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A CRITICAL SUCCESS FACTORS MODEL TO IMPLEMENT DIGITAL TRANSFORMATION IN HERITAGE BUILDING CONSERVATION PROJECTS IN MALAYSIA

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ABSTRACT

Environmental changes, seismic activity, and structural stresses can damage heritage structures. However, stakeholders encounter many hurdles during the historic conservation project, which repairs, maintains, and manages heritage structures, including inadequate conservation performance and condition, inefficient project management, financial issues, and delays. These challenges are mostly caused by poor heritage data management, data dependability, information-driven decision-making, stakeholder data duplication in heritage conservation projects, lack of a comprehensive heritage asset data management repository and limited use of ICT for heritage conservation projects. Thus, to address these difficulties, this research proposes a Critical Success Factors (CSFs) Model to Implement Digital Transformation in Heritage Building Conservation in terms of Process, People, Technology, and Policy. To achieve this research aim, the first objective is to identify the critical success factors (CSFs) to implement Digital Transformation in Heritage Building Conservation. The second objective is to examine the relationship between identified Critical Success Factors in terms of People, Process, Technology, and Policy with the Success of Digital Transformation in Heritage Building Conservation Project. Finally, the third objective is to develop a Critical Success Model in terms of People, Process, Technology, and Policy for Digital Transformation in Heritage Building Conservation. A literature analysis and questionnaire survey were used in this quantitative study to build a conceptual framework focusing on People, Process, Technology, and Policy for Digital Transformation in Heritage Building Conservation. Next, the survey results identify four (4) CSFs for Digital Transformation in Heritage Building Conservation, and a structural equation model developed using Smart-PLS version 4. Thus, this research identifies four CSFs - Process, People, Technology, and Policy - to enable Heritage Building Conservation digitally to transform. The study then identified the top five process elements as retrieving source material and using a graphical model to detect clashes. Standardising digitisation through digital data integration, a central repository database, and process documentation format standardisation. People' top five variables include comprehension, awareness, and exposure; hardware capabilities, knowledge of ICT tool deployment and processes, motivation and positive attitude towards using ICT tools; and integration of a new syllabus and curriculum. The top five technology criteria include software capabilities, hardware infrastructure, understanding ICT tool deployment and procedures, and potential benefits of adopting ICT tools. Furthermore, Policy's main five factors are a clear direction for digital heritage conservation policy, guidance and supervision, appropriate project scope, contractual and procurement considerations, and cybersecurity legislation and regulation, along with reference projects. This study further demonstrates successful application of digital transformation in heritage building conservation may foster stakeholder integration, accelerate decision-making, and boost productivity through ICT tools. Importantly, the findings implies that process, people, and technology, significantly impacts digital transformation in heritage building conservation. Nevertheless, the Policy element was statistically insignificant, suggesting it might be studied in mediating or moderating roles. Finally, the research contributes practically and methodologically and may lead to future research.

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CHAPTER 1
INTRODUCTION

1.1 Introduction

This chapter introduces and discusses the research background while evaluating and substantiating the foundation of the study area. The discussion commences with the justification for the study, as well as the critical issues and problems associated with current heritage conservation project activities. The following section delineates the research aim, objectives, and concerns, followed by an overview of the research methodology and the anticipated contributions of the study. This chapter also offers a concise summary of the research structure and serves as a guide for the thesis's overall direction.

1.2 Research Background

Heritage pertains to the inheritance that receive from previous generations, which shapes the current situation and is transmitted to future generation. The cultural and natural heritage treasures we possess are invaluable repositories of life and inspiration. According to Mekonnen et al., (2022) asserted that, cultural heritage encompasses the accumulated legacy passed down to today by previous generations, which influences our current circumstances and is entrusted to be passed on to future descendants. It was elaborated upon by Otero (2022), cultural heritage refers to the legacy of tangible items (i.e., buildings, monuments, landscapes, books, textiles, paintings, or archaeological artifacts) and their intangible attributes (i.e., folklore, traditions, language, or performance arts) that are inherited from the past by a group or society and conserved for future generations due to their historical, aesthetic, archaeological, scientific, ethnological, or anthropological significance, hence representing a global, regional, national, or local relevance (Harun, 2011; Khalil & Stravoravdis, 2022; Khan et al., 2022; Mekonnen et al., 2022;UNESCO et al., 2010). In particular, UNESCO et al., (2010a) revealed that UNESCO World Heritage Convention UNESCO, 1972 defines the cultural heritage of world value as "architectural works, works of monumental sculpture and painting, elements or structures of an