

# PUSH AND PULL INNOVATION STRATEGIES BEING ADOPTED IN AUTOMOTIVE INDUSTRY

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## ABSTRACT

*Push and pull system in innovation being applied is a critical factor to be determined in the automotive industry. The degree of adaptation of these systems would determine the overall performance of an automotive manufacturer. Either one of the methods has its advantages and disadvantages in its implementation stages. Therefore, the highlight of this paper is to figure out the importance of these two systems and identify the significance of the system to the production of automotive industries. This is a conceptual study and therefore the data would be collected through observation of past data, and review of related academic journals. The outcome of this research has provided useful information in strategic planning for automotive industry by having a better focus on customers' needs.*

### Keywords

*Automotive Industry, Push System, Pull System, Organizational Performance, Industry's Perception.*

## 1.0 INTRODUCTION

Automotive industry can be considered as a large portion source of economic generator as almost Malaysian would possess a car nowadays. Strategic innovation is the important criteria for car manufacturers. Thus, it's becoming a serious issues to identify the advantages and disadvantages of a strategic and choose the best strategic in balancing customer need's with the lowest cost in producing a car. Either it's oversupplied or undersupplied in a market is directly linked with the manufacturer's choice within the industry. Thus, this project is carried out to figure out the importance of these two systems and identify the significance of the system to the production of automotive industries.

## 2.0 LITERATURE REVIEW

Literature review will discuss about background of the study is to be concerned. For the earlier of this section, this chapter will review previous literature

and overview of the definition of Research and Development (R&D), which relating to push and pull system.

### 2.1 Importance of innovation strategies

Effectively managing innovation strategies control processes that link between customers and manufacturers is an essential activity for any manufacturing business (Christopher, 2004). Definition of Research and Development in Manufacturing means activity intended to create new scientific or technological knowledge, or to develop a new application for existing scientific or technological knowledge.

The importance of innovation is explained more details as follows:

- i. Application of existing knowledge toward solving problems related to creating a new product or process, including work required to assess potential uses.
- ii. Application of existing knowledge toward dealing with problems related to untraditional improvement of an existing product or process. The term "improvement" does not include: routine activities related to application of existing knowledge, routine planning, various calculations and learning based on literature.
- iii. Planning and development of "prototypes" of products and processes is part of research and development.
- iv. Generating new knowledge or technologies that will be used to develop new products and/or processes.

In one sense, innovation often connects closely with the discovery and development of an inventive products / process. For example, the innovation of pull system is considered as a process innovation. Typically, pull system as a subsidiaries of lean manufacturing concept that is pioneered introduced by Toyota. This concept had re-shaped hoe manufacturers do business, with technique such as Kanban, just-in-time (JIT), pull system concept are becoming norm worldwide.

### 3.0 METHODOLOGY

Methodology refers to the rationale and the philosophical assumptions that underline a particular study. This paper involves qualitative research. Qualitative research can be divided into several approaches. One way to categorize various qualitative approaches would be depend on the research interest. (Tesch, 1990) introduces four categories of qualitative research based on interest in characteristics of language, in discovery of regularities, in discerning meaning and reflection. Qualitative research is particularly relevant when prior insight about a phenomenon under scrutiny are modest, implying that qualitative research tends to be exploratory and flexible because of 'unstructured' problem due to modest insights (Paivi and Anne 2008). This paper included qualitative research materials and electronic research.

The purpose of methodology is to enable researchers to plan and examine critically the logic, composition, and protocols of research methods; to evaluate the performance of individual techniques; and to estimate the likelihood of particular research designs to contribute to knowledge.

This paper will examine a case study of automotive company in automotive industry. The case study reviews will provide insight into the automotive company's innovation strategies process. the explanation of case studies environment allows further examinations on both technology push and market pull situation.

### 4.0 FINDINGS

The interaction between society and technology are best explained through technology push and market pull. When come to a situation where technology is pushing society, it can implicate that there are new innovation in technology lead to changes in society that were not expected. For example, the society is demanding the development of car on 1900s, where there is no automotive maker exist at that time. However, Ford is formally established and offer society with four-wheel car innovation. When it became reality with newly launched, it surprised the whole society and was quickly adopted and employed by the society without taking consideration what the specification is.

### 4.1 Background of Traditional (Push System) Versus TPS (Pull System)

Ford has started its business on 1900s. During that early day, Ford can consider as the founder and the developer of automotive industry, which establish by Hendry Ford. Therefore, when there is no references sources exist within an industry, the company must try to innovate by push strategies, where the customer requirement, demand and needs become uncertainty factor on that time. Ford has to push all its product to test the customer responds and feedback, so that any mistakes could be corrected and re-engineering on later on.

When Toyota enter the automotive industry later on 1930s. Toyota founder, Sakichi Toyoda, start to study the customer trends and realize that the innovation is existed in the industry with low satisfactory on that time, make a decision to put in effort to correct all these mistakes and develop a more ideal plan in order to achieve higher performance in the industry. What Toyota try to do is by develop Toyota Production System (TPS), which try to add value to challenging people and partners to grow. Once upon a time, TPS being called "respect for humanity" system. Through respecting people mean create a stress-free environment that provides lots of amenities and employee friendly. Human being tends to seek comfort and avoid discomfort. However, Toyota philosophy relies on the "system", and adhering its concept that will force people supporting the system becoming uncomfortable state. The choices presented to either remove the obstacles and let the obstacles fail the task. So, it has been shown that many tools of TPS aims to raise problem to the surface, creating challenging environment at all time so that the employee can start to think, learn and grow at all time. This is to ensure that Toyota can always stay in race and get ready to be better and more confident in capturing customer needs than other competitors.

### 4.2 Factor that Encourage Innovation

The first concern for the innovation planning is considering the benefits and also drawback of the decision whether to innovate or not. Top management of a firm should balance the benefits and drawback s and try to find the best fit solution for the entire firm. In order to determine whether an innovation strategy is appropriate, the firm needs to examine the potential benefits and drawback realistically. The benefits include:

- i. Greater control of the process and outcomes
- ii. Greater understanding of the technology produced and how to apply it
- iii. Greater ability to potentially develop next generations of technology

iv. Greater profit potential as a first mover (push system).

#### 4.2.1 Beneficial of Push System

The last point is about first mover are more external focused. First mover is a firm that is first expose to market with something new. The definition of first mover relates closely with the push system, which mean the innovative firm are the first party who started to introduce and launch the new product as well as services to the market. The firm may be first to market with given product, the first into a given market area or the first to apply new technology on existing products.

Being the first offer the products or services to the society will often lead to competitive advantages in term of customer loyalty and brand recognition. These competitive advantages are hard for competitor to match or overcome. For example, if a vehicle was installed with technological product which has high switching costs (cost to switch from one producer to another), it can make the automaker stay very loyal to the first producer because it's involve high switching cost. Additional, automaker who also concern about the comfort level of customer (customer who are already familiar with the existing technology) make a firstly introduced brand last longer than its competitors.

#### 4.2.2 Beneficial Of Pull System

The follower is adopting the concept of pull system. In some situations, it can be more beneficial to be a follower than a first mover in the industry. The first mover spends many resources in term of money, energy and expertise to develop and educating the market about the product. Additionally, the follower can learn from the mistakes of first mover, just like how Toyota learn the mistakes from Ford.

The follower is avoid for making the same mistake again and try to correct the situation to suit customer taste. In a more extreme example of how first mover advantages can turn toward followers. "Ford", the automotive firm that pioneered the innovation of automotive as early on 1900s is unable to stabilize the leading position on Asia countries nowadays. However, "Toyota", the Japanese automotive industry enter the industry on 1930s has become the top three leading automotive firm globally. Thus, it perfectly explained that Toyota as the follower after Ford had able to make success compared to Toyota today. The reason Toyota can take over Ford in the industry probably Toyota were able to build on enhanced customer relationship with the unsatisfied customer on pioneering firm earlier on.

Typically, at this case, Toyota Firm is a fast follower that able to capture quickly on what the first mover, Ford, has done on the market. Hence, fast follower ensures that Toyota will perform the best and become the leading automotive company on nowadays. So, the important factor being discussed here is customer loyalty can be lost by pioneer firm if the first mover does not performed well in the industry.

## 5.0 DISCUSSION

Based on results obtained on findings, this chapter explained the results on findings in details.

### 5.1 Discussion Based on Results

In this chapter, the researcher will be make an explanation and conclude for this entire project. The principal and main purpose for this chapter is to make concisely and overall discussion for the study, which more focus on the comparison between push and pull system. At the same time, researcher will suggest several recommendations for the project study direction in order to approach at nearly future. Besides, researcher will also clarify the limitation during the study progress. Last but not least, researcher will covered a conclusion for the data analysis that obtained while the study is being conducted.

#### 5.1.1 Production Issues

For production cases, it plays the important role as this factor would lead to the success or failure to the company. As illustrated on table, the traditional production system encourages huge amount of production. In old thinking's, people might feel that inventory is equivalent to glory. So, this eventually leads to overproduction and increase the storage cost and cash flow. In fact, they never forecast or predict what the customer trends and produces according to customer needs only. However, this problem had been successfully overcome by Pull system. Toyota seem overproduction as waste (*muda*) and try to eliminate the waste by pull concept where the product is being produced based on customers requirement only. The customer is the one who determine what, when and how much quantity should be produced in pull system.

#### 5.1.2 Problem-Solving Skills

Next, the truth is keep protected until it is too late to be considered in push system. This might be very dangerous especially on production process. When there is an small error occurred, the truth always being hide and keep (scared being punished) until it cause a bigger problem. Besides, it also rely on

executives summaries and endless repeated meetings to solve simple problems. On contrary, push system more precise on problem solving where the person in charge will go examines thoroughly to understand the problem occurred. Push system more likely to raise the problem to surface and try to control and corrects the situation before it goes worse. This can avoid the small error becoming big issues. Hence, the problem solving skills of pull system is much more effective than push system.

### 5.1.3 Technological Utilization

In term of technological utilization, push system is tried all the way to replace people with automation technology. The traditional thinking belief that automation would fix every problem occurred. In fact, the people is getting more lazy and ineffective when rely everything on automation such as robots. However, pull system only use reliable, appropriate level of automation to serve the people and processes well only.

## 6.0 LIMITATIONS

There are several limitations occurred when doing this study.

### 6.1 Lack of information

This topic has seldom being discussed so far in Malaysia. Hence, this making the searching information process becomes difficult and hard to find relevant information that related to push and pull strategies being applied on vehicle and automotive industries on local practices and regulations. Moreover, in order to confirm only the precise accurate information are adopted, much effort involved in filtering of irrelevant information through journals and articles. This make the applicable input data become much limited.

### 6.2 Time restriction

The period for conducting this research is only three month of period only. So with this limited time to carried out the research, the accessible resources can be used are also limited. So, it's hope by prolong the time of research, the researcher can make utilize to present a more comprehensive outcome as the outcome of the research.

## 7.0 RECOMMENDATIONS

This study only focuses primary on comparison of technology push and market pull in automobile firm only. Further studies shall include to other scope of studies, but not limited to automobile manufacturing firm only. The future studies may also includes the

application of push in pull system in other industry such as telecommunication. This will help the study become more comprehensive. In fact, the data or information provided in this paper can be references by adding value to the further studies.

## 8.0 CONCLUSIONS

After gone through with the progress of the study, researcher can make a conclusion about this study. As stated in chapter one, the objectives of the study are to compare and contrast between push and pull strategies and explore more strategies that related to innovation issues. At the end of paper, this paper investigate the significant effect of implementing push and pull system with relating to organizational performance. Lastly, the researcher compare and contrast the differences between push and pull system in process innovation in term of decision making process and its effect to organization.

Besides, it is important for organization who wish to improve productivity and quality must fulfill customers' need by implementing these process innovation tools and techniques to match with the customer requirement. Furthermore, it is hope by the automobile maker can make full use of the result that suggest that in addition to direct "push" (in respect of encouragement), indirect persuasion should be carried out as "pull" mechanism (in respect of impediment factors) in order to achieve a higher level of process innovation by both ways.

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