



ENABLER OF BLOCKCHAIN TECHNOLOGY ADOPTION IN SME SUPPLY
CHAIN MANAGEMENT JOHOR BAHRU



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I hereby acknowledge that this project paper has been accepted as part of fulfilment for the degree of Bachelor of Technology Management (Supply Chain Management And Logistics) With Honours

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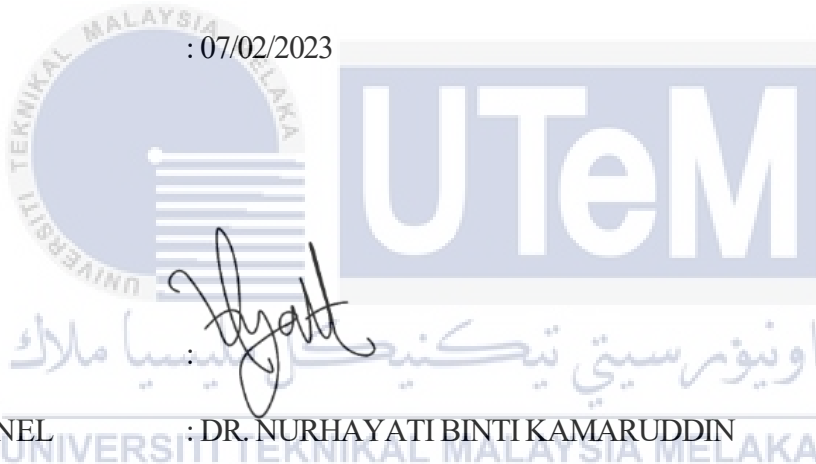
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Enablers of blockchain adoption in Johor Bahru's SMEs supply chain management.

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This thesis is submitted in partial fulfilment of the requirements for the award of Bachelor of Technology Management (High Technology Marketing) with Honors



01/07/2022

DECLARATION OF ORIGINAL WORK

I hereby declare that all the work of this thesis entitled “Enablers of blockchain adoption in Johor Bahru’s SMEs supply chain management.” is original done by myself and no portion of the work encompassed in this research project proposal has been submitted in support of any application for any other degree or qualification of this or any other institute or university of learning.

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DEDICATION

I would like to appreciate the dedication of my beloved family members who give me full support for my degree. Without them, it will be not easy for my completion in FYP. And also, I express a deep sense of gratitude to my lecturer whom also my supervisor for my final year project, Datin Dr. Suraya Binti Ahmad and my fellow friends. They have provided me fully support and advice throughout this research. With their support, I was able to complete this research paper smoothly. Thank you for their encouraging and guiding with their knowledge throughout this whole research.



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ABSTRACT

Blockchain technology is defined as a Point-to-Point Network that creates and maintains distributed ledgers, databases, and information. It's special feature and characteristics of enable it to create a sustainable and reliable supply chain management. It have the potential to switch the entire supply chain behavior from procurement of raw material to distribution to customer. For current Malaysia scenario, Blockchain concept is now being promoted among Malaysian SMEs, as they account for 98.5 percent of the country's business sector. This research is to study the enabler of Blockchain Technology adoption in Johor Bahru's SMEs supply chain management. Relationship between Independent Variables (Perceived Usefulness, Perceived ease of Use and Data Security) and Dependent Variable (Adoption of Blockchain Technology) is determined in this research using several analysis method. Data was collected from 132 respondent who currently work in SMEs industry through well structure likert questionnaire survey. Several method used to analyse are Cronbach's Alpha analysis, descriptive analysis, Multiple Regression analysis and Pearson's Correlation analysis. The result show that three of the Independent Variables has a significant level with the Dependent Variable.

Keywords: Peer to Peer network, Distributed ledgers, Sustainable

ABSTRAK

Teknologi Blockchain ditakrifkan sebagai rangkaian peer to peer yang membina dan mengurus lejar, pangkalan data dan maklumat yang diedarkan. Ciri-ciri ia membolehkannya mencipta pengurusan rantaian bekalan yang mantap dan boleh dipercayai. Ia berpotensi untuk menukar keseluruhan pengurusan rantaian bekalan daripada perolehan bahan mentah kepada pengedaran kepada pelanggan. Penyelidikan ini adalah untuk mengkaji pemboleh penggunaan Teknologi Blockchain dalam pengurusan rantaian bekalan PKS Johor Bahru. Hubungan antara IV (Dirasai Kebergunaan, Dirasai Kemudahan Penggunaan dan Keselamatan Data) dan DV (Penggunaan Teknologi Blockchain) ditentukan dalam penyelidikan ini. Data dikumpul daripada 132 responden yang kini bekerja dalam industri PKS melalui tinjauan soal selidik. Beberapa kaedah digunakan untuk menganalisis iaitu Analisis Alpha Cronbach, Analisis deskriptif, Analisis Korelasi Pearson dan Analisis Regresi Berganda. Keputusan menunjukkan bahawa tiga daripada Pembolehubah Bebas mempunyai tahap yang signifikan dengan Pembolehubah Bersandar.

Kata kunci: Rangkaian Peer to Peer, Lejar teragih, Mampan.



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LIST OF ABBREVIATIONS

ABBREVIATION	MEANING
SME	Small and Medium Enterprise
BCT	Blockchain Technology
TAM	Technology Acceptance Model



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CHAPTER 1

INTRODUCTION

1.1 Introduction

In this chapter, researcher will going to discuss and elaborate the background of the research, which is enablers of Blockchain adoption in SME supply chain management in Johor Bahru. It will consist problem statement, background of study, research objectives and questions, scopes and limitation of the study. Besides, significant of study and outline of thesis will be prepared in end of this chapter.

1.2 Background of Study

From the first industrial revolution until now, the forth revolution, which we called Industry 4.0, world business operation has become more efficient and emphasize the idea of sustainable inside their supply chain. When first time computer is introduce to the world, Industry 3.0 has follow the step introduce to the market. And for now, Industry 4.0 has offers capabilities to optimize the production performance by using Information Technology(Amjad et al, 2021; Xu et al, 2018). Concept of Industry 4.0 was introduced by Germany in Hannover Fair event in year 2011. When this topic first introduced, European companies and researchers show high interest towards this topic since this concept enable operation become more efficient and cost effective. According to Luthra and Mangla, the adoption of Industry 4.0 technologies has become more important since it has cause visible improvement among enterprises and industrial sectors (2018).

In the last four decades, emerging countries include Malaysia have transformed rapidly from agriculturally based to Industry based. In recent years, Malaysia industrial sector has become a leading enabler of economic growth. This is possible due to global manufacturing firms one after another set up their manufacturing firms in Malaysia because of Malaysia's political stability, safety and allowance. However, the rate of adoption in Industry 4.0 is relatively low. This is probably because Industry 4.0 need larger capital investment. According to Bai and Sarkis, the use of new technology must be evaluated and considered carefully if you want it to be sustainable since it will need higher investment (2020). However, people realize that Industry 4.0 is important towards recent Malaysia economic since it can help to increase efficiency and enhance the value flow inside the supply chain. Government of Malaysia also recognize the fact and put in effort to encourage local firms to embrace the latest technologies for example: in year 2018, Malaysia government has formulated new strategies and guidelines (Industry4WRD, 2018) to enhance the uses of IT.

Talking to latest information technology, the introducing of Blockchain technology in supply chain operation is an idea that frequently discussed by researchers and companies in recent years. Blockchain was first introduced by Nakamoto in year 2008 to the world as a data management concept that featuring open, transparent and secure distributed ledger technology (DLT) that eliminates the need for a trusted third party. Those features has capability to improve visibility, privacy and accuracy inside the supply chain. According to Luo and Lee, Blockchain technology can generate closer and trustworthy relationships (2019) since it can trigger significant improvements in accountability, trust and security (Kshetri, 2018). Besides, blockchain technology is applicable for entire supply chain operation, thus it includes customer and not only for supplier relationship. In other words, the application will be able to improve the entire supply chain information flow system. According to Goyat et al, Blockchain have the potential to switch the entire supply chain behavior from procurement of raw material to distribution to customer (2019). To understand this statement, we should know how Blockchain actually works.

Briefly explain Blockchain is a distributed database that shared among the nodes inside a computer networks. Their structure is called as blocks because they collect data together and transform into groups. Those groups of data that form into block will linked to previous filled block and form a data chain, thus known as blockchain. We can observe that the structure of data are decentralized which makes blockchain different to other database system. For other data base system, because of data is store centralized inside one location, if failure happened at that point, all data will have the risk of destroy and gone, forever. Decentralized of data provide the advantage of data security and also accountability. What blockchain provides is it allow data store inside several network nodes at different location which interconnected together.

In researcher opinion, this concept should promote among Malaysian SMEs, as they occupied for 98.5 percent of the country's business sector (Teh and Kee, 2019). Therefore, SMEs play an important role in improving economic growth in Malaysia. When come to Supply Chain for SMEs, the use of blockchain will be able to help them reduce their operation cost and make sure the accuracy of chain.

1.3 Problem Statement

Unlike the traditional business environment, Industry 4.0 encourage the collaborative organizations along supply chain by using Internet Of Thing to effectively respond to customer needs. Recent researcher has put in many effort to review several different Information technology application such as ERP, Oracle, IFS and SAP to understand the importance of digital technologies in operation and supply chain activities.

Companies from all around the world recognize that invest in innovation technology have the potential to reduce the cost and stay competitive. However, introduce the use of new technologies into the operation, usually need a lot of capital, human resource. Besides, only human resource is not enough, but they should

also be knowledge based. The lack of local talent in developing the technology, the lag in skill and awareness towards the benefits that blockchain technology can bring, and the high invest capital are the main reason why adoption of blockchain are still low among SMEs in Malaysia. According to Tracxn, as of April 2020, Malaysia only have 48 blockchain compared to Singapore which have 397 startups(2021). The reason probably because SMEs tend to implement new technology when they are mature since the risk of adoption will drop simultaneously.

Due to this situation, SMEs typically do not enjoy the benefits of innovation compare with larger organisations when come to implement new technology and reap the rewards of being early adopters. This has cause them to lose out to larger firms even before the competition begins. Gap between SMEs and larger firms will become larger and larger as the time passes. Therefore, this paper intends to study the factors that drive SMEs in Johor Bahru to become an adopters of blockchain and the level of intention of SMEs to adopt.

1.4 Research Question

The researcher determined three research questions in this study:

1. What is SMEs understanding about Blockchain technology?
2. What are the benefits towards SMEs when adopt Blockchain technology inside their operation?
3. What are the factors that cause SMEs willingness to adopt Blockchain technology inside operation?

1.5 Research Objectives

In this research, there are three research objectives to be figured out:

- I. To examine the level of understanding about Blockchain technology among SMEs.
- II. To investigate the benefits of Blockchain adoption towards SMEs inside their operation.
- III. To evaluate the factors that drive SMEs in Johor Bahru to become an adopters of Blockchain.

1.6 Scope and Limitation of the Study

This research paper is focusing on the enablers of blockchain adoption in Johor Bahru's SME supply chain management. Thus it will be conducted among SMEs inside Johor Bahru states of Malaysia. The selected respondents will be chosen according to the study field which is employees in SME industries. The researcher will be carried out by distributing questionnaires to the respondents.

The limitation of the study is the inaccurate data from respondents due to them was chosen randomly by the researcher. Besides, due to the limitation of time and study didn't conduct in different state, these will also influence the accuracy of data.

1.7 Significant of Study

The findings of the study benefited Malaysia SMEs that have the interest in adopt new technology in their operation. They will understand the impacts of technology adoption in their daily operation. Besides, SMEs can understand more

about several enablers that stimulate them move towards new technology. In addition, the study provides empirical literature sources to future researchers which carry out a similar topic.

1.8 Outline of thesis

The remain research paper is structured as follow, for chapter 2 researcher will provide literature review on application of Blockchain technology in supply chain management and operation in several sector. Besides, chapter 2 include the development of theoretical framework and identify the enabler of adoption. For chapter 3, researcher will discuss about research methodology that used to collect data and information in this research. In Chapter 4, researcher will analyse data that collected form discussion. Final in Chapter 5, researcher will generate conclusion and recommendation according to the discussion and result from this study.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Researcher will going to discuss about literature review and relevant theoretical model in this chapter. This includes definition of Blockchain technology, SMEs in Malaysia and Johor Bahru, what is supply chain management, and Technology Acceptance Model (TAM). After read through relevant literature, researcher will be able to define research's dependent variables and independent variables. Besides, literature review is essential for researcher to decide the research method whether using qualitative or quantitative method to conduct the research. Hence, this chapter will present the proposed research framework to fully described the theory and developing the hypothesis.

2.2 Small and medium-sized enterprise(SME) in Malaysia

Two criteria should list into consideration when come to define SME, sales turnover and number of full time employee. According to SME Corporation Malaysia, SMEs can be divided into several sectors which are manufacture sector, service and other sector. For manufacture sector, SMEs are defined according to their sales not exceed RM50 million or number full time employee not exceed 200 people. For service and other sector, SMEs can be defined as firm's sales turnover not exceed RM20 million or number of full time employee not exceed 75 person. According to Tee and Kee, SMEs account 98.5% of Malaysia business sector(2019).

By compare to SME data between other countries, Malaysia government has learned and realize that SMEs played a huge roles in Malaysia Economic growth. This has been prove by a series of data studied by Jaafar, as he state that portion of SMEs Malaysia facilitate 37.1% of Malaysia's GDP and will be growth towards 41% in year 2020.

2.2.1 Small and medium-sized enterprise(SME) in Johor Bahru

Johor, second largest state in peninsular Malaysia, also as known as the “southern gateway” of Malaysia. It's locate in the Economic Growth Triangle (Indonesia- Singapore- Malaysia growth triangle) and make it one of the most developed state inside nation and Johor Bahru is it's capital city. Johor Bahru, a city beside Singapore has the geographical advantage to be a excellent trading center. Distance and free movement between Singapore and Johor Bahru has attract more investment into Johor Bahru. Besides, Singaporean loves to shopping at Johor Bahru city due to their Singapore Dollar currency are stronger than our Malaysia Ringgit. This has boost up the growth of SMEs in Johor Bahru City. According to IRDA, major industries in Johor Bahru are manufacturing in plastic, electronic component, food and petrolchemical. In the other sides, major services in Johor Bahru are wholesaling and retailing, tourism, transport, medical, education and financial service(2020).

2.3 Supply Chain Management

Supply Chain Management term is introduced by Loliver and Webber in year 1982 and several researchers tried to combine it's essence and try to define it into a single definition in the late nineties. According to Christopher, supply chain refers to the network of organization that are involved in upstream and downstream linkage,