A STUDY ON

PUSHER BOX TECHNOLOGY ADOPTION AUTOMATIC

IN RUBBER PLANTS

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Report submitted in fulfillment of the requirement for the Bachelor Degree of Technology Management in Innovation

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SUPERVISOR DECLARATION

"I hereby declare that have read this thesis and in our research is sufficient in terms of scope and quality.This project is submitted to Universiti Teknikal Malaysia Melaka as a requirement for completion and reward Bachelor Degree of Technology Management (Technology Innovation)"

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DEDICATION

This research paper is special dedicated to my parents, En. Nasruddin bin Hj. Bostani and Pn. Norhayati binti Hashim, who has been my main source of inspiration and encouragement during my studies. Thank you for giving me the opportunity and a new experience in my life to complete this meaningful research. Thank you to my husband En.Firdaus bin Md.Basri for allowed and always give full support to me for further and complete my study.

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ABSTRACT

For this research, it‟s a study on automatically pusher box technology adoption in rubber plants. This research will be done in two rubber factory under Felda Global Venture (FGV) which is FRISB Kilang Getah Palong 8, Negeri Sembilan and FRISB Kilang Getah Pasak, Johor with the cooperation of the Project Manager. Both of the company we strive to be the global leader in natural rubber processing offering high quality products and services through good manufacturing and eco-friendly practice and the same time they want to using new technology in the work environment. So, automatically pusher box is one of the new technologies which will be brought into the company. Furthermore, this automatic pusher box it is suitable for labor saving and the same time to reduce cost of medicine in this company. This research will be discuss about to view automatically pusher box technology adoption as a consistent process is the key to enabling hesitant users to successfully adopt and use technology. The populations of these study 100 respondents .The appropriate questions will be asked and the data collected will be shown as figures to be clear about the results. This research used a methods like a surveys, filed observation, and quantitative methods. The researcher objectives will be achieved and answering the research question.

CHAPTER 1

INTRODUCTION

This chapter is about the introduction of the study. This introduction is important to determine the success of the research using iron triangle. There are common types of introduction for research that must included background of the study, problem statement, research question, research objective, scope, limitation and key assumption.

1.1 Background of study

FRISB Kilang Getah Palong 8 and FRISB Kilang Getah Pasak,Johor through its subsidiaries, processes, manufactures, and trades rubber and polymer product in Malaysia and internationally. They also offer natural rubber of product such as Standard Malaysian Rubber (SMR 10/20), and specialty rubber grades. The researcher chose this topic because it‟s based on experience industrial training at

Felda Rubber Industries Sdn.Bhd Kilang Getah Teloi Timur, Kedah in which the researcher was exposed in several improvement projects including the changing pusher box from manual until the pusher box are automatically. So that, the researcher tried to bring this new technology to the Kilang Getah Palong 8, Negeri Sembilan and Kilang Getah Pasak, Johor because they still used the pusher box manually. Pusher box manually have some problems liked workers often complain of back pain caused by pushing the box weighing 1500kg manual.

So that, the researcher can study about technology adoption of pusher box in automatic at rubber plants. Technology adoption is the process through which organization decided to make full use of an innovation in their daily businesses (Roger, 1983). After got the title and field, researcher constructs the research questions and also research objectives. To fulfill this report the researcher chose explanatory design and used directional hypothesis as a strategy a plan of action to achieve a goal.

1.2 Problem Statement

The issue on this research is about automatically pusher box technology adoption in Kilang Getah Palong 8, Negeri Sembilan and Kilang Getah Pasak, Johor. Technology is most important among employees to improve product quality and reduced defect rate in Malaysian Rubber. The researcher can found some problem statement for both of this company. First organization thought that to purchase good machines very costly and to hire more engineers in equipment were expensive. Second is manually machines were always down and error. Lastly, workers often complain of back pain caused by pushing the box weighing 1500kg manual.

1.3 Research Question

The purpose of this study more to evaluate external factor affected technology adoption, external factor impact the attitude, and external factor impact adoption behavior. In evaluating the statement, this attempts to answer the following questions:

RQ1: What are the external factors affecting adoption of pusher box in Rubber Plants?

RQ2: What are the external factors impacting adoption attitude?

RQ3: What is the proper adoption model to adopt pusher box technology in Rubber Plants?

1.4 Research Objective

Several studies have been carried out trying to identify source of information and their relationship with the organizational innovation. The researcher also has three objectives for this issues which is:

RO1: To identify external factors affecting technology adoption of pusher box in Rubber Plants.

RO2: To analyses the external factors impacting attitude to adopt.

R03: To evaluate the adoption model to adopt pusher box technology in Rubber Plants.

1.5 Limitation and Scope of the study report

The researcher do some research about the technology adoption automatically pusher box in rubber plants. The study will be carried out all the data collection about adoption of automatically pusher box at both of company. Here, researchers have found that some of the problems faced by both these companies because they used a box pusher manually.

The researcher collected data from project management department and also workers of pusher box at flattener to see the extend workers at this department accepted of new technologies that will be adopt into the company and on the same time the researcher also can observe pusher box technology adoption will give positive or negative impact on their company.

1.6 Significant and important of study.

This study is to explore the relations between technology adoption automatically pusher box and external factor impact to attitude and adoption behavior. It‟s not easy because the new technology have much benefit to workers and sometimes will give problems to the company. Both of companies have to play an important role to achieve goals and which will facilitate the adoption of new technologies fit into their organization. This study also will encouraged them to increase work skills and work method. The mainly things of this study is to help the organization to solve their problem like to purchase good machines very costly.

CHAPTER 2

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter will be discussed about literature review that about technology adoption of automatically pusher box at Rubber Plants. In emphasized organization adopt new technology in their work environment also and the same time can improved their quality of rubber. As we know, all organization is very concerned about quality of the product to an achievement their target every month. To achieve the objective of this study, the information about technology adoption, and the frame work were obtained from various sources i.e. published book, journal and online article. All the data collected is useful to organization for potential future.

2.1 Technology adoption.

According to Paulino (1998) technology adoption is high technology capital goods such as spacecraft, aircraft, boats, submarines and nuclear plants. These innovative products embed technologies that are often absolute. For instance, the electronic component embedded in these products may be obsolete compared to

those inside consumer electronics. Surprisingly, while spacecraft are synonym of breakthrough technologies, our personal computers embed technologies may be more advanced. The analysis of technology adoption in these capital goods sheds the light on a situation where high technology products are made of components that display technological delays.

Technology adoption means the different things to different people. Viewing technology adoption as a consistent process is the key to enabling hesitant users to successful adopt and use technology. Organizational spend many cost to get a good products and quality and the same time that gives satisfied to their customer. Basically this research is focus to automatically pusher box technology adoption at rubber plants.

As organization can introduce new technologies, full implementation and successful adoption not be achieved unless the workforces accept the technologies (Manross & Rise, 1986).Organizational spend many cost to get a good products and quality and the same time that gives satisfied to their customer. Basically this research is focus to automatically pusher box technology adoption at rubber plants. This technology provides benefits to the company which is suitability for labor saving and the same time to reduce cost of medicine in this company

To meet the challenges posed by the contemporary competitive environment, the manufacturing organization must infuse quality and performance improvement initiatives in all aspects of their operations to improve their competiveness (Pintelon and Gelders, 1992).Rogers (1983:21) defines adoption as “a decision to make full use of an innovation as the best course of action, and conversely, rejection is a decision not to adopt an available innovation”.

Actually automatically pusher box will give good attitude to workers, improved their skill and in order to enhance the quality of work. According to Rogers (1995), the adoption process as a series of linear (Rogers.1995). His five-stage model is outlined below:

Stage	Explanation
Stage 1	• Knowledge: - The person (or group) comes to know about the innovation and begins to learn about it, resulting in increased knowledge and skill.
Stage 2	• Persuasion: - The person forms an attitude or image (positive or negative) about the innovation through discussion and interaction with others.
Stage 3	• Decision : - The person resolved to seek additional information, leading to a decision to accept or reject the innovation
Stage 4	• Implementation: - The person gains additional information needed to put the innovation into regular use.
Stage 5	• Confirmation: - The person looks for benefits of the innovation to justify its continued use. Use of the innovation is routines and promoted to other people or conversely, the decision to use is reversed based on negative evidence.

A group of psychologists (Prochaska, DiClemente, & Norcross, 1992) developed a very similar 5-stage model to explain personal change, particularly with cessation of addictive behaviors. The researchers believe automatically pusher box can implementation to this company and hopes this innovation justify continue use.

The researchers also believe the same pattern of varied movement is true in many cases of technology adoption.

Moreover, various studies have demonstrated that the issues of technology adoption is a complex one, as adopting a particular technology depends on many factors that contribute to the success or failure of adoption organization (Liao et al,1999). These factors may inhibit the success of the technology adoption (Harris and Davison, 1999). Prospective and targeted users may reject the new technologies for several factors. Absence of user involvement, lack of an understanding, technical difficulties, lack of training, and insufficient support from top management and perceived complexity, are considered as the main cause of user resistance (Manross and Rice, 1986; Liao et al, 1999).Some organization also knows that the innovation effort and the adoption of new procedures and new technologies may increase competitiveness (Goel and Rich, 1997). In fact, the innovators can be inventors if they are able to manage research and development function (Gilbert, 1995).

2.2 External factor

External factor it‟s an outside influence that can impact in a business and it‟s also can impact the ability of a business or investment to achieve its strategic goals and objectives. These external factors might include competition like social legal and technological change, and the economic and political environment. The researcher will explain more about technology changes in rubber plants which is manually pusher box changes to automatically pusher box. According Coates (1988), technological factors changes in techniques or equipment that can lead to the development of new goods and services or new ways of doing things.

Now both of this company still use manually pusher box, so they consuming manpower energy using to push a box that filled with crushed rubber and weight of box trolley are estimate to 1500kg but when both of company adopt new technology

staff more comfortable with the automatic pusher box and at the same time to ensure a better quality of rubber production, also the company can produce innovative and effective work. So that, external factor will give positive impact to organization. Moreover, the researcher has selected some external factors which it will affect both of these companies and the factors are technology factors and economic factors.

2.2.1 Technology factors

The new technology is one of the new process and process of innovation. According Chard Boeninger (2013) Technological factors are including trends in innovation, usage of technology, technology change as well as access to the technology. Technology also can integrate with the existing process to achieves benefits and extend the life and the productivity of existing asset. Globalization of technological advancements have increased the potential for interaction among people living in different geographic locations (Yuksel.2012).According to the article Rosenberg (1972), argued strongly that one of the reasons for the slow but eventually complete diffusion of new technologies was their relatively poor performance in their initial incarnation. Emergence of technology particularly popular with in the retail sector such as Radio Frequency Identification, and online and mobile shopping has immensely benefited operations. RFID help business to reduce their cost of operations through inventory shrinkage, smart labeling, self-stocking efficient checkout process (Gaukler, 2010). The increasing popularity and reliance of business of technology it is benefits firms by increasing target market, marketability factor, increased behavior of workers (Forbes.2012)

2.2.2 Economic factor

Economic growth of individual markets has its influence of businesses and consumer disposable income increases and so does their purchase power, ultimately benefiting business profits (Reynoso, 2009). In particular with the emerging economies showing high potential of economic growth provides a promising future for corporation (Thelander, 2009). Other factors such as cost of labour also impact business asses and the economic issue also have great influence on the use of technology. Inflation rate is another important factor affecting business and consumer experience. For instance, high inflation rate such as in the UK (BBC News, 2012) deforms consumer behavior, destabilizing markets and generates avoidable shortages of resources (Zentes and Schramn-Klein, 2012). Odedra&Madon (1998) state that two economic aspects of technology acquisition are important to be considered: i.e. 1) funds for initial investment and 2) return on investment. In low and middle income countries, the funds available are often not sufficient to buy expensive technology. These countries mostly rely on the technology donated to them and later problems are encountered when the project is over. Lind (1999) has also identified that the lack of awareness of available technologies and its uses, capabilities, and return on investment are greater barrier to technology adoption.

The erratic political situation of Pakistan has lead to the economic hardships of the country. Every new government aims with to solve the same economic problems and then these 147 very governments are duly changed with different projects unimplemented with resources under utilize (Khilji, 2001). Despite having such unstable economic systems, the organizations in Pakistan however are concerned about performance increase. Economic policies in Pakistan are made under influences of external pressure; therefore they do not carry consistency. The lacks of knowledge about technology selection, adoption, and implementation as well as lack of knowledge in organizational development and strategic planning restrict to the uses of new technology in organization.

2.3 Adoption Behavior

According Goodwin (2012) define the adoption individuals perform or reproduce behavior that are themselves a product of relationships between people, their environment, and the technology that surrounds them. Goodwin (2012) also state adoption behavior as a person‟s positive or negative feeling about performing the new thing that they adopt. The adoption and diffusion of innovations is a theme that has been widely studied across a broad continuum of disciplines, including social science, marketing, engineering and management (Rogers, 1983).

2.3 Theoretical framework

To help explain about more technology adoption automatically pusher box, the researcher choose to use Technology Acceptance Model (TAM) to integrated both of organization adopt new technology in their company. Technology adoption framework is information system theories that have been used in studies of innovation diffusion and adoption, and to provide a theoretical base for examining the factors influencing technology adoption in organizations (Devis et al, 1989). The TAM has been used widely in many studies (e.g., Davis, 1989; Venkatesh, 1996; Adams et al, 1992; Segars and Grover, 1993; Succi and Walter, 1999; Matheson, 1991; Lu et al, 2003; King and He, 2006) with different domains and in different situations to predict the behavior intentions to use a technology as well as actual use of technology (Al-Gahtani, 2001).

The researcher is utilized models in studying information technology adoption and diffusion is Technology Acceptance Model (TAM). Developed by Davis in 1989, it goal is to provide a basis for tracing the impact of external factors on user‟s attitudes and intention to accept new technologies. The TAM is based on the Theory of Reasoned Action (TRA) (Fishbein, 1980), which is concerned with the