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Organizational Culture and Innovation Adoption/Generation: A Proposed Model

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***Abstract*—**Organizational culture fosters innovation, and innovation is the main engine to be sustained within the uncertainty market. Like other countries, the construction industry significantly contributes to the economy, society and technology of Malaysia, yet, innovation is still considered slow compared to other industries such as manufacturing. Given the important role of an architect as the key player and the contributor of new ideas in the construction industry, there is a call to identify the issue and improve the current situation by focusing on the architectural firms. In addition, the existing studies tend to focus only on a few dimensions of organizational culture and very few studies consider whether innovation is being generated or adopted. Hence, the present research tends to fill in the gap by identifying the organizational cultures that foster or hinder innovation generation and/or innovation adoption, and propose a model of organizational culture and innovation generation and/or adoption.

***Keywords*—**Innovation adoption, innovation generation, architectural firm, organizational culture

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I. Introduction

IN the present, innovation has been hailed as the key to success and survives in the competitive, fast-changing and uncertain business environments. However, the construction industry itself built of different kinds of project, and somehow its difference from one another has hindered research and development [1]. In addition, there is always a risk when adopting a theory from other disciplines [2]. Problem lies on the different nature and structures of the construction industry [3] and the nature of the industry perceived to be conservative has inhibited innovation [4, 5]. In addition, the market has started to compare, to show interest in learning about the materials in use, the quality and price [6]. Later Kamaruddeen *et al.* [7] claim that even the developed countries are facing similar concerns such as regarding the quality of the building and customer consciousness, just to name a few. The current trend shows that the house buyers are more demanding in terms of the house design, where Ozaki [8] reports that the concept of mass customization has been introduced in the Korean housing market in order to meet the demand. On the other hand, the global issues have started to grab public attention. It is reported that the buildings have consumed more than 32% of the world resources and released 40% of the green house gas [11]. The Malaysian Prime Minister, Datuk Seri Najib Tun Razak, during the United Nation's (UN) Climate Change Conference, December 2009, stated that Malaysia is committed to reduce the emission of carbon dioxide gas by the year 2020, and this is because the buildings have contributed to 1/3 of the total release of the green house gas globally [12]. Due to the environmental consciousness, the green-technology has been introduced and encouraged by the Malaysian government. However, in the Malaysian context, this innovative concept and idea still remain to be new and therefore, challenges are yet to be solved [12]. Similar issues are reported at the Scottish social housing when the solar panel faces difficulties due to the matter of the cost and accessibility of the product [13]. In terms of sustainable development, the level of offsite methods application is generally low among large house-builders in the United Kingdom due to the perception of higher capital costs [14]. Meanwhile, the challenges within the construction industry and the global needs remain unsolved, and thus these challenges are believed to be able to be met through innovation [7].

On the other hand, innovation can be realised in two forms, either it is being generated or being adopted [49], [28]. In Malaysia, the architectural services, refering to Act 117, Architects Act 1967 [16] clearly justify the roles and commitment of an architect which are not limited to any personal or industry matter, but expand to the whole environment in aspects like designing, monitoring, constructing and creating. However, in the Turkish architectural domain, the level of innovation is still low in the 21st century, where there are discoveries rather than inventions, or put on other words, new ideas or methods are being adopted from other sectors [17]. Coincidently, the president of the Malaysian Institute of Architect [18] has stated that the obstacles faced in the Malaysian build-environment is due to the designers' un-changed, un-learnt and attitude of being easily satisfied with the current knowledge and achievement. These go in contrast to the definition of the architectural service justified in Act 117, Architects Act 1976 [16], and the fact that the current situation in Malaysia might slow down the generation of novel and innovative design. To date, the literatures strongly suggests the insufficient knowledge regarding the distinction of innovation adoption and/or generation [32]. Hence, inconsistency results have been achieved in most innovation studies [33]. The United Kingdom's house-building industry, in the 1950s and 1960s, in specific the adoption of concrete panels in the industry had failed in practice, where it proved that a risk did exist when adopting innovation from other disciplines [2]. At the opposite end, innovation generation, has been suggested to have higher failure rate in comparison with

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innovation adoption [34]. Zhou [35] claim that innovation generation is the key towards sustainable development; whereas innovation adoption seeks to gain competitive advantages. It has been added that a different innovation (innovation generation and/or innovation adoption) might diversely affect the overall organizations' performance [30]. Consequently, inconsistency can be solved by identifying the theoretical differences between innovation generation's organization and innovation adoption's organization [36]. In the Malaysian construction industry, especially the architectural firm, Filippetti [37] has forwarded that the design and R&D (research and development) are significantly contributive to innovation, and the term "design" also refers to architecture and interior design [38], [39]. In addition, the president of the Malaysian Institute of Architect has claimed that the originality of design (innovation generation) by the architect is significantly important to its sustainability and succession [18]. Yet, there is still insufficient, and less, focus placed on the role of design to the innovation generation and/or innovation adoption [37].

Apart from that, numerous scholars put forward the fact that a creative and suitable working culture is significantly important for an organization [20], [21]. The organizational culture is considered as a key towards sustainable competitive advantage [23], [17] and recently, organizational culture has been hailed as the key factor in the context of innovation [24], [25], [27], [28]. However, innovation still fails in some way [27], [24]. Although organizational culture is considered as a factor propelling innovation [29], yet, it might also lead to conflict between innovation and the current organizational culture [24]. Furthermore, whether innovation is being adopted or being generated, it is much dependent on the culture practised by the organization [30] and the literatures seem to have limited knowledge in terms of "innovative culture" which suggests the notion of cultures that support innovation [30], [31]. Therefore, the present research aims to identify innovative culture.

To date, the majority of the organizational cultures and innovation studies have been done in the context of the United States of America [43], [30], and it is a long-standing issue to other economic settings with regards to the generalization of their findings [43]. Consequently, the Western theories about innovation generation and innovation adoption might not be able to explain the situation in the Asian countries due to the different cultural and characteristics settings [44]. Journeying from the past to present, innovation has been studied in many ways in the context of the construction industry such as the obstacles that have to be faced toward innovation [6], [2], the innovativeness in the British and France's constructions [54], the challenges and strategies of innovation [56] and the relationship between social psychological factors, innovation and the business' performances in Australian architectural and engineering firms [28]. However, the research has not identified which dimension under the organizational culture that affects the innovation, and the innovation has been studied under one construct without identifying the cultural effects on innovation generation and/or innovation adoption. A previous study made by Erbil and Akinciturk [17] concentrates on the factors influencing the dissemination of innovation within architectural firms in Turkey. However, there is still no convincing models and principles on innovation [57]. Additionally, the practices of innovation in the Malaysian private organizations are still under-researched [20] and the majority of the innovation studies done in Malaysia tend to be concentrating on the small and medium enterprise (SMEs) or only focus on certain type of innovation [7]. Several research in innovation taking place in the context of Malaysian build-environment have been done by Yusof *et al.* which focus on the tendency of adopting a process innovation; the build-then-sell system by the Malaysian housing developers [61] and the examination of the factors affecting the readiness of firms towards innovation in the housing industry [48]. Kamaruddeen *et al.* [7] examine the state of innovativeness of the Malaysian housing developers. In addition, Yusof and Zainul Abidin [10] test the relationship between organizational cultures and innovation in the context of the Malaysian public listed housing developers. However, the existing theories have shown that there is significant different progression between the design process and construction process [62] and the insufficient theoretical basic that has been the obstacles for the innovation to be materialised in the industry [63]. Contrastingly, others have focused on the housing developers. Given this circumstance, the present research attempts to focus on the other important roles in the build-environment. The architectural firm plays important roles from the beginning until the end of a construction project and therefore, they are the key-triggers to innovation in the build-environment [17]. In addition, investigation on innovation should be done within the stakeholders in the construction industry such as architectural firms to enrich the understanding of innovation in different processes such as designing [40]. Consequently, the present research will focus on the architectural firm as to study the culture embedded in the organization and its relationship with the innovation adoption and innovation generation. Hence, the present research objective is to propose a model that identifies which organizational cultures foster or hinder the generation and/or adoption of innovation.

II. Literature Review

A. Architectural and Design

The term "architecture" according to Malaysia's Act 117, Architects Act 1967 [16] can be summarized to several keywords; there are conceptualization, R&D (research and development) on design and environmental impact, designing, monitoring, creating, improvement and constructing as the accompanying processes. In addition, architecture in the Turkish context means designing, planning and producing in the build-environment [65]. As aforementioned, it is clearly stated that architecture is about bringing novelty and improvement to the build-environment, and the initial keyword that needs to be highlighted is the term "design". Architecture is mainly the idea of design [39] and design has

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been hailed as the key for innovation to occur [38]. "Designing" confronts build and evaluate, as it is the process of creating solution for a problem and verifying its performances [66]. Whereas in relation to design and innovation, innovation is made of social relationships and communication of a complex system [67]; design on the other hand is a complex social activity [69]. Hence, to gain more understanding of innovation, it is wise to focus on the main generator of novelty, the design. It has also been a major aspect on which the commitment by the architects rest.

B. Innovation Adoption and Innovation Generation

A debate on innovation concerns with whether it is adopted or generated [32]. Although there are scholars who define innovation as being adopted and being generated synonymously [70], [71], the novelty of the innovative product or service is perceived by the adapted unit. However, there is a need to differentiate between innovation being adopted and generated; and there is a significant difference in terms of the skill and resource profiles for innovation adoption and/or generation [74]. In general, innovation generation is about introducing a new product or service ahead of other competitors [76]. In contrast, innovation adoption is about adopting ideas from their competitors [30]. The difference becomes obvious when both innovation-types require different environments and processes. For instance, innovation generation requires idea generation, defining the project, design, development and marketing the products and services [47]. In contrast, innovation adoption confronts the responsiveness of innovation, formation, evaluation and the decision to adopt the trial period and sustain the implementation [70], [71]. Apart from the facts stated, different innovation approaches (innovation generation and/or innovation adoption) serves different purposes and advantages. Innovation generation creates a market and sustains competitive advantages [9]. On the other hand, innovation adoption introduces an improved product to better serve the customer and able to identify the potential market [51]. Also, a creation takes a creative process by merging the new and existing knowledge in a new way to result in an invention which is fundamentally novel [64]. By contrast, adoption is meant to solve problems by adapting the existing knowledge to meet the identified problems [36]. Unlike the adoption of innovation, the innovation generation brings out hidden problems and generates knowledge and information [50]. Innovation generation confronts the exploration of knowledge and unknown possibilities; whereas innovation adoption goes through the process of exploiting the of existing knowledge [75]. In addition, innovation generation is disorderly and unpredictable in nature, whereas innovation adoption is more predictable and planned [77]. In terms of time consumption, innovation generation requires longer time than innovation adoption [36]. For the cost allocation, the former is more costly compared to the latter [30], [46]. On top of that, innovation within the organization level serves different purposes and aims, for instance, organization with the achievement of innovation confronts innovation generation, where in contrast, organization that uses innovation as a co-support to the main objective relatively practice innovation adoption [36].

C. Organizational Culture

Many have defined organizational culture and yet there is non-existent consensus due to each definition reflecting different phenomena [73]. Organizational culture is, roughly speaking, the way we get things done [72]. Another definition suggests that organizational culture is the embedded values and trust shared by the members of an organization [24]. The shared values and trust typically appear within the organization and are accepted through successful experiences in the past, as they are sustained via the social interactions and passed to the new generation; in short, these become a common sense over the best way to run the organization [24]. However, the existing organizational culture may serve as a conflict to the high demands on the innovation and creativity [24] and therefore, different cultures or even opposite organizational culture-types should be implemented [58]. Twelve cultures are suggested to the proposed model. Power distance as the first in the list explain the degree of acceptance towards the unequal power distribution within the organization [55]. The second dimension is masculinity versus femininity, as it refers to the roles played according to the gender, masculinity focuses on monetary success whereas femininity concerns on the quality of life [55]. The third dimension is named individualism versus collectivism [55]. In short, it refers to being self-focused and instilling teamwork quality within an organization. Self-focus is a behavior of taking good care only to the immediate families and themselves, whereas in contrast, teamwork represents a strong relation of team members working together [53], [26]. Another two dimensions suggested by Martins and Terblanche [24] are strategy and behavior adopted to encourage innovation. There are several sub-dimensions suggested within the behavior to encourage innovation, but only two sub-dimensions are used, mistake handling and continuous learning culture. Strategy refers to the focus and importance of the firm's objective towards innovation, shared and embedded among the organization's members [24]. On the other hand, mistaken handling refers to the way an organization responds to mistake and subsequently, it is crucial to encourage new ideas and innovation [24]. The sixth dimension would be continuous learning culture and is suggested as a culture that allow curiosity, communication within and outside the organization, knowledge management and training for skills and thoughts [24]. At present, it is insufficient to only focus on the previous proposed cultures. Therefore, creative factors as suggested by Ekvall [41] have been added to the proposed model as the organizational culture. The creativity is the capability to generate novelty [45]. In addition, innovation is nothing without the occurrence of creativity and creativity always associated with the terms idea, invention and breakthrough [42]. Consequently, the next dimension is the challenge which refers to the perception and passion of a member towards his or her own commitment, where a high-challenge mean the member enjoys and is

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devoted to his or her job whereas a low-challenge indicates a lack of dedication to his or her current situation [41]. Freedom refers to the extent which a member within an organization engages himself or herself in the organization in aspects like making decisions, conducting open discussions and forming contacts [41]. The ninth dimension is the idea support and this refers to how novel ideas and attempts are treated by the upper management team and across the members of an organization [41]. Playfulness and humour represent the atmosphere of the working environment and social relationship among the members of the organization; it deals with spontaneity and energy where the opposite would be boredom and discourage [41]. Risk taking refers to the way uncertainty and unknown outcome are handled by the organization [41], [53]. The last dimension is the idea time, which refers to the time allocated for defining and introducing the new ideas [41].

III. Proposed Model: Relationship Between Organizational Culture and Innovation Adoption/Generation

Studies have suggested that organizational culture significantly determines the generation and adoption of innovation [24], [60], [59]. For instance, a study done in Spanish organizations shows that there is a positive relation between adhocracy and product innovation [31]. Despite this, the study has mentioned nothing about which culture within adhocracy that significantly affects innovation. Another study that works in the Malaysian context also proves that the organization that favors decision making (freedom), support mechanism (encourage creative and novel ideas), and continuous learning (learning and development) have a positive impact towards innovation especially when relating to the technology, process and administrative aspects [68]. Nonetheless, the study does not justify whether the innovation is being adopted or being generated. In between organization with a learning behavior and a creative climate, learning behavior has been reported to have greater influence towards innovation [25]. In the context of the construction industry, the culture that emphasizes teamwork (collectivism) and performance orientation are perceptible [52]. A recent study also shows that performance orientation, humanitarian, assertiveness and future orientation are significantly related to organizational innovation in the public-listed housing developers, although the finding has shown no relationship between innovation and the remaining dimensions of cultures (power distance, uncertainty avoidance, individualism/collectivism, and masculinity/feminity) [10]. These findings show inconsistent results to previous scholars when collectivism (teamwork) is recognized as important to creativity and innovation [67], and risk tolerance (uncertainty avoidance) should be embedded within an innovative organization [24]. On top of that, conflicts occur when a study exhibits that control orientation contributes towards greater performance [15]. In contrast, several scholars defend that control orientation and centralization can most likely hinder creativity and innovation [24], [22]. However, there is an empirical study showing that either control orientation or decentralization significantly affects innovation, as it has been put forth that control orientation or most likely addressed as hierarchical cultures promote innovation adoption whereas decentralization or adhocracy cultures confront innovation generation [30]. To add, somehow the result also shows that control orientation is significantly associated with innovation generation in Spanish manufacturing firms [30]. Therefore, this has proven that different cultures eventually affect organization in different ways [19]. In consequence, the present research proposes a model of organizational culture and innovation adoption/generation which include twelve dimensions in Fig. 1. However, due to the conflicting views from previous studies, in order to stand firm on the dimensions of culture that foster and/or hinder innovation adoption or/and innovation generation in the architectural firms, these dimensions are yet to be explored in detail.

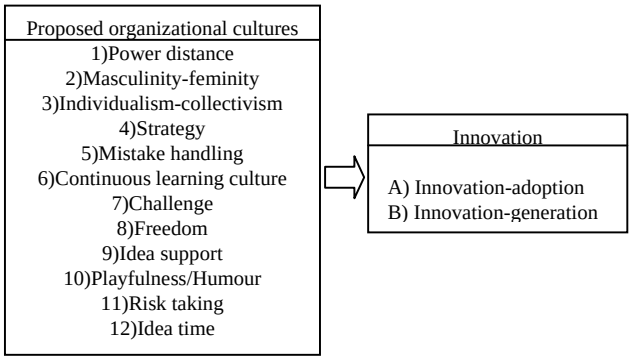


Fig. 1 Proposed model of organizational cultures affect on innovation-adoption and/or innovation-generation

IV. Conclusion

It is a necessity to differentiate the innovation's approach, between adoption and generation, especially when sustainable innovation development has been the major aim within the construction industry. The reason lies in different innovation approaches that might contribute to different business performances and advantages, therefore, they also require different environments and organizational cultures as to support and foster the adoption or/and generation of innovation. Within the architectural setting, design is the main focus and the generation of novel idea is significantly important in this particular aspect of architecture. However, the existing studies within the construction context have been pretty limited. Therefore this paper attempts to conceptualize the relationships between organizational culture and innovation generation and/or adoption. By doing so, it is hoped that we can better understand the organizational cultures that foster and hinder the adoption or generation of innovation, so that specific, innovative cultures can be developed to perfectly suit the innovation generation or innovation adoption intended.

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