

Challenges in re-engineering the new product development on Bieichi technology

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ABSTRACT – In response to the complexity, time consuming, expensive and risky process in new product development (NPD) process, re-engineering process is being actively pursued by organisations. Therefore, the implementation of re-engineering process been undertaken by changing the traditional way in NPD process where organisation redesign and improve Bieichi technology instead of develop total brand new product. However, to implement this changing, it triggers several challenges to the organisation. Hence, the research aims to identify these challenges. The research used a case study through semi-structured interview sessions with 10 respondents from Universiti Teknikal Malaysia Melaka (UTeM), Syngas Sdn. Bhd., Ministry of Science, Technology and Innovation (MOSTI), National Solid Waste Management Department (NSWMD), Universiti Malaysia Pahang (UMP) and Universiti Teknologi Malaysia (UTM). The finding yielded that, patent and technical knowledge is the most critical challenge in implementation of re-engineering in NPD process. The challenges affected the development and commercialize of Bieichi technology in Malaysia. Future study should examine strategy to overcome these problems in order to increase effectiveness in the implementation of re-engineering in NPD process.

1. INTRODUCTION

Product development is one of the important activities in an organisation. Most of the organisation tend to develop new product frequently due to the hyper competition, technological advancement, market changes and product life cycles that occur in the market [1]. Moreover, with tremendous demand from customer regarding their problem in daily life, organisation force to develop new technology that can solve customer problem. Therefore, New Product Development (NPD) always be employ for develop new technology from an idea or opportunity into a successful market launch [2].

In reality it is not easy to develop and commercialise new product. It will take many years to design, develop and launch new products to the market [3-4]. Moreover, with high competition in marketplace nowadays, past paradigms will not work. Therefore, there is a need to reduce product development time and resources, increase speed and also maximise windows of opportunity for new product [5]. Hence, in response to these problem, re-engineering of existing process is being actively pursued by organisations.

The re-engineering process can be define as the fundamental rethinking and redesign of existing process in order to achieve improvement in term of performance such as cost, speed, quality and service [6]. The implementation of re-engineering process in NPD process can be implement by changing the way organisation develop new technology into the market. In other word, the organisation just redesigns and improve existing product instead of develop a total brand new product. Thus, by implement this process it will help to increase productivity and to reduce development time in the market.

However, the implementation of re-engineering in NPD process is usually a stressful and painful task to the organisation. The re-engineering concept will change the old method from develop new product. As a result, it will increase the probability of failure as organisation seek. This based on the previous literature shows that 60% - 70% of re-engineering process was failed and not achieved dramatic results company seek [6-7].

So, there is a need to study on the challenges when implementing the process of re-engineering in NPD process. In order to show how these challenges will affect the NPD process, this research will analyse in term of development of clean technology in Malaysia. It originally from Japan which is Bieichi technology (refer to Figure 1). Bieichi technology is a clean technology where this technology can convert different types of plastics such as poly propylene (PP), polyethylene (PE) and polystyrene (PS) into crude oils [8]. Moreover, these crude oils can be processed again using heating process to produce gasoline, diesels, kerosene, and heavy oils [9].



Figure 1 Bieichi technology.

This research chose Bieichi technology instead of other technology because of the awareness to reduce

negative effect from plastics waste. Based on previous literature [10], the un-controlled management of plastics waste caused negative effect to human health, ecological, and environment. Hence, by developing clean technology especially Bietchi technology will convert plastic waste into fuels. It will help to reduce the negative effect of plastic wastes in Malaysia.

As a conclusion, by knowing what experts believe in this study, it will increase the effectiveness in the implement of re-engineering in NPD. The result will predict the challenges that faced by the organisation and at the same time will help to educate society to manage their plastics waste efficiently after use.

2. METHODOLOGY

Data were collected using qualitative method through semi-structured questionnaire interview. Semi-structured questionnaire interview can be defined as an informal interview, where the researcher used this method to explore in depth of a general area in which the researcher interested and start asking related questions and carefully listen to the answers and able to explore further [11]. There are 10 respondents were chosen from UTeM, UMP, UTM, MOSTI, NSWMD, and Syngas Sdn. Bhd. Table 1 shows the list of respondents:

Table 1 Background of respondents.

Respondents	Organisations	Position
1	UTeM	Deputy Dean (Academic)
2	UTeM	Senior Lecturer
3	UTeM	Senior Lecturer
4	UMP	Senior Lecturer
5	UTM	Senior Lecturer
6	NSWMD	Administrative Assistant Secretary
7	NSWMD	Administrative Executive
8	Syngas Sdn Bhd	Sales Executive
9	MOSTI	Executive 1 for Commercialisation
10	MOSTI	Deputy Secretary of Industry Division

3. RESULTS AND DISCUSSION

Previous literature discussed that there have four critical challenges to redesign and improve existing technology instead of developing new technology. Patent challenge, technical knowledge challenge, market challenge and resources challenge are critical challenges that organisation will face in this process [3,12-14]. However, the researcher found that patent and technical knowledge become critical challenges to this process. This is because the challenges always been mentioned by most of the respondents. This result is slightly different from previous literature.

The technical knowledge challenge occurs because of inexperience of the technology developer toward the technology [13]. In order to develop and redesign existing technology, it requires full and detail information on how the technology being operate. However, due to inexperience of the technology developer toward the technology, it is difficult for the developer to develop the same technology. Thus, the technology developer cannot develop and modify the technology during product

development. Hence, all of the respondents agreed this challenge is a critical challenge to the implementation of re-engineering in NPD process especially in redesign Bietchi technology. Respondents also agreed that, without the technical knowledge, product development team cannot develop the product and it will interrupt the development process. Therefore, the organisation need to solve this problem before product development being conducted. In summary, technical knowledge is one of the critical challenge in implementation of re-engineering in NPD. Hence, this challenge can slow down the redesign and improvement of Bietchi technology in Malaysia.

Next, for patent challenge it occurred because of the application of know-how in commercial application [13]. The patent holder, have a right to protect their technology from infringement. Therefore, it will be an issue if other organisation develop same technology without get authorization from patent holder. Respondents 1 – 5 agreed this challenge will be critical issue in redesign and improvement of Bietchi technology in Malaysia. Respondents 1- 5 stated that, if Blesst Corporation register Bietchi technology in Malaysia, other organisation cannot commercialize technology like Bietchi in the market. Respondents 4 and 5 mentioned that, it will be a disadvantageous to the organisation because the organisation has invest to develop the product. However, the organisation cannot commercialize the product into the market. Based on the interview, patent challenge will affect the implementation of re-engineering in NPD process by preventing the organisation to develop and redesign Bietchi technology in Malaysia.

4. CONCLUSION

The implementation of re-engineering in NPD process is suitable to reduce product development time and resources, increase speed, and also maximize windows of opportunity for new product. At the same time, to implement re-engineering is usually stressful and painful to the developer. Hence, this research study challenges in implementing of re-engineering in NPD process. The result yielded that technical and market challenges is the most critical challenges to this process. Therefore, these challenges will affect the development of Bietchi technology in Malaysia. As a conclusion, future research should identify strategies in order to overcome these challenges.

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