



Effect of Halal Transportation Towards Supply Chain Performance in Halal Food Manufacturing

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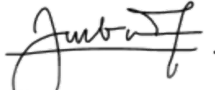
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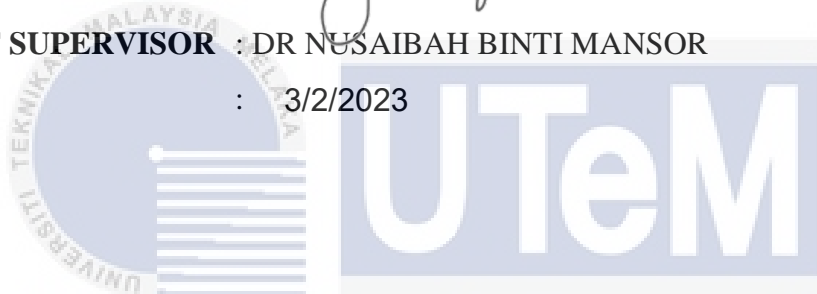
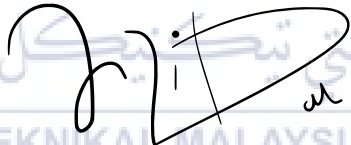
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Effect of Halal Transportation Toward Supply Chain Performance in Halal Food Manufacturing

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This thesis is submitted in partial fulfillment of the requirements for the award of Bachelor of Technology Management (Supply Chain and Logistics Management)

With Honors



Faculty of Technology Management and Technopreneurship

Universiti Teknikal Malaysia Melaka

DECLARATION OF ORIGINAL WORK

I hereby declare that all the work of this thesis entitled “**Effect of Halal Transportation Towards Supply Chain Performance in Halal Food Manufacturing**” 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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DATE : 20 JANUARY 2023



DEDICATION

Alhamdulillah and praise to Allah. I would like to appreciate the dedication to my beloved family members and siblings especially to my parents Haron Bin Rais and Kartini Binti Baris, who sacrifices a lot of things for me such as in financial and mental support that make me survived until now on my degree studies. Without their support and motivation, I won't go further.

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ABSTRACT

This study aims to determine the relationship between the Effect of Halal Transportation Towards Supply Chain Performance in Halal Food Manufacturing. The theory used in this study is Descriptive and Explanatory studies. Not only that, this studies also was conducted by using quantitative method. A survey methodology was used in this study. This research involves the utilization of questionnaire which was administered among 170 employees working in the selected organization. This study was conducted in selected Halal product food company in area of Melaka. Furthermore, the results obtained from respondent of questionnaire survey taken will be analyzed using statistical tool known as Statistical Package for Social Science (SPSS). The relationship between effect of Halal transportation and supply chain performance was analyzed using the Cronbach's Alpha tests. The dominant factor that affects supply chain performance were identified using Multiple Regression analysis. From the result, technological, organizational and economic factors have significant relationship in effecting Halal transportation towards supply chain performance. There are contribution and recommendation from this study research that can be used by the future researcher which also leads to increasing awareness about Halal transportation.

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ABSTRAK

Kajian ini bertujuan untuk mengetahui hubungan antara Kesan Pengangkutan Halal Terhadap Prestasi Rantaian Bekalan dalam Pembuatan Makanan Halal. Teori yang digunakan dalam kajian ini ialah kajian Deskriptif dan Penerangan. Bukan itu sahaja, kajian ini juga dijalankan dengan menggunakan kaedah kuantitatif. Metodologi tinjauan digunakan dalam kajian ini. Penyelidikan ini melibatkan penggunaan soal selidik yang telah ditadbir di kalangan 170 pekerja yang bekerja di organisasi terpilih. Kajian ini dijalankan di syarikat makanan produk Halal terpilih di kawasan Melaka. Seterusnya, keputusan yang diperoleh daripada responden kajian soal selidik yang diambil akan dianalisis menggunakan alat statistik yang dikenali sebagai Statistical Package for Social Science (SPSS). Hubungan antara kesan pengangkutan Halal dan prestasi rantaian bekalan dianalisis menggunakan ujian Alpha Cronbach. Faktor dominan yang mempengaruhi prestasi rantaian bekalan dikenal pasti menggunakan analisis Regresi Berganda. Hasilnya, faktor teknologi, organisasi dan ekonomi mempunyai hubungan yang signifikan dalam mempengaruhi pengangkutan Halal ke arah prestasi rantaian bekalan. Terdapat sumbangan dan cadangan daripada kajian kajian ini yang boleh digunakan oleh pengkaji akan datang yang juga boleh mendorong kepada peningkatan kesedaran tentang pengangkutan Halal.

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CHAPTER 1

INTRODUCTION

Halal transportation in Halal food manufacturing is really important especially for Muslim products manufacturers and producers that applying Islamic concepts which is for preserving Halal integrity in their product to meet the demand for their Muslim's consumers due to the growth of Muslim population in this country that has been continuously increase. The purpose of this research is to determine the effect of Halal transportation towards supply chain performance which is in this chapter one, it is more focusing on the background of the study, statement of the problem, objectives of the study, research question definition of term, and scope and limitation of study.

1.0 Background of Study

Since Halal food industry has grown progressively worldwide that also with the increasingly Muslim people, most food producers bringing good aspect such as safety, clean and hygiene to prepare their business products. Muslims seller or producer especially the one who is serving foods for their customer must follow the Shariah Law which is must be Halalan Toyyiban that won't give any doubt to the Muslim consumer. In Malaysia, all of the producer must obtain and apply Halal certification which be a sign for their foods is from Halal products. When it is related to food or any form of products that need Halal processing, the terms of 'Halal', 'Guaranteed Halal' or Muslim Food indicate and defined as a permissible to be consumed by any Muslims consumer which is in this kind of product, it is a must for the products not to be contaminated with any substance or item from animals that are forbidden to Muslims or any substance that considered impure by Islamic law. Not only that, Muslims consumer are one of the huge targeted markets in food companies demand in Malaysia which guarantees the food produced must be complied with Islamic principles (Hosseini, 2019).



Figure 1

Standard Halal Logo by JAKIM

In Malaysia, the department of Islamic Development Malaysia (JAKIM) has been entrusted to rule any Halal issues related to the production of Halal products. To guarantee the Muslim consumer on the halal products, JAKIM has developed Halal assurance system that known as MS 1500:2009 a general guideline for production, preparation, handling and storage Halal foods. The purpose of developing this system is to ensure that Halal standard also concerned on the issues related to the hygienic, cleanliness and safety on how they processing the food from beginning until the end of production. The Halal transportation of goods or cargo services is a key component of the practice of physical segregation. The terms of “Halal transportation” is used to describe the level of customization and segregation used in the transportation to supply only Halal goods and freight chain services. By separating shipments of Halal and non-Halal commodities such as using different pallets, containers, and refrigerators, a strict Halal segregation strategy would improve a performance of logistics service providers in terms of service quality and flexibility (Noorliza, 2019). Based on the requirements and guideline for Halal transportation, Halal products must be segregated along the chain to ensure the integrity and quality.

The Halal supply chain consist of many functions including in the transportation activities. According to Ngah *et al* (2017), there were many of food manufactures still being reluctant to include Halal transportation services as part of their business operation. The Halalness of food products could be in doubt if the product were not handled aligned to the Syariah’s requirements. Mohamed (2020) said that if Halal products especially foods products were not handled accordingly to the Halal requirements, the Halal quality will be questioned due to the break of chain in the Halal

supply chain activities. By creating the technology, organization and environment (TOE) framework, this study has determined the essential elements that encourages top managers of Halal food manufactures to adopt Halal transportation services. In this research study, researcher was determined what is Halal transportation and what is the relationship between Halal transportation and supply chain performance in the Halal food manufacturing.

1.1 Problem Statement

Food product or any other products that needs to deliver to the Muslim consumer requires certain procedure of Halal requirements which is will ensure the quality of the products that concerning on the ingredients used in the product and how they process it. The process of manufacturing product is including on how they transport the Halal products. According to Ngah *et al* (2017), even though the community understands and knows the importance of Halal transportation, ensuring the integrity of Halal, series of interviews were executed with the Halal transportation provider which is they claimed that the adoption of Halal transportation services among Halal manufactures is still low. Moreover, most of the food producer still reluctant to apply for Halal certification for their products and good as one of the answers is because of the effort and cost they will bear that motivate them not to apply Halal certification in their production processes (Ngah *et al* ,2017).

Halal practices must be considered in the entire supply chain from time to time during the processing of the Halal products. It is a huge responsibility for the Halal productions and foods manufacturers to keep all of the processes are Halal. According to Haleem (2018) which said that Halal transportation among Malaysian Halal food manufactures is still lacking. The contribution of academic were needed to ensure the manufacturer and consumer who applying Halal in their life to understand clearly about the perspective of Halal especially in Halal transportation. Thus, many analyses need to be taken on the perception of producer in the Halal transportation and how it effects supply chain performance in Halal food manufacturing.

1.2 Research Objectives

1.2.1 General Objective

The objectives of this research are to study about the Effect of Halal Transportation Toward Supply Chain Performance in Halal Food Manufacturing.

1.2.2 Specific Objectives

The specific objectives for this research of study are:

- a. To determine Halal transportation adoption factors.
- b. To identify the relationship between the effect of Halal transportation towards supply chain performance.
- c. To analyze the most significant Halal transportation adoption factor.

1.3 Research Questions

In this research study, the research question will be crucial to determine:

- a. What are the Halal transportation adoption factors?
- b. What is the relationship between the effect of Halal transportation towards supply chain performance?
- c. What is the most significant Halal transportation factors?

1.4 Scope and Limitations of Study

This research study is focusing on the effect of Halal transportation towards supply chain performance in Halal food manufacturing. This study will be conducted for among 170 respondents from the employees and employers of Halal food product company in area of Melaka. The selected respondents will be chosen randomly which is after that the respondents will be distributed with questionnaire to answer the related question about this research study.

The limitation of study that existed from this research study is the accuracy of the data from the respondent that will be worried as they were chosen randomly by researcher. The researcher can't pay their attention to all respondent as there are many respondents were taking the questionnaire. Not only that, it will be difficult for the

researcher as the time given during conducting this research study is too short. This study needed to be complete in short period time which is only in 10 months.

1.5 Significant of Study

In this section, the research may give information about Halal transportation. Through this study, the finding may give the understanding on how Halal transportation will affect to supply chain performance in Halal food manufacturing. This research may also give an information on how Halal transportation give impact to the food manufacturing whether it is in positive or negative aspects. By determining the relationship between Halal transportation and supply chain performance, the finding give the awareness of what is Halal transportation and on how to improve the supply chain performance based on the hypothesis of research study.



1.6 Definition of term

In this section, they will be definition for some word from this research of the study:

Words	Definitions
Halal	An Arabic word that gives meaning of permissible or lawful
Shariah law	Islamic law which refers from primary sources of Islam, Al-Quran and Sunnah
Halal transportation	One of the Halal supply chain activities which is related to the movement of products that need to follow Halal requirements in its processes.
Supply chain performance	The approach to determine the performance of supply chain system.
Transportation	Movement of product from one location to one another
Supply chain Flexibility	The ability to easily make change on something in the production including the transport capacity and raw material purchase.
Supply chain Responsiveness	The ability of supply chain to respond quickly and positively within the time to the customer's need.
Customer services	Support given by the marketers for the consumer that give value for them
Consumer	It is a buyer or user who bought the product

1.6 SUMMARY

In this chapter, the researchers have discussed about the background of study, problem statement of study, research objectives and questions, significance of study, limitation of study and the definition of terms. In the next chapter, the researcher will be carried out the literature review of the study research. There will be broader information about this study research in the next chapter.



CHAPTER 2

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter will discuss about the literature review on the effect of Halal transportation towards supply chain performance in Halal food manufacturing. The concepts gained from this literature were used to explain the conceptual framework and hypothesis for this research. This research was classified into sections which is the definition of term of Halal, Halal transportation and supply chain performance, the effect of Halal transportation in supply chain performance. From all of this research, it will explain in detail how Halal food supply chain works.

2.0 CONCEPT

2.1 Concept of Halal

All knows that one of the populous religions in the world is Muslim population that make sense for all of us need to know what is the concept of Halal. Halal is an Arabic word that give the meaning of permissible, lawful or allowed by Islamic law (Ibn Manzur, 2019). According to the Islamic law and principle from the teaching of Al-Quran and the conduct of Prophet Muhammad in Hadith, Halal were generally means lawful and permissible (Yusuf, 2016). Halal concept especially for foods is define as the process is truly from farm to the table, and it needs nutritious items that has been prepared from permissible ingredient in a clean and hygienic manner and must compliant with the Islamic law (Hanzaee and Ramezani, 2011). There are one of the pieces of evidence from Quranic verses which tell:

O you who believe! Eat of the good things (toyyib) that We have provided you with, and give thanks to Allah if Him it is that you serve. (Al-Baqarah 2: 172)

From these Quranic verses, it is telling that Islam has sets two essential aspects for food consumption which is Halal (permissible) and Toyyib (good quality) (Zalina,2008). This verse explains that Islam ask its believers, all Muslims to find *rizk*

that Halal and Toyyiban that the foods they eat must be a Halal food and in a clean condition that is not prohibited by Islam with the purpose of avoiding it from ruining their bodies and lives (Omar *et al* and Jaafar, 2011). According to Tieman *et al*, 2011, he believed that Halal status for food product is not only about the ingredients or materials, but the product also can be questioned about the quality of Halal if it is expose to Haram entire the supply chain process such as in storing or transpprtation. The consumption of Halal is certified as a preferred products that fulfil with Shariah requirement and rule to be guarantee as good hygienic, clean, safe to be consume and especially quality. The consumption of Halal also due to the changes of food industry on worldwide (Ab Talib *et al* and Ai Chin, 2018) that causing many global companies such as McDonalds and Nestle certified their products with Halal certification which is applying Halal processing in their production (Fischer *et al*, 2016).

2.2 Halal Transportation Adoption

Halal were defined as permissible, lawful or allowed in Islam based on Tieman (2011) and Wilson and Liu (2010). Process of Halal supply chain is applied the same as how conventional supply chain works, but it must embed accordingly toward the principle of Shariah law (Omar, 2013). Halal food supply chain were mentioned by Omar *et al* (2017) that it must comply with shariah law in all activities including warehousing, transportation, sourcing, handling product, inventory management and procurement. The halal status of foods not only depends on the ingredients but contamination can be occurred at the entire supply chain process, it is including in farming, manufacturing, warehousing, transportation and retailing as the effect of contact between Halal and Haram food's products (Iranmanesh, 2019).

The Halal transportation adoption occurs when the organization of the production make a decision to use innovation for the advantage in the production that will make it easy for them to produce more and more product. Halal transportation quite new for some company as it requires the manufacture of product to applying the concept of Halal and make sure that all of the processes of making the product were separated from non-Halal ingredients. According to Ngah *et al* (2014), Halal transportation is concerning to separate the Halal and non-Halal products to make sure and preserve the integrity of the Halal products. Halal transportation is one of the essential activities in

supply chain (Pahim, 2012) as without the adoption of Halal transportation in the production, there will be no Halal products may be moved from manufacturing location. Halal products should not be transport with other non-Halal product such as in same container or pallet or anything else as it damages the Halal quality of the product (Tieman *et al*, 2011). There are differences between Halal transportation services and conventional transportation services which is the Halal transportation service is a service that serve product complying with Halal requirements but for the conventional transportation, it is seeks for the aim to increase the efficiency and reduce the cost in the production (Ngah *et al*, 2014). To keep on maintaining the Halal, the tools and substance used must not be shared with another non-Halal product. Halal providers were certified by the JAKIM based on the MS 2400-1:2010; Halalan Toyyiban Assurance pipeline part 1: Management System Requirements for Transportation of goods and/ or cargo chain services.

2.3 Theoretical Background

2.3.1 Technology, Organization and Environment (TOE) framework

According to Ngah *et al* (2021), the technology, organization and environment (TOE) framework was created by Tornatzky and Fleisher (1990) from the previous models which are including three dimensions: technology, organization and environment. The technology will be explained about the existing technology and to be adopted, for the organization, it will be describing the characteristics or the limitation of adopted technology, while for the environmental factor, it explaining the surrounding context on how the firms conduct their business. The TOE framework in contrast to the majority of other adoption theories and models as it is a general theory that provides several dimensions of impact without outlining which variables should be included in the model (Zhu and Kraemer, 2005). This model enables researcher to insert wide range of others variables for a more thorough analysis of why people choose to accept and adopt the new innovations. The majority of research that use TOE framework, with varied variables depending on the context of their investigation, according to the literature in various fields of study (Ngah *et al*, 2019).

According to the Oliveira and Fraga Martins (2011), the TOE framework is frequently in technology adoption and innovation across the spectrum of technologies,

has a strong theoretical basis and is well supported by empirical evidence. Thus, it encourages researchers to include this theory as the study's theoretical lens. The applying of TOE framework in this research is to studying of the effect of Halal transportation adoption towards supply chain performance in the Halal food manufacturing as according to Azmi *et al* (2019), there are still lack of researchers in Malaysia to study on Halal transportation adoption among Halal food producer or manufacturer.

2.4 Technological Factor (Perceived Benefits)

The perceived benefits refer to the impression of the advantages brought about by a particular action (Leung, Y. ,2013). For this study, perceived benefits are regarded on how organization think how the Halal transportation that as a technology or innovation will give benefits to the company. The benefits for using Halal transportation providers among Halal food manufacturer are avoid the doubtfulness of Halal quality and get to increase the image of the products (Ngah *et al*, 2021). According to Shaltoni (2017), perceived benefits have a positive influence that intent to use internet marketing. It is also lead to the initiation and implementation of socially sustainable procurement (Agbesi, 2018). Not only that, perceived benefits also found has positive related to the e-business studies which relationship with the e-commerce. In this research study, the perceived benefits are how the organization used the halal transportation to improve the production or how the organization protect the quality using the Halal transportation providers.

2.5 Organizational Factor (Readiness)

Readiness itself means the state of being fully prepared for one action which is in this research, it is how ready the organization to adopt new technology within their business application. According to Ngah *et al* (2021), a study defines readiness as the capability of Halal manufacturer's management to adopt Halal transportation services in terms of human resources and financial management. The financial support including the cost of training and knowledge for the employee all about Halal requirements and Halal activities. There are essential components of organizational readiness such as technical support, expertise, infrastructure and the existence of professional in the

organization. Business with good organizational readiness will have better positioned to use frequency identification technology adoption (Lee Abd Kim, 2007).

2.6 Environmental Factor (Customer Pressure)

In business, the customer or consumer is the main focus for the producers or manufacturer to stay survive in the highly competitive business around them (Ngah *et al*, 2021) which considered to be a factor for the firms to react accordingly to the what customer's need and demanding for (Khemthong and Roberts, 2006). the decision to change something in the production will follow accordingly what is the customer wanted to which will help the firms to improve their products. Once the consumer starts to pressure, there will be the needs to satisfied for them which at worst they tend to change to other products that meets their needs.

Good management will know what is the consumer's requirements especially when it comes to the religion and belief requirements. According to Ngah *et al* (2021), many studies founded positives influence from customer pressure and their behavioral intention to adopt new technologies such as the adoption of internet marketing that proved by Mohtaramzadeh (2018) and Shaltoni *et al* (2017), but in this research study, the new technologies adoption is Halal transportation adoption.

2.7 Supply Chain Performance

To improve supply chain performance, there are many aspects that need to consider such as reduced lead time, improving production, delivery or quality improvement to meet the requirement of end-customer to deliver the performance in a responsive manner (Warren Hausman, 2016). If it is put in grouping into broader range, it priorities the aspects of cost, quality, delivery time, flexibility, service level and innovation that will be useful way to measure the supply chain performance (Vickery ,2003). In detail, the first group will be concerned with how supply chain performance was measured and for the second group is purposely to find ways to improve supply chain performance. (Sezen, 2008). According to Ramezankhani. 2018, supply chain performance management is a central for the organizations to obtain and maintain competitive advantage.

To achieve and win the new environment, supply chains need continuous improvement which is by using performance measurement. Performance measurement is one of the useful tools for best decision making in one organization (Marinagi, 2015). A measurement instrument that used to measure the performance in this study research are supply chain responsiveness and supply chain flexibility which to expose a theoretical concept. In this research study, it will determine whether the Halal transportation has relationship with the supply chain performance that will also justify positive or negative impact to the performance. There are two main performance the researcher focuses on:

2.7.1 Supply Chain Responsiveness

Supply chain responsiveness is described by Gunnasekeran (2008) and Danese (2013) as how the supply chain can be prompt and the extent to which on purposes to show the changing needs of customers regarding to their demands as well as the respond by the firm to other changes in the business environment. There are many competitive markets that needs an organization to develop the skills and capabilities to be able for them effectively respond to the market changes that will meet the demand of the customer in effective manner (David, 2021). A good responsive company is one of that have the supply chain capability to respond the short-term changes of the customer (Christopher, 2016) and considered as responsive company if they have the ability to achieve flexibility and performance in terms of delivery (Hallgren and Olhager (2009). The study of Kim *et al* and Cavusgil (2009), the proposed that supply chain responsiveness is positively impacted on brand equity and market performance with their findings that supporting the hypothesized positive effects. In this study research, the researcher is measuring the supply chain performance by using supply chain responsiveness on how Halal transportation adoption factor will affect the performance.

2.7.2 Supply Chain Flexibility

Supply chain flexibility is one of the measurements for supply chain performance which was defined from a strategic and holistic perspective as the ability of an organization's supply chain effectively and economically respond to its internal and external uncertainties (Pujawan, 2004; Lummus, 2003; Vickery *et al*, 1999). The supply chain flexibility should be measure from consumer-oriented opinion and perspective which is directly impact customer values that has suggested by Vikkery *et al* (1999). Flexibility was studied as the manufacturing capability to respond changes in the system such as inventory control, equipment problems and varying task times (Hou, 2018). According to Centobelli (2020), due to the existence of supply chain in uncertain environment, many organizations have developed supply chain flexibility to adapt with changes that will satisfy market requirements so that at the end they will achieve competitive advantage and great business performance. It is very important for the organization to read the nature of business complexity and make respond to the changes in the system to sustain (Famiyeh, 2018; Saleh and Watson, 2017; Wan Ahmad,2016).



2.8 Conceptual Framework

In this research study, the independent variable is the factors of effecting Halal transportation consists of perceived benefits, organization readiness and customer pressure. The second part is for dependent variables is effect on supply chain performance that consist responsiveness and flexibility.

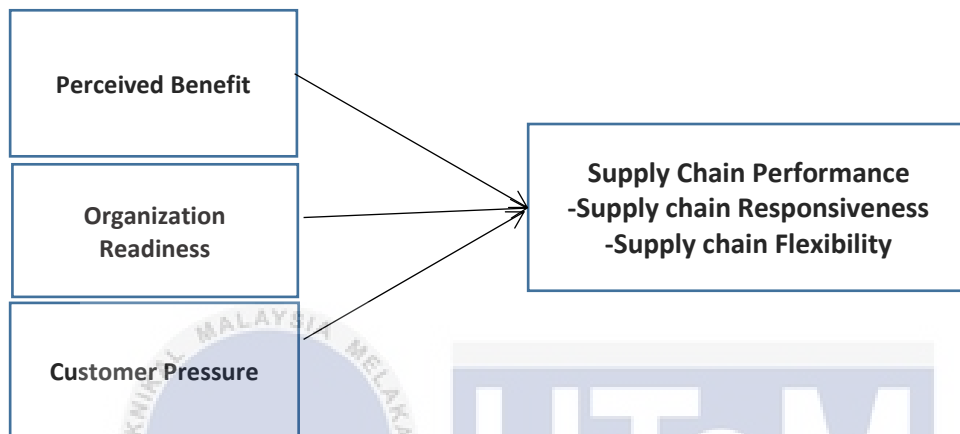


Figure 2 Conceptual Framework the effect of Halal Transportation Towards supply chain performance In Halal Food Manufacturing

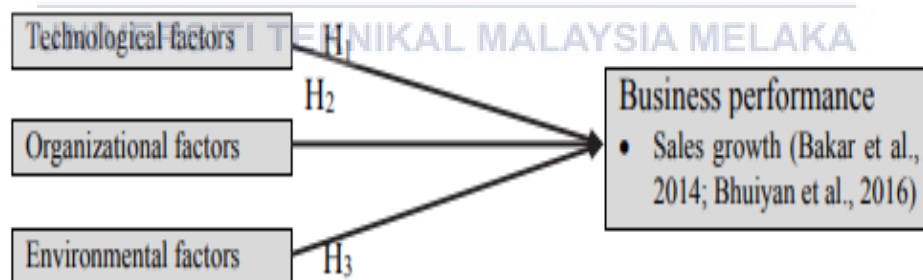


Figure 3 The original conceptual framework referred

2.9 Research Hypothesis

The following hypothesis in this study:

Effect of Halal Transportation Towards Supply Chain Performance in Halal Food Manufacturing

Technology Factor

Perceived Benefits

H0: There is no significant relationship between perceived benefits of Halal transportation and supply chain performance

H1: There is a significant relationship between perceived benefits of Halal transportation and supply chain performance

Organizational Factor

Organization Readiness

H0: There is no significant relationship between readiness of Halal transportation and supply chain performance

H1: There is a significant relationship between readiness of Halal transportation and supply chain performance

Environment Factor

Customer Pressure

H0: There is no significant relationship between customer pressure of Halal transportation and supply chain performance

H1: There is a significant relationship between customer pressure of Halal transportation and supply chain performance

2.10 Summary

In this chapter, the researcher discussed about the effect of Halal transportation towards supply chain performance in Halal food manufacturing. The proposed research divided into two variables which independent variables and dependent variables. The dependent variables in this research are the supply chain performance which is main focus of researcher is just related to supply chain responsiveness and supply chain flexibility while for the independent variable in this research will be factors of Halal transportation adoption that consist of Technology, Organization and Environment (TOE) framework: Technology (perceived benefits), Organization (Readiness), Environment (customer pressure). The following chapter will discuss about the research methodology.



CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

In this study research, it is discussed about the methodologies that collecting all the data and information about this research. It will discuss about the explanatory research design which is concerned to explain the relationship of independent variables and the dependent variables. This study is using the quantitative method as a methodological choice. The data has been obtaining the source from the primary and the secondary data. In this section, it will be discussed about the research location, research strategy, time horizon, reliability and validity and the data analysis method. The outcomes from the whole research can be evaluated and understood with these research methodology procedures.

3.2 Research Design

Research design for this study research is the general plan on how the researcher answer for the research question in the Chapter 1 which is determined clear objectives from this research questions. This study research is using the explanatory research which is an explanatory study that aims to explain the causal and consequences of situation and not only that, it also analyses specific problems and explains about the relationship between variables, which is in this research it is consist of two variables, the independent variables and dependent variables.

This research study is using explanatory research because it is study about the effect of Halal Transportation which is the factors of adoption Halal transportation going to be the causes or else as its independent variables. The supply chain performance will be the consequence and the dependant variables. Here, it also determines the relationship between effect of Halal transportation and supply chain

performance on the factors of technological, organization and environment in Halal food manufacturing.

3.3 Methodological Choices

There are three type of methodological choice which are quantitative, qualitative and mixed methods. For the quantitative method, the researcher will make a hypothesis and later they will test it through structured means which is it will deal with facts and statistics and use questionnaire for collecting the data. For the qualitative method, the researcher will explore a specific situation which use interview or observation on collecting data information about the research study. The last method is mixed method which is in this method, the researcher will combine both qualitative and quantitative method in their research that will have a questionnaire, interviews, and observation about the situation.

However, in this research study, the researcher is using the quantitative method to determine the relationship between the two variables which is this method mostly focusing on the theory data and information. This method expects proper formed theory by re-relate to the general principles and definitions through the observation data (Huygens, 1629).

Figure 4: Deductive Approach by Huygens



3.4 Primary and Secondary Data Sources

The secondary and primary data were applied in this study research which is the primary data is a data that has been created by the researcher himself/herself by using an interviews, surveys or experiments to find the information and solve the research problem. The respondents from the interviews or questionnaire will be given with the question that require them to answer the questions given which the question is based on the research that been studied by the researcher.

The secondary data is a data that has been collected by government agencies, or any other large government institutions which is available for public (Ghauri, 2020) and its help to prevent waste of time and money as the data of the study can be gained by finding from the website and library database such as by selecting journals, reports or any articles.

3.5 Research Location

This research of the study will be conduct at the area of Melaka which are several selected companies will be chosen to participate in answering the questionnaire survey. It is because in this research study, there will be a targeted respondent from few Halals foods manufacturer company to answer question related to this study research which is a Halal transportation and supply chain performance. The range age of the respondent will be 20 years old and above whom has the knowledge about Halal food supply chain, Halal transportation and supply chain performance.

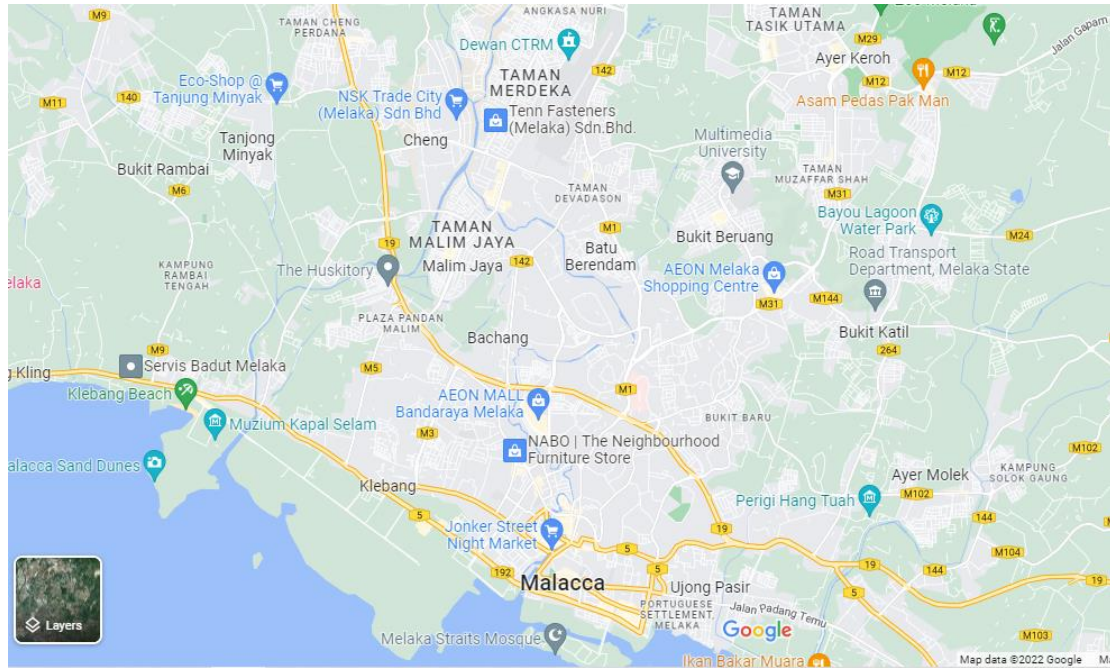


Figure 5: The Research Location in area of Melaka

3.6 Research Strategy

Research strategy is a plan for the researcher on how they will conduct their research question to the respondent whether they will conduct the question through experiment, survey, documentary research, grounded theory or narrative inquiry. This research will be choosing a survey strategy as it was easy to make a comparison of data from a sizeable population using the questionnaire in survey strategy. The researcher also chooses archival or documentary research strategy as these sources of information can be gained online.

3.6.1 Questionnaire Design and Data Collection

In this research of study, questionnaire will be the method to conduct the answering question. Researcher will implement the online platform (Google Form) to let the respondent answer all the question given which is the question is asking about the problem of the research study. It is convenience for the respondent as the respondent just need to answer the question only by using their phone or computer.

Literally, this questionnaire survey is needed the people from executive level and above to answer the question as the understanding about the supply chain performance is not known by all employees, basically it is about the performance. But it is impossible for researcher to get all the respondent from among those people as this questionnaire is given randomly through email. If it is not by email, the researcher also distributed it to the company itself, but it is easier to get the respondent from random position. This questionnaire survey uses Google Form management which the researcher distributed to respondent in selected company by sending them URL/ link format through the email. The researcher also sent the company the approval letter that state the purpose of this study research, which is to gain the information about Halal transportation in Halal food manufacturing and also supply chain performance. However, the responses from this questionnaire will be kept confidential to protect the privacy of all respondents.

In this questionnaire, it consists three parts of question that the first part is about the demographic of respondent. In this part, the respondent will be asked about their age, gender, race, department of their job and working duration that has been experienced. The second part of question will consist about the independent variables which is the factors influencing the effect of Halal transportation, including the TOE question which in factors of technological, organization and environment. The last part of question will be asking about the dependent variable in this research; supply chain performance (responsiveness and flexibility).

Multiple choice question and Likert scale will be applied in the questionnaire. The Likert scale method is using the point rating scale which for scale 1 is represent “strongly disagree”, 2 represented as “disagree”, 3 as “neutral”, 4 as “agree” and lastly for scale 5 it will be strongly “agree”.

Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

Table 3.1: five points rating scale by Rensis Likert (1932)

3.6.2 Sampling Design

Population is made up of all the things or occurrences of a particular category which researchers seek knowledge or information (Mike Allen, 2018). A population might be broad in scope, thus, researcher will choose a subset of the population known as sample which is much easier to manage for the observation. Convenience sampling method was used to conducted this study research that this method is a method of non-profitability sampling where the researchers is selecting the sample as opposed to randomly choose it, so not all the members from the population have an equal chance of participating in the research study. This method is convenience as it allows the researchers to create large samples in short periods of time (Julia Simkus, 2022).

Also, the table of Krejcie and Morgan were applied to identify the sample size for this research study. Based on the data in the Halal Malaysia Official Portal, there are 300 company in Melaka that applying Halal for their business food product. Table 3.2 below shows the table is to identify the minimum sample size that need for this research. From the table, the minimum sample will be taken from this research is 170 respondents.

3.6.3 Sample Size Needed

Table for Determining Sample Size from a Given Population

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note. N= population size, S=sample size

Table 3.2 Sample size of population source by Krejcie and Morgan (1970)



Figure 6: Halal Malaysia Official Portal

3.6.4 Pilot Test

Prior to final distribution, pilot tests were conducted on members of the target population to assess their reliability. This test is a small-scale trial that make the researcher to test and comment on the questionnaire as to reduce the problems when the respondents answer the question and data recording issues. This test will be collected before it distributes to the respondent which the researcher will select 17 respondents (10% from 170 respondent sample) to take the pilot test in one week period of time. After that, their feedback and opinion of comment will be taken for the final survey questionnaire in this research study.

3.7 Time Horizons

There are two types of time horizons which is cross sectional studies and longitudinal studies. For the cross-sectional studies, it is conducting and gathering data only once at a time, it may take days, weeks or months while for the longitudinal studies, this study is a collection of data repeatedly over a long period. In this research study, the researcher will use cross sectional studies due to the time limitation. The researcher may have to complete the research study from chapter 1 to chapter 5 in within ten months. There is only a month of period time to collect and analyse data of the research.

3.8 Reliability and Validity

Reliability and validity are basically used to determine how well a method used to measure something. For the reliability, it is referred to the replication and consistency. It is an assessment tool create stable and consistent result (Collin Phelan and Julis Wren, 2005) while for the validity, it is referring to the appropriateness of measuring used, the results on the accuracy of the research analysis, and the speculations of findings. For the validity, it consists two types of validity which is first is the internal validity that implement in a survey questionnaire where a set of questions showed the statistically to be linked with the analytical factor or outcome. While for the external validity which focusing on the question whether the findings of the research may be generalized to other related settings.

In this study research, the researcher uses Cronbach's Alpha tests which is this method is developed by Lee Cronbach (1951) that to measure reliability of the variable from research. This test is to see if the question Likert scale surveys are reliable. The range in alpha coefficient is between 0 and 1. When the value shows on the Cronbach's Alpha is more than 0.7, it is considered acceptable, more than 0.9 value shows it is good, and the equal or more that 0.9 will considered as excellent. But if the value shows are less than 0.6, it is considered as poor and less than 0.5 will shows as unacceptable result. When the value shows negative result from the test, it must be something wrong with the data gained.

Cronbach's Alpha Coefficient Range	Strength of Association
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Table 3.3: Cronbach's Alpha coefficient Range and Strength of association

3.9 Data Analysis Method

When the data from the questionnaire has obtained, researcher will apply for the Statistical Package of Social Sciences (SPSS). It is a set of software programs which is this program is to analyze scientific data that relate to the social science (John Noels, 2018). In this research study, the method that will be used in this research study are descriptive analysis, Pearson's correlation analysis and multiple regression analysis (MRA).

3.9.1 Descriptive Analysis

Descriptive analysis is a process by using statistical techniques that describe one set of data which is this method is popular with its ability to generate accessible observations from the uninterpreted data (Thomas Bush, 2020). It is using the numerical description and comparison of variables which are target the centre of tendency and dispersion. Basically, this analysis was measure by using means, medians, modes, and standard deviation. In this study research, the researcher using this descriptive data to point out on the question of gender, age, race, job department and working duration that has been experienced by respondent. The raw data will be converted in the form that much convenience to understand that describing the demographic of the respondent.

3.9.2 Pearson's Correlation Analysis

Pearson's correlation analysis will be applied in this research study as to compute the linear relations between two variables which dependent and independent variables. The independent variables in this study are perceived benefits, organization readiness and customer pressure as follows the TOE frameworks while the dependent variable is supply chain performance. The coefficient of this analysis will be between -1 to +1 that represent perfect negative and perfect positive correlations. While the value of 0 will represent as no association correlation.

Correlation Coefficient Value (r)	Direction and Strength of Correlation
-1	Perfectly negative
-0.8	Strongly negative
-0.5	Moderately negative
-0.2	Weakly negative
0	No association
0.2	Weakly positive
0.5	Moderately positive
0.8	Strongly positive
1	Perfectly positive

Table 3.4: The Value of Correlation Coefficient

3.9.3 Multiple Regression Analysis (MRA)

Statistical technique that used two or more explanatory variables that aim to predict the outcome of response variables. It allows researcher to generate the strength of the cause and consequences between the relationship of variables, independent variables and dependent variables. In this study research, the researcher needs to understand the variables which the independent variable in this research is includes perceived benefits, organization readiness and customer pressure towards the dependent variables is supply chain performance (responsiveness and flexibility).

The Multiple Regression Analysis allows the researcher to determine greatest impact from independent variables to dependent variable. The equation used from this analysis is:


$$\text{Equation of MRA: } Y = a + bX_1 + cX_2$$

Where;

Y = Dependent Variable (Consumer Behavior)

a = Constant value or Intercept

b = Influence of X₁ (IMC tools)

c = Influence of X₂ (types of media)

X₁, X₂ = Independent variables

3.10 Summary

To sum up from Chapter 1 until Chapter 3, the explanatory research is needed the survey questionnaire to be offered to the respondents. There are 300 of Halal product company in Melaka which is required of 170 respondents to answer the question related to this research study through the Google form given. The researcher's main focus of respondent are the people from executive level and above, but to make things easier, the researcher just distributed the questionnaire randomly as it using through email and phone call that make it difficult to distribute only for those selected people. This research is used the cross-sectional time studies which the data collected only once. Moreover, before the questionnaire is giving out to the respondents, the researcher will conduct the pilot test. The researcher also refers to the secondary data sources from the past article, reports, books and online journal. The researcher also used Cronbach's Alpha to measure the reliability of the variables in this research. Once obtaining the data, the researcher will analyse the data gained by using the descriptive analysis, Pearson's correlation analysis, and multiple regression analysis. In chapter 4, the following data analysis and discussion will be discussed.

CHAPTER 4

DATA ANALYSIS AND RESULTS

4.1 Introduction

In Chapter 4 will explained the results and findings of data analysis which had been conducted in this research project. The data was collected from 170 respondent over three months period of time. All the data collected during this 3 month will be analyzed by using Statistical Package for Social Sciences (SPSS) to get the result of research objectives and to examine whether the research hypothesis is valid. This research analyzed the collected data to test the hypothesis using the Pearson Correlation Coefficient Analysis and Multiple Regression. The result will be explained in charts and table forms.

4.2 Reliability Analysis (Pilot Test)

The pilot test in this research is to test the feasibility of the questionnaire that been given to the respondent whether the question in the questionnaire either can be understand or not. In this study, the researcher selects 17 respondents which are 10% from total 170 respondents to measure the consistency of data from the questionnaire, Cronbach's alpha is used which is the value of alpha must 0.7 or higher which indicate as acceptable internal consistency, thus, 0.6 and below is considered low. The higher value will indicate consistent reliability of the questionnaire.

The table 4.1 below shows the Cronbach's Alpha of pilot test which the pilot test was delivered to 17 participants. Based on the table, Cronbach's Alpha value for independent variable (perceived benefits, organization readiness and customer pressure) and dependent variable (Supply chain performance in Halal food manufacturing) is 0.766. The value is considered acceptable for this study research as it is higher than 0.7.

Table (4.1) Case Processing Summary

		N	%
Cases	Valid	17	100.0%
	Excluded	0	.0
	Total	17	100.0

a. Listwise deletion based on all variables in the procedure

b. Table 4.1: Case Processing Summary

(Source: SPSS Output)

Table (4.2) Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.766	.799	22

Table 4.2: Reliability Statistics

(Source SPSS Output)

4.3 Descriptive Statistics Analysis

4.3.1 Respondent Demographic Profile

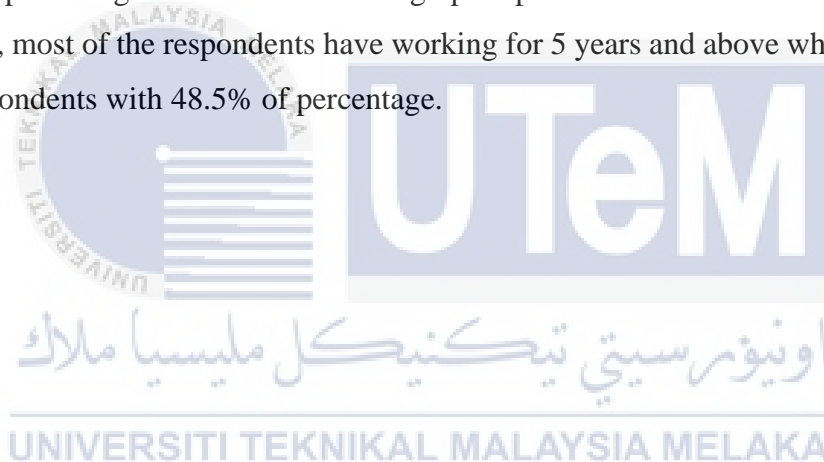
Table below shows the summarized of demographic profile taken from Statistical Package for Social Sciences (SPSS).

Table (4.3)

Summarized demographic profile of 170 total respondents.

Variables	Items	Frequency	Percentage (%)
Gender	Male	79	46.2
	Female	91	53.8
Age	20-29 years old	70	40.9
	30-39 years old	60	35.1
	40-49 years old	33	19.3
	50-59 years old	8	4.7
Race	Malay	101	59.1
	Chinese	44	25.7
	India	23	13.5
	Kadazan	2	1.2
	Iban	1	.6
Department	Account & Finances	27	15.8
	Marketing & Sales	33	19.3
	Operations	40	23.4
	Manufacturing	52	30.4
	Human Resources	18	10.5
		1	.6
Duration of Working Experience	Less than 3 years	47	27.5
	Less than 5 years	41	24.0
	5 years and above	83	48.5

In general, the questionnaire survey was requested the respondents to answer the demographic characteristics first which include gender, age, race, department of working and duration of working experience. There were total of total 170 sets of questionnaires were analyzed. Table 4.3 is summarized demographic profile of total 170 respondents. Based on the collected data, most of the respondents answered the questionnaire are female, which are 91 respondents, and the percentage is 53.8% while the respondent for male is 79 respondents with the percentage of 46.2%. The majority of the respondents were in the age range of 20-29 years old which indicate total 70 respondent and 40.9% percentage. The least respondent was in range age of 50-59 years old which is shows it has 8 respondents and 4.7% percentage. Whereas for race, Malay has become higher number of respondents which is 101 respondents with 59.1% percentage. Next, most respondents are in department of Manufacturing which is 52 and 30.4% percentage. Last items in demographic profile are the duration of working experience, most of the respondents have working for 5 years and above which is there are 83 respondents with 48.5% of percentage.



4.4 DESCRIPTIVE ANALYSIS OF THE RELATIONSHIP VARIABLES BETWEEN INDEPENDENT VARIABLE AND DEPENDENT VARIABLE

4.4.1 INDEPENDENT VARIABLES

4.4.1.1 TECHNOLOGICAL FACTOR (PERCEIVED BENEFITS)

(Table 4.4) Descriptive Analysis

	N	Minimum	Maximum	Mean	Std.Deviation
1.By implementing Halal transportation, we feel that our production control will improve.	170	1	5	4.06	.855
2. Our market share will increase if Halal Transportation were adopted.	170	2	5	4.11	.884
3. We feel that quality of the product will improve by adopting Halal Transportation.	170	1	5	4.05	1.007
4. The purity of our products will increase if Halal Transportation were implemented.	170	2	5	4.12	.876

Table (4.4) Descriptive Analysis for Perceived Benefits

From table (4.4), the findings explained that the maximum mean of perceived benefits was (M=4.12) with the items on “The purity of our products will increase if Halal Transportation were implemented”. The standard deviation value is 0.876. The lowest mean value shows the item of “We feel that quality of the product will improve by adopting Halal Transportation” with the value of mean is M=4.05, the standard deviation was 1.007. The minimum rating scale in perceived benefits data was 1 and the higher rating scale is 5.

4.4.1.2 ORGANIZATION FACTOR (ORGANIZATION READINESS)

Table (4.5) Descriptive Analysis

	N	Minimum	Maximum	Mean	Std.Deviation
1.Our employee has understood the Halal Transportation and how its work in the organization	170	2	5	3.98	.811
2. Our company understands the real situation of the business related to Halal Transportation.	170	1	5	3.96	.877
3. In order to adopt Halal Transportation, our company is ready to re-align companies' policies and strategy	170	1	5	4.06	.813
4. To adopt Halal Transportation services, our organization has a knowledgeable staff about Halal requirements.	170	1	5	4.07	.823

Table (4.5) Descriptive Analysis for Organization Readiness

Based on table (4.5), it has shown that the result of mean and standard deviation for Organization Readiness which is the highest mean is 4.07 from the item of “To adopt Halal Transportation services, our organization has a knowledgeable staff about Halal requirements” with the standard deviation of 0.823. At the same time, the lowest mean value (M=3.98), indicated the item of “Our employee has understood the Halal Transportation and how it worked in the organization” with the standard deviation of 0.811. The minimum rate of among all item was 1 and the maximum rate was 5.

4.4.1.3 ENVIRONMENTAL FACTOR (CUSTOMER PRESSURE)

Table (4.6) Descriptive Analysis

	N	Minimum	Maximum	Mean	Std.Deviation
1. The consumers are confident that Halal food fulfils the hygiene, sanitation and food safety.	170	2	5	4.21	.856
2. Consumers require our firm to operate based on Halal requirements.	170	1	5	4.34	.753
3. Believing perception leads to attitudes of the consumers.	170	1	5	4.25	.887
4. Customers' behaviors indicate that our company needs to adopt Halal supply chain services.	170	1	5	4.08	.871

Table (4.6) Descriptive Analysis for Customer Pressure

The results of mean and standard deviation of Customer Pressure are shown in Table (4.6). The item in Customer Pressure indicates “Consumers require our firm to operate based on Halal requirements” as the highest mean which is (M=4.34) with standard deviation of 0.753 while the lowest mean shows in data is (M=4.08) with standard deviation value of 0.871 indicated the item of “Customers’ behaviors indicate that our company needs to adopt Halal supply chain services”. In general, the minimum scale rating is 1 and the highest scale rating is 5.

4.5 DEPENDENT VARIABLES

4.5.1 SUPPLY CHAIN PERFORMANCE

Table (4.7) Descriptive Analysis

	N	Minimum	Maximum	Mean	Std.Deviation
1. Length of time to process a received order for Halal food product is in good condition.	170	1	5	4.05	.777
2. Our operations system including Halal Transportation responds rapidly to changes in product volume demanded by customers.	170	1	5	4.06	.866
3. The organization are able to meet specific customer service needs about Halal requirement	170	1	5	4.16	.831
4. By adopting Halal Transportation, the organization still be able for accommodating uncertain market demand.	170	2	5	4.04	.836
5. Halal Transportation adoption in the organization still capable to produce a product in different ways.	170	2	5	4.28	.769

Table (4.7) Descriptive Analysis for Supply Chain Performance

Based on the table (4.7), it is stated that the result of mean and standard deviation for Supply Chain Performance. It is shown that the highest value of mean from data is (M=4.28) with the standard deviation of 0.769 indicates the item of “Halal Transportation adoption in the organization still capable to produce a product in different ways”. Meanwhile, the lowest value of mean in the data shows that the item of “By adopting Halal Transportation, the organization still be able for accommodating uncertain market demand” with mean (M=4.04) and standard deviation of 0.769. The minimum rate shows in the data was 1, while the maximum rate was 5.

4.6 INFERENCE ANALYSIS

4.6.1 Pearson's Correlation Analysis

The Pearson's Correlation Coefficient is measuring the degree of linear relationship between two continuous variables which is in this study research, it is between independent variable and dependent variable. The independent variables include perceived benefits, organization readiness and customer pressure while the dependent variable is supply chain performance. The correlation coefficient's strength was state in table below.

Coefficient Range	Description of Strength
± 0.81 to ± 1.00	Very Strong
± 0.61 to ± 0.80	Strong
± 0.41 to ± 0.60	Moderate
± 0.21 to ± 0.40	Weak
± 0.00 to ± 0.20	Weak to no relationship

Table (4.8): Strength of The Correlation Coefficient (Hair et al., 2010)

Table (4.9): Correlations

		MeanSCP	Relationship
MeanPB	Pearson Correlation	.531**	<ul style="list-style-type: none"> Moderate positive relationship
	Sig. (2-tailed)	< .001	
	N	170	
MeanOR	Pearson Correlation	.644**	<ul style="list-style-type: none"> Strong positive relationship
	Sig. (2-tailed)	<.001	
	N	170	
MeanCUSP	Pearson Correlation	.571**	<ul style="list-style-type: none"> Moderate positive relationship
	Sig. (2-tailed)	<.001	
	N	170	

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

Table (4.9): Result of Correlations Analysis for All variables

(Source: SPSS Output)

Remarks:

PBI: Perceived Benefits

OR: Organization Readiness

CUSP: Customer Pressure

SCP: Supply Chain Performance

In Table (4.9) shows the Pearson Correlation Coefficient Analysis of independent variables and dependent variables. Each variable in independent variables such as perceived benefits, organization readiness and customer pressure, has shown a significant two-tailed connection with the dependent variable of supply chain performance which is at 0.01 levels.

Firstly, the Pearson Coefficient Correlation was computed to determine the relationship between perceived benefit and supply chain performance. Perceived benefit is having correlation with supply chain performance which is at $r=0.531$, $p<0.01$. The strength of the relationship is moderate positive relationship as it falls in category of moderate relationship, ± 0.41 to ± 0.60 . Thus, it is suggested that the increasing of perceived benefits also will increase in the supply chain performance.

Secondly, the Pearson Coefficient Correlation indicate that organization readiness having correlation with supply chain performance as it is $r=0.644$, $p<0.001$. The relationship between these two variables falls into category of ± 0.61 to ± 0.80 , a strong relationship. So, it is suggested when the organization readiness is increasing, the supply chain performance also will increase.

Next, customer pressure and supply chain performance were also computed by Pearson Coefficient Correlation and it shows the relationship of these two variables is $r=0.571$, $p<0.001$. The relationship is falls into category of ± 0.41 to ± 0.60 , a moderate relationship. Thus, it is suggested that the customer pressure is increase and the supply chain performance also increasing.

4.7 Multiple Regression Analysis

Table (4.10): Model Summary

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.729 ^a	.531	.523	.40264

- a. Predictors: (Constant), Perceived Benefit, Organization Readiness, Customer Pressure
- b. Dependent Variables: Supply Chain Performance

The table (4.10), is shows the result of linear regression model summary of independent variable such as perceived benefit, organization readiness and customer pressure are associated and relevant with the supply chain performance. The data indicates R-value is at 0.729, imply the overall variation in achieving the objectives with supply chain performance is 53.1 percent. Only 46.9 percent of students was not affected.

Table (4.11) COEFFICIENT

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std.Error	Beta		
1 (Constant)	.801	.248		3.234	.001
Perceived Benefits	.122	.061	.148	1.991	.048
Organization Readiness	.428	.055	.465	7.756	<.001
Customer Pressure	.261	.073	.269	3.596	<.001

- a) Dependent Variable: Supply Chain Performance

Table Coefficients

(Source: SPSS Output)

Based on the table (4.11) above, the beta for perceived benefits, organization readiness and customer pressure are 0.148, 0.465 and 0.269 respectively. According on beta, it is shows that all the variables have a positive relationship as it was noticed by researcher that there are no independent variables with negative sign, which giving negative relationship with supply chain performance. In the shown result, it can be concluded that Organization readiness is the most significant factor that effect Halal transportation in Halal food manufacturing as it is the highest influence of positive relationship among the three variables. The constant that shown in data is 0.801. Therefore, the relationship between independent and dependent variable can determine by using Multiple Regression equation.

$$Y = A + Bx_1 + Bx_2 + Bx_3$$

Where:

Y= Dependent Variables

A= Constant from coefficient table

B= Independent Variable

x= Beta, B value

Bx₁= Perceived Benefit

Bx₂= Organization Readiness

Bx₃= Customer Pressure

$$\text{Supply Chain Performance} = 0.801 + 0.148 (\text{Perceived Benefit}) + 0.465 (\text{Organization Readiness}) + 0.269 (\text{Customer Pressure})$$

When the perceived benefit is increasing one unit and the other variables remain constant, the linear equation shows that the supply chain performance will grow 0.148 units. Following that, when the other variables, organization readiness increases by one unit and the others stay the same, supply chain performance will grow to 0.465 units. Moreover, when customer pressure improves by one unit and the other stay remain the same, the supply chain performance will increase to 0.269 units.

Table (4.12): ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30.653	3	10.218	63.026	<.001 ^b
	Residual	27.074	167	.162		
	Total	57.726	170			

- a. Dependent Variable: Supply Chain Performance
- b. Predictors: (Constant), Perceived Benefit, Organization Readiness, Customer Pressure

Table (4.12) ANOVA

(Source: SPSS Output)

According to the ANOVA table, $F = 63.026$ with $p = 0.001$. As a result, the model's fit has been confirmed. The whole regression model including of three constants: perceived benefit, organization readiness and customer pressure, has done a good job on explaining the factors of effect of Halal transportation.

4.8 Hypothesis Analysis

In this regression analysis, independent variables included Perceived Benefit, Organization Readiness and Customer Pressure while the dependent variables for this study research is Supply Chain Performance. The result shows that all the significant value is below 0.05, where p-value is less than 0.001, although one of the variables shown the significant value is almost to 0.05, the result is still accepted.

Hypothesis 1:

H₁₀: There is no significant relationship between perceived benefits of Halal transportation and supply chain performance.

H₁₁: There is significant relationship between perceived benefits of Halal transportation and supply chain performance.

Based on Table (4.11), the relevant value of perceived benefit is 0.48, which is the p-value is still below than 0.05. Thus, the perceived benefit has significant relationship with supply chain performance and the alternative hypothesis $H1_1$ is accepted.

Hypothesis 2:

$H2_0$: There is no significant relationship between organization readiness of Halal transportation and supply chain performance.

$H2_1$: There is significant relationship between organization readiness of Halal transportation and supply chain performance.

Based on Table (4.11), the relevant value of organization readiness is less than 0.001, which is the p-value is below than 0.05. The organization readiness has significant relationship with supply chain performance. Thus, it is indicated that the alternative hypothesis $H2_1$ is accepted.

Hypothesis 3:

$H3_0$: There is no significant relationship between customer pressure of Halal transportation and supply chain performance.

$H3_1$: There is significant relationship between customer pressure of Halal transportation and supply chain performance.

According to the Table (4.11), the relevant value of customer pressure is less than 0.001, which is below than p-value of 0.05. It is shown that customer pressure has significant relationship on supply chain performance. Thus, the alternative hypothesis for $H3_1$ is accepted.

The findings from this study will be summarized in Table (4.13). There are three hypotheses were accepted in this finding of study shown below.

Table (4.13)

Independent Variables	Hypotheses	Significant Value
Perceived Benefits	There is significant relationship between perceived benefit and supply chain performance	P= 0.048 ($p < 0.05$) (Accepted)
Organization Readiness	There is significant relationship between organization readiness and supply chain performance	P= 0.001 ($p < 0.01$) (Accepted)
Customer Pressure	There is significant relationship between customer pressure and supply chain organization.	P= 0.001 ($p < 0.01$) (Accepted)

4.9 CONCLUSION

This chapter were utilized from SPSS software version 28 to get all the result of data analysis and explanation for the whole chapter 4. There are 170 total respondent was involved to collect the data to study all the factors of Halal transportation's effect on supply chain performance in Halal food manufacturing. There are several different statistical were used to interpret data analysis.

In pilot test, reliability analysis was conducted which was used to measure the internal consistency of the questionnaire by using Cronbach's Alpha. For respondent's profile, the data and variables were shown in table that explained how much frequency and the percentage each of the item. The researcher also used linear regression analysis to determine all of the alternative hypothesis which is the result of hypothesis were all accepted. The null hypothesis is all rejected as the result between independent variables (perceived benefit, organization readiness and customer pressure) and dependent variable (supply chain performance) have significant relationship. Moreover, Pearson's Correlation Coefficient were analysed there is strong and moderate relationship between independent variables and dependent variables which are perceived benefits and customer pressure shown moderate relationship while for organization readiness shown strong relationship in this research study. Lastly, the researcher was conducting multiple regression analysis that conclude the Organization Readiness factor is the most significant factor that effect Halal transportation towards supply chain performance in Halal food manufacturing.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Introduction

In this Chapter 5, the researcher explains on the overall discussion of the study finding in Chapter 4 which are the research findings, literature review, implication, limitation, contribution, recommendations and conclusions for the whole research study made based on the research objective that have been explained in the Chapter 1 and Chapter 2. The recommendations are acquired from research findings and meant for future research.

5.2 Summary of Findings

In previous chapter, the study research had achieved the research objectives in Chapter 2, which are to determine the factors of effect of Halal transportation in Halal food manufacturing, to study the relationship between independent variable; effect of Halal transportation and the dependent variable; supply chain performance, and to examine the most significant factor influencing the effect of Halal transportation towards supply chain performance in Halal food manufacturing. This chapter will quickly review the findings and reason for the findings based on past research article, which will divided into three parts according to the research goals:

RO 1: What are the Halal transportation adoption factor?

RO 2: What is the relationship between the effect of Halal transportation towards supply chain performance?

RO 3: What is the most significant Halal transportation factors?

5.2.1 Research Objective 1

RO 1: To determine Halal transportation adoption factor.

The first objective in this research study is to determine Halal transportation adoption factor. In previous chapter, the researcher had studied and found out many research paper that related to the factors of effecting Halal transportation towards supply chain performance in Halal food manufacturing which are the technological, organizational and economic factor. The first objective was achieved through Literature Review in Chapter 2. The factors of had been proved by previous researchers. Therefore, the researcher determines that the independent variables (perceived benefits, organization readiness and customer pressure) between dependent variable (supply chain performance) influencing the effect of Halal transportation.

The first factor is technological factor which is a perceived benefit. Perceived benefits are an anticipated advantage or benefit of innovation in an organisation, according to Chwelos (2001). Perceived benefits refer to the recognition of management that Halal transportation services can provide benefit to the firms. Not only that, perceived benefit was mentioned from Fulantelli and Allegra (2016), perceived benefits of technology are a major motivator for firms to adopt innovation, as well as a predictor of technology adoption. The important factor of perceived benefits is to determine the adoption of new inventions (Tornatzky and Klein, 2016). The use of Halal transportation has advantages for Halal food manufacturers, including removing concerns about Halal quality and enhancing the products' reputation (Ngah *et al*, 2021). In this research study, the Halal transportation itself as a new technology that entered into the organization which is need them to adapt on how its works.

Next, the second factor in this study research is organizational factor which is organization readiness. An organization's readiness affects its capacity to advance in its business activities, particularly when it relates to change in their business processes (Ngah, 2016). Organizational readiness is the manager's assessment of the extent to which their organisations have the resources and commitment to implementing new technology (Tan *et al.*, 2019). The organizational readiness itself defined as operation

management's capacity to embrace Halal transportation services in terms of human resources and financial. Financial support is needed for staff knowledge sharing and training relating to Halal operations. (Ngah *et al.*,2019). The organization's internal capacity and position in the market will reflect its readiness to adopt new technologies for use in their business application (Ngah *et al.*, 2019). Even if organisational readiness is varied, it still has a big impact on whether or not to adopt an innovation which is in this research study is Halal transportation (Makame, 2014).

The last factor is the customer pressure which is as the environmental factor in this study research. When say about customer, people always tend to say the terms “customer is always right” as a marketing strategy which will make sure that all of the customers happy with the company's services. Without customers, there will be no profits for the company. The customer satisfaction also one of the forces driving success in the organization. Thus, the company need to become more focus on what the customer's needed and demanded (Chong, 2016). In business, customer is always be the main focus to maintain highly in the competitive business which is be the factor for the organizations to react based on the requirement and needs that has demanded from customers. If there is something cannot satisfy their needs, the risk that clients tend to change to other products to meet their requirements is high. A good management will always know what their customer's requirement and needs, especially when it comes to the demands related to religion and belief requirements (Ngah *et al.*, (2016).

5.2.2 Research Objective 2

RO 2: What is the relationship between the effect of Halal transportation towards supply chain performance?

To achieve second research objective, the researcher goes through for Pearson's Correlation Coefficient Analysis by Statistical Package for Social Sciences (SPSS) Software. The findings display that all the independent variables which are the technological, organizational and economic factors that includes perceived benefits, organization readiness and customer pressure respectively are positively associated to the dependent variable which is the supply chain performance. Moreover, the results of the analysis determine that all of the independent variables have significant relationship and positively associated with dependent variable, the supply chain performance. All the independent variables have moderate to strong positive relationship with the dependent variable as there are a respective value between 0.531, 0.644 and 0.571 according to Table (4.9). The Organization factor which is the organization readiness has the highest association followed by technological and economic factor.

The study from Ngah *et al.*, (2019), shown that the technological factor of perceived benefit is one of the main factors that positively related to the intention to adopt Halal transportation. Thus, this study research is parallel with the previous study. Not only that, the organizational factor of organization readiness also one of the main factors that positively related to the intention to adopt Halal transportation which means, this factor is parallel and can be relate with the previous study. Furthermore, the environmental factor of customer pressure also shown as one of the main factors that has positive relation with the intention to adopt Halal transportation, thus, it is also parallel with the previous study.

5.2.3 Research Objective 3

RO 3: What is the most significant Halal transportation factors?

The third research objectives are to determine the most significant factor that effecting the adoption of Halal transportation towards supply chain performance in Halal food manufacturing. The researcher achieved this objective by using Multiple Linear Regression analysis from the Statistical Package for Social Sciences (SPSS) Software. According to the Table (4.9), the organizational factor which is the organization readiness is the most significant factor influencing the effect of Halal transportation towards supply chain performance in Halal food manufacturing.

Based on the Table (4.11), the first highest beta value is 0.428 which is at variable of organization readiness. This is because this variable shows that it is the most important factor that make most of company adopt Halal transportation in Halal food manufacturing. Second highest value shown in the data is on the economic pressure which is customer pressure with 0.261. The third highest value is the technological factor which is perceived benefits with the beta value of 0.122. Thus, the result of the Multiple Regression Linear between the factors of effect of Halal transportation and supply chain performance has all positive value.

Next, the researcher goes through the Multiple Regression Analysis Coefficient which there is a positive significance and for the summary from Table (4.12) ANOVA F value is 63.026 that give means the predictor (constant, perceived benefit, organization readiness and customer pressure) has a positive relationship with the dependent variable, supply chain performance.

5.3 RESEARCH LIMITATION

During the research, there are several limitations the researcher was facing. Some problems happened during conducting the research study that need to be faced by the researcher such as time constraint of giving out questionnaire to the respondent. This research study focuses on employees and employers at Halal food product company in Melaka which have 300 company and need to find 170 total of respondent in just 3 months. The time is just too short that make it really difficult for the researcher during this study. There are also a few company that needs the researcher to go as it is easier than just submitting an email to the companies as not all employers and employees want to participate in answering the questionnaire. The researcher has also prepared the approval letter that state the researcher want to distribute the questionnaire survey.

Not only the time constraint makes it difficult for the researcher, the researcher also needs to distribute the questionnaire repeatedly on email and sometimes need to use phone call to call the company just to distribute the questionnaire. The time management set is organized but to get 170 respondent is beyond the researcher's control as not everyone in the company want to participate to answer the questionnaire as they are busy with those works at their company.

Moreover, the next limitation was existed during the study research is the researcher faced the difficulty to identify either the respondent fully understands the question or just fill out the questionnaire without understand what they are doing. Such problems happened as some of the respondents are forced to be answered the questionnaire in an inappropriate time which from there, it will affect to a wrong data entered. The wrong data entered will affect the result after fill out the data in the Statistical Package for Social Sciences (SPSS) Software. This also leads of the researcher needs to repeat to distribute the questionnaire survey to obtain sufficient and correct data to be run in SPSS.

Last reason of the limitation from this research that has faced by the researcher is the limited data availability. Halal transportation is not something that all people know about compared to the general logistic, conventional transportation that people

used to know. It would be different with the general logistics transportation as it needs Halal requirement and Halal status before the company execute the business especially in food product that really needs Halal requirement that demanded from Muslim people.

5.4 RESEARCH RECOMMENDATION

Based on the results and findings in previous chapter which is in Chapter 4, there are several suggestions that can be considered by researcher throughout the research study. It is not many people out there knows about Halal transportation rather than general logistics transportation that people always used to hear. Halal transportation needs Halal requirement before it is executed and it has many regulations related based on religious understanding. Business company who wants to open food product company need to know how is it to take care of the quality of product and at the same time know how to avoid any contamination of non- Halal material that will be existed during the production of products. The future researcher can add more knowledges and additional information about Halal logistics or specifically Halal transportation to spread the understanding which make more people knows how essential Halal requirements need to be follow regarding the high demand from the consumers. The future researcher also can find this information from articles, journals and books using many platforms for this related study as now it is a technology era that everyone can just find information, they wanting in easier way such as by Google. It is more interesting if future researcher can do a qualitative method by conducting in-depth interviews with potential parties in product food company that applied Halal, contribute to give more information about Halal and specifically Halal transportation. Different research method will give the future researcher better result and extra knowledges.

Not only that, future researcher can widen the scope of study in Malaysia which is not only in one place to get more information and knowledge. The wider the scope also will wider the population of people who involved in the research that generally will help to give information about the study research. From this, the future researcher also can increase respondents' awareness about Halal transportation and how essential Halal requirement for some product.

5.5 RESEARCH CONTRIBUTION

The main aim of this study is to get an insight and understanding about Halal transportation among employees and employers at Halal food product company. The conclusions and findings from this study research have given the contribution on two aspects:

5.5.1 For Knowledge

The study of halal transportation can advance an understanding of supply chain management and logistics, particularly as it relates to Halal commodities. Understanding the particular criteria for handling and transporting Halal goods, such as those for separation between Halal and non-Halal items, and recognising potential sources of contamination, are examples of this knowledge. Research in this field can also help in identifying the best procedures for preserving the integrity of Halal products along the supply chain. Not only that, research on Halal transportation can also advance an understanding of Halal accreditation and certification. This can involve being aware of the various certification bodies and procedures as well as how they affect the logistics and supply chain for halal products.

5.5.2 For Industry

Additionally, studies on Halal transportation can help company of Halal product in the understanding of how consumers behave in respect to Halal products. Understanding how Halal certification affects variables like brand and price that affect customer choice and preferences is one way to do this. In general, research on Halal transportation can help company of Halal product in improving knowledge and information of Halal supply chain management, Halal certification, and consumer attitudes toward Halal products. This information can be used to increase the supply and accessibility of Halal products for customers who obey to certain dietary regulations and help in the expanding of the Halal market.

5.6 RESEARCH IMPLICATION

Based on the results, all objectives have been achieved by researcher by using descriptive analysis and multiple regression analysis to test three variables which are perceived benefits, organization readiness, and customer pressure whether these three have a relationship with supply chain performance.

In this study research, the researcher has capability to achieve the research objectives through literature review, the researcher is able to achieve the research objectives through Literature Review, Pearson's Correlation Coefficient's analysis and Multiple Linear Regression analysis and the hypothesis were tested on the relationship of independent variables (technological, organization and economic) effecting supply chain performance in Halal food manufacturing. In conclusion, organization factor is the most significant factor that can affecting Halal transportation towards supply chain performance in Halal food manufacturing.

In addition, the critical factor that effecting Halal transportation in Halal food manufacturing is essential to have in depth understanding on organization readiness to get the insight about the consumers. For the organization of Halal food company, they can increase awareness of how essential it is to manage Halal transportation in their business to avoid any contamination on association Halal and non-Halal material happened in the manufacturing. Due to the rising of demand of Halal from customers, it is essential to Halal food product company to keep track their production and how the process from beginning till the end of end consumer. The consumption of Halal is not only as a commitment of believing in way of Islam, but it is leads to healthy product lifestyle because Halal product were created with clean and hygiene procedures. That is why Halal product company needs to register for Halal status from JAKIM and get the Halal certification, which is to ensure the company is always adhere with the requirement and guidelines (Ngah *et al*, 2021).

5.7 CONCLUSION

This research study was conducted with aim to gain deeper understanding and knowledge about the factors that affecting Halal transportation towards supply chain performance in Halal food manufacturing. The research has achieved the objectives of study proposed at initial stage. The limitation that has been facing by the researcher also during the execution of collecting data of research study in this chapter. The constraint that existed during the study research were conducted, leads to the suggestion of some recommendation for future research study. According to previous chapter, the researcher has outlined the objectives one by one. It is proven that all the independent variables such as perceived benefit, organization readiness and customer pressure are crucial factors affecting the Halal transportation in Halal food manufacturing.



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APPENDIX A



QUESTIONNAIRE

Effect of Halal Transportation Toward Supply Chain Performance in Halal Food Manufacturing

Dear Sir/Miss/Madam.

Thank you for taking part in this research. My name is Izyan Khalisa Binti Haron and I am a Bachelor Degree student from the Faculty of Technology Management and Technopreneurship (FPTT), University Technical Malaysia, Malacca. The objective of this survey is to investigate the relationship between the effect of Halal Transportation towards supply chain performance in Halal food manufacturing. The information obtained from this survey will be kept confidential and will solely be used for academic purposes. This questionnaire comprises of three sections. Please read the questions carefully before you answer them and only choose one answer from each of the question given. I would be most grateful if you could take about 5-10 minutes to complete this short questionnaire. Thank you very much for your willingness and cooperation. If you have any question or concern about the study, you may contact me through the following:

QUESTIONNAIRE

Research Title: Effect of Halal Transportation Toward Supply Chain Performance in Halal Food Manufacturing.

SECTION A

Please mark (/) at the provided space.

1. Gender

☐ Male

☐ Female

2. Age

☐ 20-29 years old

☐ 30-39 years old

☐ 40-49 years old

☐ 50-59 years old

☐ 60 above

3. Race

☐ Malay

☐ Chinese

☐ Indian

☐ Others: _____

4. Department

☐ Account & Finance

☐ Operations

☐ Marketing & Sales

☐ Productions

☐ Others

5. Duration of Working Experience

☐ Less than 3 years

☐ Less than 5 years

☐ 4 years and above

SECTION B

Please indicate your level of agreement on the following statements based on your experience. The rating is from 1=Strongly Disagree to 5=Strongly Agree. Please choose only one answer from the answer given.

Code		Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
TECHNOLOGICAL FACTOR						
PERCEIVED BENEFITS						
PB1	By implementing Halal transportation, we feel that our production control will improve.	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
PB2	Our market share will increase if Halal Transportation were adopted.	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
PB3	We feel that quality of the product will improve by adopting Halal Transportation.	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
PB4	The purity of our products will increase if Halal Transportation were implemented.	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
ORGANIZATIONAL FACTOR						
ORGANIZATION READINESS						
OR1	Our employee has understood the Halal Transportation.	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
OR2	Our company understands the real situation of the business related to Halal Transportation	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
OR3	Our company is ready to re-align companies' policies and strategy in order to adopt Halal Transportation	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
OR4	To adopt Halal Transportation services, our organization has a knowledgeable staff.	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5

ENVIRONMENT FACTOR						
CUSTOMER PRESSURE						
CUSP1	The consumers are confident that Halal food fulfils the hygiene, sanitation and food safety	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
CUSP2	Consumers require our firm to operate based on Halal requirements.	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
CUSP3	Believing perception leads to attitudes of the consumers.	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
CUSP4	Customers' behaviors indicate that our company needs to adopt Halal supply chain services	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5



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UNIVERSITI TEKNIKAL MALAYSIA MELAKA

SECTION C

Please indicate your level of agreement on the following statements based on your experience. The rating is from 1=Strongly Disagree to 5=Strongly Agree. Please choose only one answer from the answer given.

Code		Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
SUPPLY CHAIN PERFORMANCE						
SUPPLY CHAIN RESPONSIVENESS & FLEXIBILITY						
SCP1	Length of time to process a received order for Halal food product is in good condition.	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
SCP2	Our operations system responds rapidly to changes in product volume demanded by customers.	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
SCP3	The organization are able to meet specific customer service needs.	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
SCP4	By adopting Halal Transportation, the organization still be able for accommodating uncertain market demand.	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
SCP5	Halal Transportation adoption still capable the organization to produce a product in different ways.	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5

Thank you very much for your participation on answering this questionnaire

APPENDIXES C

GANTT CHART

Gantt Chart of Final Year Project (FYP) 1

WEEK/ ACTIVITIES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
FYP talk									M I D							
Search for FYP topic																
Meeting with supervisor																
Topic discussion																
Title confirmation									S E M E S T E R							
RO & RQ Construction																
Submission Chapter 1																
Submission Chapter 2																
Submission Chapter 3									B R E A K							
First draft of FYP 1																
Submission of FYP 1																
Presentation 1																
Revised of FYP 1																

APPENDIXES D

GANTT CHART FOR FINAL PROJECT YEAR (FYP) 2

WEEK/ ACTIVITIES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Create Questionnaire									M I D							
Distribute Questionnaire																
Collect Questionnaire																
Analysis Data									S E M E S T E R B R E A K							
Submission Chapter 4																
Submission Chapter 5																
Proposal Correction																
Slide Preparation																
Submission of FYP 2																
Presentation 2																