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A CONCEPTUAL FRAMEWORK FOR DIGITALIZING TANGIBLE HERITAGE IN MALAYSIA

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Graphical abstract

Abstract

Conservation of tangible heritage has environmental sustainability benefits; Cultural heritage management remains a key priority for governments and civil society in Asia and Europe, which also acknowledged the significant role of non-governmental stakeholders in heritage. In Malaysia, the effort of conserving heritage buildings commenced approximately 30 to 40 years ago which is still at it infant stage. The implementation of National Heritage Act beginning from 2006 faces many challenges in confronting the wave of rapid urbanization. A review of necessary literature was carried out critically highlighting some fundamental principles in conservation of historic building which inform conceptualizing a framework for the digitalizing tangible heritage in Malaysia. The conceptual framework shows the complexity involves in managing tangible heritage digitization process. The process required interdisciplinary collaborative process from many expertise and professionals. The results form the basis for a proposed automated tool to assist in the development of strategies for conservation and increasing tourism potentials in Malaysia. This proposed framework would be further tested in form of a collaborative research among professional from different fields in built environment.

Keywords: Framework, Digital, Tangible-Heritage, Malaysia

1.0 INTRODUCTION

One important phenomenon pertinent to current day discusses lies in the need for heritage preservation. This drives the examination of available avenues to rank an economics of scale heritage conservation in modern society and how it affects the planning and development of the city. This scale will aid researchers and policy makers to establish a lasting framework which accommodates heritage drive integration into existing management and development systems. To achieve effective heritage conservation, importance is placed on conserving tangible heritage sights in a bid to protect and preserve them from any undue harm. Less exposure to undue harm helps to extend the life span and functions inherent in the heritage sights. The functions are translated into cultural significance which if duly preserved can be passed from one generation to the next. Hence, to adequately transfer such cultural significance without loss of identity, sustainable management best approaches need to be adopted in preserving tangible heritage sights. Three stages were used to actualize this paper; first is the review of existing literature on the current trend in digitalizing tangible heritage; the second stage was to conceptualize how to manage the various experts and knowledge required to propose the framework and lastly the

framework was actualized. Therefore in order to digitalize our tangible heritage a framework is required that would assist in strategizing how to conserve and increase tourism potentials in Malaysia. The outcome of the proposed framework is a data management center for the repository of digital heritage in Malaysia for the purpose of conserving our culture and heritage.

2.0 BACKGROUND

Tangible heritage conservation brings environmental sustainability advantages. Conservation of heritage enhances sustainable development through the preservation of culturally and historically crucial buildings. In order to attain a sustainable management of tangible heritage conservation in Malaysia, it is important that effective and inclusive data management system takes a prominent role in conserving the tangible heritage. Malaysian tangible heritage is an endowment of immeasurable value to the tourism industry based on their affinity to both the foreign and local tourists.

The dual process of developing sustainably and ensuring conservation of the environment forms a challenging task to both developed and developing countries across the globe. Due to the increased awareness and resolutions from the Earth summit organized by the United Nations to discuss environmental and development concerns, all key stake holders, world leaders and civil society groups are sensitized and are eager to dialogue on issues affecting environment and development. The Earth summit resurrected the need to explore issues surrounding how development can be merged with environmental sustainability by the cultural sector of the Earth Summit. Globally, researchers on environmental issues examine initiative from both the civil societies and those from the cultural sector of the Earth Summit.

Having adopted the world heritage convention in 1972, the world heritage List continuously soared and remains escalating. Based on this, there is a vital need for guidance for states parties on the actualization of the convention [1]. The intricacies encompassing heritage should therefore compel society to engage in its comprehensive management which is ideal for a sustainable process. This holistic management should be digitalized and sustainable as well. With the broadened scope of what is termed heritage, the rising dimension of the problems confronting it, and the need to apply it sustainably, whether for tourism or for other purposes; care of tangible heritage inevitably [1, 2]. Figure 1 shows some examples of old and new issues in heritage management from greater complexity to greater need for suitable management approaches as it is applicable to tangible heritage management.

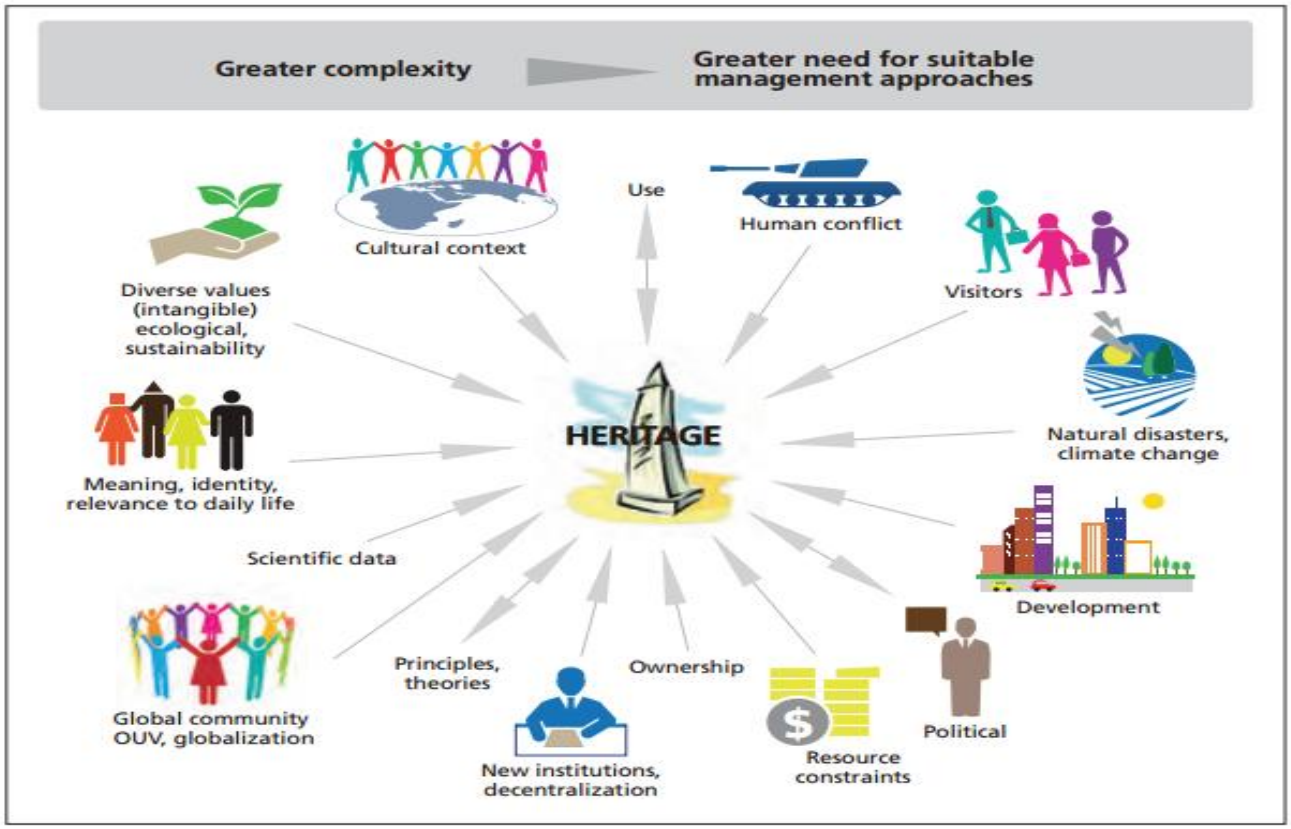

Figure 1 Some examples of old and new issues in heritage management source [1]

A two-stage study on heritage was carried out. . The first phase comprises an extensive search, which mapped initiatives within the country while the second stage deeply examined the selected initiatives. Cultural heritage management remains a key priority for governments and civil society in Asia and Europe. The 5th ASEM Culture Ministers' Meeting held in September 2012, Indonesia focused on "Managing Heritage Cities for a Sustainable Future" which also acknowledged the significant role of non-governmental stakeholders in heritage. In Malaysia, the effort of conserving heritage buildings is just approximately 4 decades old [2] and it is still at it infant stage [3]. The implementation of National Heritage Act beginning from 2006 faces many challenges in confronting the wave of rapid urbanization. In other to highlight what is the best practice criteria for sustainable heritage management. [4], identified that "maintenance, staff training & expertise"; was the most significant criteria supporting sustainable best practice in the management of heritage buildings in Malaysia.

Table 1 Types of heritage information systems [5]

Types	Pro's	Con's	Examples
Physical (Document and photo-graphic inventories and catalogues)	✓ Simple to setup ✓ Low-cost	✓ Typical linear/hard to cross-index ✓ Hard to search/query ✓ Physical storage requirement can be become a challenge	www.nps.gov/history/hdp/standards/CRGIS/paper.htm (description of a planned migration from paper to digital)
Localized electronic data base	✓ Highly customizable ✓ Relatively easy to get started with ✓ Simplifies indexing	✓ Interaction with other inventories id difficult ✓ Non-standard, specialized query tools hard for novice users ✓ Adding and managing data can be complex	www.kikirpa.be/www2/en/doc/docu.htm www.mip.berkeley.edu/spiro
Geographic Information System (GIS)	✓ Strong data management potential ✓ Highly customizable	✓ Requires consideration input of mapping info. ✓ Steep learning curve. ✓ Can be costly.	www.timemap.net http://zimas.lacity.org
3D Earth Viewers (online GIS with spatial imagery)	✓ Combines advantages of GIS with an intuitive and easy to understand 'real' background	✓ Not as useful for non-spatial data. ✓ Nothing more than a nice visual interfaces (i.e. little data management and requires other tools to extend)	http://earth.google.com http://worldwind.arc.nasa.gov www.microsoft.com/VirtualEarth
Hybrid, shared, 'Web 2.0' systems with relational data structure, XML, & other standards	✓ Highly customizable, adaptable and shared	✓ Emerging technology	http://whc.unesco.org

2.1 Digitalizing Process for Tangible Heritage

In the digitalizing process for tangible heritage [6], express in their findings that the media we use to transmit and keep it are volatile, and the technology employed to retrieve it are being rapidly replaced by contemporary technologies. As a technology base go under, lose support, access to the digital heritage that they hosted is also lost. These challenges pose organizational, societal and technical dimensions; the most pressing issue on preserving of heritage management in the modern world is the digitalization [1,6]. Ultimately, if the heritage sector does not fully embrace sustainable development and harness the reciprocal benefits for heritage and society, it will find itself a victim of, rather than a catalyst for wider change.

2.2 Rationale for Conceptualizing

The World Heritage Convention recognizes heritage as 'monuments, groups of buildings and sites'. The archival heritage residing in archives, libraries, museum and art gallery constitute a major part of that memory and reflects the diversity of people, languages and cultures that need to be preserved [6]. The aged

feature of the built heritage makes them prone to some degree of degradation and deterioration which necessitate that they should be systematically maintained [3]. Due to growing concerns for future needs in promoting tourism heritage sights, factors such as modernization drive, economic value and pressure to develop need to be considered. In addition, elements which will promote development in the community in line with culturally viable landscapes are encouraged. Recognizing the changing demographics, growing inequalities and diminishing resources the field of conservation has brought which includes; vast quantities of heritage information, scientific records, historical studies, surveys, inventories, photographs, maps, and field documentation there is need for a sustainable data management [5]. In order to achieve this goal the city government or heritage custodians need to take three steps as shown in Figure 2.

In-depth analyses of the three case studies, and interviews and presentations of heritage custodians of (Kathmandu; Georgetown and Manila) which points out the important lessons learnt for cultural heritage conservation and the role of city governments.

The need for deeper and broader participation and awareness among the citizens and civil society at large, in order to acquire this tangible heritage through a strong institutional and policies propagation.

The need for proper documentation and preservation programs to be put in place, to aid in proper digitalization and data management.

To allow for acquisition, archiving and repository of the tangible heritage by the proposed policies.

Figure 2 Heritage Conservation: The Three-pronged approach to heritage conservation adopted from [7].

2.2 Tangible Heritage in Malaysia

In previous years, heritage was thought to entail basic recording of historically relevant occurrence within and around the heritage location. However, these recordings have evolved into defining cultural identity of urban landscapes and development. Several factors are prevalent for cultural identities namely; social factors denoted by improvement of the identity and image of the city and the effective integration into the daily life style and values of development in the neighborhood; politico-economic factors denoted by integration and mutation into playing relevant roles to improve the tourism of the country including upliftment of historical and archeological facade of the neighborhood and; planning factors denoted by the impact on architectural heritage involving the use of reusing, redeveloping and regenerating heritage sights into the overall neighborhood development in the city.

2.4 Problem Statement

The implementation of National Heritage Act faces many challenges in confronting the wave of rapid urbanization; conservation of tangible heritage has great impact on sustainability of the built environment. But the formation of national heritage listing and gazette that is based on virtual imagery that is accessible online worldwide has not received any attention yet in Malaysia.

3.0 METHOD

The method used in actualizing this paper was basically in three stages, first a review of literature on the current trend in digitalizing tangible heritage and the second stage was to conceptualized how to manage the various expertise and knowledge required to proposed the framework and lastly was the actualization of the proposed framework.

3.1 Review of Existing Literature

Critical review of existing literature highlight some fundamental principles in conservation of historic building in relation to the need for digitalizing tangible heritage in Malaysia, this was once a laborious process done manually and recorded on paper. This process is now gathered, organized and archived digitally and yet the explosion in heritage information has exacerbated 3 key data challenges; fragmentation, reliability and longevity [3, 5].

3.1.1 Case Study on Cultural Heritage Preservation Framework

The first case study is a cultural heritage preservation framework proposed by [8], he explained that heritage preservation initiatives and cultural tourism activities in Manila as a test case can fuel businesses and creates jobs. He also said that the framework depicts two sub-sectors within the Cultural Heritage Sector namely: Heritage Preservation and Cultural Tourism. The former, if given proper support, can generate jobs. The latter, if developed, can contribute to the creation of new businesses. If the tourism sector will contribute more to the economy, this will benefit everyone. He mentioned that cultural heritage prevention can both be carried out by formal institutions such as the formal heritage sector and by individuals and communities.

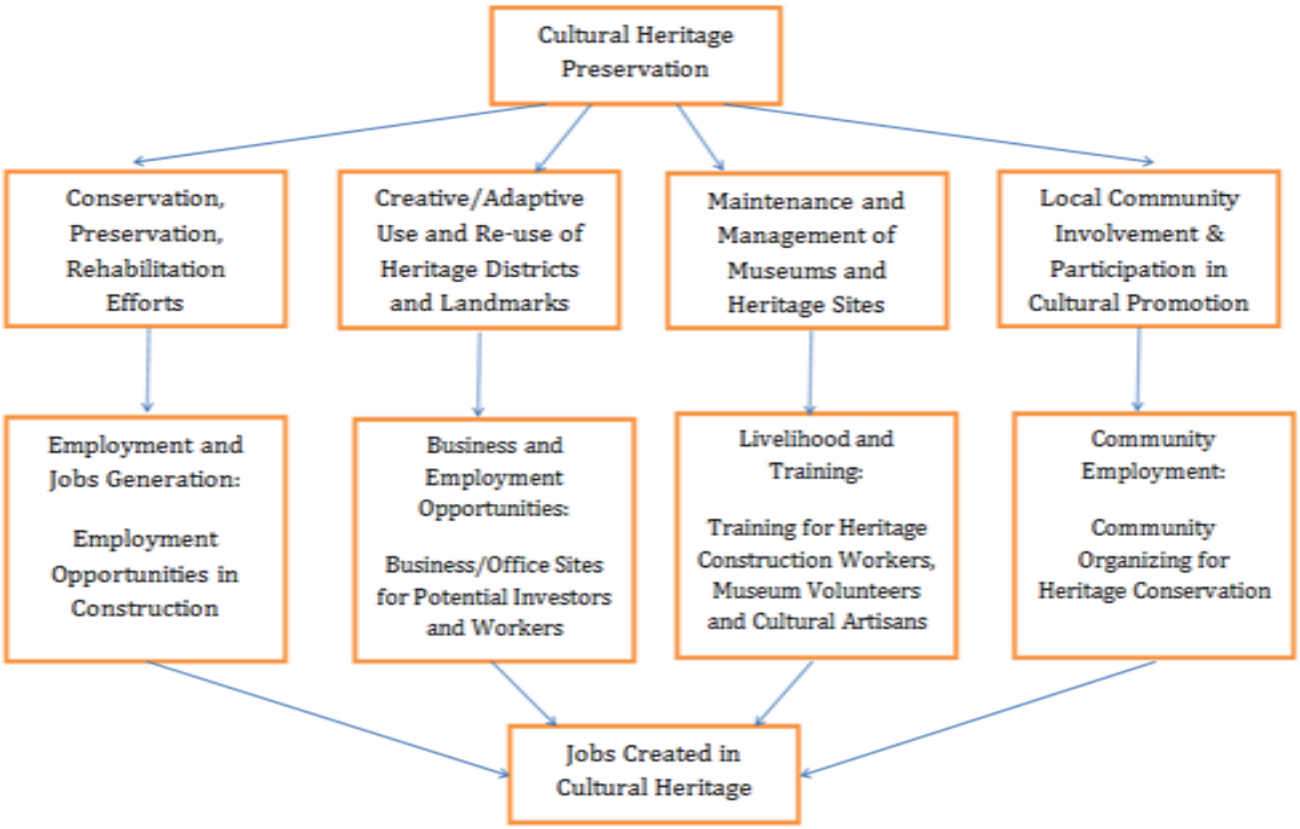

Figure 3 Strategic Frameworks for Jobs Creation in the Area of Heritage Preservation [8]

3.1.2 Case Study on Intangible Culture Heritage Framework

Intangible Culture Heritage is very important as national treasure for a country since it is a part of identity of the country. Rapid technology changes and globalization are some of the reasons why the new generations are less interested to involve in culture heritage sector. Without any drastic action to safeguard Intangible Culture Heritage for the country, it will soon disappear. In this study, the researchers introduced a model of factors that contribute in archiving Intangible Culture Heritage. By transforming it from the model to meta model it will be a guideline, standard and base for developing a repository of Intangible Culture Heritage. The finding for this research is vital and very fruitful for intangible study and archiving and also as a main contribution of this study.

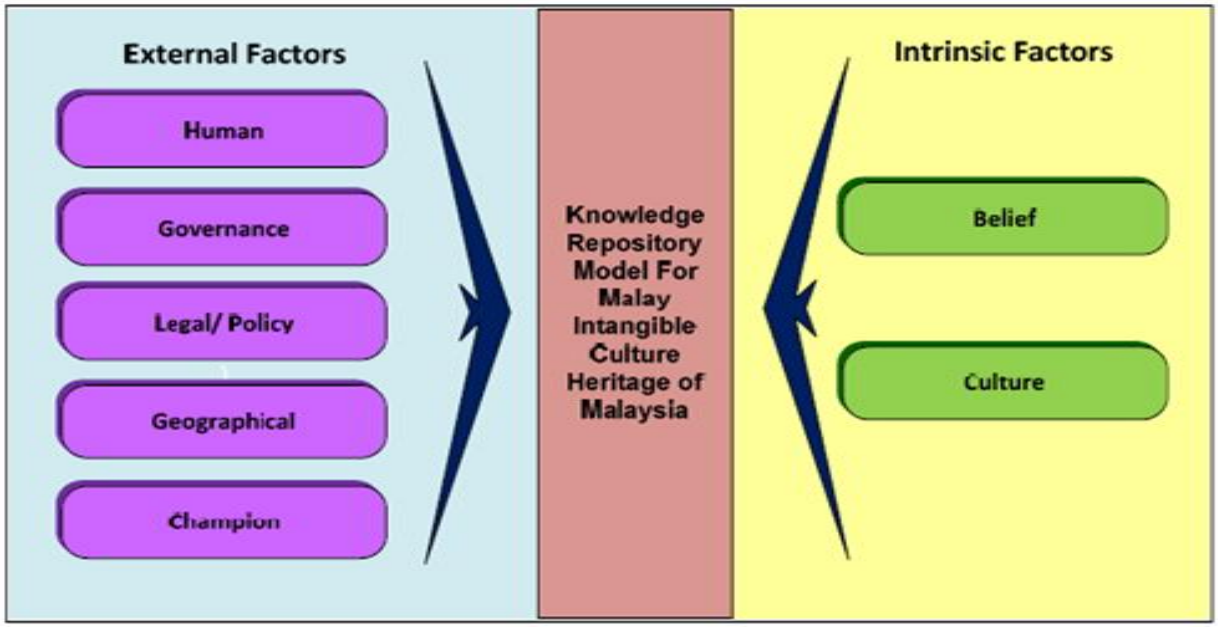

Figure 4 Model of Repository of Intangible Culture in Malay Language (IR-BUDAYA) [9]

3.2 Conceptualizing a Workable Framework

In responding to needs for the future, inherent in its development pressures, economic conditions, and drive for modernization, a workable framework for heritage repository and management was conceptualized based on [5]. It would safely store multidisciplinary knowledge of a place, its value/significance, and integrity; it will archive together all a place's rich media, from maps to images, drawings documents, CAD files, movies, audio recordings, etc.; allow intuitive querying and straightforward contributions of additional records; guarantee long-term viability of the records through clear, simple, and human decodable data structures; promote interest and involvement in the preservation of the heritage through the dissemination of acquired information; enable informed decision making and ensure that a place's management, maintenance and conservation is related to its integrity (physical form, materials, construction, etc.) and its historical and cultural significance. Based on the guideline by [5], a conceptual framework was proposed as shown in Figure 5. This framework shows how a collaborative transdisciplinary research would help in tangible heritage conservation and is further broken down in Figure 6 with steps that are required and the full blown model is shown in figure 7. The basic idea which comes from Figure 3 and 4 on strategic framework for jobs creation in the area of heritage preservation and the transforming model to meta model for knowledge repository of Malay intangible culture heritage which forms the under pining for the research model proposed in this study (Figure 7).

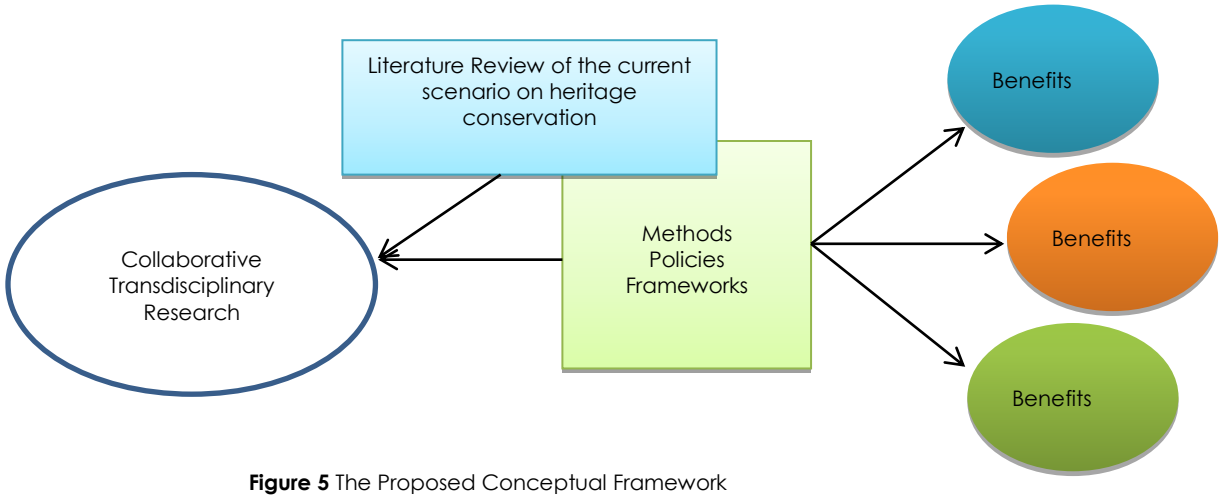

Figure 5 The Proposed Conceptual Framework

3.2 Transforming the Framework

The data management has to deal with various professionals including; GIS expert's 3D modelers, software engineers, architects and historians who will form the various members of research group in a collaborative transdisciplinary research. The various research grouping would be from different universities and research institutes.

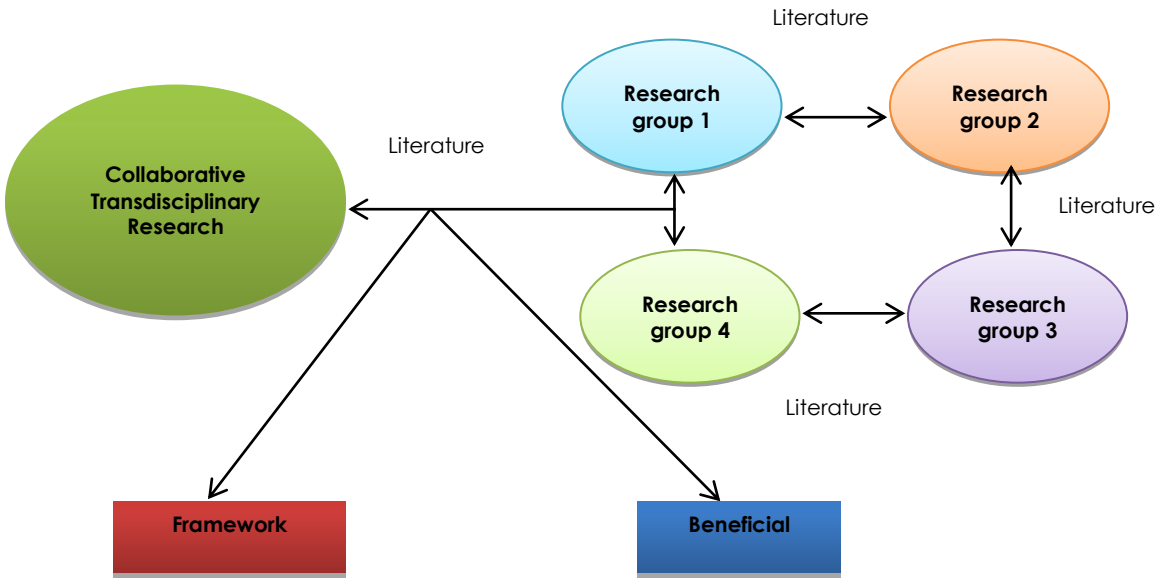

Figure 6 First Stage of Proposed Framework for a Transdisciplinary Research Transformed

4.0 RESULT

The result from the review shows that many researches were done on types of heritage information system with their pros and cons discussed in Table 1 for a sustainable data management of tangible heritage. A digitalized system is required that would provide a data base that would be easy to search, adding and management of data easily; that consider continuous input of mapping info with a nice visual interface and emerging technology.

Cultural properties maintain strong links with communities and contribute to society important social and economic functions. Conserving our common past through conventional approaches need to be digitalized.

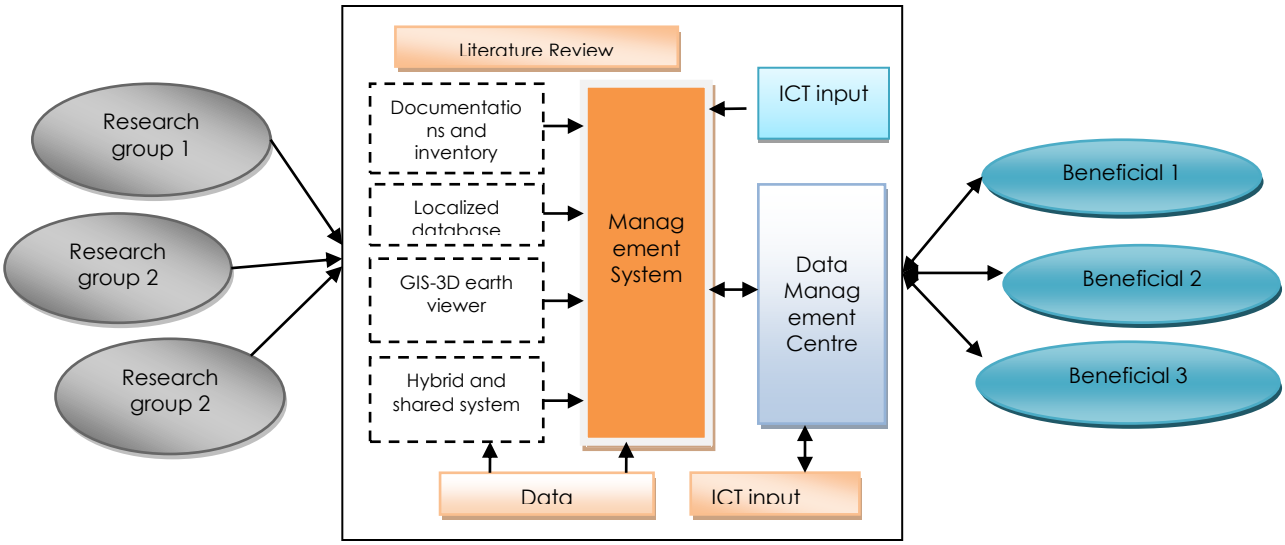

Figure 7 The Proposed Transformed Framework

5.0 DISCUSSION

The discussion is divided into two aspect 5.1 deals with comparing the two case studies analyzed in this study and elaborating on how they have helped in shaping the study while 5.2 is the proposed case study for the digitalizing tangible heritage in Malaysia.

5.1 Comparing the Case Studies Models

This paper designed a conceptual framework for developing indicator by using indicator selection methodologies with a strong emphasis on intangible culture for Heritage city. The pillars of this framework are policy context, theoretical perspectives and local issues. This framework was developed based on bottom-up approach by using Stakeholder Consultation Model. It is a community based and holistic approach. It focused on local community participation and association with government policy objectives. This is due to the local consensus of the cultural heritage value. The first model combines the two forms of heritage both the tangible and intangible while the second model shows the repository process of the intangible heritage in terms of culture in Malay Language (IR-BUDAYA) as proposed by [9]. Both framework shows how the mechanism of a methodological process could ensure that the entire essential aspect are represented based on both framework studies as expressed in their work [10]. It is a conceptual foundation and methodological framework for developing urban indicator of heritage city which is entrenched in this research.

5.2 The New Model as Analyzed

Sustainable development in the archival heritage can be considered as one of the most pressing concerns for the preservation of heritage management. It is a significant need of using sustainable development as a strategy in preserving archival heritage [1, 5]. The proposed model in this study looked at issues relating to tangible heritage and focused on how to develop a data management center on tangible heritage for various strategic purposes in the efforts to protect and conserve heritage built environment. In addition is the formulation of an efficient and systematic assessment criteria and priority methods leading towards the formation of national heritage listing and gazette and to build a virtual gallery on tangible cultural heritage accessible online worldwide. The model exhibit how many researchers can come together with a common goal in a transdisciplinary research as the issue identified in the study requires experts from various fields

6.0 CONCLUSION

A tool that would assist in the development of strategies for conservation and bringing various agencies (government and non-governmental) to work collaboratively towards protecting the tangible heritage through cloud-based platform in form of a data management center is proposed in this study. The beneficiaries are the general public and those involve in research and tourist. This tool is conceptualized in figure four and would probably enhance a sustainable tangible heritage management when tested and apply. This proposed framework would help to develop a coordinated archival and repository data on tangible heritage for the protection and conservation of culturally significant places within the context of sustainable heritage management in Malaysia.

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