attitude Toward Using INTTRA
AX	-	Anxiety
BTUI	-	Behaviour Toward Using INTTRA
CEPS	-	Custom and Exercise Protective Service
CMEs	-	Computer mediated environments
C-TPB-TAM	-	Combined-Theory of Planned Behaviour and
e-CAM	-	e-Commerce Adoption Model
EDI	-	Electronic Data Interchange
EE	-	Effort Expectancy
FC	-	Facilitation conditions
GcNET	-	Ghana Community Network Services Limited
GPHA	-	Ghana Ports and Harbour Authority
GRA	-	Ghana Revenue Authority
HND	-	Higher National Diploma
ICT	-	Information and Communication Technology
IDT	-	Innovation Diffusion Theory
IS	-	Information Systems
IT	-	Information Technology
JHS	-	Junior High School
JSS	-	Junior Secondary School
MBA	-	Master of Business Administration
MPCU	-	Model of PC Utilization
NGOs	-	Non-Governmental Organizations
NSSs	-	Negotiation Support Systems
NVOCC	-	Non-Vessel Owning Common Carrier Organization

PE	-	Performance Expectancy
PEOU	-	Perceived Ease Of Use
PERM	-	Perceived E-Readiness Model
SCT	-	Social Cognitive Theory
SHS	-	Senior High School
SI	-	Social Influence
SPSS	-	Statistical Product for Service Solution
SSA	-	Sub-Saharan Africa
SSS	-	Senior Secondary School
TAM	-	Technology Acceptance Model
TPB	-	Theory of Planned Behaviour
TRA	-	Theory of Reasoned Action
UN	-	United Nations
UNIDO	-	United Nations of Industrial Development
USAID	-	United States Aid
UTAUT	-	The Unified Theory of Acceptance and Use of

CHAPTER ONE

INTRODUCTION

1.0 Background to the Study

The modest aim of every business or industry is to work faster, reduce errors and cut down paper work in order to cut down cost. The shipping industry is not different when it comes to cutting cost and increasing efficiency through technological innovations. Technology is being increasingly integrated by firms and businesses to facilitate processes in order to reap maximum benefit at the least cost and human strength or intervention. Technology acceptance is therefore a vibrant area in research where different models, frameworks, concepts and theories are being formulated to understand the drivers of technology adoption.

Several models such as the Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), the Theory of Planned Behaviour (TPB), Combined-Theory of Planned Behaviour and Technology Acceptance Model (C-TPB-TAM), the model of PC utilization (MPCU), the Innovation Diffusion Theory (IDT), and the Social Cognitive Theory (SCT) and The Unified Theory of Acceptance and Use of Technology (UTAUT) have been studied and applied to specific situations to better understand adoption styles and help in decision making by allocating resources appropriately. In this study, we consider the INTTRA technology adoption in the Ghanaian shipping industry using the UTAUT model.

1.1 Research Problem

The introduction of INTTRA booking has been argued in some quarters as the way forward or the answer to the up till then cumbersome cargo booking and unstructured procedures associated with all the major and yet different ocean carriers

in the world. Ghana's shipping player's participation in this electronic commerce is the reason for a thorough study in this study to establish the possible factors which may have direct or indirect impact on Ghana a country which has been classified in many literatures as a developing country (DC) with a vibrant shipping industry.

This research also emphasizes that there are complexities of factors which make it challenging for any one model or concept to be employed to understand technology adoption situation in Africa and Ghana. Researchers assess technology in Sub-Saharan Africa by delving into political and cultural issues which influence the intention to accept and use any electronic service or not (Okoli & Mbarika 2003). These authors have suggested in their studies that the next stage for future research in this field is to explore the relationships among these dimensions discussed in their research to help understand the relationships and define practical solutions for the challenges facing developing countries in Sub-Saharan including Ghana.

1.2 Research Aims and Objectives

The aim of this study is to explore the state of the art of existing shipping portals and other e-marketplaces in the shipping industry and specifically seek objectives to:

i. review literature regarding the usage of freight management systems
ii. review theories and models used for studying Technology acceptance, use and adoption in general.
iii. review literature regarding the use of INTTRA in the Ghanaian shipping industry.
iv. identify factors that influence adopting INTTRA in the Ghanaian shipping industry.

v. analyse the relationships between the identified factors using the UTAUT model.

1.3 Expected Contributions

The study seeks to make two main contributions to the shipping industry. These contributions are discussed below.

1.3.1 Theoretical Contribution

This study attempts to examine the practicality of models developed and tested mainly in industrialised countries in technology adoption and use when applied to developing countries. It is also expected that at the end of this study, literature regarding technology acceptance and use in the Ghanaian shipping industry will be expanded. Particularly, empirical evidence regarding the acceptance and use of INTTRA in Ghana would be provided.

1.3.2 Practical Contribution

The ocean carriers in the shipping industry are interested in directing their clients who are mainly shippers, exporters and their agents to INTTRA an online IT portal for booking. It is a standard means of access to all major carriers. The study is expected to provide shippers, exporters, agents, carriers, and INTTRA developers with relevant information regarding the use of INTTRA. It is therefore expected that the findings of the study will serve as a guide to their methods or factors that need to be strengthened in order to increase the use of INTTRA in Ghana.

1.4 Organisation of the Study

The thesis is organised into five (5) main chapters and each of the chapters has specific sub-topics that are discussed. Chapter one is basically an introductory chapter to the research. Chapter two is a review of literature concerning globalisation as the concept which changed the world view on doing business. It also explains how it drove the creation of the World Wide Web and the Internet which have necessitated the subsequent development of technology acceptance research. The next chapter presents the different models in technology adoptions are discussed and evaluated research paradigms and approaches leading us to a formulation of a conceptual framework and hypotheses. Chapter four is data collection and analysis and it includes measurements and results of the model analysis and the testing of the hypotheses. Chapter five is dedicated to discussions. It also presents conclusions, recommendations, contributions and limitations of the research.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Overview

This chapter reviews relevant literature covering the state of the art of existing shipping portals and other e-marketplaces for the shipping industries by discussing key concepts and issues in existing logistic management and e-marketing in the shipping industry. It goes on to examine the theoretical underpinnings of factors affecting adoption and use of INTTRA in the Ghanaian Shipping Industry, its weaknesses and strengths. The chapter also reviews literature on models that best explain the subject in discussion. Finally, it examines the conceptual framework that guided the study.

2.1 The concept of Globalisation

The catchphrase for international business is globalization in the 20th century (Humphrey 2010). Through globalization nations have become more and more interdependent among themselves through the flow of goods and commercial services and the exchange of cultures. Direct investment and international subcontracting and export have widened and are widening the scope for the concept of globalization which has its own benefits and challenges depending on where one is located on the globe, the gains may be unevenly distributed among nations and societies such as competitive advantage through lower costs and access to new markets and technologies. And the challenges too may be unevenly distributed among nations and societies depending on where one is located on the globe such as complex logistics and security issues. In 2011 it was estimated that world merchandise export increased by 20% while the export of commercial services grew

by 11% and trade among regions grew stronger in the same year especially North America, Europe and Asia. Africa's main destination markets for export were the European Union, followed by North America and Asia.

The theory of interdependence in globalization is again connected with peace and more and more with democracy (Ibrahim 2013). It is the economy that drives states to make decisions as the world moves more and more towards interdependence; decision becomes collective in the economic sense and therefore a shift towards homogeneity in pricing, tastes, standards and to some extent cultures. Ideological principles permeate political and social settings on levels.

Some have even opined that globalization is also political in a sense that it spearheads the capitalist idea of free movement of goods and services across boundaries by transnational firms and businesses in a uniform manner yet independently of economies. This notion has its origins in Africa from the period of the peak of the cold war according to historians around 1960s and 1970s when the two main blocs divided up postcolonial Africa into two camps. This division encouraged military take over and authoritarian regimes that worked against the democracy and subsequently weakened economic development in most parts of Africa. Economically, globalization has reinforced the economic marginalization of African economies and their primary dependence on few primary goods for which their demand and prices are externally determined (Ibrahim 2013).

Technologically, it is believed that the forces of globalization helped to quench or extinct the indigenous development of technologies in Africa to tackle African needs and preserve African cultural identities which have distorted the growth patterns and

rates in Africa. And this extinction is sometimes identified as one of the reason for the 'brain drain syndrome' in Africa.

There are numerous facilitators of the breakout of globalization from supplier certification, knowledge of foreign business, global opportunities, and development of trade zones and technological orientation of industry. These facilitators helped to bring global sourcing productivity advantages and above all offered greater standardization. This has become the benchmark for all who participate and wish to participate in global sourcing which can be defined as the integration of all the procurement activities across businesses with a common yardstick. The increasing scope of globalization over the years has necessitated the growing need to coordinate the following: practices, processes, designs, technologies and suppliers via IT systems which are standardized to help track performance worldwide.

2.2 The Paradigm Shift of Globalization

The paradigm shift in the procurement function through global sourcing is a direct product of the globalization which has increased the complexity of managing global supply chains. An intense change in the way of conducting businesses sunk to logistics management within supply chain management over the years due to globalization and it is reducing the world to a global village. An important aspect therefore is facilitation through systems that link firms and governments together. And the global effort is not just for the mere entry into any one particular market with a well designed and marketed product or service but it involves are more strategic entry and placing internationally a product or a service where there exist a network of trade blocs and firms who are also competitors.

2.3 The World Wide Web

The emergence of the World Wide Web also known as WWW or W3 saw the evolution of the marketing concept from being a more traditional and conventional media to an electronic environment known as Computer mediated environments (CMEs) under the support of the web which is actually a part of a networked environment on the internet on a global scale or implementation. The web was started by Tim Berners-Lee in a European lab in Switzerland as a model in 1989 and released to the internet community in 1991 (Hoffman & Novak 1995). The World Wide Web consists of 'sites' that providers erect for users to visit and 'browse' (Hoffman & Novak 1996).

The web is best explained using the Process Model construct called Flow which is the play aspect of any CME. Flow is defined the construct for understanding the network navigation of users for sustained periods or exits depending on whether the experience is good enough or not and also based on the user's skills or challenges (Finneran & Zhang 2002). Sustained exploration of any web based application is an experience behaviour based on the users' control, attention focus, curiosity and interest which when made conducive by CME will yield positive result to users (Finneran & Ping 2005). Flow is therefore a state where the user of the technology is wholly immersed in the action of the browsing environment to the extent of losing touch with the real world. There exist several options to leave as well as opportunities to carry on in the browsing environment (Hoffman & Novak 1995).

Previously, many firms and organizations communicated with their different customers through media which allowed certain controlled or even limited feedbacks from their customers, however the introduction of the Web and the Internet have

revolutionized all forms of communication including the marketing effort from firms to their myriad customers. It is said, that the Internet represents a model of distributed computing that facilitates many-to many communication (Hoffman & Novak 1995). This fast and dramatic advancement in electronic technology by the use of the Web and Internet have provided firms increased levels of competitive urge as well profit maximizations through universal connectivity to millions of customers who have access (Finneran & Ping 2005).

2.4 Electronic Commerce/Market

Electronic exchanges begun the concept of electronic market where the exchange of goods and services take place by providing a rather competitive environment for buyers to choose based on the suitability of the product or service displayed or advertised by sellers. Information is an essential ingredient for the functioning of any market and it is exchanged often between a buyer and a seller when price information is exchanged (Wigand 2000). Information technology is making the cost of coordination among firms and their customers cheaper through electronic links and networks which have high speed and are not particularly hindered by geographical distances or location.

Traditionally, the linking role between a seller and a buyer was mediated by retailers, wholesalers, brokers, agents, freight forwarders, and distributors and so on but now these roles have almost been replaced through the process of disintermediation which has is defined as the displacement of market intermediaries to make way for direct trade between sellers and consumers without agents (Wigand 2000).The advent of Electronic Data Interchange (EDI) is therefore a show of the perfecting forms of information technology in e-marketing where human intervention is being

removed to make way for a paperless transaction which is cost effective. The economists therefore have put forth The Transaction cost theory which classifies transactions into those that support coordination between the seller and the buyer and those that support coordination within the organization itself. In this case, the coordination cost includes the transaction cost for the information processing needed to coordinate the human resource and machine processes. These costs comprise of the following: Search costs: the cost of searching for the product or service, the sellers and buyers, Contracting cost: the cost of setting up and carrying out the contract Monitoring cost: the cost of ensuring that the terms of the contract are adhered to Adaptation cost: the cost of incurred when making changes to an existing contract.

Firms according to The Transaction cost theory will gradually shift towards transactions that economize on coordination cost which should lead to a zero cost for coordination eventually. Cheaper cost of transaction is the aim of almost all firms which engage in electronic communications and this is the driving force behind most electronic commerce portal technologies.

2.5 Logistics and Supply Chain

Logistics and value addition have become two key concepts in globalization now due to the increasing hunt for cheap and cost effective means of transport and communication. Outsourcing is defined as the contracting of the management of and the operational control of logistics functions to unrelated third party companies. Outsourcing is also defined as the selection of third party companies or an outside supplier to perform a task, function or a process, in order to gain business-level benefits. There are different types of outsourcing such as systems take over, Joint

venture, Systems spin-off (subsidiary) and Management contract. Normally when there is an outsourcing of the logistics arm of a company, it is for the performance of all of the following functions by a third party logistics firm or combination of these functions or one of these functions to derive the maximum profit and eliminate waste in a company's system: procurement, transport, packaging, distribution, communication, warehousing and inventory, materials handling and reverse logistics.

2.6 Outsourcing

There are various reasons why a firm or an organization may decide to use outsourcing but the main reasons are usually because the company wants to improve operations and customer satisfaction in a cost effective way, acquire expertise, talents or resources through outsourcing which may not exist internally and above all focus on its core competencies.

Companies which are providing contractual logistics services are referred to as third party logistics companies. One of the widely acceptable definitions of third party logistics therefore is that third-party logistics are activities carried out by an external company who also act as intermediaries on behalf of or between a company (shipper) and his customers consisting of at least the provision of management of multiple logistics services. These activities are offered in an integrated way, not on stand-alone basis. The co-operation between the shipper and the external company is an intended continuous relationship.

Value addition or value adding in third party logistics business refers to services that add extra features or functions to the basic services, there are more customized

offerings tailored to suit the company's style and so on. Value added services in third party logistics are more often initiated by customer request usually at the beginning of the outsourcing process or sometimes during an on-going business relationship between the two parties.

Supply chain is defined as a network of interconnected businesses involved in the ultimate provision of product and service packages required by end customers. Supply chain management comprises of the planning and management of all the activities in procurement, conversion and logistics management.

There are several considerations companies look at when planning to outsource any function to a third party logistics and these could range from the level of outsourcing the company is willing to let go to a third party logistics bearing in mind the potential problems such as transition problems and confidentiality associated with such an arrangement and on top of it all will be the compatibility level of both the company and the third party logistics systems of operations. Globally outsourcing to third party logistics has a trend or pattern of the following areas being increasingly outsourced by companies; inventory management, all supply chain functions, packaging, fleet management, shipment planning, information systems, carrier nomination and rate negotiation, freight payment, auditing and so on.

In the era of outsourcing, a shift towards global sourcing is increasing global trade and the increasing complexity of managing the global supply chain is turning out for firms to fall on third parties logistics to manage these complexities for several reasons. Third party logistics have competitive advantage in global sourcing due to their large clientele base yet tailor made services and add-ons to suit every customer. They have a stronger bargaining power due to the volume of business and more

importantly the economies of scale they are able to offer carriers or global sources for example in shipping, a multimodal transport operator who is acting as a freight forwarder or a Non-Vessel Owning Common Carrier (NVOCC) is a able to negotiate on behalf of all his customers to derive the most competitive freight and so on. They therefore facilitate the flow of economic transactions at the most competitive cost and time due to their array of global networks. Examples of well renowned and most profitable global third party logistics are Schneider Logistics, Danzas, FedEx, Caterpillar and the rest.

Third party logistics offer Just in Time strategy to their customers because of their high sense of customer awareness. It is a strategy which is based on the principle of getting the materials or resources to the right place at the right time for production and onward distribution through the distribution channels. Under this strategy, suppliers, transportation systems and warehousing are supposed to be firmly integrated in a chain which must be ready to deliver just in time not early or late. This strategy in logistics has many basic benefits such as the elimination of waste and cost saving, few competent and reliable suppliers due to supplier competition. And all this is done to ensure a long term prospective relationship between the company and the third party logistics.

Customer service in third party logistics is the one thing which separates one third party logistics from the other apart from price in such a competitive industry. The main objective is to create a satisfaction of the customer so much so that the customer does not look for other alternatives. Customer service is a continuous process which starts from the pre-transaction stage, the transaction stage and post transaction stage which involves setting priorities right, viewing the whole process as

a resource allocation issue and setting achievable customer service policy and standard as guiding principle in the execution of third parties logistics in outsourcing. In outsourcing, third party logistics firms sell their service mainly through positive feedbacks from customers which can go great lengths to influence the attitudes of other companies to also patronize their business.

Another phenomenal feature of globalization is the rise of different value-chain views expressed by different writers due to the complex and diversified nature of the concept itself which has given way to a lack of a well-defined theoretical frame-work in globalization studies (Humphrey 2010). In Ghana, Logistics and supply chain management has undergone complex and diversified faces just as the international scene described in the preceding paragraphs. The main driver of logistics companies in Ghana is also meeting customer demands and it involves reactiveness on the part of the logistics companies by studying the customer's business in order to tailor products or services adapt to suit them (Kwateng et al. 2014). In this regard there have been several interventions to ensure the services of third party logistics in Ghana are competitive and comparable to the global standard described earlier.

Another area in is differentiated distribution which is the segmentation of customers based on their needs and it is key in third party logistics management, the marketing of the different products and services based on their nature. It also entails the efficient movement of these products and services to customers when ordered to avoid waste of resources and to also save time for the company. The council of Logistics management therefore defines logistics management as that part of the supply chain process that plans, implements and controls the efficient, effective flow

and storage of goods, services and related information between point of origin and the point of consumption in order to meet customer requirement (Kwateng et al. 2014).

The main driving force in value-added services in third party logistics is meeting the customer demands and it involves reactiveness on the part of the contracted third party logistics company by studying the customer's business in order to tailor products or services to suit them. It also involves dynamism to be able to match competition from outside third party companies who want to come in. The relationship between third party logistics and a company usually is on contract basis and is renewable based on performance and the achievement of targets and goals in the whole of the supply chain management. The contractual nature of this relationship makes it a more competitive terrain for the third party logistics company and therefore affords the company who has outsourced an otherwise an internal function chance to concentrate on, improving operations and customer satisfaction in a cost effective way, acquire expertise, talents or resources which may not exist internally and above all to focus on its core competencies.

2.7 Information Systems Adoption in Sub-Saharan Africa

There have been several studies to understand the Sub-Saharan environment and its readiness or preparedness to support and adopt e-business as part of the business processes and even as the actual business process. Extant research on e-commerce on adoptions in different cultures are conceptualized with different Information Systems (IS) and psychological theories, framework and models to understand the challenges which firms and organizations have to either overcome or circumvent in order to attain the value or benefits that the adoption of any one electronic technology affords

the user. It is ideal if models or frameworks are specifically developed to suit a particular cultural setting. It is in this light that developed a paper on a research framework for assessing electronic commerce in Sub-Saharan Africa (Okoli & Mbarika 2003). It describes the nature of the digital divide, and explains the need for the commercial applications of the Internet in developing countries in general' (Okoli & Mbarika 2003). There is a division of the African continent into two broad areas based on economic development patterns which is North Africa and Sub-Saharan Africa (SSA) It is said that North African economic development is patterned alongside those of the Middle-East and sometimes considered as a part of the same socio-economic region although geographically they are apart on different continents. In Sub-Saharan Africa (SSA), South Africa is a rare case of highly advanced and comparable to Europe when it comes to socio-economic development and it is for this reason that it is not considered as a part of this study of Sub-Saharan Africa (SSA) implementation of e-commerce.

The study explores the Digital Divide as phenomenon which thrives on the notion that developed nations such as United States, Canada, Western Europe and South Africa with resources to invest in ICT infrastructure stand a greater chance of reaping benefits from the information age while developing countries in Sub-Saharan Africa including Ghana are lurking in the 'dark' at a slower pace (Okoli & Mbarika 2003). For an e-commerce to be successful a country needs the personnel and equipment which includes hardware and software (Okoli & Mbarika 2003).

And Sub-Saharan African countries are ill-equipped and this is deeply entrenched in our school systems which have little or no room for training computer experts and personnel to take up the role of developing indigenous software customized for the

unique company and cultural needs of the region. This lack of technological know-how has led to the over-reliance on foreign firms to host and maintain websites abroad or even to come into Africa as expatriates to host and maintain websites.

The Ghanaian hold of electronic commerce in its own right has evolved over the years and it has taken a not too unusual pattern than any other developing country in Sub-Sahara Africa. The Ghana government over the years especially in the late 1990s and early 2000s have made tremendous efforts to bridge a digital divide which has been created over the long period that other developed countries begun exploring with information technology and its numerous benefits to businesses including small and medium scale enterprises (SMEs) (Boateng et al. 2008). A national Information and Communication Technology (ICT) for Accelerated Development policy was launched in 2003 officially by (Boateng et al. 2008) the Ghana government to spearhead an ICT led socio-economic growth and development plan. This governmental initiative saw the emergence of ICT projects such as the Kofi Annan-Indian ICT center and many more of such projects with technical and financial support from the UN and donor countries like India and NGOs such as the USAID and DANIDA witnessed phenomenal expansions. E-commerce is one of the most evident instances in which information and communication technologies (ICT) can contribute to economic growth. Another significant milestone in the development of Ghana's ICT is the liberalization of the telecommunications industry in the 1990s where internet usage increased and the improvement led to the discussion and adoption of e-commerce to firm development (Boateng & Foundation 2011).

Ghana is traditionally an export led economy therefore the adoption and use of ICT based technology has become imperative in order to remain competitive with

international commerce. The introduction of INTTRA as a shipping portal platform for the industry has a direct bearing on the traditional export from Ghana.

Several researches into e-commerce and e-businesses have been conducted and are being conducted to understand the Ghana story in its various forms and shape in order to understand the underlying factors both the internal and external contextual issues affecting the adoption and the sustenance of e-commerce in Ghana. Initial studies were purely qualitative in method to get a rich understanding of the social and human nature of the issues affecting adoptions in Ghana (Boateng & Foundation 2011). The realities and patterns which have been found so far have led to further studies that have combined qualitative and quantitative methods to find answers or to confirm claims. Perceived E-Readiness Model (PERM) brings a comprehensive approach to evaluating and understanding the multi-prong challenges of e-commerce and institutionalization in Developing Countries (DCs) according to (Boateng et al. 2008).

2.8 Information Systems in the Ghanaian shipping industry

The introduction of IT systems such as the Ghana Community Network Services Limited GcNET which is an example of an Electronic Data Interchange system mandated to provide an e-solution to the government of Ghana (Ghana Customs-CEPS and Ghana Revenue Authority-GRA) and other shipping industry players and stakeholders including air in Ghana. GcNET is a single window platform for multiple accesses and processing in the import and export and transit of landlocked cargo in Ghana. This system provides solutions for the Ghana Customs for processing of clearing and related documents and for the calculation and payment of Customs duties, a tool for processing all declarations for both import and export in a

form of accurate manifest, a transit monitoring system, an e-tax portal which enables the Ghana Revenue Authority to administer the domestic tax regime effectively and an access which allows all the players on the platform to interact electronically with all who are involved in the clearing process. All these features of the GcNET system by far is a response to the standardization that globalization encourages which is by far the pattern of trade and business globally.

2.9 The INTTRA Portal

The INTTRA is a multi-carrier e-commerce portal which was established in 2001 as neutral central party to facilitating ocean trade world-wide by providing a network platform access to about 54 carriers and non-vessel operating common carriers (NVOCCs) where shippers, exporters, agents, freight forwarders and all shipping related customers around the world can book, track containers and submit shipping instructions within the ocean industry.

The INTTRA is as a consequence is a response to the myriad issues with the booking aspect of export documentation by offering a single electronic connection portal to the many customers of the world's major ocean carriers anywhere in the world where people have access to the internet. Booking at a single platform is where shipping industry players can go and obtain a 'one stop shop' benefits such as placing a booking online, sending shipping instruction, bill of lading-invoice, tracking and many more shipping details from major ocean carriers without the stress or cumbersomeness of manual paperwork. The system is reported to have been working very well in Asia and Europe and there are many case studies attesting to its efficiency.

There is a case study of Sinotrans, one of the world's largest shipping agencies in the world based in North China. The challenge for Sinotrans previously was the volume of information on paper on a ten-ply paper they had to fax to carriers for each shipment which was not only time consuming but very confusing and a profit eating thing to do. This and many more of such challenges in the industry caused INTTRA to respond in 2006 with the introduction of SHIPPING ORDER, a booking standardisation package which according to Ms Tang XueChun, General Manager, Sinotrans has helped solved all their booking needs. According to her testimonial, her company saved 80 man-hours per week in Shanghai in 2008 and each man-hour is equivalent to $3. Not only have that but Sinotrans saw a 10% increase in volume amounting to a revenue gain of $300,000. This and many more of such success stories are the demonstrations of the enormous benefits of INTTRA is reported elsewhere to have been contributing positively to the shipping business.

However, the case in Ghana where INTTRA has been introduced appears to be recording different and mixed acceptance and adoption altitudes from the main target group which is the shipper and forwarder community. The manual shipping instruction procedure, the different and tedious and various carrier procedures, sometimes the over the phone instruction and handwritten shipping and booking instructions which come with so many errors which lead to severe operational cost such as wrong stowage, change of destination and so on is still being carried out.

The shipper and forwarder community have been encouraged to embrace the INTTRA technology mainly by the technology developers and shipping lines that are apparently funding the technology at some level. Shippers and forwarders have been advised and promised that they stand to benefit a lot if INTTRA is embraced wholly

or at worst partially judging from the point of view that, it is currently the only electronic platform in shipping globally which is believed to serve all the different needs of shippers, carriers, forwarders, insurers, researchers and many who have interest in shipping globally. It has been described as the foremost portal for the shipping industry which offers carrier schedules, container booking, shipping instruction, shipping order, bill of lading, container tracking, e-invoicing and many through a single link. The purpose of the INTTRA IT portal is to standardize all booking activities to ocean carriers by allowing users to gain access to an online tool that speeds up the documentation process in shipping.

2.10 Chapter Summary

The chapter reviewed related literature by first discussing global issues around the world of technology. It identified globalization as the driver of technological advancement and the catalyst for the creation of the Web and Internet which revolutionized the pace of logistics and supply chain management globally.

CHAPTER THREE

METHODOLOGY

3.0 Overview

This chapter presents the theoretical background to the study leading to methodology followed in carrying out the study. It gives a description of the study area, research design, sources of data and target population. It further explains the study's sample size determination, sampling procedures/ techniques used, research instruments and the procedures followed in data collection, processing and analysis as well as its presentation. Challenges encountered during the fieldwork, their implications and also ethical considerations are also discussed.

3.1 Theoretical Framework

This section shall concentrate on some main theories in technology acceptance on which we shall draw stimulus for our main theory which is The Unified Theory of Acceptance and Use of Technology (UTAUT). These models have evolved over the years and as a result of persistent validation and model extensions in technology acceptance and diffusion models as an insight for improvement of systems.

3.2 The Theory of Reasoned Action

The theory is a psychological model used to explain technology acceptance (Ajzen 2002). It explains the relationships between attitudes and behaviors in the power of prediction equation regarding the influence of human behavior. It argues primarily that individuals will behave in a certain way based on their pre-existing attitudes and behavioral intention that which translate into an outcome the individual expects to occur as a result of choosing a particular behavior over several others. The theory in

principle suggests that individuals are rationale and their attitudes and subjective norm determine intention and the stronger the intention the more likely it is for a particular behavior to be performed or occur. According to TRA, the most important determinant of an individual's behavior is behavioral intentions and not attitude. And an individual's intention to perform a certain behavior is a combination of attitude towards performance of the behavior and subjective norms. And attitudes are formed based on an individual's set of beliefs increased by their evaluation.

The theory has been utilized in various areas in predicting specific behaviors and a typical one is predicting sexual behaviors especially among adolescents. It is used extensively to explain the behavioral intention to engage in early sex by adolescents as influenced by attitudes and subjective norms. Attitudes in this instance comprise either pre-existing attitudes which could be negative or positive and subjective norm taking the form of perceived social pressure from peers, classmates to engage in sexual behaviors.

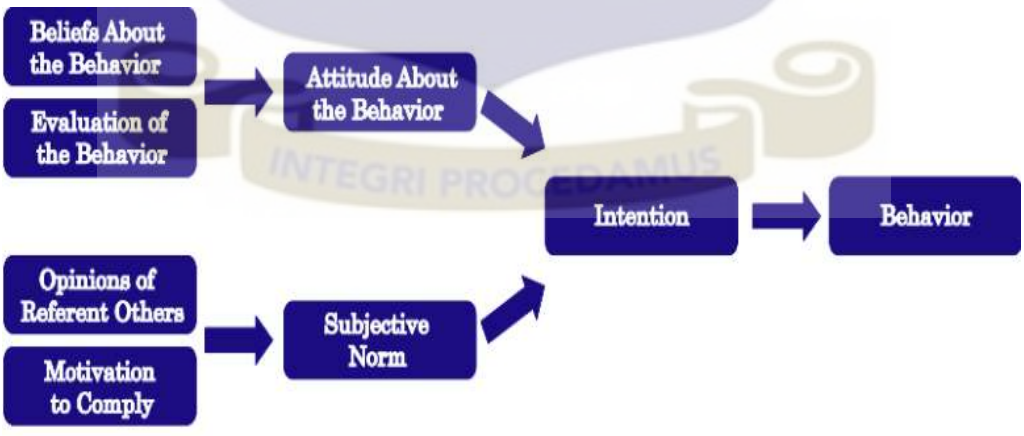

Figure 3.1: The Theory of Reasoned Action model (Ajzen, 2002)

3.2.1 Successful use of the Theory of Reasoned Action

The theory of planned behavior can covers non-volitional behavior which cannot be explained by the theory of reasoned action. An individual's behavioral intention cannot be the exclusive determinant of behavior where an individual's control over the behavior is incomplete. By adding "perceived behavioral control," the theory of planned behavior can explain the relationship between behavioral intention and actual behavior.

Several studies found that the TPB would help better predict behavioral intention than the theory of reasoned action (Ajzen, 1991). The TPB has improved the predictability of intention in various fields such as health, tourism so as the industrial sector.

In addition, the theory of planned behavior as well as the theory of reasoned action can explain the individual's social behavior by considering "social norm" as an important variable.

3.2.2 Limitations of the Theory of Reasoned Action

Despite the numerous application of the Theory of Reasoned Action, some researchers still think the model does not address situations which do not fit within the domain of their constructs which should be the main focus of researchers. The issue of choice problem is not tackled well because the individual's intentions are assessed without reference to necessary information such as irrational decisions, habits and the likes which are not under volitional control but should inform intention to use and therefore such behaviors cannot be explained using TRA.

3.3 The Theory of Planned Behaviour

The limitations of the Theory of Reasoned Action caused the Theory of Planned Behaviour (TPB) to be projected in 1985 (Ajzen, 1991) and it is an extension of the Theory of Reasoned Action. It addresses behaviors that occur outside of volitional control such as irrational decisions and habits. Theory of Reasoned Action by introducing perceived behavioral control in situations where prediction of behavior is hindered by actual control. This theory in summary states that an intention to perform behaviors of different kinds could be predicted with high accuracy from attitudes toward the behavior, subjective norms and perceived behavioral control and these intentions or motivation are responsible for considerable variance in actual behavior which is the ultimate action taken by an individual at a specific time and place with an expected outcome. Here, past behavior is also built in the prediction equation to help explain actual behavior and intention and the perceived behavioral control must correspond to the behavior to be predicted and the identified setting must be the same.

It has been applied to studies of the relations among beliefs, attitudes, and behavioral control. The Theory of Planned Behavior as applied to such as environmental psychology**.** For example, sustainable behaviors are seen as positive behaviors but although there may be an intention to use it, perceived behavioral control could be hindered by constraints such as one's intention to behave in a responsible way in the end. Likewise the theory has also been widely used in health and nutrition intervention programs**,** the main constructs such as behavioral control.

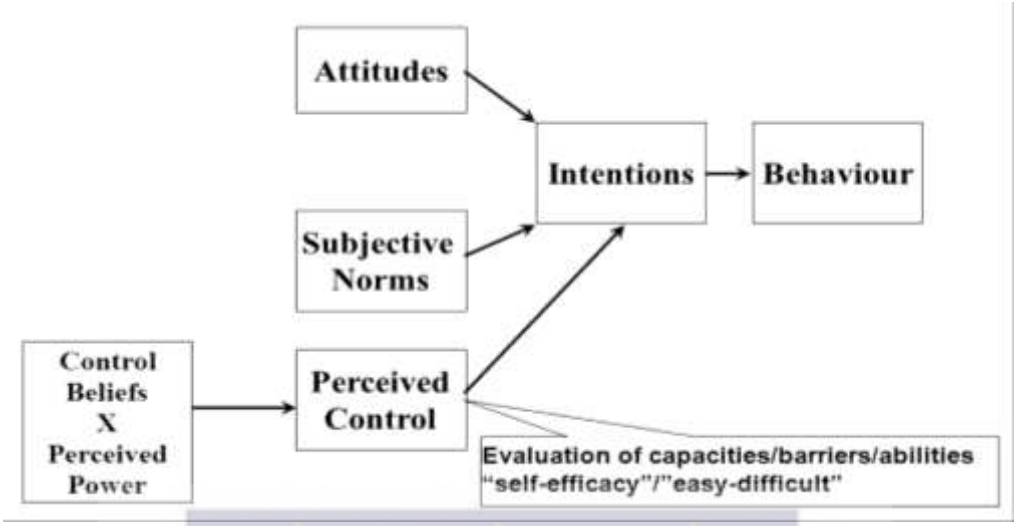

Figure 3.2: The Theory of Planned Behavior model (Ajzen, 1991)

Perceived behavioral control, subjective norms and intentions are measured to see their effects on behavior. In general the TPB is enhancements of TRA in the sense that it is able to a large extent explain the relation between behavioral intention and actual behavior with the support of the perceived behavioral control construct.

3.3.1 Successful use of the Theory of Planned Behaviour

A survey employed the Theory of Planned Behaviour to investigate on a Singapore companies' intentions to adopt negotiation support systems (NSSs). The data collected were tested based on two theoretical models: the theory of planned behavior (TPB) and the technology acceptance model (TAM). Preliminary findings showed that the TPB provides a better prediction of the intention to adopt a NSS than the TAM does, with subjective norm and perceived behavioral control being the significant determinants of intention.

3.3.2 Limitations of the Theory of Planned Behaviour

Despite TPB strong applications in behavioral prediction studies, there are claims of its deficiencies such as there is nothing about how beliefs come about but it dwells solely on cognitive processes without including the variable of the influence of emotion, fear, threat and so on. It is also criticized in some quarters for its lack or focus on actual control since it suggests that behaviors are planned and should have shown how the planning process occurs and related the process to the model.

3.4 The Theory of Technology Acceptance

The Theory of Technology Acceptance (Davis, 1985) is an effort to develop a means of measuring and analyzing computer usage acceptance. The goal of TAM is to provide an explanation to the determinants of computer acceptance among users. TAM has evolved over the years from the initial means of predicting computer usage which is measured by using behavioral intention and is marked as (B1) Perceived usefulness (PU) which refers to the degree to which a person believes that using a system would enhance his/her job performance and perceived ease of use (PEOU) which also refers the degree to which a person believes using a particular system will be free of effort. It believes that PU is influenced by PEOU because in an ideal situation the easier a technology is the more useful it should be to the user. The model puts forward external factors such as computer training, user involvement in the designing process and so on as the main variables which come together to explain actual use or behavior as shown below:

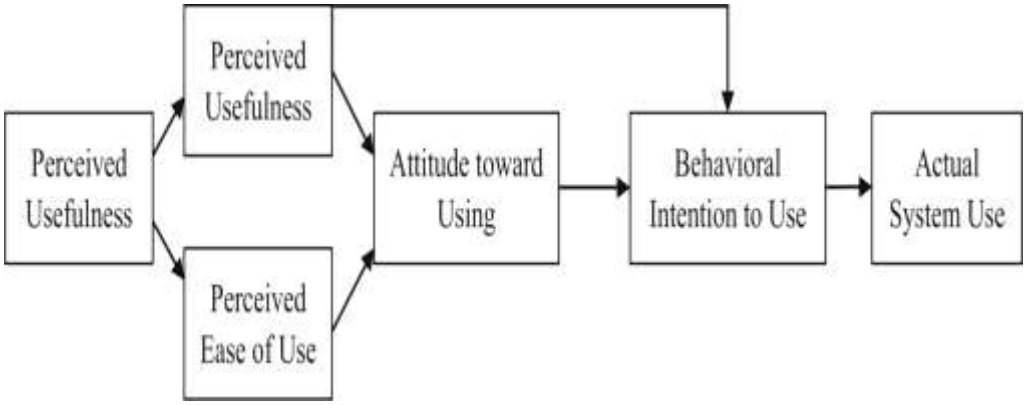

Figure 3.3: Theory of Technology Acceptance Model (Davis, 1989)

The model has undergone several phases of development which are adoption, validation, extension and elaboration phases over the years to respond to criticism. Similarly, the model is believed to have been developed specifically for IS systems and for that reason several new technologies acceptance tests on individuals and firms have been done using TAM. It is widely used in e-Commerce Adoption Model for example (e-CAM) which draws its constructs from TAM and several researches have fallen on this robust and time tested model in many works concerning e-commerce.

3.4.1 Successful use of the Theory of Technology Acceptance

Davis, 1989 investigated the technology email and graphic editor systems using the Theory of Technology Acceptance and with the objective of developing a measuring scale for PE and PEOU. The study used a sample comprising of 40 evening MBA students and 112 employees.

3.4.2 Limitations of the Theory of Technology Acceptance

The original the Theory of Technology Acceptance despite its recorded efficiency in research has its own limitations and researchers such as (Akbar, 2013) have done studies to improve it by expanding the theoretical base line to include other variables such as trust and quality which are key when dealing with e-commerce which thrives mainly on internet exchanges without human contact. It is therefore is highly recommended by scholars such as Legris and many others (Legris et al., 2003) and Serenko et al.,(2008).

The most commonly cited limitation is the reliance on respondents self-reporting mechanism which is used to measure actual usage. There is a vulnerability display too due to the different method approach which is field versus a laboratory or an experimental setting such as a school with a convenience sample of students which critics argue is not the same as a workplace where the diffusion of a new technology is much needed.

3.5 The Unified Theory of Acceptance and Use of Technology

The Unified Theory of Acceptance and Use of Technology model although very new since its publication in 2003 in comparison with other models discussed previously, the model has been noted as one of the most commonly cited in the IT adoption and diffusion studies and research (Williams et al. 2011). The model as at 2015 is reported to have received more citations but less than a quarter of actual utilization of its main constructs. The Unified Theory of Acceptance and Use of Technology (UTAUT) is derived from a fusion of various and previous theories such as the Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), the Theory of Planned Behavior (TPB), Combined-Theory of Planned Behavior and

Technology Acceptance Model (C-TPB-TAM), the model of PC utilization (MPCU), the Innovation Diffusion Theory (IDT), and the Social Cognitive Theory (SCT) with the attempt to become a one stop shop for technology adoption and acceptance in research (Venkatesh et al., 2003).

Many studies conducted however outside academic environment to test technology acceptance using the UTAUT model according to some critics have findings which are ‘’consistent to some extent”. It is worth noting that most studies conducted using the original UTAUT model focus on newly introduced technology to capture user’s perceptions and how the perceptions evolve with experience using the technology in an extensive and consistent manner enough to affect initial perceptions. One of the most important factors for the success of health information technology (IT) implementation is user’s acceptance and use of that technology (Kijsanayotin et al., 2009).

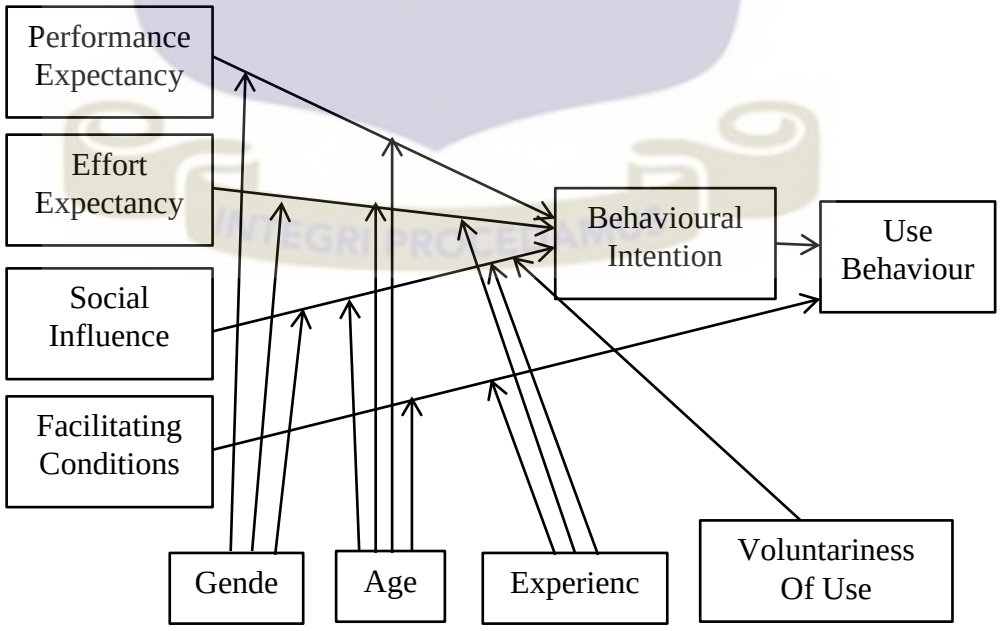

Figure 3.4: The UTAUT model (Venkatesh et al., 2003)

3.5.1 Successful use of the Unified Theory of Acceptance and Use of Technology

Akbar 2013 in a study employed the Unified Theory of Acceptance and Use of Technology to investigate what affects student's acceptance and use of technology introduced on their campus in determining of the success of the technology. The study revealed that consistent with the UTAUT model, anxiety did not have a significant influence on behavioural intention in the measurement.

3.5.2 Limitations of the Unified Theory of Acceptance and Use of Technology

Despite the limited application of the Unified Theory of Acceptance and Use of Technology model to outside academic circles its predictive powers so far lends credence to studying the health IT system restructuring of Thailand by adopting and modifying the original UTAUT model to understand the factors that influence IT adoption in community health centers in Thailand and to validate this extant IT adoption model in developing country health care context (Kijsanayotin et al. 2009). According to UTAUT, the four main constructs which are performance expectancy, effort expectancy, social influence, and facilitating conditions are the direct determinants in the prediction equation of behavioral intention and intention to use however for our study, we shall add the two initial constructs which were dropped from the original UTAUT model that is Self-efficacy and Anxiety and use the full model to compare their influence on acceptance findings. Again the full UTAUT model is being used in this study because of the combination of several previous models as in Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), the Theory of Planned Behavior (TPB), Combined-Theory of Planned

Behavior and Technology Acceptance Model (C-TPB-TAM), the model of PC utilization (MPCU), the Innovation Diffusion Theory (IDT), and the Social Cognitive Theory (SCT) to better explain an multi-faceted research problem of e-commerce adoption in Ghana.

3.6 An extension of the Unified Theory of Acceptance and Use of Technology 2 (Venkatesh et al., 2012).

The Unified Theory of Acceptance and Use of Technology 2 model is an extension of the original UTAUT which has the four main constructs which are performance expectancy, effort expectancy, social influence, and facilitating conditions constructs and additional constructs which are hedonic motivation, price value and habit. These three additional constructs exhibit changes in behavioural intention and technology use therefore is not too relevant to the study.

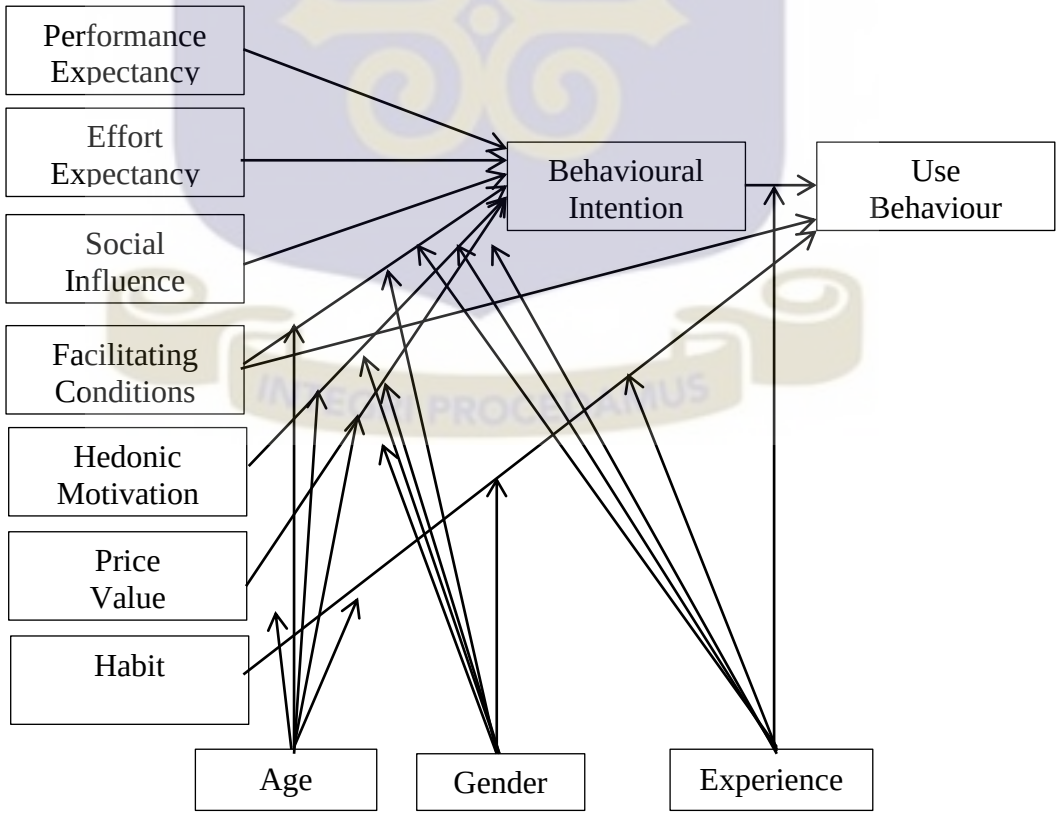

Figure 3.5: The UTAUT 2 model (Venkatesh et al., 2012)

3.7 Conceptual Framework

In spite of the limitations, the Venkatesh et al. (2003)'s Unified Theory of Acceptance and Use of Technology has been employed for this study. The framework, however, has been modified to include factors and other important variables that the original model did not have. The Unified Theory of Acceptance and Use of Technology have been adapted because it comes nearer to containing all the elements or variables that are needed for the study. It has also been adapted in order to make the study well focused and to make it easy for the objectives of the study to be realised.

As illustrated in Figure 3.6, the adapted conceptual framework assumes that effort expectancy, performance expectancy, social influence and facilitating condition tend to influence behavioural intention which ends in use behaviour.

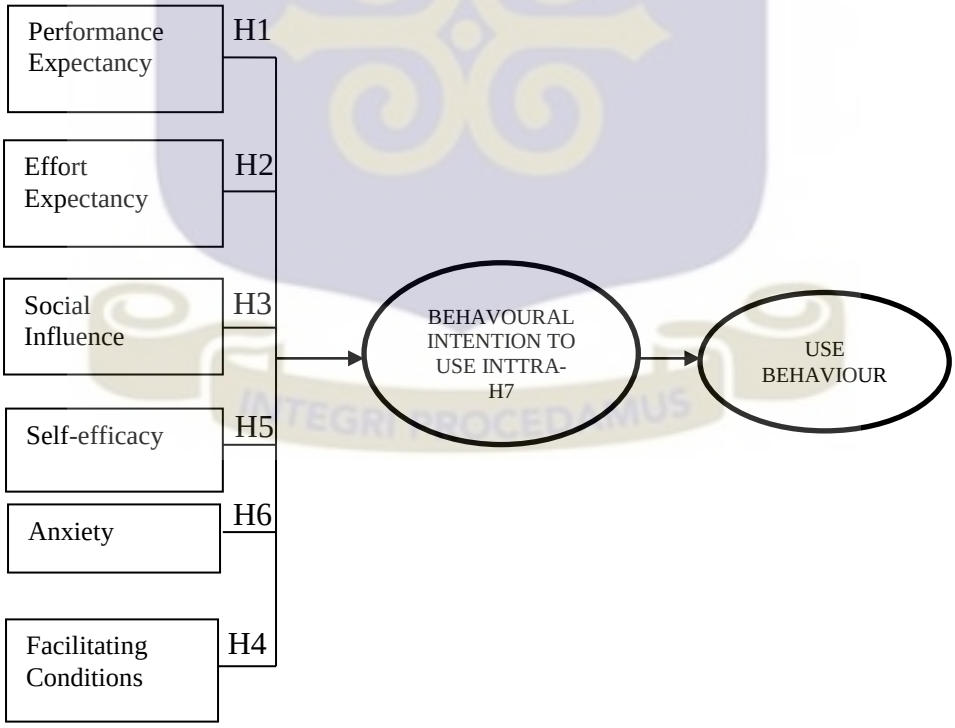

Figure 3.6: Adapted Conceptual framework. Source: UTAUT model (Venkatesh et al., 2003)

All the variables on the modified model (performance expectancy, effort expectancy, social influence, self-efficacy, anxiety and facilitating conditions have been defined and as below: Performance expectancy (PE) is defined as the degree to which an individual believes that using IT (INTTRA) will help him or her to attain gains in job performance. Effort expectancy (EE) is defined as the degree of ease of use associated with IT (INTTRA).Social influence (SI) is defined as the degree to which an individual perceives that that important people believe he or she should use IT (INTTRA). And the two added constructs are INTTRA self-efficacy which is a judgment of one's ability to use INTTRA to accomplish a particular task and INTTRA Anxiety which evokes anxious emotions when performing a behavior which is using INTTRA in our case. Facilitation conditions (FC) is defined as the degree to which an individual or organizational and technical structure exists to support the use of the technology.

3.8 Study Area

Since the location in which a research is conducted plays an important role in the overall process of a research (Kumar, 2005), it is appropriate to outline some basic characteristics of the study area. The spatial focus of the study is the Tema and Takoradi Habours. Both harbours are the main and busiest harbours in the country. Daily transactions needed the minimum turnaround to boost efficiency and buy more economic time. Therefore the nature of transaction in these two main harbours necessitated the study.

3.9 Research Design

The descriptive research design was adopted for the study. Descriptive design outlines and interprets what exists (Punch, 2003; Payne & Payne, 2004). A descriptive design with, respect to this study, is concerned with the factors that affects the conditions of adoption and use of INTTRA in the shipping industry. Descriptive research design is used to obtain information concerning the current status of the phenomena under study and to describe 'what' exists with respect to variables or conditions in a situation (Creswell, 2005; Sarantakos, 2005). The descriptive design was well thought-out to be appropriate for this study because the objectives of the study.

3.10 Research Paradigms

A paradigm can be defined as a distinct set of concepts or thoughts patterns, including theories, research methods, models, and ways of thinking that are commonly accepted by a particular discipline or group. In research, there a four main research paradigms which are Positivist, Interpretive, Critical and Design. We shall however concentrate on the two main paradigms which are Positivist and Interpretive paradigms of research (Sarantakos 2005).

3.11 Positivist Paradigm

Positivist research believes that reality is objective and factual knowledge can only be gained through observation and measurement which are quantifiable. In positivist research, the researcher is independent of the study being carried out such that interaction with the participants are less or limited in order to remain objective at data collection and interpretation. Assuming a positivist position in a research means

that, the researcher believes deeply that being independent of the study means being objective. It also means reality can be observed from an objective point of view to be able to explain and predict by formulating hypotheses which are testable without a researcher's involvement. Usually Positivist research paradigms find patterns and relationships between variables or constructs (Kumar 2005).

Positivist research has its own shortcomings such as the over reliance on experience to explain and understand and acquire knowledge. Again Positivist research assumes that almost all processes or realities can be seen as a variation or relationship between variables and this makes it too reliant on the descriptive instead of delving into issues deeply through a researcher's close interaction to get rich data to avoid over generalization based on small number of cases.

3.12 Interpretive Paradigm

Interpretive research paradigm believes that understanding reality can be explained subjectively. The interpretive researcher is therefore actively involved in the research which is conducted in a natural environment in order not to miss any detail but rather the researcher affects or applies him/herself to the entire process to gain a clear insight into the phenomenon under study (Neuman 2007).

The approach to interpretive research paradigm is inductive which means collecting data from scratch and building theories, models and frame works through the collection of qualitative data and analysis. A typical feature of this research is the flexibility of the structural design of the research which permits new ideas and dimensions in order to get a clear understanding of the research problem. This feature also helps at eliminating generalized issues to specifics.

3.13 Qualitative versus Quantitative Paradigms

The quantitative paradigm is based on a positivist stance which advocates an existence of one truth which is the objective reality devoid of human perceptions and the researcher is independent of any influence on what is being investigated or vice versa. The technique which is adopted is highly structured and surveys with limited predetermined responses. Quantitative relate to numbers and therefore data collection and analysed in statistical patterns to find associations or relationships among phenomenon (Punch 2003).

On the other hand, qualitative research paradigm is based on interpretive stance that advocates the existence of multiple truths based on a person's view on what reality is. The researcher is therefore actively involved in the research process through participant observation and extensive interviews which will produce mutually created meanings in the research. The difference between these two paradigms appears in their philosophy, methodology, as well as the style adoption for reporting on findings. The decision on which approach to employ in any one research is based on the objectives of the research and it is a normal practice in research to combine both quantitative and qualitative but the objective of the research will determine which becomes the principal and the subordinate method (Bergman 2008).

There are two main perspectives to research in social sciences; positivist and interpretive perspectives. Positivism is based on realisation through experience which aims at explaining social life (Sarantakos, 2005). Proponents of this perspective have preference for quantitative data and often use surveys, experiments and statistics to inquire about statistical measurements to test hypotheses. On the other hand, the interpretive perspective of research deals with interpretation and

understanding of social life through direct detailed observation (Sarantakos 2005). Advocates of this perspective also prefer qualitative data and frequently use in-depth interviews, focus group discussions among others as a method of data collection.

It is nonetheless becoming more and more useful to bring together both philosophies and their techniques, in view of the fact that a blend of methods enables the researcher to have a deeper understanding of the phenomenon under study. As a result, this study adopted mixed methods approach by combining the survey (questionnaire) and in-depth interview to collect data. This method helped to provide more perspectives on the phenomenon being studied as it made it possible for the combination of diverse forms of data (Esterby-Smith, Thorpe and Low, 2002). The combination of these methodologies is of relevance in the field of sales and marketing research as is evident by the work of Okoli and Mbarika (2003).

The combination also enabled the researcher to acquire more appropriate and reliable results to contrast what was obtained from a single approach. The complementary importance of the mixed method approach is buttressed by Hanson, Creswell, Plano-Clark, Petska and Creswell (2005) and Bergman (2008). They observe that when mixed methods are applied in studies, researchers possibly enrich their findings. The combination of research methods also allows researchers to concurrently generalise their findings and expand their understanding of the phenomenon under study. But this study sought to the use of one, qualitative methods to arrive at the results.

3.14 Research Hypotheses

The objective of this paper therefore is to examine the influence of the constructs of the UTAUT model on the INTTRA technology acceptance in Ghana by hypothesizing the following:

i. H1: The influence of performance expectancy on behavioral intention to use INTTRA will have a significant influence in actual use.
ii. H2: The influence of effort expectancy on behavioural intention to use INTTRA will have a significant influence in actual use.
iii. H3: The influence of social influence on behavioural intention to use INTTRA will have a significant influence in actual use.
iv. H4: Facilitating conditions will not have a significant influence on behavioural intention to use INTTRA
v. H5: Computer self-efficacy will not have a significant influence on behavioural intention to use INTTRA.
vi. H6: Computer anxiety will not have a significant influence on behavioural intention to use INTTRA.
vii. H7: Behavioural intention to use INTTRA will have a significant positive influence on actual use.

3.15 Sources of Data

The study used both primary and secondary sources of data. Primary sources were the shippers, exporters and agents from Tema and Takoradi. Secondary data were obtained from published and unpublished documents such as from the internet, the head office of the Ghana Ports and Habour Authority (GPHA) and some shipping

lines in the ports of Tema and Takoradi. This assisted in soliciting views from players in the shipping and export market.

3.16 Target Population

The target population for the study comprised shippers and exporters, who were encountered at the selected lines within the port area between the months of April and May, 2016. The sampling of data from shippers, and exporters was on the basis that, they also form a significant market share of Ghana's port market. Also, agents have been daily users of existing technology and might emerge in trying to seek their perceptions.

3.17 Sample Size for the Study

In view of the fact that it is virtually unfeasible to question all the constituents in the target population, samples had to be selected for the survey. The samples for the study were selected in a manner that ensured representativeness of the target population.

The choice of a sample size for the study was guided by the need to obtain rich data and ensure that the shippers and exporters are fairly represented. Thus, hundred (100) shippers and exporters were selected for the study and in no particular allocation or order for either gender at the time of selection. This was because, from the researchers' perspective, it will be essential in getting diverse information from individuals. Gender is recorded as an opposite binary variable which is either male or female and the age of the participants recorded as a continuous variable which is split into four ranges 18 to 25 years, 26 to 35 years, 36 to 45years and 46 and above years. Work experience of the participants recorded as a continuous variable which

is split into three ranges as 0-5 years, 6-10 years and above 10 yrs. Qualification is recorded as values from 1, 2, 3 and 4 in an ascending order starting with JHS/JSS, SHS/SSS, HND/First Degree and Masters and above and finally computer ownership is recorded as an opposite binary variable which is either yes or no.

3.18 Sampling Procedure and Techniques

Simple random sampling technique was used to select the participants who were picked from the booking desks of the major shipping lines in both Tema and Takoradi as well as via emails to some participants who agreed to e-mail participation. These selected hot spots were visited and questionnaires were administered to shippers and exporters, using the accidental sampling method of data collection. This procedure enabled the researcher to capture the views of respondents that were readily available and satisfied initial conditions of whether or not they had used existing technology in their transaction during the visit and how it has affected their transaction.

3.19 Research Instruments for Data Collection

The surveys were based on the original UTAUT model with certain changes to fit the Ghanaian shipping community. The survey was conducted both on-line via email and by random picks at vantage points. Pre-testing of 20 participants was conducted to ensure clarity and a good understanding of the questionnaire to ensure the reliability of the anticipated number of participants. All these constructs are measured using a five-point Likert scale starting with strongly disagree, disagree, neither agrees or disagrees, agree, and strongly agree.

Questionnaires were the main instrument used to collect primary data for the quantitative aspect of the study. It was administered to shipping and export agents at the hotspots by the researcher and field assistants. Questionnaire was used because it guaranteed easy data collection and also efficient for collecting statistically quantifiable data in social science research (Twumasi, 2001). Its usage ensured the independence and anonymity of respondents in the study. The questionnaires had ten modules.

The first module probed respondents use of the INTTRA (how often, and use purpose). Module two sought to find out their demographics. Module three addressed issues on performance expectancy, while module four covered the effort expectancy, module five assessed their attitude towards using INTTRA, module six on their social influence while module seven, eight, nine and ten talks about the facilitating conditions, self-efficacy, anxiety and behavioural intention to use INTTRA respectively.

3.20 Field Work and Challenges

Two field assistants were selected and trained to assist in the data collection. They were senior high school graduates who could speak, write and better communicate in the English Language. A training session was held for them to better equip them to understand the nature of questions and how best to interact with the agents to achieve their maximum cooperation. The filed assistants helped with the administration of the questionnaires at the various hotspots during the main data collection.

As it is with most research works, this particular study was not without challenges. One major challenge was the unwillingness of some agents to participate in the

study. Another challenge was that some of the agents felt lazy in completing the questionnaires, which should not have lasted for more than ten minutes. Attempts were made to encourage them to complete the questionnaires. Some of the agents also completed the questionnaires only half-way. However, attempts were made to resolve the problems by giving them a brief talk of what the entire study is about.

3.21 Ethical Issues

The ethical dimensions of every research and how they are addressed are very important. This research considered seriously issues of informed consent, anonymity and confidentiality. Leary (2001) and Neuman (2007) conceived that researchers must not coerce respondents into participating in researches, thus protecting their rights is key in every study. In other words participation must be voluntary at all times. Informed consent was therefore sought from respondents and facility owners before undertaking the research. Provision of adequate information about the study was therefore important to enable the participants to decide whether they wanted to take part or not. Introductory letter from the Department was used to seek the consent of facility managers and the agents. This was important to ensure that participants were not coerced in anyway.

Secondly, the issue of anonymity was also ensured. Anonymity protects privacy by not disclosing a participant's identity after information is gathered (Babbie, 2007). This is guaranteed when names of participants do not appear on the instrument used. The use of questionnaires guaranteed respondents anonymity since names and other personal details were not associated with specific responses given.

Furthermore, the purpose of confidentiality which according to Babbie (2007) is to conceal the identity of respondents was adhered to. This was pertinent in order to protect the rights of all the respondents. The researcher achieved this by not sharing information given by the respondents with a third party. Moreover, information gathered from respondents was only used for the purpose for which it was collected.

3.22 Data Analysis

Statistical Product for Service Solution (SPSS) version seventeen (20) was used to analyse the quantitative data from the field. The said data was cleaned, coded and entered into the SPSS software, with frequencies and cross-tabulations determined. Also statistical tools such as chi-square, paired-sample t-test and correlation were used to test hypothesis and establish relationships between variables.

3.23 Chapter Summary

This chapter described the methodology used for the study and the procedures that were followed to collect data from the field. In brief, it looked at the research design, sampling techniques, research instruments, and the data processing and analysis. Challenges encountered from the field work were also enumerated. The concluding part of the chapter elaborated on the ethical considerations of the study. The next chapter presents the results and discussion of the study.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Overview

This chapter outlines and discusses the results of the data collected. Issues covered include respondent's use of the INTTRA, demographics, performance expectancy, effort expectancy, and attitude towards using INTTRA, social influence, facilitating conditions, self-efficacy, anxiety and behavioural intention to use INTTRA.

4.1 Demographics of Respondents

Table 4.1: Demographics of Respondents

Variable	Elements	Frequency (fq)	Percent (%)
Gender	Male	65	68.4
	Female	16	16.8
	No response	14	14.7
Age	18-25	13	13.7
	26-35	19	20.0
	36-45	52	54.7
	46 and above	11	11.6
Work experience	0-5 years	58	61.1
	6-10 years	28	29.5
	Above 10 years	9	9.4
Qualification	JHS/JSS	5	5.3
	SHS/SSS	30	31.6
	HND/First Degree	51	53.7
	Master degree and above	9	9.5
Computer ownership	Yes	66	69.5
	No	29	30.5

Source: Field survey (2016) n=95

Under gender, the most significant feature is that we have 65 male participants representing 68.4% and 16 female participants also representing 16.8% and as many as 14.7% participants declining to disclose their gender in the survey.

Under qualification, the most significant feature is that we have 51 of the participants representing 53.7% holding HND/Degree qualification which shows a highly educated number of participants doing booking related activities, 30 participants representing 31.6% holding SSS/SHS qualifications while 5 participants also representing 5.3% holding Masters and above and 9 participants representing and 9.5% having JSS/JHS qualification. This distribution clearly shows that we have more HND/Degree qualification holders operating in the shipping industry in both Tema and Takoradi. And this also shows a higher number of participants not disclosing their qualifications as it usually a very sensitive area a lot of people normally would refrain from answering when given the chance.

Under computer ownership we have a significant number of participants numbering 66 owning computers which is represented as 69.5% while 29 participants disclosed they do not own their computers. Under work experience we have 58 participants representing 61.1% who have work experience from 0-5 years and 28 participants who have experience from 6-10 years while only 9 participants representing 9.5% have 10 and above years of work experience in the shipping business.

Under age we have as many as 52 participants representing 54.7% who are between the ages of 36-45 years. And we have 19 participants who are also within the age bracket of 26-35 years and 13 participants who are within the age group of 18-25 years representing 14%. This implies that the shipping industry is made of more young people working in it.

4.2 Internal Consistency Reliability Measurement

One purpose of this study is to re-examine the validity of the instrument used to ensure reliability in our chosen context (Ghana) since the original model did not have the same setting as Ghana and the original context has been validated by several authors who have cited and applied the UTAUT model in their studies.

Table 4.2: Internal Consistency Reliability Measured by Cronbach's Alpha

Cronbach's Alpha Reliability Statistics		
Variables	**Number of questions asked**	**Cronbach's Alpha**
PE	4	0.889
EE	4	0.719
ATUI	2	0.769
SI	2(SI3 & SI4 were dropped to improve alpha)	0.742
FC	3(FC2 was dropped to improve alpha)	0.757
SE	2	0.750
AX	3	0.873
BTUI	3	0.875

Source: Field survey (2016)

Table 4.3: Responses from Shippers and Agents

	Strongly agree 5	Agree 4	Neither Agree nor Disagree 3	Disagree 2	Strongly Disagree 1	Total
PE1 - I find INTTRA useful for the shipping industry	32	59	9			95
PE2 - Using INTTRA will enable me to accomplish tasks more quickly	33	55	8	2	1	95
PE3 - Using INTTRA will increase my productivity	29	52	10	6	1	95
PE4 - If I use INTTRA, I will increase my chances of getting higher results	23	58	12	5		95
EE1 - My interaction with INTTRA will be clear and understandable	16	67	11	2	1	95
EE2 - It will be easy for me to become skillful at using INTTRA	21	61	13	3	1	95
EE3 - I find INTTRA easy to use.	17	51	25	3	2	95

EE4 - Learning to operate INTTRA is easy for me.	19	38	33	6	1	95
ATUI1 - Using INTTRA is a good idea	31	54	8	5	1	95
ATUI2 - INTRRA will make work more interesting	22	46	18	8	2	95
SI1 - People who are important to me think that I should use INTTRA	9	54	35	1	1	95
SI2 - People who influence my behavior think that I should use INTTRA	13	45	38	2	1	95
FC1 - I have the resources necessary to use INTTRA.	12	55	28	3		95
FC3 - I have the knowledge necessary to use INTTRA	18	53	26	1		95
FC4 - A specific person (or group) is available for assistance with INTTRA difficulties.	12	46	34	3	3	95
SE2 - I could complete a job or task using INTTRA if I could call someone for help if I got stuck.	10	62	26		2	95
SE3 - I could complete a job or task using INTTRA if I had a lot of time to complete the job for which INTTRA was provided.	6	60	25	6		95

A1 - I hesitate to use INTTRA for fear of making mistakes I cannot correct	8	30	24	32	4	95
A2 - It scares me to think that I could lose a lot of information by hitting the wrong key.	5	39	25	24	5	95
A3 - I feel apprehensive (anxious) about using INTTRA.	1	36	28	27	5	95
A4 - INTTRA is somewhat intimidating to me.	4	21	33	30	8	95
BITUI1 - I plan to use INTTRA in the next one month.	17	39	26	5		95
BITUI2 - I predict I would use INTTRA in the next three months.	19	27	21	15		95
BITUI3 - I intend to use INTTRA in the next six months.	15	27	34	14		95
UEEFREQ -	56				44	95

Source: Field survey (2016)

4.3 Correlation analysis

Correlation was used to explore the relationship among a group of variables. In this case it would be awkward to report all the individual correlation coefficients in a paragraph therefore it was better presented in a table below (see Table 4.4)

Table 4.4: Correlation Analysis

		PE	EE	ATUI	SI	FC	FE	AX	BTUI	USE
Spearman's	PE	1.000								
	EE	.099	1.000							
	ATUI	.229*	.691**	1.000						
	SI	.167	.085	0.39	1.000					
	FC	.086	.175	.079	.009	1.000				
	SE	.303**	.142	.229*	.162	.195	1.000			
	AX	.119	-.109	-.121	.138	-.131	.047	1.000		
	IBTUI	.340*	.291**	.381**	.161	.137	.318	.248	1.000	
	USE	.073	-.017	-.138	.016	.307	.140	-.127	.020	1.000

*Correlation is significant at the 0.05 level (2-tailed)

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

From the above inter construct correlations, we can show that some construct exhibited higher relations with others than others. For instance, Attitude Towards Using INTTRA* Effort Expectancy has a coefficient correlation of .691**, Behavioural Intention to Use INTTRA * Attitude Towards Using INTTRA has coefficient correlation of .381** and behavioural intention to use on the average recorded higher correlations with most constructs while other constructs actually recorded negative coefficient correlations such as USE* Attitude Towards Using INTTRA with a coefficient correlation of -.138 and anxiety as a construct consistently recorded nearly negative coefficient scores with most constructs which means it had little or no relations with most constructs. Facilitation conditions also did not record any significant relations with most construct which means that it also has very little inter construct relations with the others. Therefore consistent with the UTAUT model we can say that to a large extent EE, PE,FC are the determinants of behaviour in technology acceptance however SI was not supported in the results but SE which is an added variable rather showed a better support than SI.

Per the above results we can tell that there is a mixed support for UTAUT model in our study as such some of the variables are strongly correlated, others partially while some are not supported at all and even recorded negative values such as US*ATUI, EE* US in their inter construct correlations.

4.4 Testing of Hypothesis

Hypothesis 1: Findings of correlation suggests that there is an evidence of relationship that exists between performance expectancy and use, consequently a strong negative relationship between these variables suggesting that the alternative hypothesis is supported. This confirms the study by Ajzen (2012) and Ghalandari in 2012.

Hypothesis 2: The results do not support the assertion made that the influence of effort expectancy on behavioural intention to use INTTRA will have a significant influence onn actual use. The correlation test showed a negative relationship (.020) between behavioural intentions and actual use of INTTRA. The result inconsistent with the works of Venkatesh et al. (2012).

Hypothesis 3: Hypothesis 3 show that social influence has a significant effect on the users' actual intention but a negative relationship as the co-efficient of the result is .016 thus reflecting what Ghalandari postulated in his study in 2012.

Hypothesis 4: Findings of test suggests that there is an evidence of truth that exists between facilitating conditions and behavioural intentions and has a very strong positive relationship (co-efficient = .137), therefore the hypothesis is supported. The result of the test is an evident of what Ajzen (2012) and Ghalandari in 2012 said about how conducive conditions influence attitude.

Hypothesis 5: According to the results from the test where the co-efficient is .318 and suggest that the hypothesis is significant as manifested in the works of Davis (1985) and Akbar (2013) that computer self-efficacy will have a significant influence

on behavioural intention to use technology, explaining that there is a very strong relationship between these two variables.

Hypothesis 6: Also, hypothesis 6 was rejected based on the results of the study. Findings of test suggest that there is an evidence of truth that exists between anxiety and behavioural intentions, therefore the result explains the positive relationship between these two variables. The result of the test is an evident of what Ajzen (2012) and Ghalandari in 2012 said about how conducive conditions and influences attitude.

Hypothesis 7: Williams et al., 2011 and Ajzen (2012) exhibited in their work that behavioural intention to use will have a significant but negative influence on actual use. This reflected in the result of the study where co-efficient value of the test is .020.

4.5 Chapter Summary

Respondents showed much interest in the adoption and use of INTTRA. This was made easy by the use of UTAUT model and its variables modified to suit the study. The next chapter discusses the conclusions and recommendations of the study.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.0 Overview

This chapter presents the conclusions and recommendations of the study. It summarises the major findings of the study, research contributions and it draws conclusions based on the findings and makes recommendations towards improving the use of technology in the shipping industry. It also suggests areas for further research into sales and marketing industry.

5.1 Summary of Findings

The main objective of the study was to assess factors affecting the adoption and use of technology in the shipping industry. The evaluation of the study specifically focused on:

i. Reviewing literature regarding the usage of freight management systems where it was deduced from the thesis that agents in the sector are embracing the use of technology to manage daily booking documentation transactions.

ii. Reviewing theories and models used for studying Technology acceptance, use and adoption in general. The model was thoroughly analysed to give adequate knowledge about how technology adoptions and use have been accepted and used in the industry.

iii. Reviewing literature regarding the use of INTTRA in the Ghanaian shipping industry where the study came out with the level of acceptance of the INTTRA but with its challenging issues and apathy towards its use.

iv. Identifying factors that influence adopting INTTRA in the Ghanaian shipping industry; the study detected influencing factors that led to the adoption of

INTTRA. These factors aided smooth transactions at the main sea ports in Ghana.

v. Analysing the relationships between the identified factors using the UTAUT model. The study adapted Venkatesh's model in 2012 on UTAUT which helped in analysing and discussing of results using co-efficient correlation to establish the relationships between variables.

The conceptual framework guiding the study was adapted from Venkatesh (2003)'s model on behaviour and how people adopt to new technological ideas. This model sought to explain the adoption and use of technology. The conceptual framework also provided for the fact that, if other variables are added to the existing will lead to same or similar results.

The study adopted a descriptive research design and a mixed method approach to data collection and analysis. A total of 100 respondents were selected and administered with questionnaires through the use of random sampling procedures where 95 of the questionnaires were useful for the study.

5.2 Research Contributions

This study has made two main contributions both in theory and practice to the study of technology adoption and use in the Ghanaian shipping industry as discussed below.

5.2.1 Theoretical Contribution

The results of the study have established that the UTAUT model can be adapted and applied to settings outside of industrialised countries in the study of adoption and use

of technology. The study has therefore expanded existing body of knowledge on technology adoption and use in the Ghanaian shipping industry. Empirical evidence therefore is available through this study to support these contributions.

5.2.2 Practical Contribution

The study has shown generally that shippers and exporters are excited about the use of INTTRA from the fact that some have used the portal on a number time. The interest of ocean carriers who are hooked to the portal is for their clients to adopt the technology to help standardize the shipping industry. The findings of this study will therefore serve as a guide to strengthening the methods and factors that need improving in order to increase the use of INTTRA in the Ghanaian shipping industry.

5.3 Conclusions

Based on the specific objectives set and the findings of the study, the following conclusions were drawn.

The study concludes that shipping and export agents are ready to adopt and use new technology upon being trained on how to use it. Also, the study provides insights into Ghanaian shipping agents' behaviour towards INTTRA usage when the Venkatesh et al. (2003) the Unified Theory of Acceptance and Technology model was applied. The study concludes that of the hypotheses stated, Effort Expectancy, Performance Expectancy and Social Influence positively influence Behavioural Intentions to use INTTRA for transactions by shippers and agents in the Ghanaian shipping industry while Facilitating Conditions and Behavioural Intention directly influence agents Behaviour of INTTRA provided for transactions. Only Effort

Expectancy and Facilitating conditions significantly predict shipper's and agent's intention to use INTTRA.

5.4 Recommendations

In connection with the key findings, the study suggests the following recommendations: the advantage of using the UTAUT model in the study is the integration of different models to its advantage which strengthened the study and the knowledge gained in the Ghanaian shipping industry which can be introduced in future work regarding technology implementation and adoption in other Sub-Saharan countries aside Ghana.

The inclusion of moderating factors such as age, gender, work experience and so on in previous studies have not been accounted for in this work therefore future research into this area can add these factors to retest the UTAUT model which may predict better usage behaviour indicators.

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APPENDIX 1
QUESTIONNAIRE

PERFORMANCE EXPECTANCY	**Strongly Agree**	**Agree**	**Neither Agree or Disagree**	**Disagree**	**Strongly Disagree**
I find INTTRA useful for the shipping industry	□	□	□	□	□
Using INTTRA will enable me to accomplish tasks more quickly.	□	□	□	□	□
Using INTTRA will increase my productivity.	□	□	□	□	□
If I use INTTRA, I will increase my chances of getting higher results.	□	□	□	□	□

EFFORT EXPECTANCY	**Strongly Agree**	**Agree**	**Neither Agree or Disagree**	**Disagree**	**Strongly Disagree**
My interaction with INTTRA will be clear and understandable.	□	□	□	□	□
It will be easy for me to become skilful at using INTTRA.	□	□	□	□	□
I find INTTRA easy to use.	□	□	□	□	□
Learning to operate INTTRA is easy for me.	□	□	□	□	□

ATTITUDE TOWARD USING INTTRA	**Strongly Agree**	**Agree**	**Neither Agree or Disagree**	**Disagree**	**Strongly Disagree**
Using INTTRA is a good idea.	□	□	□	□	□
INTRRA will make work more interesting.	□	□	□	□	□
Working with INTTRA is fun.	□	□	□	□	□
I like working with INTTRA.	□	□	□	□	□

SOCIAL INFLUENCE	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
People who are important to me think that I should use INTTRA.	□	□	□	□	□
People who influence my behaviour think that I should use INTTRA.	□	□	□	□	□
The facilitators of INTTRA have been helpful in the use of INTTRA.	□	□	□	□	□
In general, shipping lines have supported the use of INTTRA.	□	□	□	□	□

FACILITATING CONDITIONS	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
I have the resources necessary to use INTTRA.	□	□	□	□	□
INTTRA is not compatible with other systems I use.	□	□	□	□	□
I have the knowledge necessary to use INTTRA.	□	□	□	□	□
A specific person (or group) is available for assistance with INTTRA difficulties.	□	□	□	□	□

SELF-EFFICACY	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
I could complete a job or task using INTTRA if there was no one around to tell me what to do as I go.	□	□	□	□	□
I could complete a job or task using INTTRA if I could call someone for help if I got stuck.	□	□	□	□	□
I could complete a job or task using INTTRA if I had a lot of time to complete the job for which INTTRA was provided.	□	□	□	□	□
I could complete a job or task using INTTRA if I had just the	□	□	□	□	□

built-in help facility assistance.					

ANXIETY	**Strongly Agree**	**Agree**	**Neither Agree or Disagree**	**Disagree**	**Strongly Disagree**
I hesitate to use INTTRA for fear of making mistakes I cannot correct.	□	□	□	□	□
It scares me to think that I could lose a lot of information by hitting the wrong key.	□	□	□	□	□
I feel apprehensive (anxious) about using INTTRA.	□	□	□	□	□
INTTRA is somewhat intimidating to me.	□	□	□	□	□

BEHAVIOURAL INTENTION TO USE INTTRA	**Strongly Agree**	**Agree**	**Neither Agree or Disagree**	**Disagree**	**Strongly Disagree**
I plan to use INTTRA in the next one month.	□	□	□	□	□
I predict I would use INTTRA in the next three months.	□	□	□	□	□
I intend to use INTTRA in the next six months.	□	□	□	□	□

ACTUAL USE Daily About 3 days a week Once a week Never used

How often do you use INTTRA?	□	□	□	□	
What do you use it for?	Booking	Sailing	Shipping Instruction	B/L Amendment	None
	□	□	□	□	□
Any other comments					
AGE	18-25	26-35	36-45	46 and above	
	□	□	□	□	
GENDER	Male		Female		
	□		□		
WORK EXPERIENCE (years)	0-5	5-10	Above 10		
	□	□	□		
QUALIFICATION	JHS/JSS	SHS/SSS	HND/First Degree	Master degree and above	
	□	□	□	□	
DO YOU OWE COMPUTER/LAPTOP	Yes		No		
	□		□		

APPENDIX II

COVER LETTER

Dear Participant,

I invite you to participate in a research study entitled the utility of the UTAUT model in explaining INTTRA adoption in Ghanaian shipping industry. I am currently enrolled in an MA at the Regional Maritime University, Tema. The purpose of the research is to determine the acceptance and use of INTTRA in the Ghanaian shipping industry.

Your participation in this research project is completely voluntary. You may decline altogether, or leave blank any questions you don't wish to answer. There are no known risks to participation beyond those encountered in everyday life. Your responses will remain confidential and anonymous. Data from this research will be kept under lock and key and reported only as a collective and combined total. No one other than the researchers will know your individual answers to this questionnaire.

If you agree to participate in this project, please answer the questions on the questionnaire as best as you can. It should take approximately 10 (ten) minutes to complete.

If you have any questions about this project, feel free to contact me: *saintama@yahoo.com.*

Thank you for your assistance in this important endeavor.

Sincerely yours,

Thomasina Tettey