

APPLICATION OF E-TENDERING IN MALAYSIAN CONSTRUCTION INDUSTRY

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ABSTRACT Electronic tendering has been assumed to be a more effective method compare with a traditional tendering method. However, most of the local projects are still adopting the traditional tendering method. The aim of this study is to investigate whether the contractors in Malaysia construction industry would adopt and participate in the e-tendering system. The study will take into account the application of e-tendering in current Malaysia construction industry, the challenges of implementing the e-tendering system and willingness of the contractors to participate in e-tendering. The research applied quantitative data, which questionnaire survey had been distributed via online to identify the level of understanding about the e-tendering system of contractors in Malaysia and also whether the contractors involved in the application of e-tendering in Malaysia. The result shows that the application of e-tendering is in moderate level in current Malaysia construction community. The majority of the contractors have a moderate understanding regarding the e-tendering system and more than half of them having experience with e-tendering. The challenges of the e-tendering system and the contractor's readiness in adopting e-tendering were evaluated. Most of the contractors are willing to involve if they are invited to participate in the e-tendering project. Saving in storage space is one of the biggest factors which contribute to the contractors' willingness to participate in e-tendering. In the other hand, security concern is the most important factor contributes to contractors' unwillingness in the participation of e-tendering.

Keywords: E-Tendering, Procurement, Malaysia Construction Industry

1. INTRODUCTION

Construction industry plays an important role in Malaysia's economy. Beside economy growth, construction industry also improves the quality of life and living standards of Malaysian people. Malaysia recognized the importance of the construction industry since its independence in 1957. Today the construction industry in Malaysia is developing rapidly and become one of the backbones of the country[1].

The construction industry is transforming into a new dimension with the help of information technologies. With the advancement of information technologies throughout the years, businesses are moving away from traditional processes to a modern and efficient ways of working. Compared to the traditional process, electronic processes believe to have great potential to generate huge wealth [2].

The tendering phase in the construction industry considered to be the most important and critical parts throughout the lifecycle of the construction project [3]. Tendering process will form the contractual agreements between the client, consultant team, and contractors [4].

2. E-TENDERING

Tendering has been undertaken as part of the traditional contractual procurement process. It is a long and complicated business process. This process normally produces a lot of contractually related legal liabilities. Tendering process in simple form can be defined as an invitation to the parties to accept an offer. The offer

will lastly become a legally binding contract between the both parties [5].

The terms electronic tendering (E-tendering) defines that entering and conducting a tendering process electronically [6]. It can be described as an electronic based process where the contractors can carry out the complete tendering process including advertising receiving and submitting tender through electronic media. Without the paper-based transactions, the process assumed to become more cost effective and time savings [7].

According to RICS guidance note [8], e-tendering benefit both the clients and tenderer. The benefits including reducing tendering cost enhance security and confidentiality, remove unnecessary administration, reduce administrative and transaction cost, fast and reliable exchange of information and streamline the tendering process.

2.1 E-Tendering Stages Of Development

According to Bettset al. [9], Government and most of the business organization are unlikely to abandon the paper tendering system as e-tendering is a relatively new concept and consist of uncertainty. They prefer to develop the e-tendering system in phases. The development e-tendering generally occur in three phases. The international countries such as Australia, Hong Kong, and Malaysia have already developed e-tendering systems up to the second stage.

The first phase involves principal to tenderer communication. This phase allowed the clients or representatives for the clients can be consultants post and upload the tender advertisement and documents on a website. The tenderer will download but still submitted the documentation in the paper. It is only one-way communication at this stage of development.

Different with the first phase, the second phase including downloading the tender documents and submitting the documents electronically. There is two-ways communication between the clients and the tenderer as all the addendum and negotiation occur electronically. However, there is no tender award electronically.

In the third phase, the process almost the same as the second phase with additionally the tender is awarded and the contract formed electronically. The contract administration will be carried out electronically via collaboration software.

National E-Tendering Initiative (NeTI) in Malaysia is a national initiative that links and merge every process in entire construction tendering into an electronic media. NeTI hopes that it can transcend geographical, time, economical and human error. By doing so, it can speed up the tendering process and assumed to be more efficient and profitable for all the parties in the industry. The main aim of NeTI was helping to solve the biggest challenges faced by the Malaysian in implementing e-tendering.

Phases applicable in NeTI are as follows and shown in Table 1.

Table 1. Phases in NeTI

Phases	Descriptions
<ul style="list-style-type: none"> • Phase 1 – Tender Advertisement • Phase 2 – Registration and purchase tender 	<ul style="list-style-type: none"> • The government or registered agencies would advertise the tender notice on the official tendering website which is www.tender.gov.my. The tender notice shall include the tender reference, tender title, registration category required, closing date, document fee, and all the necessary info • Subsequently, the contractors can view and register with the tender the interested with. After that, the contract can purchase the tender from agency counter using registration code. Contractors with the registration code can download and view the documents online anytime during the tendering period.

- Phase 3 – Pricing and Upload BQ
- Phase 4 – Open tender box
- After completely download the documents, the contractors can start pricing the BQ. All the documents are in electronic format. The contractors can then submit the BQ online.
- Once the tender is close. The registered agency will log in as tender admin. Agency will download the documents submitted by the contractors and evaluate the tender. The contractors are able to view the tender result through e-Notice Board.

Source: National e-Tendering Initiative

2.2 E-Tendering Challenges

Challenges in performing e-tendering could be specified in few perspectives.

Table 2. Challenges in E-Tendering

Characteristics	Descriptions
Poor Reliability	System availability is important and critical during the tendering stage as it is one of the main causes which lead to the failure of the project [10].
Resistance to Change	Resistance to change is one of the biggest barriers to the introduction of e-procurement in the public sector, which the paper-based tendering method has been applied in the construction for so many years, people are more familiar with the traditional system instead of an e-tendering system which is relatively new[11][12].
High Initial Cost	The cost implication on the e-tendering system will be the high initial capital investment required by the companies [7].
High Maintenance Cost	IT technologies are too expensive and grown very quickly; the maintenance cost would be very high in order to ensure the systems are always kept in advanced [7].
Security Concern	In tendering process, everything could be private and confidentiality; the contractors would not want their information leakage due to the poor security system. Poor security may cause the project fail in the tendering process [12].
Legal Issues	According to Betts, Christensen et al. (2005), legal issues become one of the challenges as it is important to maintain the legal compliance when converting the paper base traditional tendering method to an electronic tendering system.
Lack of Business Relationship	e-Tendering is relatively new concept compare with traditional tendering, most of the organization are not interested and familiar with it. It is difficult to find a partner which complying with the new IT system [11].

2.3 Comparison between Traitional and E-Tendering

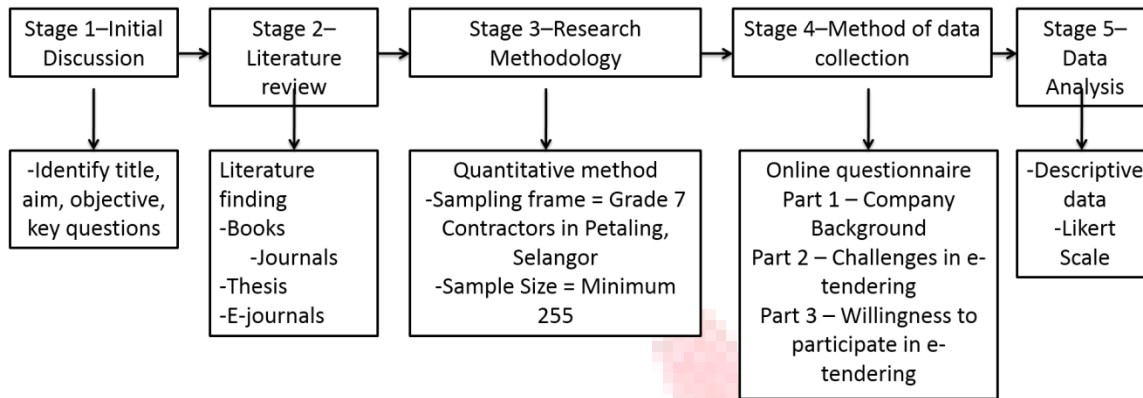
This section compare on the conventional tendering and e-tendering. E-tenders are paperless, portable, inexpensive simple to compile and benefit to lower the cost to the organizations [14].

Table 3. Comparison between Traditional and E-Tendering

Traditional	E-Tendering
Poor audit trail	Receipt for each action is automatically generated provides a systematic and accurate audit trail.
High paper usage and storage	Paperless as tenders can be viewed and submitted online. With e-Documentation, there is no need to physical storage space of tender documents.
Restricted mobility as it required tenderer to physically come to collect the documents	Tender documents can be viewed and downloaded anytime, anywhere with the internet
Poor information safety and availability	As all tender documents are securely sorted online and backed up in the servers.
High processing cost	Economical as printing and transporting cost can be reduced
Time-consuming and slow processing because of human errors	Automated & Accurate process allowed documents produce in a large amount within a short time.

Source: Ezanee Mohamed Elias, Norlila Mahidin, Norshuhada Shiratudiiin [15]

3. RESULT METHODOLOGY



4. RESULT AND DISCUSSION

More than half of the respondents (57% of the total respondents) depicted in Figure 1. In other hands, 43% of the respondents do not have any experience with the e-tendering system.

According to Lou [16], the concept of e-tendering in Malaysian construction community is still in its infancy stage. However, in 2015 the result shows that more than half of the respondents having experience with e-tendering systems. This shows that Malaysian construction community is changing towards ICT adoption. The ICT trend will increase when more and younger generation entering the construction industry.

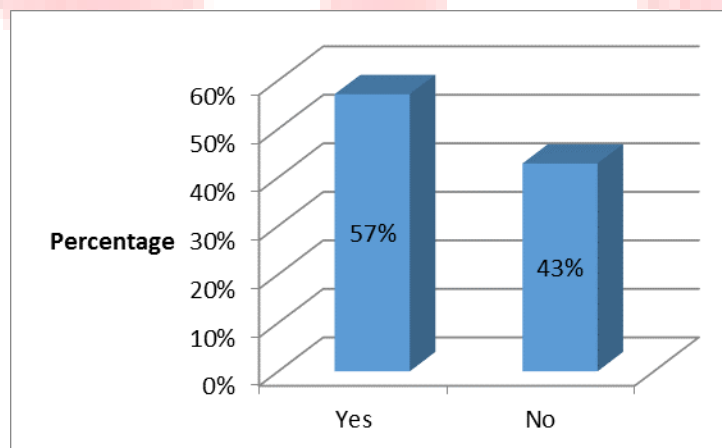


Figure 1. Experience of E-Tendering

The challenges faced when to implement the e-tendering system in Malaysia construction industry. The highest ranking among the challenges is 'poor reliability'. According to Derek and Andre [10], System availability is the important and critical parts during the tendering stage as it is one of the main causes which lead to the failure of the project. The result shows that most of the respondents are concern about the reliability of the system. In order to

make sure the e-tendering process can be done smoothly, the system has to be checked from time to time ensure it is not malfunction. Unavailability of the system may cause tendering process fail.

'Security concerns' was ranked as the second highest among the challenges. Security is a major concern when working on the internet. The threats like virus attack, hijacking are very common and will affect the confidentiality of the data. Without compatible software, data transmitted on it can be garbled, leakage or reassemble wrongly. According to RICD guidance note [8], e-tendering can enhance the security and confidentiality. However, the result shows that the respondents are more concern about security issues as during tendering process, there are so many documents and the information is private and confidential for example the price, contract agreement. The tenderers would not want their data especially the price leakage due to the poor security system.

Another important challenge implementing e-tendering is 'resistances to changes'. The paper-based tendering method has been applied in Malaysia Construction Industry for so many years. People are more familiar with the traditional method compare with e-tendering which they not familiar with it. Traditional and stubborn thinking, culture issues and lack of upper management support become the biggest barriers prior to the adoption of an e-tendering system [12].

'High initial cost', 'Legal issues', and 'High maintenance cost' were ranked as fourth, fifth and sixth respectively. Although the e-tendering system can help the companies save in running cost or courier cost [8], but the process required high initial capital investment. High installation or set-up cost for the system required at the early stage. Maintenance cost like wages for the technician, replacing of accessories is also necessary in order to ensure the system can be performed well in the future.

'Lack of knowledge' and 'Lack of business relationship' are less important and ranked as seventh and eighth among the challenges. The Older generation that has not kept up with the advances in IT related issues relying heavily on the traditional method. With more and younger generation entering the construction industry, lack of knowledge becomes insignificant issues which prevent the implementation of e-tendering in the construction industry.

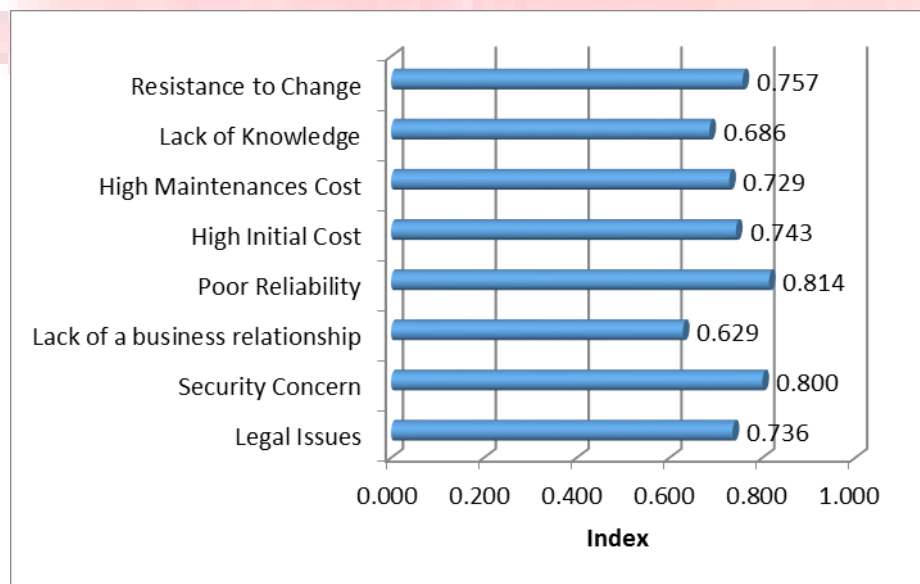


Figure 2. Challenges in Implementing E-Tendering

Figure 2 shows on the challenges faced by the contractors who are having experience in the project which implements e-tendering system. In regard to challenges provided through e-tendering implementation, it resulted in different readiness in participating e-tendering for a project. The results show that most of the construction companies are highly willing to participate in the project which implements the e-tendering system. 68% are willing to participate if they are invited while the rest are reluctant. According to the e-readiness study carried out by Lou [16], the Malaysian construction community is ready to adopt ICT for e-tendering. The majority of the companies in Malaysia are actually ready and willing to involve in e-tendering if they are invited.

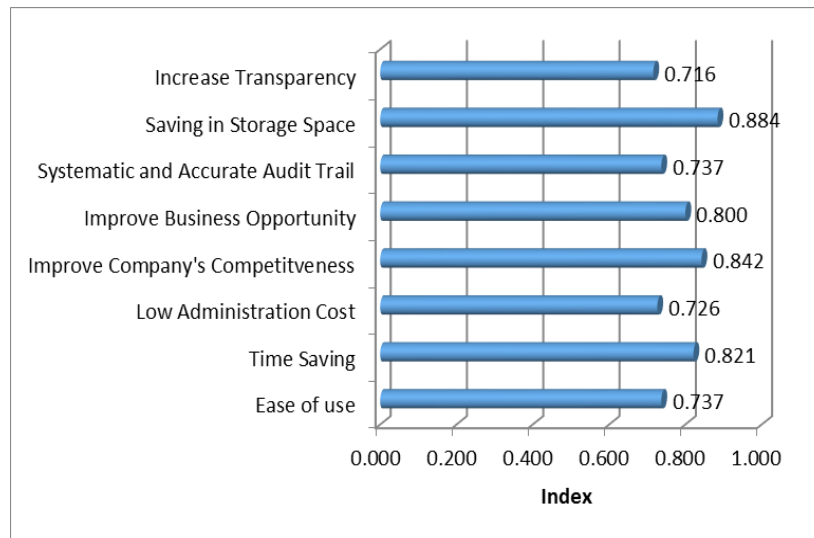


Figure 3. Factors contribute the readiness in Participating E-Tendering

'Saving in Storage Space' is likely to have the highest ranking among all the factors which influence on the companies willingness to participate in e-tendering. Tender documents comprise of various documents which cause it paper heavy. During tendering process, it is important to keep all related documents which included high paper usage and required large storage space. With e-tendering systems, the process can be done paperless as the documents can be stored and view online. There is no need physical storage space for tender documents Although most of the projects in Malaysia Construction Industry are still adopting the traditional tendering method, however, when more and younger generation entering the industry, the electronic process will become more and more common in the next few years. Having experiences involved in electronic process can improve the company's competitiveness and reputation. It is clearly shown in Figure 3 that 'saving in storage space' is the major factor that contribute the readiness of contractors in participating in e-tendering system.

'Time-Saving' ranked as third highest factors which affect the respondent's participation. An electronic process which automated the documentation flow reduces most of tedious data entry and compilation, making it possible to process hundreds or even thousands of tender documents at the same time. With the electronic system, overall time spent can actually be reduced and reflects as one of the most important factors.

'Improve business opportunity', 'Ease of Use', and 'Systematic and Accurate Audit Trail' ranked as fourth, fifth, and sixth important factors which affect the respondent's willingness. E-tendering systems have the potential to generate a huge new wealth and provide opportunities for improved business processes. Besides improving business opportunity, E-tendering has a more system and accurate audit trail and easier to use compared with traditional methods.

'Low operating cost' and 'Increase transparency' have been ranked less concerned factors affecting the respondent's willingness to participate in e-tenderingelow

5. CONCLUSION

The development of construction work system creates more challenges in the industry. The longer the industry occurs, the more development and improvement needed in order to ensure industry provide a better structure and more opportunity to all parties in the industry, and the e-tendering system is one of

the processes developed in the construction industry. Some recommendations in achieving potential improvement in e-tendering system are listed below:

1. Policies and circulation;
 - a) The government or principal to enforce the implementation of e-tendering for a construction project as compulsory and applicable to all levels or classes of construction,
 - b) Enforce the system for the whole construction development process, starting from tender advertisement, tender submission and tender evaluation,
 - c) Promote training courses gradually to not only contractors but also all construction professionals.
2. Construction firms;
 - a) To develop and accept any changes require in construction development process,
 - b) To invest and accumulate knowledgeable staff and technical staff on IT literacy.

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