

# CONCEPTUALISING INNOVATION FROM THE PERSPECTIVES OF MALAYSIAN HOUSING DEVELOPER

Nor'Aini Yusof<sup>1</sup>, Karl Wagner<sup>2</sup>, Nazirah Zainul Abidin<sup>3</sup> and Lai Kong Seng<sup>3</sup>

<sup>1,3,4</sup> School of Housing, Building and Planning,  
Universiti Sains Malaysia, 11800 Penang, Malaysia

<sup>2</sup> [Faculty of Business, U](#)University of Applied Sciences, 83024 Rosenheim, Germany.

Corresponding author: [ynoraini@usm.my](mailto:ynoraini@usm.my)

Tel: +604-6535235

## Abstract

The purpose of this paper is to seek an understanding of the concept of innovation from the housing developers' point of view. In most parts of the world, innovation becomes a critical success factor for an organization to survive in a competitive market. Innovation plays a vital role as a vehicle to sail through the uncertainties of globalization. A direct adaptation of innovation concepts developed by other industries such as manufacturing may risk of being unsuccessful because of the different nature of housing industry compared with the other industries.—Therefore, the development of a definition and concept of innovation from the perspective of the main players of housing industry especially housing developers will help transforming the industry from relying on conventional methods into a more innovative approach which is virtually an increasingly competitive environment. A survey was carried out with 181 housing developers, followed by three semi-structured interviews. The results discussed in detail show that in general Malaysian housing developers conceptualise innovation as something which is new, is-being put into practice, constitutes improvement, providgives benefits and unique propositions.

Keywords: concept of innovation, innovation, housing developers, housing industry

## 1.0 Introduction

Housing industry in the 21<sup>st</sup> century is facing a changing environment. Increasing technological capabilities, changing consumer needs, tighter control over environmental regulations and quality standard, rising construction costs and

increased competition necessitate ~~for~~ the industry to be innovative. Conventional approaches of relying on standardized design and managing projects is hard to sustain and no longer suitable [1]. As- the new global arena demands and requests high competitiveness, ~~t~~The industry ~~now~~ needs to continuously rejuvenate their products, designs and processes of delivering housing in order to survive ~~and stay competitive~~ [2]. In other words, the industry has been called to be more innovative to effectively meet the changing demands of today's environment. –

Nevertheless, there seems s to be an agreement among the scholars that the industry is lagging behind in terms of innovation. Obsolete~~The~~ characteristics of the housing industry which are very different from the manufacturing industry and not conducive to innovation haves been blamed as the main obstacle for firms to be innovative [3]:–

Firstly, the industry is disjointed in the sense that there are many firms ranging from very small to medium and then very large, with different motives and aims, involved in the process of building and delivering housing [4]. It implies that a great challenge is faced by the industry because of different capabilities for firms to be innovative.

Secondly, housing projects are temporary in nature, with definite beginning and ending dates. Innovation efforts become difficult because knowledge sharing and information flow from one project to another and among industry players are usually poor. This indicates that integration issues must be addressed before any innovation endeavour can work [5].

Because of these reasons Slaughter [6] recommends that developers need to actively participate in both management and construction before they can adopt and adapt innovations. In addition, others argue that the direct benefit from being innovative to developers firms is short-lived [7]. At most, the benefit of being innovative if there is any, might bes temporary because other developers will soon imitate the new product or process [8]. Many developers are reluctant to implement innovation in their housing projects because of the many risks they may face [9]. They take a conventional way of doing business and are complacent with tried and trusted methods that are proven to be successful [9, 10]. It is therefore not surprising if only piecemeal innovation is visibly practiced by the developers [11].

In contrast, innovation research within many other disciplines has already been well established. These studies were conducted in different organizational settings – primarily manufacturing and service industries, R&D laboratories, hospitals, schools and libraries at individual, group and organizational levels which vary in nature. But it should be noted that despite the richness of the studies in these areas, there is not one a single accepted definition of innovation. This is most likely due to the multidisciplinary approach to research in these areas and most definitions rely on the context of the study [12, 13].

Within the housing industry, studies on innovation tend to concentrate on very specific areas, focusing on certain types s of innovation. Most research~~studies~~ focus and capitalize on factors for innovation. Dewick's and Miozzo's [14] study on the motivation for solar heating systems in Scottish Social housing found out that the

main impediments for using the innovative product are the costs and access to the product materials. Yusof et al. [15] concentrate on process innovation and analyse the Malaysian housing developers' propensity in adopting one new housing process. They reveal that despite the many incentives given by the government, the developers are only partially ready to implement a new process. Hoppe and Lulofs [16] focus on energy efficient technology and study how the structure of the housing sector influences the use of the innovative technology in Dutch homes. Pan et al [17] study the utilization of offsite construction methods among United Kingdom's large house builders. They highlight that the rate of utilization is generally low and identified several factors including the perceived higher capital costs as the barrier for innovation.

Quite surprisingly, studies on the concept of innovation in the housing industry which is more basic remain relatively under-researched. Fincher [10] provides a good attempt to define innovation from the perspective of one of the stakeholders. Using narratives of high-rise developers, the author argues ~~that~~ the claim that high-rise housing in inner Melbourne is innovative. According to Fincher, it is indeed actually a conventional

and taken-for-granted views about urban living. However, But again like many other researchers, the study is too narrow, focusing on just one type of innovation; high density apartments in Melbourne which housing developers claimed to be considered an 'innovation'. We argue that the broad nature of housing development which involves generation of development idea, accumulation of resources, construction of the build form, maintenance, adaptability and redevelopment necessitate innovation to be perceived from a holistic view. On the other hand, because of limited studies in this particular area, it should be highlighted that there is a tendency among housing scholars to adapt innovation theories developed for other industries. In the U.K., there is an attempt to describe innovation based on the perspectives of other industries that are relatively more advanced in innovation adoption compared to the housing industry, aiming at helping the industry to meet the changing demands of today's environment. Ball [3] comments that the effort which was borrowed from manufacturing industry has resulted in mixed success. Hereby, it has received much criticism from the industry practitioners. One of the arguments is that the unique nature of housing industry makes direct adaptation of theories would not fit well and risk a danger of not being accepted by the stakeholders [3]. Therefore it is important to conceptualize what does the housing industry, in particular the developers which are the main motivators for development, mean by innovation. The understanding of what innovation is can be done by developing a concept which is suitable for practice in its specific arena. For this reason, the paper aims to develop a concept of innovation from the perspective of housing developers. The rationale for targeting on housing developers is because they are one of the key agents in the housing market which, according to Koebel [8], responding to market demands, make decisions and, acting as catalysts, translate them into the finish product that is the houses. Since what do they, once perceived by the shareholder, will directly

influence the type of products they built [10], it is necessary to focus on what do these developers mean by the term innovation.

In addition, the material importance of innovation has been highlighted by [such as](#) many [researchers](#). According to Porter [18], innovation plays a crucial role in securing a sustained competitive advantage. The need for successful breakthroughs is [vite](#) crucial for housing developments to survive and compete in the open and competitive market. Slaughter [6] suggests that innovation can be a key driver to achieving a competitive advantage for construction companies, offering the means through which a firm can achieve a client's purpose in a specific project or over a range of projects. Innovation improves building and design quality, lower construction costs, thus increasing the developers' performance [19]. If pay-off rates are conceived of as assets often achievable only in the long run, it will also help in achieving a broader goal of sustainable development which protects the environment for present and future generations [20]. However, the concept of innovation is still a relatively new idea in most developing countries. [In particular, we derive](#) ~~There is~~ a need for an in-depth understanding of the concept of innovation pertinent to the housing industry in Malaysia, especially as it relates to the housing developers which are the main agents of change in the industry.

The paper is organized as follows. Firstly, it reviews the general definition of innovation from a general perspective. Secondly, it discusses the concept of innovation based on the limited studies in the context of housing industry, followed by a research methodology for a survey and semi-structured interviews conducted on housing developers by the authors. At the end of the paper, we present the results of our study as to what ~~de~~ Malaysian housing developers conceptualise as innovation. This empirical part may be the onset for future researches on innovation in the housing industry.

## 2.0 Innovation – the general definition

In general, innovation derives from a Latin word *innovare* which means 'to make new' or "to alter" [21]. From the definition, there are two main views of what it means by innovation. The first view consider the element of 'newness' as to what is defined as innovation, while the second view broaden the concept to include 'improvement or upgrading' as innovation.

In the first viewpoint, the key characteristic of innovation is that it involves an attempt to realize something new, be it an idea, method or tool ([22]). According to Schumpeter [23], an innovation management guru whose work has been referred and developed upon by most scholars, innovation is defined as an introduction of a new thing either in the terms of good, market, resources, method of production or operation. Thus, in the context of a firm, innovation refers to the introduction of new idea to organization's members. In this sense, innovation is described as an idea, material, or artefact perceived to be new by the adopting firm [24]. Therefore,

according to this view 'innovation' is not a matter of being the first to adopt, but it is a matter of perception of the adopting firm or individual which constitutes innovation.

However, innovation is not just about introduction of a new idea to individuals or to a firm. As advocated by Kuhn [25], as a necessity, innovation involves ~~it~~ transforming the idea into products and services. Similarly Badawy [26] claimed that something can only become innovation if the novelty is been applied into use or practice. Teece [27] is concurring to this view and suggests that innovation occurs when it has been practiced or completely adopted. Therefore, innovation is not just a new idea, but rather a new outcome that comes into being.

In the second view, the definition of innovation goes one step further to unleash the upgrading of products or services to improve or exchange them by better ones. ~~ones~~ Tidd et al. [21] call for firms to be innovative, they argue that they have to be prepared to renew their products and processes on a continuing basis; demonstrating an agreement to include improvement or enhancement of product or process in comparison to the status quo. Agreeing to this, Oslo Manual [28] provides a more comprehensive definition by defining innovation as "the implementation of a new or significantly improved product (good or service) or process, a new marketing method, or a new organizational method in business practices, workplace organization, or external relations". Subsequently ~~Therefore in the second view~~, innovation involves implementing new ideas or improving an existing product and process.

Other features of innovation claim that it must be successful and brings benefits both to the adoptive firms and to the consumers. This stricter view of innovation suggests that a new idea followed by its implementation, will only be considered as innovation, if it creates added tangible value either to the firm or to its clients [29]. The argument which only considers innovation if it provides added value, is similar to what has been proposed by Urabe [30]. The author suggests that innovation must have the ability to strengthen and expand the performance of a firm or business. Likewise, Twiss [31] holds ~~a view~~ that innovation only occurs when the new product or process is tangible as it succeeds in the marketplace. Therefore, new or improved outcome that is unsuccessful cannot be considered as innovation. Doyle [32] adds another condition to the definition that the new or improved thing must satisfy time-nearnew consumer needs or offer solutions to the existing needs. It also can comprise of more intangible added values, as the new idea, product or process may be considered as innovation if it could take a place and survive in the market, provide added value and help to solve problems, improving capabilities and increasing utility to the adopting firm.

The preceding view of innovation is not surprising, because innovation has always been related to the performance and achievements of the products, systems or processes. When explaining process innovation, Cumming [33] argues that it achieves enhanced quality, speedier production and substantial cost reductions at the same time. Technology innovation for example has direct impact on product and process, in the sense that it produces significantly improved outcome ~~that add~~ ings practical value to the industry [34]. There is also incremental innovation that emphasizes on cost or

feature enhancements in existing products or services [35]. This type of innovation which aims at strengthening the firm's market share ~~of the firm~~, realised through refining existing products and services while at the same time keeping the fundamentals of the products and services [35].

Another strict view of innovation is a view that advocates a firm to be innovative is that it needs should-to be different and unique from their competitors [36]. This view argues that being new, progressing or providing solution is not enough to be called innovation. This uniqueness includes how far the potential adopter implements the innovation method which makes the adopter different from others. It is about unique selling propositions (USP) and, if its opening sleeping customer needs, it mightean be considered as unlocking a Blue Ocean Strategy.

In short, there are conflicting views of what can be conceptualised as innovation and this disparity is due to ~~the~~ different understandings, varying from industry to industry. Therefore it becomes very important to identify the concept of innovation with specific regards to the housing industry.

### 3.0 Innovation in Housing Industry

In an attempt to conceptualise innovation in the housing industry, previous studies have highlighted several definitions. Barlow [9] suggests that innovation in the industry involves either in terms of developments of product or processes that are new, or; a change towards better quality or an advancement of the existing production process. Improvement in product design and the level of service quality that give benefits to the clients or home buyers are considered as innovation [37]. On the other hand, changes in the way firms produce their end products or services, which are new to an industry, firms or their sub-units are also referred to as innovation [38].

A broader definition is given by Kamaruddeen et al. [39] ~~who~~ considering innovation as a tendency of a firm to adopt new products, methods, process and organizational systems that are new either to firms or the industry. Similarly, Hassell et al. [40] define innovation in the context of housing industry as either a product or; process, marketing, technology etc, which is perceived as new by the firms in the respective industry. Fincher [10] exploreding the meaning of innovation by housing developers in Melbourne which have made an influential change in the housing market by building new forms of housing in the inner-city, comments that the claimed as 'innovation' by housing developers is actually based on a conservative view about housing choice. These scholars, however, seem to agree that innovation in the housing industry reflects the newness or the advancement in the way which houses are being constructed and delivered to home buyers.

In terms of its benefit, innovation has been recognised as one of the driving forces to achieve expansion of markets of the industry or housing firms [9]. The use of concrete systems and elements such as concrete -panelised system for example, is argued to provide greater economic benefit to housing developers and deliver higher quality products to home buyers [19]. Nevertheless the benefits cannot be achievrealised by simply substitutinges other materials with concrete and

maintaining the use of [the](#) current construction process. In this context they regard innovation as a ‘whole-of-life’ or ‘whole-of-process’ approach ~~which was~~ borrowed from manufacturing principles. Similarly, technology innovation is acknowledged as a process by which an organization transforms labour, capital, materials and information into products and services of higher quality [34].

The discussion so far showed that the existing housing literature tended to conceptualise innovation in the context of newness and improvement. Differences in defining innovation are understandable because of the complex nature of the housing industry and the referring many types of innovation. How valid are the above conceptualizations of innovation when applied to the Malaysian housing industry? Do housing developers in Malaysia consider innovation the same as what their counterparts in other countries conceptualized what innovation is? The paper will try to provide ~~with some~~ answers. We argue that the understanding of what is innovation in the housing industry needs to encompass a much wider definition. By knowing the concept of innovation it can help the firms to be more responsive to their business environment by developing new ideas and transforming them into new products, processes or systems which in turn can help these developers to compete and survive in an increasingly challenging future demanding the industry to become green.

### 3.0 Research Methodology

As research of innovation for housing is still in its infancy stage, the researchers tried to get initial insights by using a two-folded approach, quantitative and qualitative:

a) quantitative: A two sections questionnaire has been developed to survey housing developers in Penang and Selangor. ~~Both The~~ states ~~of Penang and Selangor~~ were chosen, because housing development activities in Malaysia tend to concentrate over-proportionally in these two states. The survey instrument consists of two sections. Section 1 asked about respondent’s background and firm’s profile. Section 2 asked about the concept of innovation in the housing industry. Respondents were asked to indicate their degree of agreement with the statements in the questionnaire. A 5 point Likert-scale ~~was has been~~ used to measure the construct: (1- strongly disagree, 2- disagree, 3- neither agree nor disagree, 4- agree and 5- strongly agree). 7 questions based on past studies have been developed to conceptualise the meaning of innovation [in the Malaysian housing industry](#) (Attachment A). A pilot test was carried out on 3 individuals who considered themselves experts in housing industry to assure content and face validity.

The [sample population](#) for this study consisted of 338 registered members of the Real Estate and Housing Developers’ Association (REHDA). Only REHDA members were targeted in the study, because the information provided by REHDA is more reliable and accessible than other sources.

Since the REHDA list only provides information about the developers’ address, simple random sampling is the most suitable sampling method to be used.

The advantage of simple random sampling is that it is not only easy to use, but it requires only the listing of the population to precede the sampling process [41]. A total of 181 firms were selected, in accordance with the minimum sample size to gain valid quantitative data as suggested by Krejcie and Morgan [42]. A preliminary contact was ~~established~~ made with the respective firm to identify a suitable person to participate in the survey. The targeted respondents were the owners or managers who have knowledge on the firm's activities and are involved in making decision. The targeted respondents were contacted through the telephone to seek their permission and to notify them before sending the questionnaires. A cover letter explaining the aim of the study, promise of anonymity and contact numbers of the researchers was ~~also~~ included with the questionnaire to increase the response rate. The survey was conducted in June 2009, and t~~he~~ questionnaires were posted to the respondents including and a self-addressed stamped return envelope. ~~The survey was conducted in June 2009.~~ After each seven days, two repeated follow-up call were made, and the pending respondents were given another set of questionnaire including a second prepaid return envelope.

After all, only 33 responded, resulting in a response rate of 18.23 percent. All returned questionnaires were usable for the analysis. The low number of responses was disappointing despite the strategies used to increase response. However, it draws a clear picture and probably reflects a lack of interest among the developers firms to participate in such a future-bound survey. It is not surprising since many other researchers also recorded similar experience [17, 11]. Nevertheless, methodologically speaking, the response rate of more than 18 percent is considered acceptable and common when using a postal survey [43] and in a wireless world of emails with a decreasing response mentality due to an unprecedented influx of electronic surveys since the 90ties, it is methodologically acceptable of increased meaning.

b) In addition to the survey, follow-up semi-structured interviews were carried out on three developers who acknowledged their willingness to participate further during the survey. The purpose of the interviews was to explore in greater depth what housing developers mean by "innovation". The target was qualitative data which was that ~~were~~ not collected by the structured survey. A subsequent interview guide was developed based around the questions asked in the survey. In addition, the interviews addressed the meaning of innovation as what the firm perceived and also what had been implemented by the industry. Respondents in each interview were either the owner or the senior project manager. Each interview lasted around 45 minutes to an hour and was conducted at the respondents' offices.

For the analysis of the quantitative survey data, descriptive statistic has been utilised. The score for each item was derived from the sum scores for all respondents. Frequencies tables presented the result of the survey. The qualitative data obtained from the interviews were transcribed and coded into the study's themes. The interviews results were used to provide further explanations of the survey findings.

#### **4.0 Results and Discussion**



#### 4.1 Respondent profile

Nearly 82 percent of the respondents are either ~~the~~ the owners, senior managers or executives of the respective firms. Furthermore, the majority has more than 10 years of experience working in the industry. Nearly 64 percent of the responding firms are private firms while the remaining are public limited companies which are able to sell shares to the public. A vast majority of about 70 percent have been established for more than 10 years. Most of the respondent firms employed less than 50 fulltime employees. This is considered as normal because of the nature of the industry which subcontracts most of the works. Most of the firms build either from 50 to 500 units or more than 1000 units in one project and most of them are operating in one state.

#### 4.2 Concept of Innovation – Developers’ Perspective

A descriptive analysis of 7 core items was performed to get the insight of what does innovation means to the housing developers. The responses were summed to derive an ~~the~~ average score for each item. Following Alston and Miller’s [44] interpretation of the Likert scale, the subsequent scales were used to interpret the results: 1 - 1.49 strongly disagree, 1.5 - 2.49 disagree, 2.5 - 3.49 neutral (neither disagree nor agree), 3.5 - 4.49 agree and 4.5 - 5.00 strongly agree. Table 1 lists down all the items used to conceptualise innovation and presents the mean score of each item.

Table 1 : The items to conceptualise Innovation and the mean score of each item

Items	Mean	Std. Deviation
Item 1. Innovation is something which is new	4.09	.843
Item 2. Innovation is a new idea which is put into use	4.15	.508
Item 3. Innovation is something that involves improvement	4.27	.626
Item 4. Innovation is a new idea which is useful	4.21	.485
Item 5. Innovation is a new idea which is profitable	3.85	.870
Item 6. Innovation is a new idea which provides solution	4.00	.661
Item 7. Innovation is a new idea which is unique	3.76	.867
Valid N = 33		

All items covered by our research paint a clear image of innovation fulfilling any of our theses. The “Pertinent TOP3 Items of Innovation in Housing” with mean scores in a range of 4.27 – 4.15 are:

Item 2. Innovation is a new idea which is put into use

Item 3. Innovation is something that involves improvement

Item 4. Innovation is a new idea which is useful

These 3 items have in common that the most important element of innovation in housing is its **applicability**. Profitability and generic connotations like uniqueness, newness and providing of solutions attained high scores as well, but are basically slightly less important than the TOP3. In addition, on average the TOP4-7' combined SD is much higher at the same time (810.2 compared with 539.7 in case of our TOP3). That means that the TOP3-agreement is much more unanimous.

Throughout the following paragraphs when shedding light on the results, we will elaborate on just a brief detailed quantitative descriptive analysis. We will emphasise more on qualitative comments uttered by our interviewees, making the TOP3 and the slightly less important TOP4-7 pertinent items more understandable.

#### 4.2.1 TOP 3 Pertinent Items of Innovation in Housing (item 2,3,4)

##### 4.2.1.1 Item 2 - Innovation is a new idea which is put into use

31 respondents (93.9 percent) either agree or strongly agree to the statement. Therefore, our finding is similar to previous studies by Kuhn [25], Badawy [26] and Teece [27] respondents view that innovation is not just a new idea, but is only true when it has been practiced or implemented. Agreeing to the statement, Developer B elaborated further

*'To us innovation is not just about acquiring the knowledge or developing the new idea.... For example in terms of the new solar panel: Even before the government announced about the green building index, some of us have already been exposed to this green building... through seminars, workshops and surfing the internet. But this does not mean that we have adopted the innovation. We can only claim when we have actually implemented it in our projects.'*

One indicator whether innovation is implemented or not comes out from the interview with Developer A. According to him, the new idea which is put into use must be accepted by the market. E.g. regarding the experience of installing home automation in its high end apartments, he said

*"In our apartments now we are doing home automation; alarm system and security, CCTV. This is the new trend. Switch on the light through the phone, screening of visitors. Touch lift with security card. This is a new trend for supper condo. This is acceptable by the customers. Our buyers are willing to pay extra....RM300 – RM400 per month for security. So the response (from the market) needs to be good, accepted by the buyers....then it can be practiced"*

##### 4.2.1.2 Item 3- Innovation is something that involves improvement

With a mean score of 4.27 (SD=0.626), innovation that triggers improvement achieved the highest score of all 7 items. Illustrating how improvement was done, Developer B said

*“For landed properties, previously we use piling, concrete footing, so when we tender, the price is high. What we do now is some economic reengineering ....we ask the contractors to come out with their own proposal. We believe they know better. They propose raft foundation ... or a better method....and money wise it save us a lot. So most of our innovations are in term of methods of construction we improve by changing from concrete footing foundation to raft foundation. Or from using conventional method of construction, we are now for offsite methods; precast system. The effect is lesser cost to us ... ”*

#### 4.2.1.3 Item 4 - Innovation is a new idea which is useful

Respondents in our study basically agree that innovation is something which is useful (mean = 4.21, SD=0.485). With regard to housing, previous studies have postulated that benefits of innovation can emerge in term of its usefulness, increased performance or profit to the adopting firm, and provide solution to address the problems faced by the adopting firms [30, 31, 32].

In terms of what is meant by usefulness, one interviewee points out that the new idea must be useful to the developers. As narrated by Developer C:

*“When we start to implement innovative design in our single storey terrace house, people start to compare. They said that our design is now more trendy and not the same as before. People have started looking for us now. Compared to 2 years back...whereby when we launched our project it is difficult to sell. Now, with the new design we no longer face the problem (of selling). Last November when we launched 200 units of single storey houses, 90 percent of the units have been sold out”.*

In the same vein stressed Developer B:

*“The best thing about innovation is that it can save us the money and give us the quality that we want.”*

The developer elaborated further by giving an example of one of his projects

*“In one of our projects, we develop both LC and MC. Last time the design is purely conventional; in which we use RC concrete. When we do that it is a bit costly because the steel price has increased.. So we decided to change... we change the procurement from conventional to*

*turn key project. So we give option to the contractor and say this is what we one...we want 600 + units of LC and LMC, the build up is 650 to 700 sq ft and must have 3 bedrooms.. The contractor comes up with a proposal ...they do precast concrete. Precast concrete is good when you have big numbers and build high rises ... when they propose that method we actually save about a few millions. To us this is innovative....we look at options”.*

Developer A reinforced the statement by elaborating that

*“For condominium development with complicated design, we now use steel form. This is another new thing that we try to adopt. Because we can recycle, steel form is more reliable and the surface is very nice. It set faster and it can be kept to use for the next project.”*

The interviewees also highlighted that usefulness is not only to the developer but argued that the usefulness of the innovation should extend to the home buyers.

Developer B emphasised

*...to us if we want to consider new idea or product we will consider if it benefits to the home buyers. For example if we checked that what the other developers are giving to the buyers are not giving real benefit to the buyers, we will not do it. We don't think it is fair and we will tell the buyers the truth, why we are not developing that kind of product especially when we know that the buyers will later have to pay more in terms of maintenance etc. Because when we do business we are looking at....we want to establish longer relationship with the buyers.*

Usefulness is described in the context that is suitable to its application for the benefit can be utilised. Giving one of the offsite methods of construction that uses precast concrete as an example, Developer A testified

*Yes, precast is one of innovative construction methods but we don't do precast... simply because most of our houses are medium cost and high end... Precast is not suitable... it is not for complicated design. For simple square design, like low cost house, then precast can be adopted. And it must be done in big quantity. But for complicated design with many curve and various types we cannot use precast.*

#### *4.2.2 TOP 4-7 Pertinent Items of Innovation in Housing (item 1,5,6,7)*

##### *4.2.2.1 Item1 - Innovation is something which is new*

With a mean score of 4.09 and a relatively high SD of 0.843, our follow-up interviews confirm that the concept of newness is to the adoptive firm and not to the industry or to the 'world'. According to Developer A

*'innovation is a new idea... to develop this new idea we will go to other cities like Kuala Lumpur, in Singapore, Japan and Australia where the design is more advanced, so that we are exposed to the latest trend ....from the experience we try to adopt it to our firm'*

Developer B was echoing the same tendency:

*'...of course we need to come out with the new idea. But we don't have our own R&D. We are not like the manufacturing industry.. they have R&D, we don't...So sometimes we look at what other people are doing. We look in Kuala Lumpur where many new designs in the country start there.... or we just look at the magazine or internet on what is new overseas.. we look at what others are doing. We learn from others.. then we tell our architects and engineers what we want.'*

#### 4.2.2.2 Item 5 - Innovation is a new idea which is profitable

With a mean score of 3.85 and a relatively high percentage of respondents who neither agree or disagree (18.2 percent), this item becomes more arguable than those from our TOP3 list. In anticipation of more detailed research to dig deeper, Developer A gave an example of solar system which benefits and foreseen pay-off period cannot be denied, but because of its high cost of investment, it put off the developer from utilizing the new system. Developer A mentioned

*'At first in our new apartment we plan to install solar system for lighting purposes in all common areas. But the cost is too high which reduces our margin of profit. Actually in the long run the idea of using solar system can save the cost of energy. But for a developer, we cannot stand too high a overhead cost. It will affect our profit. So we have to abandon the plan (of using solar system)'*

Elaborating the importance of profitability when defining innovation, Developer B said

*'I think for developers the most important thing (to consider) is that it goes back to sales.. what the people wants... the demand. Even if this new product gives you many benefit but if it does not sell very well, it costs you your profit. So whatever innovation we are adopting we must at least sure that it can give us the profit we need....'*

The interviews reveal that being useful is not enough to the developers. The usefulness must be translated to whether the new idea or product can give them the profit margin they want. As a profit motivated entity it is not surprising if profitability

of an innovation is one of the main considerations for developers adoptability (of the new idea).

#### 4.2.2.3 Item 6 - Innovation is a new idea which provides solution

Similar to item 5 (profitability), there is also a high percentage (21.2 percent) of respondents who are unsure with the statement. Nevertheless Developer B elaborating the point

*I believe innovation is not just about implementing new technology or new design. It (innovation) is more than that....If we can find a way to complete the house in shorter period and at the same time we do not sacrifice with the quality... this is innovation. For example the industrial building system (IBS), precast system, and not forgetting the Build then Sell (BTS)... These type of innovations help to address some of the problems in the industry and this is what is needed by the housing industry.*

#### 4.2.2.4 Item 7 - Innovation is something which is unique

Similarly in terms of whether innovation is something which is unique the mean score is 3.79 (SD=0.867) demonstrating that the bulk of developers (54.5 percent) slightly agree with the statement which may indicate a perception of a general less importance compared with the TOP3 items. Developer C explicitly described ~~de-on~~ how he developed a new idea. Frustrated by the same design used in many of its single storey houses, Developer C revealed

*'the façade may looks a little bit different but the interior, the layout... it is almost the same in every project. After several years I feel really bored.'*

The developer went on and said

*'I did my own search. I look in the internet, architect magazine etc and try to adapt (new layout) in our single storey houses. Then I call the architect...this time around I engage not a very high ranking... not an A level architect. But new, or young firms based on their staff and of course a friend of mine who will follow my idea...and convey, this is what I want. So we come out with this design which is quite different from what others (developers) have been doing. The layout (of the interior building) is unique but we still comply with the regulations; in terms of size, set back, back lane etc. And we plan to patent it (the layout) so that other (developers) cannot copy'*

Developer B associated uniqueness with being different from others

*...actually in this company by (adopting) innovation, we are trying to create our own signatures...It means that when people look at our project, we want them to recognize that this is our company's project. We are trying to depend on our own product and not just by following the trend. So it is not only a matter of implementing new design or new construction method... we deliver on time, we maintain high quality. Our low cost houses are larger than other developers, larger than the minimum standard. We develop trust....Buyers don't have to worry about project being abandon. ... These are our strong points. To us this is what innovation is*

The preceding responses are in line with what being advocated by Menn [36] that an innovative firm should be different and unique compared with their competitors. Nevertheless the mean score of 3.79 shows that developers are slightly agree that innovation should constitute 'uniqueness'. This is not surprising, because it is difficult to stay unique in the housing industry for a long time. The developers usually rely on the same supplier and manufacturer, as a consequence, soon the other developers will imitate the new idea.

## **5.0 Summary**

This paper contributes to the extant body of knowledge on the meaning of innovation by surveying and interviewing housing developers. The findings from the survey reveal that in general developers agree that innovation is something which is new, put into practice, constitute improvement, give benefits and unique. Nevertheless, what the highest mean scores [of our TOP3 items](#) is concerned, housing developers agree that innovation constitutes improvement or upgrading of product or services, followed by the concept of innovation that it should be useful and put into use. The responses obtained through semi-structured interviews provide a better understanding of the statements. The findings reveal that the meanings of innovation to Malaysian housing developers are similar from what previous studies have suggested. Furthermore, the lower scores concerning innovation's adoptability [item\(variable 5 and 7\)](#) also could present a sign of low awareness of the viability of innovative housing solutions especially in the long run. As a hypothesis, the lack of awareness could be reduced in the future if rules and regulations reward innovation by giving incentives, especially if it triggers environmental-friendlier solutions to build and energise houses.

Nonetheless, continuing on the approach utilised here, we have to admit that this study have several limitations, as it was conducted in the context of housing developers in the cities of a developing country where innovation is still considered new. Therefore, the results cannot be simply generalised to a different, political, economic and cultural context. In addition, despite several strategies were made to increase the response rate, 18 percent of usable response -although methodologically acceptable- was not high. Future studies that want to embark into the same postal

survey should be aware of this fact. It is advisable to adopt more face to face survey techniques ~~combined with~~ a more qualitative approach of research methodology.

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