# DETERMINING RISKS ON NEW PRODUCT DEVELOPMENT (NPD)PERFORMANCE IN SMALL MEDIUM ENTERPRISE (SME)

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**Abstract**- Small medium companies (SMEs) are still play pivotal role in any countries' economic growth. The ability to innovate and develop new product will ensure their survival in competitive market. Companiesneed to make prompt decision making on producing new product to compete in demanding market. One of the major aspects in developing new product is by looking at risks. Risk can either gives positive or negative effects towards product development process. It is crucial for companies to manage risks in order to achieve desired new product development (NPD) performance without compromising with quality. This study therefore is to find determinants of risks in SMEs which could affect NPD performance. It is found that three main types of risk may affect NPD performance which are technological, organizational and marketing risks. Future empirical research is expected to be carried out to test the conceptual framework.

**Keywords-** risk, new product development, SMEs

## I. INTRODUCTION

Product life cycle are becoming shorter due to market demand. Competition among companies in market place is becoming more intense. Access of market are widening, as emerging countries started to flourished. Companies are expanding to reach these market hence expected to achieve financial goals. However due to the intensifying market place, companies need to compete in quality, design and cost in managing new product development. Small and Medium Industries Development Corporation (SMIDEC) in a report noted that Small Medium Enterprises (SMEs) account for close to 99 percent of all the establishments in the manufacturing, services and agricultural sector and provide around 65 percent of total employment in Malaysia (SME Corp Report, 2010). According to Department of Statistics Malaysia since year 2000, SMEs increasingly contribute to National Gross Domestic Product (GDP) from year to year (SME Corp Report, 2010). In 2009 alone, SMEs contributed up to 31.2 percent to national GDP. This report therefore indicates the importance of SMEs as part of government's arm for Malaysia economic growth. Acknowledging the significance of SMEs, government has been putting a lot of emphasize on SMEs development. In report indicates promising growth of SMEs contribution to GDP from 33.5% in 2013 to 35.9% in 2014.In 2013, their performance remained encouraging with the GDP growth of SMEs gonefurther to 6.3%. The growth not only surpassed growth of GDP recorded in 2012 of 6%, but also the overall economic growth of the country of 4.7% in 2013. In the future, SME growth is expected to sustain at 5.5 to 6.5% in 2015 (SME Corp Report, 2014).

Rancangan Malaysia Ke-10 (RMK-10), the government announced to allocate RM10 billion for capital funding and industry restructuring targeted solely on SMEs development. Supports by the government are not limited to monetary form, but variety of forms come from different agencies such as consultation, training and facilities. A total of 30 initiatives were finalized of which 16 were targeted at SMEs so that they will contribute to at least 23% to total exports by 2020 in RMK-11.

However, the level of competitiveness of Malaysian SMEs is still low and need a lot of catching up with other SMEs from developed countries. As at July 2012, a diagnostic tool to assess and rate the competitiveness of SMEs based on company performance and capabilities was used. The tool named as SME Competitive Rating for Enhancement (SCORE) used to evaluate 4,686 Malaysian SMEs. From the result, 1,605 SMEs were rated 3 to 5 stars category which not reach the target as wanted by the government (SME Corp Report, 2010). According to the SMIDP's 2001–2005 study report (SMIDEC, 2004), SMEs in Malaysia are facing many new challenges, domestically as well as globally. The government of Malaysia still optimistic on the performance of SMEs as a

To continue their survival, companies are compelled to innovate and develop new product. A research done in UK shown that most SMEs find it problematic to implement new product development process due to some constrains such as poor definition of product requirements. The study highlighted the process was delayed due to poor understanding of customer requirements, and

insufficient knowledge of a product's technology and market (Owens, 2006).

## II. NEW PRODUCT DEVELOPMENT RISK MANAGEMENT

### 2.1. Risk Management in NPD

Through research findings by Moenaert, et al. (1995), the more uncertainty reduced during new product innovation process the higher the possibility the success of commercializing new product. The research agrees on the reduction of market uncertainty to ensure commercialization of new product.Research done by Doering and Parayre, (2000) which they suggest to adopt a comprehensive risk management framework that integrates the three most important risk factors that affect NPD performance: technology, marketing, and organization. Nonetheless, this approach did not go in-depth on the process nature of risk and there is lack of empirical evidence on how risk management can improve NPD performance. Keizer et al. (2002) meanwhile developed a risk management diagnostic method for how to manage technological, organizational, and business risk in a case study. Mu et al. (2009) improved prior studies in risk management on NPD by proposing a three-dimensional risk management framework for NPD.Their framework emphasizes that firms can identify, analyze, respond to, and monitor the major risks in NPD process by various means such as learning from customers and other entities, sourcing external knowledge, and integrating specialized knowledge internally. Based on prior researches the following points of risks effect on NPD performance are further discuss, notably are technological, organizational and marketing risk.

### 2.1.1 Technological Risk

Perceived technological risk denotes to a firm's incapability to completely understand or predict some aspects of technological environment relates to NPD projects (Milliken, 1987). Firms might not foresee the upcoming of new technology and when the technology becomes obsolete (Freeman and Soete, 1997). Another identified technological risk is capability. When companies are about to involve in the process of NPD, it is often firms might not have the technical capabilities. Therefore in order to mitigate technical risk, firms might consider to find outside experts. However that is not in the case of small firms. Yap and Souder (1994) recommended for small firms to improve their new product success rate to void hiring from outside the organization for the purpose of procuring new technologies. The option to hire outside expert is only when the technological uncertainties are very high and the company has very good reason to proceed with the NPD project. Companies with strong technical competence of the NPD team can ensure success rate of new product (Cooper and Kleinschmidt, 1995). But for small firms, it is not quite applicable as it is exist inherently in almost all small firms and to a much greater degree than large firms (Ledwith, 2000). Another point on technological risk is when customer do not fully understand new technology brought into their new product. Customers expect ease of use of new product they purchased, but if it becomes difficult the new product might fail to capture the market.

### 2.1.2 Organizational Risk

Organizational risk is refers as the state of uncertainties in which firms deal with internal and external environment. It can cause direct effect on NPD performance. Mu et al (2009) discussed in their study on direct environmental risk on firms NPD performance. They elaborate three direct effects of environmental factors namely complexity, munificence and dynamism which referred from Aldrich's (1979) works. Due to volatile market place, competition among companies heighten thus contribute to environment complexity. This can cause organizational risk to increase because it is difficult for companies to implement strategic actions against competitors. Limitation on resources also can become a hindrance for firms to get start in NPD project. It is then will increase uncertainties and risk before companies decide to compete in getting the scarce resources (Andersonand Tushman, 2001). One way of reducing this kind of risk by integrating firm's capabilities into environment, their business strategy and organizational process. Another way of doing it by utilizing existing network. Firms can learn best practices and share knowledge and capabilities since external networks have been regarded as important factors in enhancing innovation (Ahuja, 2000).

The management of internal and external relations in new product development is in fact is one area where there is a difference between the existing literature on small and large firms. Most of what is published about large firms deals with internal relations. It is discussed that integration between different functional departments will achieve better results both in the characteristics of the products developed and the time taken to develop them (Shrivastava and Souder, 1987; Wheelwright and Clark, 1992). Literature dealing with small firms however focuses on external relations, addressing issues such as industrial services, subcontracting relationships, licensing, networking, collaborative R&D (Rothwell and Dodgson, 1991; Hoffman et al., 1998)

### 2.1.3 Marketing Risk

Marketing risk refersas uncertainty about the types and extent of customer needs that can be satisfied by a particular technology or new product (Moriarty and Kosnik, 1989). Much prior researches evidence

suggests that failure of NPD may largely be due to improper marketing. Marketing risk is high when consumers have had little consumption experience with a product, thus making product requirements difficult to define. Unlike technological risk, marketing risk is external to firms (Park, 2010). Marketing risk is the least controllable risk factor in NPD.

The causes of marketing risk can be quite a few. First is customer perceived risk in which customers feel uncertain of fear and have doubt whether a new product can meet their needs and expectation (Meyerowitz and Chaiken, 1987). Second is changing needs of customers. Customers need may change according to latest trend and their lack understanding of a new product in the market. Third is predicting; where it is becoming difficult for firms to forecast and predict potential sales volume of new products (Ogawa and Piller, 2006). The prediction of future revenue and possible profit depends not only on forecasting total quantity that can be sold, but also on forecasting future costs of production, prices and price elasticity. Market competition volatility makesNPD success more unknowable and unpredictable. Although marketing risk seems difficult and complex, still it can be managed. A better and precise understanding of customers need and behavior are proven to success in NPD. Studies have found that timely and reliable knowledge about customer preferences and requirements is among the most important kinds of information necessary for product development (Cooper and Kleinschmidt, 1995). According to Ledwith (2000) a strong correlation between market certainty and new product success was found for the small firms, suggesting that external factors had a substantial impact on the outcomes of projects. The study also affirmed the need of small firm to pay close attention to their customers need. Yap and Sounder (1994) suggestion to small firms with resource constraint to position their product in low market uncertainty and low technical uncertainty conditions. This positioning strategy allows customer to evaluate the product much quicker and easier.

### 2.2. NPD Performance in SMEs

Most discussed new product success are related to large companies. One of the most referred study onproduct success done by Cooper et al (2011) highlighted eight critical success drivers. Among others is product superiority, which new product to be introduced into the market is unique and can be differentiate from competitors. He also emphasize on building in the Voice of Customer (VoC). New product well perceived by customer will guarantee on financial return. But on other note,their feedbacks should be heard as early as possible and integrate into new product development process, from the early stage until product launching to guarantee success. Many researchers agreed that commonly used NPD performance dimensions can be group under development time, cost and quality. They include the length of development cycles and products first to market, development productivity and financially successful new products, or the proportion of sales from new products (Yap & Souder, 1994; Owen, 2007; Nicholas et al, 2011).

Park (2010) concludes that performance measurements on NPD have two main categories which are commercial performance and knowledge-based performance. In the research one of the clear indicator for main performances of new product development to a company is commercial performances. Fulfill customer's needs, meet product specification, meet timing goals, meet market-share goals, meet unit cost objectives, meet service goals, meet productivity goals, create new markets, and make a good reputation are considered commercial performances. Another measurement identified used to measure NPD performance in the research is knowledge-based performance. It is when the new product launched is able to lead further on next projects.New product development process activity may also lead to developments in the company's worker skill and capabilities, and therefore lead to more positive outcomes in future development projects. Meanwhile, Mu, et al (2009) measured NPD performance by four items; overall NPD process, overall performance of product is satisfactory, product reaches market on timely manner andcost management of NPD is satisfactory.

The above literaturesdiscuss on new product performance and success on large companies. A study done by Ledwith (2000) on small electronic firms which more suitable to be referred for this study. The research highlights a few factors which contributed to the success of NPD in SMEs. The author agreed that both technical and marketing proficiency in NPD activities are crucial to small and large companies. A lot of studies also reached the same conclusion that speed to market is another factor to ensure NPD success (eg. Cooper, 1999). However that is not in the case of small companies. For small firm, being first is important but being the best is more important. Although most research proved that financial factor is one of the indicators of NPD performance, however for small companies it is not as great interest to them compared to large companies. This is due to the fact that most small companies have limited financial resources.

## III. RISK DETERMINANTS OF NPD FRAMEWORK

Based on the above discussion of prior studies, it can be synthesized that three main risks effect NPD performance in SMEs namely technological, organizational and marketing risk. Thus the following

Fig. 1 illustrates conceptualization of risk determinants. NPD performance hence are measure by the overall product performance, financial performance, commercial performance and skills and capabilities acquired throughout the process of developing new product.

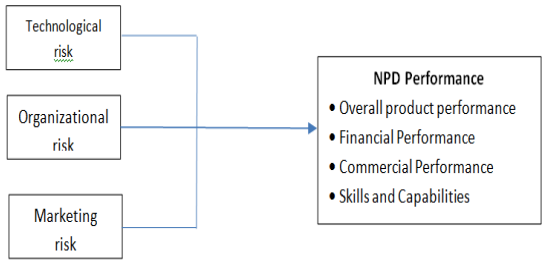



**Fig 1: Conceptualization of Risk Determinants on NPD Performance in SMEs**

## CONCLUSIONS

This study is an exploratory study, which seek out to build testable framework for future research. Through literature findings, three main types of risks are identified to affect new product development performance which are technological, organizational and marketing risks. Further research will be carried out to see the effect of risk management on NPD, to find out the implications and further deploy best practices for SME in Malaysia to increase new product success rate.

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