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Assessing Organisations' Readiness for Technological Changes in Construction Industry

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Abstract: Of late, the advancements in technology have witnessed a spike in the number of schemes aimed towards enhancing the deployment of technologies in construction-based entities, thereby increasing the demand for technological modifications. This paper intends to scrutinise the keenness of construction entities to identify technological changes within the construction sector. The goals of this research work are to ascertain the degree of willingness for technological alterations, the norms which construction entities should possess regarding the readiness for technological alterations, and the obstacles encountered by construction firms in terms of technological alterations. Ten semi-structured interviews were carried out comprising ten G7 contractors in Selangor and Kuala Lumpur regarding on the implementation and adopting the technological changes within their companies. Based on the observations, most construction firms in Malaysia are fairly prepared to encounter technological fluctuations. Furthermore, the research deliberates many norms which are essential to generate the technological readiness in construction firms along with the obstacles which could impact the organisational inclination for technological changes. This work intends to help construction companies evaluate their degree of readiness and organise themselves for better adoption of technological alterations in their businesses.

Keywords: Readiness, Technological Changes, Construction Industry

1. Introduction

The deployment of novel technologies continues to rise in the architecture, engineering, and construction (AEC) sector. Espousing novel technologies into a firm is essentially an organisational transformation initiative since it entails considerable efforts on the part of the staff to absorb new expertise and become accustomed to new operational standards. In advanced nations such as Malaysia, construction firms continually encounter deviations in different factors like technology, strategy, and human capital. If a construction firm seeks to sustain its competitiveness, it should be prepared to change.

Siemieniuch et al. (2004) emphasised on the requirement to evaluate the readiness to evolve among construction firms as they are likely to be impacted by knowledge management. In view of this, having inadequate knowledge might add to the challenges for project stakeholders in examining the changes which are presently taking place prior to executing them it in a construction venture. According to Mason (2014), a key aspect for change success is change willingness. Notably, not many research works have analysed the change intents and change willingness particularly for technological modifications. If construction firms are able to clearly comprehend the intents for a specific change, their willingness to partake shall rise coupled with the likelihood for the change to be effective (Mason, 2014).

An influencing aspect for enhancing the output and standard of living in technological modifications is the technologies utilised (Bahouth, 1994). For few business entities, the execution of a new technology holds similar significance to formulating the strategies of their firms. This validates the significance for them to establish a procedure

regarding the new technology since such technology might have a major effect on their operation. Furthermore, lapses in changes might impact the viability and performance of construction firms. Therefore, these firms need to evaluate its readiness prior to executing any changes in their construction ventures.

Hence, this paper intends to scrutinise the extent of readiness of the firms, the criteria required by a firm to be ready to adopt the changes, and the obstacles encountered by construction firms because of the technological changes.

2. Technological Change Readiness in Construction Industry

Over the last thirty years, field research shows that approximately 70% of large systems implementations do not deliver the benefits they promised their organisations on time and on budget. In over 85% of those failures technological integrity is not the issue. Ultimately, whether timely or not, the technology will do what it is supposed to do. The problem lies not in the quality and elegance of the technical solution, but rather in the process of integrating the human beings with the technology, by gaining acceptance and building commitment to its optimal utilization (Harrison, 2019; Erdogan, 2015; Bloir, 2014).

Readiness to change is very important before adopting the changes into the organization. Therefore, it is important for the construction organization to understand what is defining by organizational readiness for changes. According to Tran et. el. (2011), there are no specific definition for organizational readiness because the organizational readiness depends on various contexts, the individuals involved in the changes and also on the situation. In his opinion, readiness is defined as the organization initiatives towards preparing their organization capability to adapt a new changes and proper infrastructure when they are ready. This is because the organization tend to adopt better the changes especially technology changes when they are prepared for it. This shows that the readiness of an organisation are dynamic and can increase or decrease depends on the organization initiatives for readiness. In general, organisational readiness to adopt technological changes can be defined as the commitment and organisational ability regarding thoughts and actions associated with the adoption of technology in the organisations. The implementation of technology requires detailed and continuous planning in change management to ensure the successful accomplishment of the technology's objective (Li et al. 2012; Zheng et al. 2009).

Readiness regarding technological modifications pertains to the scenario wherein construction firms assume the initiatives to get ready for a novel technology as part of the endeavours to comprehend and adopt the technology within the firms when they are prepared (Tran et al., 2017). The reason behind this is that firms would effectively adopt any alterations when they are prepared as against when they are not ready. Therefore, construction firms should be prepared to encounter changes, particularly technological alterations, as it is the most vital kind of change that is difficult to execute. This is in line with Kamm (2017) who mentioned that technological advancement is one of the vital changes within the construction sector, which encourages change management specialists to emphasise on the significance of having readiness for change in the organisation through different approaches and tactics.

According to Perez (2018), changes present a challenge for the majority of construction firms wherein the inability to change could emerge as a threat to the firms' viability and work accomplishment. The inclination of construction firms to evolve relies on their aptitude to swiftly become accustomed to the changes which may take place going forward. This signifies that a firm with a high degree of readiness level for adopting a specific change may constitute towards a greater likelihood for the change to be effectively executed.

The success of a construction firm also relies on its determination to deal with technological alterations (Bloir, 2014). Because of the extreme competition in the construction market and pressure of money and time, particularly for large scale ventures, construction firms have a tendency to venture into construction without carrying out appropriate evaluation on their readiness to distinguish technological fluctuations (Ibrahim, 2018). In view of this, construction firms should ascertain the norms necessary to be prepared for technological evolutions so that they can get themselves ready.

Technological revolutions frequently happen in a construction venture as a means of raising its output, decrease conflicts, and attain improved quality (Kamm, 2017). Nonetheless, many major obstacles are encountered in the espousal of new advancements because of the undesirable performance of the construction sector, greater confrontation against modernisation, and inadequate knowledge due to the dearth of investment in R&D. According to Ericson (2001), construction firms which encounter technological modifications would be subjected to reconstruction particularly when the firms have inadequate understanding of the technology which would be deployed.

Moreover, inclination for technological changes is a vital kind of change in the construction sector. The initiation and deployment of a novel technology entails a firm to learn and comprehend new knowledge along with formulating new policies, directives, strategy, and supplementary investments. In view of this, the possession of inadequate readiness to encounter the technological evolutions could trigger the failure of a firm in adopting the changes whereas any ignorance to such alterations might result in its obsoleteness in staying updated with the present technology and endanger its competitive standing with other firms. According to Weiner (2009), in terms of readiness for a change, mutual collaboration among all members in the organisation is vital wherein they should offer pertinent ideas to execute the technological changes and contribute their expertise and aptitude to get their organisation ready for the technological evolutions. It is crucial for the member to possess the willingness to change so as to begin taking action for the deployment of the new technology in their firm.

Moreover, the deployment of new technologies entails appropriate comprehension of the types of technological changes happening and the ways to execute it effectively. This would allow the construction firms to ascertain their degree of readiness, find out whether they are ready for the changes, and consequently formulate appropriate processes or steps which could be adopted to prepare themselves to acknowledge the new technological evolutions.

As far as Malaysia is concerned, different kinds of technologies have been initiated into the local construction sector, such as Building Information Monitoring (BIM), drones, virtual reality, 3D printing, wearables, laser scanning, robotic constructors, big data, GPS tracking, Internet of Things (IoT), and Artificial Intelligence (AI). Nonetheless, just a limited number of such technologies are highly used in the local construction sector (Yap, et. al., 2019). Besides the dearth of knowledge and inadequate funding, the lack of pressure on the authorities to adopt such novel technologies within the local construction firms hinders the adoption of new technologies in the industry. Consequently, most novel technologies are hardly ever employed, and majority of construction firms are still deploying the conventional techniques to get their work accomplished.

3. Methodology

This study adopted a qualitative data collection approach using semi – structured interviews due to their ability to produce detailed information. Semi structured interviews are flexible enough to explore questions into areas that could provide new dimensions of issues not pre-conceived (Axinn and Pearce, 2006). A total of ten (10) semi – structured face – to – face interviews with Klang Valley-based construction managers within the period of October and November 2019 were undertaken and accomplished. Every interview had an average duration of 50 minutes, and the chosen respondents were either senior managers or construction managers with at least five (5) years of relevant experience. Table 1 presents the profile of respondents and the results show that all of the respondents involve at the management level. The stratified selection process was used to pick the respondents, and they were enlisted using email invitations and were contacted personally at the office premises. Telephonic and face-to-face interviews were conducted with no perceptible difference concerning data analysis. Respondents were enquired regarding general technology advancement, their businesses adaptation towards the swiftly transforming technology available in the market and also their experience on those technologies' usage that reflected the readiness to change towards the acceptance of the new technology and the main factors and barriers that influence the readiness to change. Interview analysis was conducted considering changes in practice, managers' technology adaptation, their views regarding technological advancement, and how they adapt to new technology to ensure the competitiveness of their businesses in the market. Once these factors were analysed, composite conclusions were derived.

An iterative process was employed to conduct thematic analysis using Microsoft Word, Excel, and other software for data structuring, in line with the suggestions of Ose (2016), for interpretation of the results of the interviews. The process started with the familiarisation of transcribed data, which was documented in Word file format. Subsequently, data were moved to Excel, where researchers used inductive coding prior to analysis. The themes which emerged during analysis were used to group data based on the common themes. The researchers performed comparisons on these themes and the obtained excerpts, discussed and reiterated them. Content reassessment for every item led to the conclusion that the items may be appropriately matched against numerous themes according to the research objectives. Previous research was employed for theme refinement as per the standard terminology. The next section presents a summary of the final themes.

Table 1 - Profile of interviewees – individual and organizational characteristics

Interviewee	Designation	Experience	Types of Company	Grade of registration with CIDB
RC1	Assistant Manager	7 years	Contractor	G7
RC2	Assistant Planning Engineer	8 years	Contractor	G7
RC3	Project Manager	12 years	Property Developer	G7
RC4	Senior Project Executive	10 years	Contractor	G7
RC5	Contract Manager	15 years	Contractor	G7
RC6	Senior Auditor	10 years	Property Developer	G7
RC7	Senior Executive Project Management	10 years	Contractor	G7
RC8	Assistant Manager Sales & Marketing	7 years	Contractor	G7
RC9	Project Manager	15 years	Contractor	G7
RC10	Senior Manager	13 years	Property Developer	G7

4. Findings and Discussion

In order to understand the readiness of technological change in the construction organizations, the respondents were asked on the types of technology they have adopted in their organizations, the level of readiness in accepting new technology and the challenges of accepting the technology change. Participants were anonymised to preserve confidentiality. For the purpose of this paper, the organisational readiness for technological changes is defined as a state of mind where the organisations are prepared and willing to contribute their abilities and skills to make the implementation of the new technological changes successful.

Understanding and Readiness for Technology Change

Organisation understanding on the readiness for technological change can be varying depending on their own thought and opinion. Ithnin et. al. (2017) has emphasize the importance of readiness before facing the technological changes and the importance of adopting the current technological changes to keep competing with other construction organisation and to sustain in the field.

In the interview, three (3) respondents stated that the new technology cannot be adopted without the organisation taking an initiative first. And the only people with power to do so in an organisation is the top manager himself. This finding is consistent with the previous literature. Leaders also play a main role in in creating a trust in the organization. If there is no guidance, the teams will develop their own working culture to fill the gap which can cause dilemma when the board levels try to implement changes in the organisation (Siemieniuch et. al. (2004). In addition, Holt et.al, (2007) also mentioned in process of changes, it should involve the participation of employee. By creating various initiatives lead by their people, the organisation can lead the organisation members to understand about the new technology and create better chances for the implementation to successfully be adopted in the organisation. Those initiatives can be disseminated through training, seminar, providing IT infrastructure and others.

Two (2) respondents stated that when there are new technological changes, the organisation must take the first initiative and the employees also must be made known of the new technology that the organisation would like to adopt. Organisation also need to consider their employees contribution in the making of such initiatives to prepare their organisation in adopting the technology changes. With a good preparation, the technology can be successfully adopted in the organisation and the employees would be more than happy to follow the organisation new initiative which can give them great advantages in terms of simplifying their work and helping to get their job done faster and in easy way (Weiner, 2009).

Besides, the behaviour and the organisation reaction towards the new technological changes play an important role in readiness for the technological changes.

"If the organisation has negative reaction towards the technological changes, it would be hard for the organisation to be ready for adoption of the new technology" - (RC 8).

The attitude of the organisation on their acceptance of the new technological changes can affect the preparation of readiness for technological changes. Organisation's willingness and a clear vision towards technological changes will drive the organisation readiness for the technological changes better than when they are forced to accept the new technology. Not only attitudes are important in the process of readiness for technological change, but the mental state of the organisational members also will affects the process. Martin & Leurent (2017) found out that the readiness shows the capability of the organisation to adopt the new technology change is very much dependent on the support and behaviour of the organisational member themselves

In the modernization era, technology will be rapidly changing in no time. Hence, the mental state preparation of an organisation is crucial to face the new technological change. The respondent also added, this is due to the fact that the technological changes require capitals, skills and expertise on the new technology which the organisation must prepare to face the changes. Unprepared mental state can cause the organisation to give up and choose to remain with the traditional method that are currently use in their organisation. If an organisation cannot prepare itself to adopt the new technology changes, that organisation will be unable to stay competitive in the market and it fails to satisfy the clients need. For a construction organisation to sustain in the construction industry, they must put the customer value at the first place.

"The organisation must prepare their mind when there are new technological changes in the construction industry" – (RC 4).

The organisation must look at the new technological in a positive way where the new technology can offer them great advantages in terms of reputation, time, speed of work, method of work and others. By setting up and making up their mind, the organisation would be willing to accept the new technological changes and prepare themselves to adopt those changes. When they are willing to accept the technology changes, it would be easier for them to ready themselves for the changes and to develop the ability to adopt the changes in their organisation.

"Construction organisation need to be ready even with small changes to larger changes in order for the organisation to successfully face the changes and consider to adopt it in their organisation" – (RC1)

Perceptions on the respondents' readiness of technological change in their organizations were asked. Remarkably, one (1) respondent stated that he knows nothing about the level of readiness of his organisation for technological changes, three (3) respondents answered that their organisation are not ready for technological change, four (4) respondents stated that their organisation are quite ready for technological change and the last two (2) respondents stated that their organisation are ready for the technological change.

One (1) respondent stated that he does not know about his organisation level of readiness for technological change maybe due to the fact that the company is aware on the existence of new technology but never aware that readiness of their organisation for new technology adoption is important hence no preparation is made for that particular purpose. Nonetheless, there are organisations that do not involve their organisational members for the adoption of new technology unfortunately the organisation still using the old technology.

Three (3) respondents stated that their organisation are not ready for technological change. This is due to the capability of the organisation to invest in the new technology The adoption of new technology requires resources and money. Without money and organisational members' support, it would be hard for the organisation to get all the required resources to adopt the new technological changes.

Other than that, four (4) respondents mentioned that their organisation are quite ready for technological change. The reason is because the companies are aware and starting to learn about the new changes and how to face the new technological changes. This literally means that those companies are exposed on the new technological changes and they have knowledge about the changes yet it is still not enough for the adoption of the new technology.

Lastly, two (2) respondents stated that their organisations are ready for technological changes. The organisations are aware about the changes, learn about the changes and starting to make plans to adopt the technological changes in their organisation. This shows that the organisation awareness and effort towards new technology. The organisation initiates several plans as a backup and adopt it in their organisation. If the plan fails, they try to go for the backup plans.

The participants also have been asked whether they ever faced failure in implementation of new technology. The result is five (5) out of ten (10) respondents stated that they failed in implementing new technological changes and the organisation readiness is one of the factor that contributes to the failures. Nine (9) out of ten (10) respondents agreed that with a good organisational readiness for technological change, the implementation of the changes will be successful and therefore increase the construction organisation's performance. This is because readiness means the organisation has took all the initiatives needed to make sure that they have sufficient capability to adopt the technological changes. This finding is parallel with Ithnin et. al., (2017). Organisational readiness on technology changes also require trust between the organisational committee, enough support by the organisation management and also come out with a proper initiative to manage the new technological changes

Only one (1) respondent stated that the organisational readiness does not have much impact on the implementation of new technological changes. The respondent stated that high capital investment is needed to adopt new technology. With high capital allocated to the technology, they hired an expertise to train the employee, hired new worker with the skills needed and others. Tran et. al. (2011) also state the successful technology adoption depends on the organisation capabilities to adopt the changes and the management attitudes towards the changes. The organisation needs to properly create the strategy to adopt the technological changes and provide all the needed resources, infrastructure and training needed by the organisational member even without the support by the government.

Factors affecting Technology Change Readiness

In the implementation of new technological changes, there are some criteria needed to be achieved in the readiness level for successful adoption of new technology in the organisation. 7 out of 10 respondents believe that the organisation must leans towards the technology in order to successfully implement the new technology. If the organisation has the willingness to adopt the new technology, they can implement the technology better thus unlocking all the potential benefit that the organisation can get from the implementation. The organisational willingness will also encourage the organisational member to accept the technological changes and contributes in the implementation of technological changes.

To successfully adopt the technological change, the organisation must develop the necessary technological and entrepreneurial capabilities. Most respondents stated that new technologies required the new skills and capabilities of the organisational member that understand the technologies and know how to use the technologies. If the organisation has the required skills and capabilities for the adoption of the new technologies, the organisation will have higher level of readiness for the implementation of new technology. Furthermore, the skills and capabilities of the organisational member are very important to determine whether the organisation have enough resources to implement the technologies or not (Martin & Leurent, 2017).

Next, an organisation needs to provide the new technologies for the organisation. Five (5) out of ten (10) respondents agreed that the organisation must have the technologies to allow them to test the technologies by

themselves. The organisation must be willing to invest for the technologies in order to practices using the technologies before adopting the technologies to their organisation. The example of technologies that the organisation requires a strategy of readiness for changes such as the Information Technology tools like Revit, Virtual Reality tools or Cloud base technology.

Organisations must also create new policies, procedures, or practices based on the new technologies. Six (6) out of ten (10) respondents stated that the new policies, procedures and practices is very important to act as a guideline for the organisational member to refer during the implementation of technological changes. With a proper guideline, the organisational member will contribute more towards the implementation of new technological changes. The organisation will also create better initiative which increases the organisational level of readiness for implementation of new technology (Council, 2018). Ithnin et al., (2017) also highlighted, the policies inside the organisation will guide the organisational members with a standard that must be follow by everyone in the organisation. By providing proper policies, procedure and practices based on the new technologies, the adoption of the new technologies will be more successful.

The connectivity and technology infrastructure are crucial elements that they must have in the implementation of new technologies. The respondents stated that without proper connectivity the technologies cannot be fully utilize to get the benefit of the implementation of the technologies. The technology infrastructure also must be provided by the organisation so that the organisation management can successfully adopt the new technologies in their organisation. Without proper technologies infrastructure, the adoption of the new technologies will be limited to what they can get with the amount they invested. With money, the organisation will be able to implement all the technologies that they want.

The other criteria that are needed by the organisation to successfully adopt the technological changes include the positioning for the digital economy. Five (5) respondents agreed that the organisation must identify first their organisation's position in terms of technology used compared to other organisation and then they can identify the technologies needed to keep in pace with other organisation. By identifying their position in digital economy, they can prepare their organisation step by step without jumping to the latest technology as it can affect the implementation of technologies in their organisation.

Besides, respondents also stated that the coordination and communication support are also important in the readiness for technological changes. In the implementation of changes, the organisation must give enough support in terms of funding, provide training and give knowledge to the organisational member about the new technologies. If the organisation failed to do so, the organisational member would be lack of interest to contribute in the adoption of technological changes. This can give impact to the organisation as the implementation would be failed due to low readiness level of the organisation.

Lastly, six (6) out of ten (10) interviewees stated that the organisation must have sufficient budget for technical and economic cost to implement the new technologies in their organisation. The adoption of new technologies requires the organisation to invest a large amount of money. That is one of the reasons why the implementation of new technologies is considered to be high risk. Having sufficient capital will allow the organisation to implement any new technological changes.

Challenges of Technology Change Readiness

In the readiness for technological changes, there are many challenges that can arises during the implementation. Five (5) groups of themes emerged during the data collections which is social, cultural, strategic implementation, psychological and also communication.

a. Social

The social factors can be divided into four (4) challenges which is lack of teamwork and collaborations between the team members, the need for personal contact, cooperation and long-term relationship with customers, less preferences in using new technologies and also lack of learner motivation towards using technologies. Four (4) respondents mentioned, lack of teamwork and collaborations between the team members happen because lack of social interaction between the organisational members. The lack of teamwork also causes the sharing of knowledge hard to be done and the organisational member also awkward to work together in a team. Teamwork is very important in an organisation to ensure good communication in the organisation because through communication, the sharing of information among the employees can be done. Jaafar et al., (2007) described that a good communication can help in reducing problems in the project for instance; reduce risk of delay and lead towards a successful information sharing.

The creation of an atmosphere in which trustful communication and collaboration can take place may be an important foundation for achieving organizational change goals. Trust in management can reduce some of the feelings of uncertainty and lack of information about the change, thereby reducing speculation and unfounded fear. Further, employees who trust their management tend to react more positively to changes in organizational direction according to Haque (2008). Three (3) respondents stated the need for personal contact, cooperation and long-term relationship with employee also become the challenges in readiness for technological changes. The relationship and keep in contact with

the employee and specialist will help the organisation to get some knowledge and information about the new technologies. If the relationship of the organisation has no connection or good relationship with the specialist, it would be hard for the organisation to get the new knowledge especially when it is limited.

The respondents also mentioned that some organisational member has less preference in using new technologies. This has become one of the barriers where the organisational member resists to change from old technologies to using new technologies. It is said that the organisational members fail to shift their mind-set which affected the learning curve to be slow and affected the readiness state of the organisation.

Six (6) out of Ten (10) respondents also stated that lack of learner motivation towards using technology also causes the organisational members to keep on using the old technologies. The organisational members are not attracted to use new technologies as they are more comfortable, and they feel safe using the traditional way to get their work done.

b. Cultural

The cultural factors also divided into four factors which is project teams consist of unique entities, different culture based on enterprises, behavioural issue in the organisation and also lack of awareness in availability of technology. Three (3) respondent states that project teams consist of unique entities. This has become a problem when the organisational member of different entities cannot blend in with each other. The respondents stated that the organisation must mix different entities in the organisation to form a team in order to create more teamwork and allow the team members to communicate with each other.

Different culture based on enterprises also has becomes the barriers that affect the readiness of the organisation in facing technological changes. Different culture which causes each of the organisations to have their own barriers in implementing the technological changes. Even in organisation, there are many departments in the organisation which have different acceptance towards the technological changes. Some maybe might not be using the technologies as much as other departments, so they think the adoption of new technologies is not worthwhile.

Six (6) out of ten (10) respondents also agreed that behavioural issue has become one of the challenges in readiness for technological change. In the organisation, there will be some people that does not want others to succeed more than themselves. This has become the problems in sharing information and data about the new technologies.

Lack of awareness in availability of technology also has become one of the barriers that causing the organisation unable to implement the new technologies. The respondents stated that nowadays there are too many technologies that has been developed for construction industry but only a few technologies are being made known worldwide which causes even large companies does not know about the technologies. The interviewees also stated that Small Medium Enterprises (SMEs) are facing this problem more than the large organisation due to the cost of investment are very high.

c. Strategic Implementation

For the strategic implementation challenges in readiness for technological changes such as lack of system knowledge; lack of strategic management; lack of clear vision and objectives, lack of technical expertise, personnel skilled; lack of leadership and top commitment, lack of an effective legal and regulation system and poor IT infrastructure and resources.

Six (6) respondents' states that the lack of system knowledge; lack of strategic management and lack of clear vision and objectives can becomes the barriers for the organisation. This is because without proper knowledge and target for the implementation of technologies, the implementation would not be effective. The readiness for technological changes also would be failed as the organisation themselves does not know what they want to achieve through the implementation of new technologies.

Besides, the lack of technical expertise, personnel skilled, leadership and top management commitment also becomes a barrier to the organisation in readiness for technological change state the respondents. The organisational leader needs to initiate the step-in readiness for technological changes in the organisation. The organisation needs to have the expertise and skilled person that know about the knowledge in order to initiate the proper step for their employee to follow.

Only one (1) respondent agreed that the lack of an effective legal and regulation system. This is because in his opinion it is not easy and takes a long time for the organisation to establish new legal and regulation system. The implementation of new technologies can only use the current legal and regulation system by just changing the purpose of the legal system. In that way, they can shorten the time taken in readiness for technological changes.

Five (5) out of Ten (10) respondents agreed that poor IT infrastructure and resources can causes the implementation of new technologies to be failed. This is because the new technologies require the organisation to invest some money for the software, system and new equipment. If the organisation does not have enough funding, it can lead to poor nrfrastructure and resource for the implementation of new technologies to be successful.

d. Psychological

For the psychological factors, the development of confidence to use new technologies, the challenge of shifting the mind-set of people wanting to stay with the current system, reluctance to share data with trading partners and lack of demand from customer/client, pressure from competitors and corporate executive level support were emerged during the interviews.

The respondents stated that the development of confidence to use new technologies also has become a challenge in readiness for technological changes. This is because when the employee is comfortable using the old technologies, they become afraid to use the new technologies as they might fail to suit themselves using the new technologies even though they already know the benefit of the technologies. Other than that, four (4) respondents also stated that in the implementation of new technology, the challenge of shifting the mind-set of people wanting to stay with the current system also cannot be avoided. The respondents stated that this is because for some employees, the adoption of new technologies is a waste of money when the organisation can still use the current system. The reluctance to share data with trading partners also happen in the construction organisation. This is because of the competition among the organisation and even among the employee themselves to get the attention of their organisational leaders. The respondents also mentioned that the barriers in readiness for technological changes also can be from lack of demand from customer and pressure from competitors. If only a few organisations adopt the new technologies, the pressure and competition among the organisation will be low and causes the other organisation to stick with the current system. The lack of demand from the client also causes the adoption of technologies will be low as they think the usage of new technologies will increase the construction cost.

Lastly, the respondents identify communication also become one of the barriers in readiness for technological changes such as inconsistent leadership style, lack of receptivity for new technologies and language problems towards using new technologies. Inconsistent leadership style causes the process of conveying information through communication cannot be done. This also causes the data and information about the new technologies cannot be delivered to the employee. The employee also will resist the adoption of new technologies since they do not understand and are not prepared for the technological changes. Two (2) respondents identify lack of receptivity for new technologies state the respondents hinder the readiness for technology change. The receptivity of the organisation for new technologies depend on their readiness level. The readiness level of the organisation will be high if the organisation has sufficient knowledge, provide trainings to organisational member and the organisation has the technologies (Weber & Weber, 2001). The receptivity of the organisation depends on the receptivity of the organisational members. The last one is language problems towards using new technologies. Language problem is rarely happening in the sharing of technologies, but it can happen in the countries that does not speak English. This is because English is the main language that helps the countries with various languages to communicate with each other. In order to overcome the language problem, the organisation should have an employee that possesses linguistic skill.

5. Conclusion

The importance of change came from the constant need to adjust and change objectives in line with the requirement of renewal and change. This paper was carried out to determine the state of company's readiness for technological changes and challenges to improve the readiness and provide recommendations to have a successful change initiative. The findings derived from semi – structured interviews indicated that the state of readiness is still at the lower level. This is attributed to factors like new technology requiring capital investment, knowledge, and prowess in facilitating an enterprise to understand and fruitfully implement it especially inside the organisation and for the employees of the organisation.

The participants recommended several criteria needed for the successful adoption of technology changes such as developing the necessary technological and entrepreneurial capabilities before the organization buy any of the new technology. They also believe introducing new policies, procedures, and practices based on new technologies comes at the forefront of criteria that may help to act as a guideline for the organisational member to refer during the implementation of technological changes. Besides, the coordination and communication support are also important in the readiness for technological changes. In the implementation of changes, the organisation must give enough support in terms of funding, provide training and give knowledge to the organisational member about the new technologies. If the organisation failed to do so, the organisational member would be lack of interest to contribute in the adoption of technological changes. This can give impact to the organisation as the implementation would be failed due to low readiness level of the organisation. It can be concluded that organisational readiness towards technology change is comparable to a state where these organisations are ready and inclined to dedicate skill and ability towards effecting successful technological change. Organisational readiness leads to a better understanding of latest technology and helps pinpoint the required changes that must be adopted in construction firms. The technological change readiness also helps identify the effects of change on an organisation and its stakeholders. Future research could build on these findings in a number of ways, including further exploring the readiness process for different needs and contexts; evaluating the impact of readiness on implementation effectiveness and further identifying readiness factors for each level of change readiness. The readiness state of the organisation will help the organisation to understand about the new technologies

and to identify the need for changes to be adopted in construction organization. The implications of changes towards the organisation and the organizational members will also be identified through readiness for technological changes.

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