Faculty of Technology Management and Technopreneurship

THE EFFECT OF IT PRACTICES ON SUPPLY CHAIN CAPABILITIES WITHIN ABU DHABI MONITORING AND CONTROL CENTER IN UAE

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THE EFFECT OF IT PRACTICES ON SUPPLY CHAIN CAPABILITIES WITHIN ABU DHABI MONITORING AND CONTROL CENTER IN UAE

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DECLARATION

I declare that this thesis entitled “The Effect of IT Practices on Supply Chain Capabilities Within Abu Dhabi Monitoring and Control Centre In UAE” is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Signature :

Name : SAEED KHALFAN SAEED AL NUAIMI

Date : 9 June 2023

APPROVAL

I hereby declare that I have read this thesis and, in my opinion, this thesis is sufficient in terms of scope and quality for the award of Master of Science in Technology Management.

Signature :

Supervisor Name : DR. MURZIDAH BINTI AHMAD MURAD

Date : 9 June 2023

DEDICATION

This work is dedicated to the inspiring person towards my life… my dear father and my dear mother whose always want me to have the best, for her love, the prayers that she made for me.

To my love

My wife is a wonderful wife, a great companion and so much more in my life. She is always a source of love, courage and strength at every tough moment throughout these years.

To my great supervisor

My dear supervisor, Dr. Murzidah Binti Ahmad Murad.

ABSTRACT

Businesses are increasingly relying on information technology to improve their supply chain capabilities. However, previous evidence demonstrates that investing in IT practices does not ensure improved supply chain capabilities. Using the assumptions of the resource-based view, the study aims to test the effect of information technology practices on supply chain capabilities. This study employs simple random sampling and obtained 361 respondents from the sample. The structural equation modelling approach is used to test theoretical predictions underlying the relationship among dimensions of IT practices and supply chain capabilities based on data obtained from Abu Dhabi monitoring and control centres. The results suggest that IT capability has a positive impact on supply chain capabilities. The study makes an empirical contribution to the theoretical by demonstrating the value of the multidimensional representation and analysis of IT practices and supply chain capabilities. For practical contribution, the application of IT practices provides great conveniences for cooperation among supply chain companies.

KESAN PENGAMALAN IT TERHADAP KEUPAYAAN RANTAIAN BEKALAN DALAM PUSAT PENGAWASAN DAN PEMANTAUAN ABU DHABI DI UAE

ABSTRAK

Perniagaan semakin bergantung pada teknologi maklumat untuk meningkatkan keupayaan rantaian bekalan mereka. Walau bagaimanapun, bukti terdahulu menunjukkan bahawa melabur dalam amalan IT tidak memastikan keupayaan rantaian bekalan yang lebih baik. Dengan menggunakan andaian pandangan berasaskan sumber, kajian ini bertujuan untuk menguji kesan amalan teknologi maklumat terhadap keupayaan rantaian bekalan. Kajian ini menggunakan persampelan rawak mudah dan memperoleh 361 responden daripada sampel. Pendekatan pemodelan persamaan struktur digunakan untuk menguji ramalan teori yang mendasari hubungan antara dimensi amalan IT dan keupayaan rantaian bekalan berdasarkan data yang diperoleh daripada pusat pemantauan dan kawalan Abu Dhabi. Keputusan menunjukkan bahawa keupayaan IT mempunyai kesan positif ke atas keupayaan rantaian bekalan. Kajian ini memberi sumbangan empirikal kepada teori dengan menunjukkan nilai perwakilan multidimensi dan analisis amalan IT dan keupayaan rantaian bekalan. Untuk sumbangan praktikal, penerapan amalan IT memberikan kemudahan besar untuk kerjasama di kalangan syarikat rantaian bekalan.

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LIST OF ABBREVIATIONS

ADMCC	-	Abu Dhabi Monitoring and Controlling Center
AI	-	Activity integration
C	-	Coordination
CFA	-	Cross-functional application
CT	-	Complementarity theory
DC	-	Data consistency
GDP	-	Gross Domestic Product
GoF	-	Goodness of Fit
IT	-	Information technology
KBV	-	Knowledge-based view
OECD	-	Organization for Economic Cooperation and Development
RBV	-	Resource-based view
SC	-	Supply chain
SCA	-	Supply chain application
SCC	-	Supply Chain Capabilities
SCR	-	Supply chain responsiveness
SDG	-	sustainable development goals
SEM	-	Structural Equation Modelling
SM	-	Social Media
SMEs	-	Small and Medium Enterprises
SPSS	-	Statistical Package for the Social Science
SPSS	-	Statistical Package for the Social Science
UAE	-	United Arab Emirates
VIF	-	Variance Inflation Factor
VRIN	-	valuable, rare, inimitable, and non-substitutable

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LIST OF PUBLICATIONS

Alnuaimi, S.K., Murad, M.A. and Husseini, S.A., 2022. The effect of information technology on supply chain capabilities within Abu Dhabi monitoring and control center in UAE: A review. *Journal of Positive School Psychology*, 6(3), pp.4757-4763.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Regardless of the activity, supply chain skills play a significant and essential part in the survival, profitability and success of companies. The administration's performance has an effect on the organization's financial and industrial operations as well as its reputation. Company duties are new to suppliers, requiring the Supply Manager to bear more responsibilities since this management has played a vital and essential part in providing the business organization a good image. This chapter starts with a backdrop of the study and a short introduction to technology on supply chain capabilities inside a monitoring and control center in the UAE. Following that, the topic's issue statement is presented, followed by research questions and research priorities centered on the problem statement. The importance of the research as well as its breadth and limits have been discussed. The chapter ends witha discussion on proposed study.

1.2 Background of the study

Business operations have become more effective and efficient since the introduction of Information Technology (IT) (Sanders and Premus, 2012). Supply Chain Capabilities (SCC) involves the management of intra- and inter-organizational resources and procedures by partnering organizations (Sanders and Premus, 2005; Flynn et al., 2010). There has been an increasing emphasis on SCI applied as part of corporate business plans in recent years as

a result of global value chains that are affecting manufacturing, international trade and other facets of global business (Gereffi and Lee, 2016; Nguyen et al., 2020).

Prajogo and Olhager (2012), Lee and Whang (2015), and Prajogo et al. (2018), demonstrate that real-time exchange of transactional and strategic information on operations, inventory status and demand and coordination of activities throughout the supply chain are required for supply chain capabilities (SCC) to be successful (Frohlich and Westbrook, 2001). Information interchange is a crucial aspect of supply chain management theory and practice (Kim and Chai, 2017; Panahifar et al., 2018; Swift et al., 2019). Better inventory management and better demand forecasting can be achieved through information exchange, according to a new report (Zhou and Benton, 2007). The ability to communicate accurate and timely information across organizations is typically viewed as a major enabler of SCIMwithin organizations (Rai et al., 2006; Sanders, 2007).

IT investments (Ward and Zhou, 2006) and IT use and adoption (Harland et al., 2007) were the focus of an early study on the effect of IT on SC and corporate performance. As a result, enterprises must also invest in IT skills that focus on system integration and support business processes (Prajogo and Olhager, 2012). As a result of using IT to support corporate operations, IT skills may be built over time (Prajogo et al., 2016, 2018).

Other primates, notably dolphins, have constructed primitive gadgets and passed on their expertise to subsequent generations (Görg et al., 2016). As well as providing a complete knowledge of the purpose of employing technology, the technique management chose to integrate technology into the organization is also explained. Only highly trained people were able to use technology effectively in the early years (Vivarelli, 2013). As technology and software applications have become more user-friendly, employees have gained control of

these resources, including hardware, software, and trained technical resources (Alfalla et al., 2015).

In its definitions, supply chain capabilities are the ability to synchronize the flow of raw materials, services, and different sources to form final products, whether products or services (Aradhana et al., 2017; Steve et al., 2017; Fan and Stevenson, 2018). When supply chain management became a buzzword in 1989, academics used the term “supply chain capabilities” for the first time to describe the differences between conventional techniques of flow management or material flows and the actual material flows that occur during production.

The importance of supply chain capabilities (SCC) has expanded during the 1990s (Per and Wang, 2018). The point of departure in supply chain management refers to suppliers or manufacturers, and the point of consumption refers to consumers, customers or end-users in the supply chain (Min and Mentzer, 2000; Dag and Hana, 2012).

When Dubai's technology odyssey began, it was in the early 1980s. As a result, in 2014, Dubai Internet City, Dubai eGovernment, Dubai Smart Government and Smart Dubai were founded. In 1999, the first ICT initiative was launched in 2014, Smart Dubai and Dubai eGovernment were established. It's been two decades since a series of urban development activities in the area have resulted in the public's understanding and use of ICT in all aspects of life. A metropolis with a population of 2.5 million, Dubai, one of the seven Emirates of the United Arab Emirates, has one of the world's highest rates of public and government adoption of ICT. Dubai has established a world-class economic environment and extraordinary living standards (Aisha, 2017).

His Highness the Sultan of Brunei Dubai's monarch, Sheikh Mohammad Bin Rashid Al Maktoum, the UAE's vice-president and premier, has portrayed technology as more of a facilitator than a target. His Highness' aim of “making Dubai the happiest city on earth” is realized through the Smart Dubai initiative. The city has a huge impact on the joy objective. Projects include enormous Internet of Things networks, data processing, block chains, hyperloop initiatives, ground-breaking 3D printing technologies as well as driverless cars and robots (Serbia, 2014)

In addition, there are a number of ways in which technology might interfere with a worker's work. An increase in the use of social networks at work is creating uncertainty and negatively affecting productivity in the office. Several companies have decided to ban links to such websites, such as Facebook, Twitter and YouTube because of the unbridled mayhem they create. Workplace disruption is also caused by laptops, PCs and programs such as Skype (Pierce et al., 2015).

Likewise, it is costly to purchase technology, but it is also expensive to retain. Many local enterprises can't afford to hire a full-time programmer, so they turn to regular software contracts who pay them for the job they've performed. If market development devices such as computers are not well managed, their performance can decrease and the method of purchasing new computers or any other business equipment will be far more expensive (Bloom et al., 2016). Moreover, as much of the operations are technically programmed, many employees become idle at work, technology is killing their creativity. Simple tasks, such as calculating revenues and tracking the inventory are carried out on computers, it is noticed that employees cannot place their minds to work, they cannot solve high-end market issues as robots or algorithms will do it without any hurdles (Cherian et al., 2013).

Employees communicate via cell phones, text messages, email or digital tools for video conferencing (Alomari et al., 2017). This form of communication system removes face to face touch. In establishing work relationships, casual communication becomes vital because employees get a chance to know each other individually and also share non-work-related knowledge. Communication Technology Technologies eliminates this sort of connection. Workers are more withdrawn and self-centered; they are lost in their work and can be of great help to the performance of businesses and employees (Naoum, 2016).

On the UAE sustainability initiatives, by 2030, the UAE hopes to be a developed nation (MDGs Report, 2008-2018). One of the fastest-growing economies in the world is in the United Arab Emirates (UAE). The UAE government wants sophisticated technology and encourages entrepreneurs to conduct business in this developing market (Al-Ameri and Al Shibami, 2019). The UAE supply chain capabilities play an important function inside the UAE organization or business and can extend to all industry sectors in the UAE economy. The supply chain is becoming a more important competitive component in business success. In order to gain a better understanding of information technology and supply chain capabilities in the UAE public companies listed and approved by the monitoring and control center of Abu Dhabi Emirate, in order to identify this effect, the researcher selected the top managers, financial managers, production managers, purchasing and inventory managers, marketing managers and information technology managers as a unit of analysis and inspection for their direct relation to the subject of the study. This study stems from the fact that it contributes to the creation of an information base and data on the success or inefficiency of supply chain capabilities in monitoring and control center of Abu Dhabi in companies that play an important role in the implementation of economic development in UAE.

1.3 Problem statement

Both internal and external supply chain integration is necessary for the development of supply chain capabilities and performance (Jadhav and Malik, 2019; Birasnav and Bienstock, 2019). It is recognized as a critical factor in the supply chain because Information technology (IT) practices can contribute to the performance of both independent firms and the supply chain as a whole (Fatorachian and Kazemi, 2021). According to Allaoui, Guo and Sarkis (2019), IT practices are an important tool which supports supply chain integration via information sharing and in the planning, coordination, and control of the production process at every level. It leads to enhance material, information, and financial flow, improve product development, increase delivery speeds and the reliability and flexibility of the delivery process. Moreover, IT practices implementation, within the organization and in collaboration with business partners, is generally accepted as an important factor in improving supply chain management (Fatorachian and Kazemi, 2021; Tseng et al., 2022; Kim and Shin, 2019; Yang and Lin, 2020). In recent years, the advancement of IT practices has rapidly changed the requirements for global business relationships (Navío-Marco et al., 2018). With the provision of timely, accurate, and reliable information, IT practices have improved the conditions for doing business around the world.

Facing ubiquitous digitization, a faster pace of new product introductions increased globalization and demanding customers, firms have to astutely manage their supply chain capabilities (Lambourdière et al., 2022). Through supply links, many organizations are involved in integrated processes. Thus, organizations may optimize the flow of goods from supplier to consumer, decrease inventory and expenses, and respond promptly to changes in demand by integrating them into the supply chain by exchanging information and coordinating their operations (Bahramimianrood and Bathaei, 2021; Zhu et al., 2022).

Hence, good IT practices design is vital to gaining a competitive advantage in the present business climate. However, in a digitalization age, neither decision-makers nor organizations have a complete awareness of their supply chain capabilities or how a set of resources and abilities can be developed and managed to support global competition (Queiroz et al., 2019; Khan et al., 2021). For example, from the supply chain digital-disruption perspective, supply chain capabilities cannot be denied as key to supporting performance improvement. In this context, and considering the complexities generated by digital disruption (Kanarachos et al., 2018), all decision-makers and all types of companies are challenged to understand in depth the supply chain capabilities. Previous literature has neither organized nor discussed the supply chain capabilities in order to support organizations and the digitalization of their networks. Furthermore, there is scant current literature that includes frameworks to further understand rethinking supply chains in the digital age (Queiroz et al., 2019).

The exponential development of IT practices with communication technology in supply chain capabilities requires an organization to optimize supply chain network flow selections for achieving organizational aggressiveness, raising higher service levels, lowering inventory, and supply chain expenses, and eliminating electronic hazards (Gupta et al., 2020; Mishra et al., 2022). To attain integration and effective data sharing across and on the far side of the organization IT practices in supply chain capabilities are additionally needed. This study studied the impact of IT practices on firms' supply chain capabilities in the UAE.

1.4 Research questions

The following research questions were formulated:

a) To what extent is the relationship between data consistency and supply chain capabilities?

b) To what extent is the relationship between cross-functional application and supply chain capabilities?

c) To what extent is the relationship between supply chain application and supply chain capabilities?

1.5 Research objectives

This study is aimed at determining the effect of information technology practices on supply chain capabilities. Thus, the specific objectives of this research are as stated below:

a) To examine the relationship between data consistency and supply chain capabilities.

b) To examine the relationship between cross-functional application and supply chain capabilities.

c) To examine the relationship between supply chain application and supply chain capabilities.

1.6 Significant of research

Technology drives national growth programs around the world. And a number of developing and developed world countries are finding ways to accelerate their growth by implementing and leveraging technology in their economies (Pourmirza, 2016). State activities account for more than 80 per cent of UAE's total GDP. While economic stagnation