UNIVERSITI TEKNOLOGI MARA

College of
Built Environment

Poster Book

IIIDBEEX 2023
20 JANUARY 2023

International Invention, Innovation & Design Exposition
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IMPACT AND CHALLENGES OF ICT-BASED INFORMATION SHARING TOOLS IN MALAYSIAN CONSTRUCTION INDUSTRY

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INTRODUCTION

Most industries are moving towards the use of technological advancement by using information and communication technology (ICT) including construction industry (CI).

Malaysia has implemented electronic procurement system known as eP in 1999 introduced by the Ministry of Finance (MoF) which allows the government and suppliers to conduct transactions electronically and in September 2000, CIDB also introduced the National e-Tendering system (Jaafar et al., 2007). The government and CIDB are trying to assimilate the ICT application into the CI. However, most companies did not exploit the ICT, and only use basic functions like email (Gaith et al., 2009).

Generally, lots of ICT applications in the CI that can be differentiated by their purposes, ranging from design, planning, administration, scheduling, and databases. The general software used in CI firms is word processor, spreadsheet, email, administration software, databases, and self-developed programs (Gaith et al., 2009; Onyegiri & Nwachukwu, 2011; Onyegiri, 2017). There are also numbers of technical construction software currently e.g., Procore, PlanGrid, Oracle Primavera, and a lot more. For this study, these most common ICT applications are categorised into computer-aided design (CAD), scheduling/resource planning, cost calculation/estimation and geographic information system (GIS).

In Malaysia, there are 12 emerging technologies mentioned in the outline of Construction 4.0 Strategic Plan 2021-2025 (2021) including Internet of Things (IoT), Building Information Modelling (BIM), 3D scanning, photogrammetry, augmented reality, virtualisation, big data, predictive analytic, and cloud and real time collaboration.

PROCORE | **PlanGrid** | **ORACLE Primavera**

ISSUES/PROBLEM STATEMENT

- Digital technology adoption by Malaysia's CI currently is **low and connectivity driver is poor.**

- CIDB planned to **implement cloud and real-time collaboration technology.**

- The Malaysian CI's **readiness to** implement the **digitalization** in the current **conventional practice.**

- This research could **provide essential information to aid the current scenario** faced by the Malaysian CI.

OBJECTIVES

1. To determine the impacts of the application of ICT-based information sharing tools on the construction project performance
2. To identify the challenges faced by construction participants on the application of ICT-based information sharing tools in construction project performance

METHODOLOGY

- Literature Review - articles, papers, books, publications
- Quantitative approach via online questionnaire survey
- Research **background, problem statement, aim** and **objective** establishment
- **Descriptive** statistical analysis – 74 respondents

FINDINGS

Impacts from the application of ICT-based information sharing tools in construction projects

1. Accuracy of information delivered Improve reporting work progress — **Mean 4.80**
2. Improve on-site productivity — **Mean 4.07**
3. Save time — **Mean 3.55**
4. Reduce disputes between parties — **Mean 3.51**
5. Reduce on-site accidents — **Mean 3.42**
6. Save cost — **Mean 3.26**
7. Improve build quality — **Mean 3.19**

FINDINGS

challenges of the application of ICT-based information sharing tools

1. Speed of internet connection — 4.23
2. Lack of IT specialists — 4.07
3. Inavailability of internet connection — 3.95
4. Require a huge amount of capital cost — 3.88
5. Unfamiliar ICT tools used — 3.68
6. Doubt on Return of Investment (ROI) — 3.62
7. Lack of promotion from the government — 3.61
8. Unwillingness of personnel to learn and adapt — 3.55
9. Poor level of security — 2.72

NOVELTY

Theoretical contributions to body of knowledge:
- Highlighting the importance of synergising information technology in the construction industry.
- Emphasize the current condition and challenges faced by construction participants in adopting ICT-based information sharing tools.

Practical contributions to industry:
- To strategise the plan to adopt digital technology for Malaysia's CI by mitigating the highlighted barriers faced by the construction participants.
- Professional bodies who govern, monitor and honor the accreditation of the academic programme to include the intended ICT application and software as the input for the students.
- Educators and students to pay full attention to ICT-related to prepare themselves for the upcoming evolution of CI.
- Preparing universities to be equipped with proper hardware and software for the students to utilise along their study journey in terms of financial support i.e., reimbursement of cost.

By focusing on these strategies, the adoption of digital technology and ICT in Malaysian CI is foreseen to be grow in the upcoming years, realising the agenda Construction 4.0 Strategic Plan 2021-2025 (2021).

CONCLUSION

IMPACTS
- The **accuracy of information delivered** via ICT is as accurate as it is.
- ICT **improve reporting work progress** between personnel.
- ICT helps to **improve on-site productivity** as well as **save time** in sharing information

CHALLENGES
- **Speed** and the **availability of internet connection** are the most challenging factor to implement ICT.
- **Lack of IT specialist** to help whenever ICT-related problem occurs
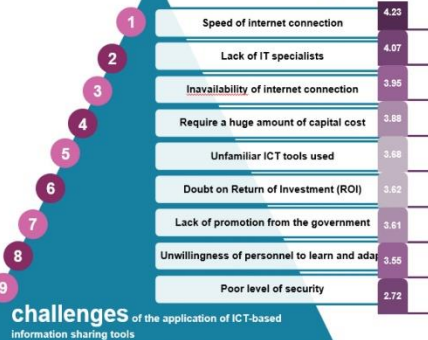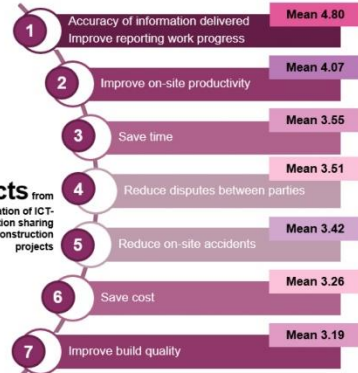
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