

THE CONCEPT OF INNOVATION IN THE MALAYSIAN HOUSING INDUSTRY

by

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KONSEP INOVASI DALAM INDUSTRI PERUMAHAN MALAYSIA

ABSTRAK

Kebelakangan ini, inovasi telah dikenalpasti sebagai faktor utama untuk mempertahankan daya persaingan. Penyelidikan terdahulu menunjukkan tahap pelaksanaan inovasi dalam industri perumahan masih lembab dan adalah tidak rasional untuk mengaplikasikan sebarang konsep inovasi dari industri lain. Tujuan penyelidikan ini adalah untuk menerokai konsep inovasi industri perumahan berdasarkan persepsi pemaju. 3 objektif penyelidikan telah dikenalpasti, pertama, mengenalpasti maksud inovasi berdasarkan persepsi pemaju; kedua, mengenalpasti jenis inovasi yang telah dilaksanakan oleh pemaju; ketiga, mengenalpasti faedah-faedah inovasi. Sejumlah 181 pemaju perumahan telah dipilih secara rawak dari senarai nama ahli *Real Estate and Housing Developers' Association* (REHDA) di Pulau Pinang and Selangor. Borang soal selidik telah diagihkan melalui faks dan penyelidik kepada pemaju (*bersemuka*). Sejumlah 33 soal selidik berjaya dikumpulkan dan telah mencapai 18.23 % tahap menjawab. Data telah dikaji dengan ujian kebolehpercayaan dan analisis deskriptif. 3 temubual telah dilaksanakan untuk mendapatkan maklumat yang lebih terperinci terhadap isu-isu yang timbul dalam kesimpulan soal selidik. Data kualitatif ini telah diterjemah, disusunatur dan dikategorikan. Kesimpulan menunjukkan bahawa konsep inovasi yang dimaksudkan pemaju perumahan merangkumi 5 kata kunci, iaitu, boleh digunapakai (*applicable*), kebergunaan (*useful*), menyelesaikan masalah (*solve problem*), baru (*new*) dan pembaikan (*improvement*), sekaligus membuktikan kerumitan industri perumahan dalam mengenengahkan konsep inovasi ini. Selain itu, inovasi pasaran (*market innovation*) dan inovasi produk (*product innovation*) telah dilaksanakan oleh pemaju perumahan. 4 kebaikan inovasi yang dipersetujui oleh pemaju ini ialah mempertahankan daya saing, menyegarkan perniagaan yang termatang, mengukuhkan organisasi dan meningkatkan keuntungan.

THE CONCEPT OF INNOVATION IN THE MALAYSIAN HOUSING INDUSTRY

ABSTRACT

In the past few years, innovation has been recognized as the key driver to sustain competitive advantages. Previous studies also show that implementation of innovation still remains slow in the housing industry and it is unwise to adopt any innovation perceived from other industries. The present study aims to gain better knowledge on the concept of innovation from the perspective of housing developers. There are 3 objectives that have been drawn to achieve the aim; first is to identify the meaning of innovation from the perspective of housing developers; second is to identify types of innovation implemented by the housing developers and the third is to identify the advantages of innovation. A total of 181 housing developers were randomly selected from the list of housing developers registered with the Real Estate and Housing Developers' Association (REHDA) in Penang and Selangor. Questionnaires were distributed to these developers through fax and face-to-face distribution. 33 responded, contributing to the response rate of 18.23%. The data was analyzed using the reliability test and descriptive analysis. Follow-up interviews were carried out to 3 other developers to gain in-depth information on issues arisen in the survey results. Interview data had been transcribed, organized and coded. The findings show that the concept of innovation defined by housing developers constitute of 5 keywords; "applicable", "useful", "solve problem", "new" and "improvement", denoting the complex nature and the multiple parties involved in the housing industry. Market innovation and product innovation have also been implemented by the housing developers. Through to the end of this present study, there are 4 advantages that the developers gain from being innovative; sustaining competitive advantages, rejuvenating a mature business, strengthening the organization and increasing the profit or sales.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Research

The housing industry in Malaysia is one of the important and critical sectors which indicate the social, economic and technological levels of Malaysia. The industry has gone through the economic and US sub-prime crisis. Today, although there is a show of economic movement, it works at a slow pace, especially in the housing industry compared to the situation before 1997. Lately, innovation which is classified as the key driver to the advancement of society, economy and technology has started to find its place in the industry. It has also started to grab the focus and attention of many authorities in various industries, and it is very much true in the Malaysian housing industry. Therefore, the first section of this chapter will focus on the discussion of the problem statement in the Malaysian housing industry especially for housing developers. It highlights the obstacles for innovation in the industry and thus gives reasons as to why this research is carried out. This topic will take into account the major and “hot” issues faced by most of the housing developers and the market in Malaysia. The second section elaborates on the objectives of the research, followed by the significance of the research. The fourth section is the scope of study and lastly, the organization of the thesis.

1.2 Problem Statement

In the past few years, the industry has witnessed the impact from industrial evolution and uncertainty of the economy. At present, the impacts still significantly affect the growth of the nation. In Malaysia, the housing industry, as one of the critical sectors which contributes to the advancement of a country, also equally strained. The economic and sub-prime crisis from the US market has greatly given negative impacts not just on the Malaysian housing industry, but also on the global economic trends. At present, although the overall economy seems to

have recovered from the crisis, yet, it has proven the fragility and passive mode of the industry. As a developing country, the housing industry in Malaysia is very likely to be affected by many internal or external factors, and therefore, innovation might be the new trend to overcome the current and future challenges. Hence, the need of the present research can be measured from both the theoretical and practical views.

In terms of the theoretical view, the existing literature concentrates more on the definitions of innovation, barriers of innovation, strategies to promote innovation in the housing industry and the innovativeness of innovation. In the earlier studies, Ball (1999), Barlow (1999) and Gibb (1999) have worked on the barriers toward innovation and on innovation initiated by house builders across the United Kingdom (U.K.). Later work by Fincher (2007) concentrates on the definition of innovation in high-rise building development and the housing developers in Melbourne, Australia. In addition, Barlow & Vernables (2004) and Halman et al. (2008) concentrate on the challenges and strategies for the increasing innovation in the housing industry in developed countries. Recent studies done by Kamaruddeen et al. (2009) focus on measuring the firms' innovativeness in the housing industry. Later on, Yusof et al. (2010a) concentrate on the new housing delivery system as a process innovation and have analysed the tendency of Malaysian housing developers in adopting new systems. Although there has been numerous research done on innovation in the housing industry, there is still limited information when it comes to the definition on the concept of innovation in the housing industry, types of innovation implemented by the housing developers and the advantages of implementing innovation. Hence, this research tries to fill the gap of the literature in terms of the holistic concept of innovation, types of innovation implemented and the advantages of implementing innovation.

From a practical view point, the new technologies and latest trends of demands have increased the competition, hence tightening the profit range. Competition promotes innovation (Tang, 2004) and innovation is suggested as a key driver in sustaining

competitive advantage (Porter, 1990; Matthyssens et al., 2006). On top of that, innovation is also believed to contribute profit and create revenue to the business (Urabe, 1988; John, 1999). Successful changes and improvements made to products and services might contribute cost reduction and significant profits. Moreover, innovation also encourages housing developers to keep on track with current technology advancements. Recently the Industrialized Building System (IBS) and Green Building Index (GBI) have been brought into the Malaysian housing industry. However, studies show that difficulties have surfaced in implementing these new technologies, Scottish social housing faces difficulties in terms of costs and accessibility of the product materials when implementing the use of solar heating system (Dewick & Miozzo, 2002). In a later study, Pan et al. (2008) highlight that the use of offsite construction methods among the large house builders in the United Kingdom are generally low due to the perception of higher capital costs. Similarly, an online news article entitled ‘Technique rejected due to high cost’ (NST, 2007), states that Johor property developers are hardly able to comply with and implement the Industrialized Building System (IBS) due to the high construction cost. Hence, there is a need to focus on the concept of innovation in the Malaysian housing industry, which might help the implementation of the innovative product and process.

On the other hand, it is a risk when the housing industry adopts a theory from other disciplines (Ball, 1999). Ball’s paper also mentions that in the 1950s and 1960s, concrete panels which seemed to conform to mass production had failed in practice. A conflict seems to occur between the concept and the practice of innovation. On top of that, in an attempt to produce ‘innovative product’ in the U.K. housing industry, which responds to consumer needs and improve building quality, a mixed success has been observed (Ball, 1999). Part of the problem lies with the concept of innovation which is argued by many as being too optimistic considering the nature of the industry which regards innovation to be of secondary importance (Barlow & Duncan, 1994; Ball, 1999). Moreover, the perceived innovative product has failed to gain interest from the consumer (Barlow, 1999). Hence, it is inadequate

to just “copy paste” the concept of innovation from other industries and implement it in the housing industry. Many have solidified their arguments when they say that it can be chaotic to implement a wrong innovation as the housing industry is different from the manufacturing industry (Slaughter, 1998).

When it comes to innovation in the housing industry, it is always related to the house or to the process of construction. However, is it only the housing industry that consists of product and process innovation? Housing developers as business-based firms rely a lot on the profit and revenue made in every project. Therefore, focus should not stop at product and process alone. Melnikas (1998) suggests that marketing problems in the housing industry should be taken into consideration to achieve a better quality and higher rate of innovation. Later, Barlow (1999) proposes that innovation is significantly important to the achievement of market expansion for the industry or the housing organizations. Since housing developers depend on market trends and demands, therefore, market innovation has made a point to find its place in the business. In general, market innovation is closely related to the identification of potential markets and serves the market in a better way (Johne, 1999). Eventually, it is very important to understand whether or not the Malaysian housing developers are open to other types of innovation. Instead of marketing, Slaughter (2000) asserts that in order for developers to adopt and implement innovation, it is important that the developers are involved actively in both management and construction. Hence, there is a necessity to identify the different types of innovation in the housing industry.

Since the concept of innovation is still relatively new in Malaysia, the above discussion points out to the need to discover and understand the concept of innovation pertinent to the housing industry in Malaysia especially from the perspective of the housing developers. The following section elaborates the objectives of the research.

1.3 Objectives

The objectives of the present research lie in identifying the concept of innovation in the housing industry. The objectives are:

- 1) To identify a holistic concept of innovation in the perspectives of housing developers.
- 2) To identify types of innovation implemented by the housing developers.
- 3) To identify the advantages of implementing innovation.

1.4 Significance of the Study

The significance of this research can be measured on conceptual and practical contributions. The first might be in academia and the latter is within the housing developers' practice itself.

The research articulates the concept of innovation by providing an in-depth explanation on the definition, implementation and advantages of innovation in the perspective of housing developers. It also identifies the state of innovation among housing developers especially in different types of innovation and their implementation.

Knowing the type of innovation implemented by housing developers might indicate the state of innovation in the housing industry. The findings may be useful to material suppliers in knowing the needs and the trends of housing developers. On the other hand, based on the result, it may contribute to the planning of future policies by the government and public authorities such as the Industrialized Building System (IBS) and Green Building Index (GBI).

Meanwhile, the classification of the advantages of innovation by the housing developers can be useful in promoting innovation in other construction sectors. It also can be a guide to the beginners in innovation.

The research also attempts to explore and draft a holistic concept and definition of innovation from the perspective of housing developers. The findings can be used as reference for the housing developers and other construction sectors to improve and expand their businesses.

1.5 Scope of Study

The focus of the research is on the response of Malaysian housing developers towards the implementation of innovation. Generalizing the results beyond housing developers to other construction sectors may be difficult. However, the findings could be used as a reference for other professional services in the construction industry. The study only involves Malaysian housing developers registered under the Real Estate and Housing Developers' Association (REHDA) in Penang and Selangor.

1.6 Organization of Thesis

In Chapter 1, the foundations of the research laid on the contents include discussion on the introduction, problem statement, research objectives, significance of research, scope of study and organization of the thesis.

Chapter 2 discusses the literature review of the present research topic. This section will focus more on general definitions and the concept of innovation. It also focuses on different views of innovation, types of innovation, advantages of innovation and innovation in the housing industry.

In Chapter 3, the methodology of the research will be explained extensively. The type of method implemented and reason for implementation will be discussed in detail.

The analysis and discussion of data will be discussed in Chapter 4. This chapter will analyze in detail all the data collected. Data will be interpreted to answer the objectives.

Lastly, the summary for the findings and suggestions for further research will be presented in Chapter 5. This chapter will be an overall summary of the findings and conclude with suggestions for further research in the same area of study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The first section will focus on the general definition and concept of innovation. The discussion is based on the definition and concept proposed by previous studies. The different terms or keywords used to define innovation will be discussed in the second section. The third section of this chapter describes the types of innovation. The following section will concentrate on the advantages of innovation. The fifth section will then discuss the current state of innovation in the housing industry. The last section will summarize the whole chapter.

2.2 General Definition of Innovation

Innovation has prospered in the world of business in the past few years. Many scholars have tried to define and look into what innovation really means to businesses. Currently, it is agreed that innovation is the key driver in sustaining competitive advantage. However, it shows that although many have tried to implement innovation, only a few of them have succeeded in doing so (Ahmed, 1998). In the housing industry, a similar situation prevails (Ball, 1999; Koebel, 2008). Hence, Winch (1998) suggests that more research in innovation is needed for the housing industry. Nevertheless, this section will focus on identifying the general definition of innovation given by scholars from different industries.

At the initial stage, it is important to find out the root and origin of the word ‘innovation’. According to the Comprehensive Etymological Dictionary of The English Language (Klein, 1996) the original word for innovate is developed from the Latin word, *innovātus*, and the past participle of *innovāre*, defined as “to renew” or “to alter”. Innovation, known as *innovatio* in old Latin, is a noun. *Novāre* means to make new (Tidd et al., 2001). *Novāre* is

developed from *novus*, mean new. In the old Latin, all these terms come with a single term ‘in’. Therefore, when combined all the terms into a completed word; *innovātus* in old Latin has become “innovate” in modern English and *innovatio* becomes “innovation”.

Many studies have defined innovation in general terms. It refers to a novelty which might refer to a process or product. According to BBC (1993), innovation has been defined as a new thing or new method of doing something. In this context, BBC declares that innovation is about novelty, new thing with reference to product and new method as referred to process. However, the root meaning of innovation still remains the same which means to make new. Wong et al. (2008, p. 2) in his paper quote a statement by West & Anderson (1996) stating that innovation is about a successful execution of process and products which is novel to the firm and is meant to profit both the firm and its stakeholders. In this definition it has stated clearly that innovation consists of new products or processes that bring contributions. Similarly, Assink (2006) has defined innovation as a process of successfully bringing a new creation that is significant to the unit of adoption. Innovation as a process of making new products and the novelty should be meaningful to the adopter. This definition of innovation seems to be flexible and applicable to any industry according to the firms’ needs and requirements. Another group of scholars have tried to define innovation in a more comprehensive way, by them, innovation involves a process that gives an added value and level of newness to the unit of adoption and its stakeholders such as suppliers and customers through the development of new processes, solutions, products, services and new ways of commercialization (Covin & Slevin, 1991; Lumpkin & Dess, 1996; Knox, 2002). From the definition, innovation is defined as continuous steps which significantly contribute not just to the adopter but also its stakeholders, and this is where novelty comes into picture. It shows that innovation involves a complicated process that might need an expected source to support its implementation. Later in 2007 Plessis makes a statement that the establishment of novel knowledge and ideas to support the new business result is intended to make improvement to the internal business procedures, structures and to provide market-driven products and

services which are considered as innovation. Innovation has been defined in a more detailed way, there are keywords identified in this definition, it suggests novelty ideas to aid products and process; improves the administration and creates its own market demand.

The overall definition explains innovation as a process of making novelty. Nevertheless, there have been many definitions and concepts of innovation brought out by scholars in the past and recent years. Hence, the next section will identify the terms that scholars use to define innovation.

2.3 Terms Used to Define Innovation

Previous studies have described innovation in common terms referring to new ideas, processes or products which are mainly categorized as either the product or process innovation (Oslo Manual, 2005). Similar to housing studies, innovation has been defined in a little more than a single line, where it always refer to a new idea, process or product belonged to either process innovation or product innovation. It is the same case with the Malaysian housing industry that it has a limited knowledge and the access to innovation in the Malaysian housing industry is most likely adopted from other disciplines. The study in innovation made by other industry seems to be broad. However, it is rather ludicrous or unsuitable, maybe to gross to just adopt any of the innovation from other disciplines into the housing industry. Due to the uncertainty of the global market, the housing industry always gets the critical hits. Therefore, it is important to gain more understanding on innovation where the current trend shows that innovation might be the key driver during recessions.

2.3.1 Innovation Is About Something New

Scholars like Duncan (1972), Zaltman et al. (1973), Drucker (1974), Damanpour & Evan (1984), Badawy (1988), Urabe (1988), Udwadia (1990), Damanpour (1991), Carnegie &

Butlin (1993), Higgins (1995), Damanpour (1996), Nohria & Gulati (1996), Doyle (1998), and Assink (2006) have included the term ‘new’ when defining innovation. New ideas, products, processes or services are considered as innovation. At this point, there is a different view when defining innovation as something new. According to Zaltman et al. (1973), an idea or object which is new to the adapted organization is considered as innovation. Later, a group of scholars who seem similar to Zaltman et al. (1973) also suggest that innovation consists of any idea, practice or object that the adopting unit regards as new (Damanpour & Evan, 1984; Damanpour, 1991). Nohria & Gulati (1996) define innovation as any strategy, constitution, means or practice or any product or market opportunity that the manager of the innovating unit to be innovated is perceived to be new. According to the above suggestion, it is clearly stated that the term ‘new’ depends largely on the perception of the adapted organization, as long as it is new to the organization; it represents the fact that innovation has been adopted. Nohria & Gulati (1996) in their definition claim that innovation is about anything related to the execution of organization that is perceived as new by the manager of the adopting unit. Hence, it is a common way to identify and classify innovation, where it refers to newness. While others refer to innovation as ‘newness’, Kimberly & Evanisko (1981) propose that only the first use of the idea in the industry with a common success is considered as innovation. This is very interesting when both scholars claim that innovation is the first use of an idea in the industry. When it comes to the term ‘industry’, it cover a broader scope, which might ignore the perception of an organization to call an idea as new idea to define innovation. In this context, only the first mover or pioneer in the industry can be considered as innovation. Hence, even the idea is new to the organization; it might still be common or has been used in the industry. Later Herrmann (1999) and Sandberg (2007), when defining radical innovation, state that the term ‘new’ should mean being new to the adopted organization and new to its market. Hence, if one accepts innovation as an idea that is perceived as new by the adapted organization, one should ignore what has been defined by Herrmann (1999) and Sandberg (2007) with regards to radical innovation.

2.3.2 Innovation Is About Something Unique

While innovation is defined as the generation of new ideas, Duncan (1972) and Michael Menn (2006) in their paper have mentioned innovation as something that is unique. A statement quoted by Michael Menn (2006) in his paper explains that innovation is about being unique from your competitor. Instead of being new ideas, being different has also been added to define innovation. As uniqueness is the key towards innovation, it makes innovation rarely occur. Uniqueness, in other word also indicates rareness or exclusivity. If innovation is the idea that is new to the organization, then innovation should be familiar and happen frequently, but if innovation is about uniqueness, then it means that the idea should be new to the organization and the industry. While Duncan (1972) attempts to define innovation and invention synonymously, hence he suggests that innovation and invention are about creative processes that involve the carrying out of existing ideas to generate a unique solution. Added by Cooper (1998), this kind of theory refers to the organization which sustains competitive advantages through the adaptation of radical innovation. The application of this definition, nonetheless, seems to happen infrequently and only applies to a few organizations.

2.3.3 Innovation Is About Something Applicable

Instead of including new ideas or promoting the concept of uniqueness, there are different views stating that only the justification of new idea, product or process is inadequate to be considered as innovation, scholars debate that it must come with certain qualifiers to make the new ideas turn to become an innovation. Kuhn (1985) has suggested that innovation brings creativity into products and services. Badawy (1988) stated that innovation brings something new into practice. Twiss (1992) adds that an invention only becomes innovation if it succeeds in the market. Sullivan (1998), Teece (1998) and Tidd (2001) argue that a new idea is not sufficient to be considered as innovation. Similarly, Udwadia (1990) suggests that innovation is the successful creation, improvement and introduction of new products, process

or services. New idea remains as an attempt if it fails to be practised. Therefore, only the successful implementation of new ideas into any product, process or service can be concluded as innovation. Scholars like Kanter (1983), Amabile (1988), Urabe (1988), Glynn (1996), Sullivan (1998), Teece (1998), Williams (1999), Fagerberg (2004) and later by Tang (2004) describe innovation to occur when it has been brought into practice or is completely adopted. In this context, innovation has been described as a process to bring the idea into the market place, which also means that the idea is to be realized. Another claim made by Fagerberg (2004) states that the first occurrence of an idea is called invention, while innovation happens when the first attempt is to carry the idea into being. This is very clear that innovation happen when the new idea has turn into a product, process or service instead of just remaining as an idea. However, these contexts reveal that innovation does not stop at the idea but need to be translated into practise. On the other hand, different views of innovation keep on appearing when scholars start to add a certain qualifier to the implementation of innovation, just in case if the process of implementing and execution of the idea fail in the market. As defined in the European Commission in its Green Paper on innovation, innovation is "*the successful production, assimilation and exploitation of novelty in the economic and social spheres*" (European Commission, 1995). In this context, it shows that the process of implementation does not mean innovation alone. Only the successful one should be considered as innovation. Cooper (1998) adds that 2 different organizations might adopt the same innovation, but, only the one who achieves some levels of success can be called innovation. At this point, the successful implementation of the new idea is named innovation. Hence, innovation is about a successful implementation or translation of new idea into products, processes or services.

2.3.4 Innovation Is About Something Profitable

On the other hand, scholars like Urabe (1988) explain that innovation creates new ideas; put into practise, contribute dynamic growth of the national economy, employment and profit. In

this context, it shows that innovation consists of a few steps from a generation of new ideas, applications and the outcomes. However, the generation of ideas and execution of ideas have been described earlier. Thus, the focus will be placed on the outcomes of successful innovation. Urabe interprets that innovation makes economic contributions. Later DTI (1996) stated that innovation makes continuous actions of taking new ideas successfully and profitably through the customers' satisfaction. This context again shows that innovation is about making profit. In addition, the interpretation and definition might be different between the academicians and entrepreneurs as suggested by Massa & Testa (2008). Innovation for entrepreneurs might be defined as anything that makes money (Massa & Testa, 2008; Freel, 2005). Thus, it is very important to include profitability as one of the variables to define innovation since housing developers are considered as entrepreneurs.

2.3.5 Innovation Is About Improvement

While other scholars define innovation as a process of generating new idea, applicable and contribute profit, scholars like Drucker (1974) and Twiss (1992) see innovation as consisting of improvements for the existing and new invention in the market. Drucker (1974) explains innovation in terms of the process to furnish new, improving capabilities and increase the efficiency. It is very clear that all terms used are meant to make improvement instead of making something entirely new. Doyle (1998) has suggested that innovation is a development and generation of new or improved product and service. According to Doyle's understanding, instead of the production of new products and services, innovation also makes improvement to the existing products and services which is similar to the point made by Twiss (1992). Hence, at this point, innovation suggests that there is no limit to the creation of novelty; and it also means that things are made better. Carnegie & Butlin (1993) define innovation as improvement or a novelty done by an organization to generate a significant value to the customer or organization. It is very obvious that innovation is also meant to improve the existing conditions. Later Thorpe et al. (2009) draw in the example that

innovation in Australian housing means that some improvements have been made to its existing products and processes. Hence, if one accepts and adopts this concept, he or she should bear in mind that innovation improving the existing products, processes or services. Therefore, another suggested key word found for this concept is ‘improvement’.

2.3.6 Innovation Is About Something Useful

Innovation is also defined as something that is useful to the adapted organization. Cumming (1998) in his paper summarizes that most of the definition consists of effectiveness, profitability and customer satisfaction. With reference to Cumming’s suggestion, all these terms might lead to the meaning of usefulness. As innovation becomes useful to the organization, definitely it would meet the effectiveness, profitability and satisfaction of customers. Assink (2006) mentions that innovation tends to hold a significant value to the adopting organization. The context might suggest that the usefulness of the innovation makes it precious to the organization. Therefore, the term ‘useful’ should be taken into consideration when defining innovation.

2.3.7 Innovation Is About Problem Solving

A group of scholars define innovation as the new solution to problems arising in an organization. Referring to Duncan (1972), generating a unique solution from the existing idea is innovation. Instead of being a new idea, profitable, providing improvement or changes, innovation is about a solution to a problem. In short, innovation is not just about improving or changing, but it is also to solve a problem and difficulty. Later Kanter (1983), Amabile (1988) and Glynn (1996) define innovation as a process to execute a new problem solution into use. Again innovation has been related to problems, and similar to Duncan (1972), the concept of innovation is about solving a problem.

Although the literature has been enriched with a broad definition of innovation, the aforementioned context is too general to be describing innovation in housing industry. Due to the uncertainty and high competitive market, it becomes crucial to make sure whether or not the Malaysian housing industry defines innovation in the same way. As what has been explained by Ball (1999) there is a risk to adapt the existing theory made by other industries into the housing industry. Hence, all the 7 terms of innovation will be included in the questionnaire to grab the holistic concept of innovation held by the housing developers.

2.4 Types of Innovation

In general, there are 8 types of innovation which have been suggested in previous studies, as the types include the administrative innovation, market innovation, product innovation, process innovation, technology innovation, value innovation, incremental innovation and radical innovation. Although all types of innovation suggested have some similarities in characteristics and purposes, each innovation holds its own meaning. Hence, it is necessary to find out the exact definition and concept for each type of innovation.

2.4.1 Product Innovation

At the earlier stage, Myers & Marquis (1969) come up with the fact that product innovation is about successful exploitation of new ideas, and Gee (1981) asserts that it should imply 2 settings, novelty and use. In short, product innovation at this point is about a successful invention of new ideas and the ideas being put to use. On the other hand, Freeman (1982) and Alegre et al. (2006) state that product innovation is a process that involves several work out which might refer to the technical design, research and development, manufacturing, administration and business activities of the new or improved product, which is slightly different from what have been defined previously. At this point, product innovation is not just limited to the level of production process, but to the extent of administration and its

marketing method. Later Utterback (1994) stresses that product innovation makes changes in the end product or service. The result of product innovation occurs in the end product, and for housing industry, the end product might refer to a house. Ali (1994) has described product innovation to appear in a new form which is entirely different from the existing forms. Later John (1999) rephrases that product innovation is the most understandable way to create profit. In this context, product innovation has been described as the key to generate revenues. Barlow (1999) in his paper has suggested that product innovation reflects change in the end product or services for the benefit of customers and clients. These might be the improvement made to the design of product and level of service quality. All these definitions explain product innovation in the light of making changes and improvement to the end products and services. As defined by Barlow (1999), product innovation does not just consist of improvement to the end product, but also to the extent of customer satisfaction. Mishra & Srinivasan (2005) clarify that product innovation is about the introduction of a new product and service or about making major amendments over the existing one. At this point, the modification of existing products has been added to explain production innovation. In short, it might refer to changes and improvement to the products. Oslo Manual (2005) defines product innovation as consisting of changes in the utilities of products and services. The products and services refer to the end products or services after sales which improve the level of customer services. Hence, product innovation tends to focus on the end production and the services offered. It may consist of the design, quality of service and customers' benefit.

2.4.2 Process Innovation

Contrary to product innovation, process innovation constitutes changes in the method of production for end products or services, which is perceived to be new to an industry, organization or sub-unit (Capon, et al., 1992; Ettlie & Reza, 1992). In this context, process innovation is about making differences in the process of production; where the term

“novelty” has been added to define process innovation. Thus, process innovation is about the implementation of production method. Later, a more adequate definition by Cumming (1998) and John (1999) who explain process innovation gives a better, faster and cheaper production, at the same time, achieve the quality, cost and timing of the production. At this point, the quality of processing has been highlighted instead of newness. Unlike product innovation, process innovation seems to focus on the method of processing and delivering the products or services. As mentioned above, process innovation is meant to lower the production cost and time while achieving the required quality of processing. Oslo Manual (2005) and Mishra & Srinivasan (2005) have defined process innovation in a more proper way. Process innovation is the application of a novel or significantly improved method of production and delivery. In this context, novelty and improvement have been added to describe process innovation. Thus, process innovation consists of the implementation of new products, designs or the like or making improvement to the process of production.

2.4.3 Market Innovation

John (1999) in his paper suggests that market innovation makes improvement to its target market. Market innovation consists of exploring new business opportunities and the best way of serving the opportunities. In this context, market innovation seems to focus more on opening new market and developing a better method to serve the market. Unlike product innovation and process innovation, market innovation seems to focus more on customer satisfaction and market segmentation. John (1999) also mention that market segmentation is crucial, due to the fact that having a wrong foresight and misreading the market potentials and drawbacks might lead to lost business opportunities. The housing industry produces houses as end products, different products serve different markets, and hence, market innovation finds its place by creating new market opportunities. In the context of the Malaysian housing developers, besides producing residential projects, housing developers have relied much more in the end sales which depend on the customers or purchasers. Later

Oslo Manual (2005) suggested market innovation contributes significant changes in product, price and promotion strategy. Due to that, it takes into account several changes in order to practice market innovation. However, it sounds similar to Johnes (1999) who points out that market innovation focuses more on its market strategy.

2.4.4 Technology Innovation

According to Daft (1978), technology innovation is about implementing of new ideas that gives direct changes to the process of the output. Phillips (1997) defines that technology innovation consists of the use of technologically new products and processes and momentous technological enhancements in products and processes. Later by Mandeville (1998) he explains that technology is about knowledge or information that is used to get things done while technology innovation makes changes to the method of doing things, or doing the whole new things. Grulke & Silber (2002) highlight that technology is the implementation of any applied sciences for sensible values; while, innovators respond to it. At this point, technology innovation is the application of idea related to applied sciences and make changes to the producing process. On top of that, Mishra & Srinivasan (2005) remind us that technology innovation is the application of novel technology or the new mixture of existing technologies to make changes either in the products, services or the process. The technological changes made are intended to contribute changes in the products, services and also the processes of production. Ozorhon et al. (2009) explain the fact that technology innovation consists of the implementation of technologically new products and processes and that it contributes significant technological improvements. Technology innovation focuses in technology-led changes and improvement which also results in technology-led outcomes. It is very clear that technology innovation is very similar to the product innovation and process innovation where focus is put on the product and process. However, technology innovation looks more at the change related to the use and application of technology.

2.4.5 Administrative Innovation

Administrative innovation makes changes which contribute to the policies, resources distribution and other factors related to the social structure of the organization (Daft, 1978). It is considered as a change which broadly influences an organization. It has something to do with the structure of an organization, skill of leader, the effectiveness of strategy and the well-management of the whole employees. Later Oslo Manual (2005) has suggested that administrative innovation is the adaptation of a new administrative system for the business practices, workplaces or to the external relations to improve the performance of an organization. At this point, administrative innovation focuses on the management and structure of an organization instead of the product and process. However, there is a direct influence where a better administrative system might contribute to better production and services. Ozorhon et al. (2009) propose then, that administrative innovation makes significant changes to the organizational structures; application of new management methods and corporate strategic orientations which sound similar to Daft's argument (1978). Similar to the earlier definition, Ozorhon et al. (2009) explain that administrative innovation takes place in an organizational environment, where all the changes made serve the improvement of the overall organization.

2.4.6 Incremental Innovation

Earlier, Tushman & Anderson (1986) has defined incremental innovation as the applied development and extension to the basic technology and thus reinforces the existing technical command. At this point, incremental innovation is explained in terms of basic technological changes to fortify the existing system. Another definition by Herrmann (1999) indicates that incremental innovation is the small changes made to a product and consequently improves its capabilities or its quality. Herrmann describes incremental innovation as tiny changes which might enhance to a product. Later Leifer et al. (2000) stated that incremental innovation

usually relies on the exploitation competencies and consists of cost or improvements in existing products or services. Similar to Herrmann's argument (1999), incremental innovation is about making improvement to the existing products or services. However, as explained by Leifer et al. (2000) incremental innovation very much depends on the exploitation competencies which refer to refining or making changes to the existing products or services. Thus, Mishra & Srinivasan (2005) have suggested that incremental innovation is about the accumulation of numerous small changes. At this point, incremental innovation happens as a result of continuous minor changes. Therefore, in short, incremental innovation has been defined as continuous redefining and making changes to the existing products or service.

2.4.7 Radical Innovation

In contrast, Herrmann (1999) has defined radical innovation as something that is completely novel and has never been done before. At this point, one should be concerned about the second part of the statement which means that changes are not just new to organization, but also to the industry and market. Leifer et al. (2000) define radical innovation as something fundamentally new that depends on exploration competencies. Exploration competencies should concentrate on the improvement of new businesses or product lines via the new ideas, technologies or significant cost reductions which transform the economy of a business. At this point, radical innovation is about the contribution of new ideas, technologies or substantial cost reductions. The keywords highlighted in the radical innovation are "fundamentally new" and "never been done before". On the other hand, Grulke & Silber (2002) have been open when defining innovation. They state that radical innovation consists of the work as the outcome of technology and entrepreneurship and resulting in a massive disruptive combination. The keyword for this definition is massive disruptive combination, which also might refer to entirely new products or services. The obvious difference between radical innovation and any other innovation is the term 'new'. In radical innovation, the term

‘new’ refers new to the firm and the market (Herrmann, 1999; Sandberg, 2007)

2.4.8 Value Innovation

The overall innovation being discussed above emphasizes the concept of being competitive among the competitive market; being the first to introduce and implement new idea or makes improvement to the existing products, processes and services. A question delivered by Mohanty (1999) is “*why do some companies operating under competitive conditions continue to achieve sustained high performance?*” and that question leads to the term named value innovation. In this paper, 6 major imperatives for value innovation have been identified, which refer to customer strength, information strength, global investors strength, strength of market place, strength of simplicity and strength of organization. Within these 6 imperatives, one should highlight the aspect of customer strength. Mohanty (1999) in his paper has touched on the point that value innovation creates value for the customer. He explains that from selling the product alone to selling not just the product, but also information and services. Thus, it is a concept which revolves around getting out of the existing competitive market by focusing into opening a new free contested market which refers to value innovation. Kim & Mauborgne (2005) have defined value innovation as improving the value of the buyers and company, thus creating a new and uncontested market space. At this point, unlike previous innovation-types, value innovation concentrates in creating a leap of value between the buyers and the organization. As a result, value innovation is believed to deliver a new and free contested market which is also called the “blue ocean strategy”. In the blue ocean strategy embarked by Kim & Mauborgne (2005), they state that a competition which occurs in the competitive market only gives more disadvantages instead of benefits. Instead of rivaling with the competitors, it is wise to focus on creating profits by opening and entering a new market. One who adapts to the value innovation should bear in mind that competition is not its benchmark.