

EXTENDING DELONE AND MCLEAN
SUCCESS MODEL WITH DIFFUSION OF
INNOVATION THEORY FACTORS FOR
FLOOD EARLY WARNING AND RESPONSE
SYSTEM SUCCESS MODEL: A CASE STUDY
AT PAHANG CIVIL DEFENCE DEPARTMENT

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SUPERVISOR'S DECLARATION

We hereby declare that we have checked this thesis, and, in our opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Doctor of Philosophy.

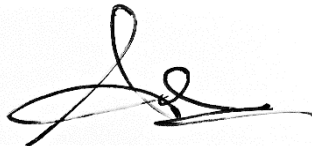


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ABSTRAK

Banjir adalah bencana semulajadi utama di Malaysia dari segi populasi yang terjejas, luas kawasan, kerosakan sosial-ekonomi, kekerapan dan jangka masa banjir. Ini menunjukkan pentingnya menyediakan pengurusan tebatan banjir yang komprehensif dan berkesan yang memerlukan agensi kerajaan meningkatkan prestasi mereka yang melibatkan inovasi teknologi. Sistem Amaran dan Tindak Balas Awal Banjir (FEWRS) model kejayaan sangat penting untuk memastikan semua pihak berkepentingan menerima maklumat yang tepat dan diberikan tindakan dan maklumat tindak balas yang diperlukan untuk mengelakkan kehilangan nyawa dan harta benda. Ia semestinya mempunyai beberapa ciri kebolegunaan yang berkesan dan komponen kejayaan akses dan paparan maklumat strategiknya, tetapi FEWRS model kejayaan yang sedia ada gagal dan sering kali tidak memberikan maklumat mengenai bencana banjir dengan berkesan untuk mengurangkan kesannya di peringkat tempatan untuk menyelamatkan nyawa penduduk. Pengukuran kejayaan sistem maklumat (IS) tetap menjadi perhatian utama penyelidik, pengurus, dan pengamal. Oleh itu, kajian ini bertujuan untuk meningkatkan pengurangan bencana banjir dengan mengetahui terlebih dahulu keberkesanan FEWRS model kejayaan. Penyelidikan ini memfokuskan kepada dua kerangka teori: Difusi Teori Inovasi (DOI) dan DeLone dan McLean (DLML) IS model kejayaan. Kedua-dua teori ini didapati paling sesuai untuk digunakan dalam model kejayaan FEWRS model kejayaan. Kedua-duanya digabungkan dalam usaha untuk memahami dan meneroka kontinjen yang berjaya dan berkaitan dengan pelaksanaan IS. DLML dan DOI adalah antara teori yang paling banyak digunakan dalam penyelidikan yang berkaitan dengan sistem, teknologi, dan penggunaan maklumat. Teori DOI menyatakan bahawa inovasi dan ciri organisasi dan persekitaran di mana ia beroperasi dapat mempengaruhi penyebaran dan kejayaan inisiatif Teknologi Maklumat (IT). Model yang dicadangkan itu disahkan melalui pengembangan model FEWRS dan penggunaan kaedah analisis statistik. Untuk mengesahkan model yang dikembangkan, kajian ini menggunakan Pemodelan Persamaan Struktural - Partial Least Squares (PLS-SEM). Data dikumpulkan melalui tinjauan soal selidik yang diberikan kepada 141 pekerja dari Jabatan Pertahanan Awam (CDD) di negeri Pahang, Malaysia. Keputusan menunjukkan bahawa kualiti maklumat, kualiti sistem, kualiti perkhidmatan dan keserasian mempunyai kesan positif ke atas kepuasan pengguna model kejayaan FEWRS yang dipertingkatkan dengan (nilai- $P = 2.359, 0.204, 0.218, 0.445,$ dan 0.354). Faktor-faktor ini mempunyai faktor yang kukuh. hubungan yang signifikan dengan kepuasan pengguna. Walau bagaimanapun, kelebihan relatif mempunyai kesan positif terhadap kepuasan pengguna tetapi tidak disokong dengan (nilai $P = 0.015$). Sebaliknya, kerumitan mempunyai kesan negatif terhadap kepuasan pengguna FEWRS dengan (nilai- $P = - 0.114$) Oleh itu, kerumitan didapati mempunyai hubungan yang signifikan dengan kepuasan pengguna. Tambahan pula, kepuasan pengguna telah memberi kesan positif kepada kejayaan FEWRS. Memandangkan kehadiran FEWRS model kejayaan bencana banjir dan bencana alam lain, dapatan kajian akan bertindak sebagai panduan untuk mengukuhkan dasar kerajaan dan sektor awam Selain itu, hasilnya mempunyai sumbangan yang besar dengan mengesahkan dan melanjutkan DLML dengan DOI faktor dan memberikan pelbagai implikasi kepada penyelidikan, teori, dan amalan.

ABSTRACT

In terms of population affected, the region involved, frequency, social-economic damage, and flood period, floods are a major natural disaster in Malaysia. That emphasizes the value of systematic and effective flood control, which necessitates government agencies improving their efficiency through technical advancement. The Flood Early Warning and Response System (FEWRS) success model is critical to prevent loss of life and property. It ensures that all stakeholders have the correct information and have the appropriate actions and response information. It should have some successful accessibility functionality and success elements of its strategic knowledge access and show, but current FEWRS success model lacks and often do not adequately have information on flood hazards to minimize their effects at a local level and save the lives of the people. For researchers, practitioners, and managers, determining the success of an Information System (IS) remains a significant concern. Therefore, the research objective of this study is to identify the success factors that affect the implementation of enhance FEWRS success model, to deploy the enhanced FEWRS success model. Moreover, to validate the enhanced FEWRS success model using the statistical analysis methods. This research focuses on two theoretical frameworks: DeLone and McLean (DLML) IS success model and Diffusion of Innovation Theory (DOI). These two theories have been found the most appropriate to be adopted for the FEWRS success model. They are merged to understand and explore the successful contingent related to IS implementation. DLML and DOI are among the most utilized theories applied in research relating to systems, technology, and information use. DOI theory states that the organization's innovation and organizational characteristics and the environment in which it operates can influence the diffusion and success of Information Technology (IT) initiatives. The enhanced FEWRS success model was validated through the development of the enhanced FEWRS model and the use of statistical analysis methods. To validate the FEWRS success model, this study employs the Partial Least Squares-Structural Equation Modelling (PLS-SEM). Data were collected through a questionnaire survey administered to 141 employees from Kuantan Civil Defence Department (CDD) in Pahang state, Malaysia. Preliminary survey had been done before going further into the study to show the importance of the research. The results suggest that information quality, system quality, service quality, and compatibility have a positive effect on user satisfaction of the enhanced FEWRS success model with (P -value = 2.359, 0.204, 0.218, 0.445, and 0.354). These factors have a strong significant relationship with the user's satisfaction. However, the relative advantage has a positive effect on user satisfaction but was not supported with (P -value = 0.015). On the other hand, complexity has a negative effect on user satisfaction of the FEWRS with (P -value = - 0.114). Therefore, complexity was found to have a significant relationship with user satisfaction. Furthermore, user satisfaction has positively affected the success of the FEWRS. In the light of the FEWRS success model presence in the flood disaster and other natural disasters, the study findings will act as a guide for strengthening government policy and the public sector. Moreover, the results have a significant contribution by validating and extending the DLML with DOI factors and providing various implications to the research, theory, and practice.

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