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Essential Entities towards Developing an Adaptive Reuse Model for Organization Management in Conservation of Heritage Buildings in Malaysia

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Abstract

The paper purposely to confirm the keys entity from the literature reviews targeting expertise as advisors for the organisation management to establish an existence required for mitigates in the decision-making process. Stratified random sampling with questionnaires as a research instrument and 129 expertise in heritage fields as a factor analysis meticulously set up. Preliminaries finding indicates with statistic confirmation that there are ten main entities namely social, economic, function, physical, infrastructure, technology, law and regulation, politic, environment and finance. The confirmatory result towards entity will contribute to the preliminaries stage procedure in developing an adaptive reuse model to organization management.

Keywords: Adaptive Reuse Model: Heritage Building

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1.0 Introduction

Conserving heritage buildings provides significant economic, cultural and social benefits (P. A. Bullen & Love, 2010). Unfortunately, heritage building worldwide increasingly threatened (Abdul Rashid & Ahmad, 2011; Mohd-Isa et al., 2011; Webb, 2017; Jim, 2005; Zhang et al., 2017) by natural disasters and human activity namely flood, earthquake, tsunami, urbanization, modern building technology and innovative development pressure. Sustainable forest management (Latip et al., 2013) and heritage building protection (Liusmanet al., 2013; Umar et al., 2015) become an essential and exclusive agenda for Ministry of Tourism and Cultural Malaysia (MOTAC) to upgrading all required, available resource within the country.

The disappearance of traditional and authenticity conservation practice in term of design, material, craft, installation method, etc. worsen the situation. Recognition as UNESCO World Heritage Site for George Town City and Malacca on 07 July 2008 is a defining moment to dedicate government achievement and tremendous effort to make sure heritage resources is well captive. The challenging part of this award is to retain the title and at the same time improving heritage asset (Romao et al., 2016) (Valentina et al., 2015) according to UNESCO requirement standard. UNESCO with cooperation and commitment from Malaysia Government, through the Department of National Heritage (JWN) under the Ministry of Tourism and Cultural Malaysia (MOTAC) consistently updating all necessary information and enhancing heritage resource (Othman & Hamzah, 2013) within the country. JWN with unlimited sources is getting input from the state party, and experience non-government organization (NGO) ensuring the information gathered is reliable and up to date. Especially with limited and scare resources such as heritage building, monument and street furniture that contribute to having a significant value of cultural heritage meeting with Outstanding Universal Value (OUV), under UNESCO World Heritage branding (Adie, 2017), term and condition. One should understand and interpret the assets in a manner which are appropriate for its cultural significance before making decisions for its future and changes to its fabric (Bakri et al., 2012). Importantly input from expertise is mandatory to fill the gap between

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stakeholders and relevant authority. Thus there is three objectives of the paper which are confirmation the entities revealed from literature reviews and confirmed with the reliability test on the research towards factors analysis (professional and experience contractors) and last but not list is a confirmation towards the most critical entity base on high-low rank.

2.0 Literature Review

Heritage building falls under tangible cultural heritage and can be defined as a building or groups of separate or connected buildings aged more than 100 year with a unique value of an architecture, homogeneity or their place in the landscape and have outstanding universal value from the point of view of history, art or science (Heritage Act, 2005). Government strategy in promoting Malaysia as a tourist destination achieve with the world heritage recognition, economically attract specifically cultural traveler (Teo et al.,2014 ; Nuryanti, 1996) from all over the world to visit Malaysia especially to the George Town City and Malacca. Preparation of existing policy and physical outlook of cultural heritage is essential in meeting the traveler or tourist expectation(Moy & Phongpanichanan, 2014). All relevant party work hand in hand to make sure all decision making for the heritage built environment at the maximum capacity, considering all factors involve directly and indirectly. According to Heritage Act, 2005, conservation of heritage building defines as an activity that includes preservation, restoration, reconstruction, rehabilitation, and adaptation or any combination in the building. Or groups of separate or connected buildings ages more than 100 years with a unique value of architecture, homogeneity or their place in the landscape and have outstanding universal value from history, art or science. The language of the developers is economics and the success of urban conservation in George Town cannot be dependent solely on cultural nostalgia(Lee, Lim, & Nor'Aini, 2008). The demolition of the historic Metropole Hotel (built in 1900) in George Town, Penang in 1993 was a classic example of the inadequacy of the Malaysian laws to protect heritage buildings (Kamal et al., 2008). A primary reason for the disposal of a building is because it does not meet the immediate needs of owners and their occupiers (P. A. Bullen & Love, 2010).

The losses of heritage value (Ellwood & Greenwood, 2016 ; Stendebakken et al., 2015) are not tolerable, the movement and escalating development pressure need to stop. Awareness, understanding, (Olive, 2014) and input for authority need to be furnished by the professional and relevant organization to make sure that decision making by relevant authority base on heritage law, and govern the public participation process in heritage sites conservation (Dian & Abdullah, 2013). Government concern of heritage building been demolished and been replace by new development lead to a searching for heritage building in Malaysia. (Idid, 1995)indicates that nearly 39,000 historic buildings built between 1800 and 1948 throughout the country which is worthy of rehabilitation and conservation. Department of National Heritage, 2016) indicates that 223 heritage building is in the loop and meticulously been taking care off. Beginning at 1998-2016, clearly show that until to date, 223 from 39000 or not more than 0.57 percent of the historic building in Malaysia are taking care and under the radar of National Heritage Department(JWN). Most of them, remain its status quo with their original function or been neglected and others have been converted to become premises for the bank, hotel, restaurant, office, museum, information center and storage building without proper guidelines and policy. This information gather can be a signal for authority involves taking urgent action and performance measure to ensure that our heritage value are well captive and preserve (Penia et al.,2015) for future generation and at the same time overcome the entire obstacle that occurs to feat in with any development pressure. Prompt and precise decision making in managing heritage asset (Bakri et al., 2012) by relevant authority is vital to avoid unnecessary action that leads to building demolish and replace by new development. Confirmation towards general assessment on factor influence in a decision making process for adaptive reuse needs to accomplish by a group of people in Malaysia that equip with vast knowledge and practice in the heritage building, so-called expertise. Perspective and vision from the group are highly crucial in shaping the future of heritage building in Malaysia. Building conservation is a multi-disciplinary field, which involves inputs from various professionals including architects, engineers, historians, archaeologists, chemists, environmentalists, and other experts (Harun, 2011).

According to Ahmad,(2006) , Four essential principal need to be applied when dealing with building conservation namely;

1. Minimum intervention
2. Scientific test on originality
3. Meticulously documented
4. The authentic of method and technique used

The prominent mention supportively with ethical and understanding about the conservation of heritage building. Base on practice in abroad and local, ethical consideration is the best way of achieving the aims of heritage conservation (Harun, 2011). Conservation process is a fragile activity that needs a meticulous plan and method to impose as a basic standard of the work. Equip knowledge of fundamental principle and ethics will produce the best outcomes for heritage conservation activity.

A stakeholder is a group or individual must have a legitimate interest in the organization (Omar et al., 2013) such as community, local authority, private sectors and non-government organization (NGO) . The owner with the concept of maximum benefit with any mean and the authority with the obligation to retain and maintain heritage significant value from the property within the heritage area creates an interesting complexity within the group. The clash interest between stakeholders especially authority and owner need to be synchronized for achieving the equilibrium point of understanding so that action can be taken for mutual benefit. Consideration to balance the interest between the groups, the best concept of conservation needs to impose namely an adaptive reuse concept. Adaptive reuse (AR) refers to the conservation of potential, unused or obsolete heritage buildings through their conversion to new uses and more appropriate functions. Without supportive forces from the local authority, the adaptive reuse concept cannot be implemented as an instrument to mitigate the organization. While the heritage building may incur some transformation, as much as possible, its structure, character, original identity, and authentic significance should be retained for future generations (ICOMOS, 1999). The authority role is

crucial to managing those expected and the unexpected issue regarding heritage building, as well as seeking advice from the professional and experienced entity.

Adaptive Reuse (AR) is a strategy towards conservation of cultural heritage (Plevoets & Van Cleempoel, 2011). Conceptually it is the method of reusing an old building for a new purpose and differs from its original built or designed for (Misiurilsoy & Günçe, 2016; Alikhani, 2009; Fournier & Zimnicki, 2004), with strategic implementations of sustainable conservation principle (Godwin, 2011) and ethics. Parallel with the need and to ensure that their heritage significance value protected (Yildirim & Turan, 2012; Bakri, Ibrahim, Ahmad, & Zaman, 2015) and well maintained. Sometimes the buildings are in good condition but the services and technology within them are outdated, in which case a retrofit process may be undertaken (Langston, 2012). According to (Langston et al., 2008) this concept increasingly being applied as a strategic method to urban renewal where existing buildings have become deteriorated and obsolete. The best way to counter the threat is to make sure physical life remain in their original form of structure and material. At the same time, safeguard the integrity of heritage and cultural value. Supportively, AR are one of the best methods and have been widely adopted as a conservation and redevelopment tool to revive old dilapidated building subsequently increase their architectural, functional and economic potentials (Ahmad, A. G. and Badarulzaman, 2003; Ismagilova et al., 2015), and made a significant contribution to the sustainability of existing buildings. Importantly, there is also a growing perception that it is cheaper to convert old buildings to new uses than to demolish and rebuild (Ball, 2002). According to (Conejos, Langston, & Smith, 2015; Langston et al., 2008; Yung, Langston, & Chan, 2014), there is a seven entity that contributes to AR decision making process worldwide namely physical, economy, function, technology, law and regulation, social and politic. Additionally in this research, base on Malaysia researchers and international sourcing there is ten entity namely physical, social, economic, technology, law and enforcement, function, environment, infrastructure, politic, and finance. The list derives from directly and indirectly entity that considers having a weight mitigating in decision making by authority.

Table 1: Influence Entity in a decision-making process, directly and indirectly for adaptive reuse model towards heritage building listed by international and Malaysian researcher base on literature review.

Entity	Relevant Research Study
<u>Physical</u> Physical Character, interior and exterior integrity, Structural integrity, durability of materials, workmanship, treatment, design, originality,	Ahmad,(2006); (Kamal et al., 2008) (Harun, 2011); (Umar et al., 2015); (UNESCO, 2015); (Hasbollah, 2015); (Shehada., 2015); (Conejos et al., 2011); (Osborn, 1985); Yudelso (2010); (Langston et al., 2008); (P. Bullen & Love, 2011); (Hudson & James, 2007)(M Feilden, 2003) (Jokilehto, 1988) (Grammenos & Russell, 1997)
<u>Economy</u> Population density, market, site access, disclosure, design constraints, the size of the plot, location,	Ahmad,(2006); (Harun, 2011); Prowler (2008); (Osborn, 1985); (UNESCO, 2015); (Conejos et al., 2011); (Langston et al., 2008); (P. Bullen & Love, 2011); (M Feilden, 2003)(Grammenos & Russell, 1997)
<u>Function</u> Flexibility, compartmentalization, disassembly, stream room, function ability, atrium, grid structure, channel services and corridor, rental,	Ahmad,(2006); (Harun, 2011); (UNESCO, 2015); (Conejos et al., 2011); Prowler (2008); Douglas (2006); (Langston et al., 2008); (Hasbollah, 2015);(Shehada., 2015); (P. Bullen & Love, 2011); (Kamal et al., 2008) (M Feilden, 2003)(Grammenos & Russell, 1997); (Yudelso, 2010)
<u>Technology</u> Scientific approach, Orientation, glazing, insulation and shading, natural light, natural ventilation of the building management system, solar access, complexity,	Ahmad,(2006); (Harun, 2011); (UNESCO, 2015); (Conejos et al., 2011);(ICOMOS,1994); (Jokilehto, 1988); Prowler (2008); (Fournier & Zimnicki, 2004); (Langston et al., 2008);(Yudelso, 2010)
<u>Social</u> Image, aesthetics, landscape, history, facilities, human scale, the neighbourhood and the environment,	Ahmad,(2006); (Harun, 2011);;(ICOMOS,1994); (Jokilehto, 1988); (Fournier & Zimnicki, 2004); (UNESCO, 2015); (Conejos et al., 2011); (Hasbollah, 2015);(Shehada., 2015); (Langston et al., 2008) (M Feilden, 2003); (P. Bullen & Love, 2011);
<u>Law and Regulation</u> Heritage Management plan, fire protection, internal quality, occupational health and safety, security, comfort, convenience of the disabled, energy efficiency, acoustics, conservation plan,	Ahmad,(2006); (Harun, 2011); (Anakkayan et al., 2013); (Osborn, 1985); (Heritage Act, 2005), (Sodangi et al., 2014); (UNESCO, 2015); (Shehada., 2015);(Kit, 2001); (Conejos et al., 2011); (Hasbollah, 2015);(Shehada., 2015); (Langston et al., 2008); (P. Bullen & Love, 2011); (Kamal et al., 2008)
<u>Politic</u> The adjacent building, site ecology, conservation, public, urban master plans, zoning, ownership,	;(ICOMOS,1994); (Jokilehto, 1988); (Fournier & Zimnicki, 2004); (UNESCO, 2015); (Conejos et al., 2011);(Langston et al., 2008);
<u>Environment</u> Carbon emission, renewable energy, climate change, waste management, ozone depleting substances, temperature, air velocity, humidity, pollution source,	(Rani, 2015); (Pilowtowicz.G, 1995); (Zahrah & Nasution, 2015), Ahmad,(2006); (Harun, 2011); (UNESCO, 2015); (Hasbollah, 2015);(Shehada., 2015); (P. Bullen & Love, 2011); (Mofidi et al., 2008)(Hudson & James, 2007) (Langston, 2012);(Yudelso, 2010)
<u>Finance</u> Financial resources, Financial planning, acquisition budget,	(Sodangi et al., 2014); (Smith, 2005), (Adair et al., 2003), (P. Bullen & Love, 2011); (UNESCO, 2015);
<u>Infrastructure</u> Transport, utility and services,	(UNESCO, 2015); (P. Bullen & Love, 2011); (Langston et al., 2008);

(Source: Author 2017)

Next step from this exclusive finding, the list of entity that have a significant effect will be confirmed by expertise in Malaysia. Expertise refers to Cambridge Dictionary means a high level of knowledge or skill, in other words, a person that has vast theoretical knowledge and practice in the particular field. In this case, a group of professionals such as architect, engineer, quantity surveyor, the planner and as well as professional individual in contractor organization who qualified as a building conservator and certified by Jabatan Warisan Negara (JWN) according to Heritage Act 2005.

3.0 Methodology

The primary purpose of the research is to establish and confirm influence entity in a decision making process for adaptive reuse model towards heritage building in Malaysia by using the finding from the literature reviews. A group of expertise in heritage conservation lead by professional and experienced contractors randomly chooses. A set of the questionnaire used as instrument to collect a necessary data namely, demography profile and expertise point of views. Likert scale (Harpe, 2015; Likert, 1932) on Important (1 – Very Important, 2- Important, 3 –Neutral, 4-Unimportant, 5- Very Unimportant) implement on the influence entity in heritage building by item in each case. A pilot test was conducted to identify issues (Tadeu & Lucas, 2013) and to obtain information on the improvement of the questionnaire (Mohamed et al., 2012) that may arise before, during and after the actual data collection process. A small-scale preliminary study performed to evaluate the technical structure, cost, time-consuming and prediction on sample size collected. The outcomes from the investigation revealed that the essential part of data collection process is poor feedback from respondent due to the limitation of time and confidentiality factors. Therefore this study will emphasize the ability of the study to be done according to the needs and suitability of data collection techniques. Significantly enhancing the instrument, procedure and method are very crucial to ensure the data collection process achieve at a maximum level of assessment for better outcomes. Randomized response in stratified sampling (Al-Kateb & Lee, 2014; Christofides, 2005) technique made to ensure that sample size divide according to the setting strata for the target population. Under proportional or optimal allocation, the estimator produced by stratified sampling is more efficient than the estimator produced by simple random sampling (Christofides, 2005). Where the first layer come from professional and contractors within the state and the second layer is a professional and contractors registered as a specialist in the specific area namely building conservation.

Base on the research subject criteria, information gathered from reliable resources such as local and federal authority, namely Construction Industry Development Board (CIDB), Jabatan Warisan Negara (JWN), Jabatan Warisan Negeri, and others. Information retrieved from the state of Selangor with relevant authority indicated that:

Table 2 : Respondent from State of Selangor and Wilayah Persekutuan

Respondent	Total (N)	Yamane(n)	(%)
Contractors	238	123	63.4
Consultant	139	71	36.6
Total	377	194	100.0

(Source: Author 2017)

Table 2, indicates that 194 potential respondent select equally from the population. Due to funding and time limitation and constraint, Random Stratified Sampling made to an available respondent in a state of Selangor and Wilayah Persekutuan. Sample size calculation using Yamane, (1967) formula approach used to simplify the data collection process for a small group of the respondent. (See figure 1) :

Figure 1 : Yamane Taro Sampling Formula

$$n = \frac{N}{1 + N(e^2)} \tag{1}$$

Where: n: sample size, N : Population size , e : the acceptable sampling error.

A set of questionnaire consists of data type nominal and ordinal. Nominal data used to make a simple demography profile for analysis descriptive. And ordinal data establish with, the Likert scale used to identify a level of critical range from 1 to 5 (1- very important, 2.- important, 3- neutral, 4. - Unimportant, 5. - Very Unimportant)with internal consistency test. Cronbach's alpha reliability coefficient normally ranges between 0 and 1. (Gliem & Gliem, 2003) provide the following rules of thumb: Excellent ($\alpha > 0.9$), Good ($0.7 < \alpha < 0.9$), Acceptable ($0.6 < \alpha < 0.7$), Poor ($0.5 < \alpha < 0.6$), Unacceptable ($\alpha < 0.5$)

Based upon the formula, see figure 2 :

$$\frac{rk}{[1 + (k - 1)r]} \tag{2}$$

Where k is the number of items considered and r is the mean of the inter-item Correlations the size of alpha is determined by both the number of items in the scale and the mean inter-item correlation

Research Subject

Highly skill practically and knowledgeable people used to fulfill the research objective. In order to have a clear grip, a group of professional and contractor is establishing with basic criteria which are:

1. Register with authority in heritage built environment
2. Experience in dealing with Heritage project as a builder or consultant

Data collection process took about four month to finish, away from the original target three month due to a lack of cooperation from the respondent and refuse to participate due to a confidentiality matters.

Table 3: Summary of data collection feedback by respondent:

Collection Mode	Total sampling	Response rate	Balance sample
Via email	194	7	187
Telephone	187	36	151
Interview with questionnaire	151	86	65
Refuse to participate			
Confidentiality reason	65 (35.5%)		
Total participate respondent		129(64.5%)	

Source: Author 2017

Table 3 stated clearly that 65.5% from 194 sample population gives their cooperation and the rest refuse to answer due to a confidentiality reason.

4.0 Analysis and Finding

The descriptive analysis using SPSS programmed namely frequency with mean, mode and median strengthen the finding. As well as cross tabulation between variable. A nonparametric test namely Cronbach-Alfa and Split-Half model used to measures the internal consistency and validated the research outcomes.

Table 4: Demography Profiles (n=129)

Item	Frequency	(%)
Gender		
Male	93	72.1
Female	36	27.9
Age		
18-24	-	-
25-34	4	3.1
35-44	88	68.2
45-54	19	14.7
55-64	17	13.2
65 and above	1	0.8
Education Background		
Masters/PhD	20	15.5
Diploma/Degree	109	84.5
High School Education	-	-
Elementary	-	-
No Income		
RM 3,001 – RM 5,000	65	50.4
RM 5,001 - RM8,000	39	30.2
RM 8,001- RM10,000	16	12.4
>RM10,000	9	7.0
Note – exchange rate (RM 1.00 = USD 0.24282)		

(Source: Author 2017)

Table 4, revealed that 72.1% of the 129 respondent gender is male. About 68.2% of the age distribution range between 35-44 years old and the majority of the respondent is a degree holder with 84.5%. Only 7% of the respondent earn income more than RM10,000 (USD2,428), and half of the respondent earn income between RM3001-RM5000 (USD 721-USD 1,201).

Table 5: Demography Profiles (n=129), Mean and Standard Deviation Values

Item	Mean	S.D
Age	3.4031	.78581
Education Background	3.1550	.36335
No Income	2.7597	.92513

Source: Author 2017

Table 5 stated that obviously mean value in the age which is 3.4031 is higher than others due to the consistent response by certain group age. Significantly show that the age group contributed to having an impact on the study outcomes.

Table 6 : Experience and Project Profile (n=129)

Item	Frequency	(%)
Experience in construction industry		
< 2 year	-	-
2 – 5 year	-	-
5 < x > 10 year	93	72.1
10 – 20 year	22	17.1
x > 20	14	10.8
Experience in conservation work		
< 2 year	4	3.1
2 – 5 year	16	12.4
5 < x > 10 year	89	69.0
10 – 20 year	20	15.5
x > 20	-	-
Position in organization		
Project Manager	11	8.5
Construction Manager	25	19.4
Assistant Project Manager	16	12.4
Site Engineer	12	9.3
Architect	11	8.5
Civil Engineer	10	7.8
Mechanical Engineer	10	7.8
Quantity Surveyor	10	7.8
Conservator	24	18.6
Type of Project Related with Historic building		
Public	70	54.3
Commercial	59	45.7
Type of concept in conservation work		
Protection	8	6.2
Repair	18	14.0
Refurbish	12	9.3
Maintenance	20	15.5
Recovery	20	15.5
Adaptive-reuse	51	39.5
The function of the historic building after the conservation process by the organization you represent		
New function	33	25.6
Original Function	43	33.3
Combination (Hybrids)	53	41.1

(Source: Author 2017)

Table 6, stated that 72.1% of the 129 respondent have minimum experience between five to ten years in the construction industry and the rest percentage is more than ten years experience. About 3.1% of the respondents have less than two-year experience in conservation work, followed by 69.0% from the group age between five to ten years experience. None of them have an experienced more than twenty years. As for position in the organization, construction manager and conservator seems to leads the group with 19.4% and 18.6%. Followed by the assistant manager at 12.4% and the rest have a percentage range from 7.8% to 8.5%. About 54.3% of the respondent admitted that their conservation work for public and the rest for commercial purpose.

Most of the conservation work concept is an adaptive re-use with 39.5% followed by maintenance and recovery with 15.5% equally. As for the building function, 41.1% purposely for combination (hybrid)and 25.6% for the new purpose. Significantly indicates that most of the conservation work purposely for the new and hybrid role.

Table 7: Experience and Project Profile (n=129) Mean and Standard Deviation Values

Item	Mean	S.D
Experience in construction industry.	3.3876	.67673
Experience in conservation work	2.9690	.63662
Position in organization.	6.9225	5.47382
Type of Project Related with Historic building	2.4574	.50012
Type of concept in conservation work	4.3876	1.67849
The function of the historic building after the conservation process by the organization you represent	2.1008	.94244

(Source: Author 2017)

Table 7 shows that position in an organization has a higher value compared to other with (M=6.9225, SD=5.47382), the score indicate the level of significant contribution from the group. Followed by type of concept in conservation work with (M=4.3876, SD=1.67849).

Table 8: Cross tabulation Education and Income (n=129)

Education	MSc	Degree	Total
Income (RM)			
3001-5k	-	65	65
(%)	-	100.0	100.0
5001-8k	5	34	39
(%)	12.8	87.2	100.0
8001-10k	8	8	16
(%)	50.0	50.0	100.0
>10k	7	2	9
(%)	77.8	22.2	100.0
Total	20	109	129
(%)	15.5	84.5	100.0

(Source: Author 2017)

Table 8 tabulates that 129 out of the respondent earn income more than ten thousand is Masters Degree holder with 77.8%, and the rest is a bachelor degree holder. Among the income group, respondent earning from RM3001-RM5000 (USD 721-USD 1,201) is the highest compared to other, and all of them is a bachelor degree, holders.

Table 9: Cross tabulation on Type of concept in conservation work and building function after conservation work

Building function	New	Original	Hybrid	Total
Conservation work				
Protection	2	-	6	8
(%)	25.0	-	75.0	100.0
Repair	8	3	7	18
(%)	44.4	16.7	38.9	100.0
Refurbish	1	1	10	12
(%)	8.3	8.3	83.4	100.0
Maintenance	1	10	9	20
(%)	5.0	40.0	55.0	100.0
Recovery	12	-	8	20
(%)	60.0	-	40.0	129
Adaptive Re-use	27	-	24	51
(%)	52.9	-	47.1	100.0
Total	51	14	64	129
(%)	39.5	10.9	49.6	100.0

(Source: Author 2017)

Table 10: Value Mode and Median

General Factor	Item	Mode	Median
Social	7	2	2
Environment	9	2	2
Physical	7	2	2
Economic	7	2	2
Function	9	2	2
Technology	7	2	2
Politic	7	2	2
Law and regulation	9	2	2
Infrastructure	3	2	2
Finance	3	2	2
Total			

(Source: Author 2017)

Note : 1-Very Important, 2- Important, 3- Neutral, 4-Unimportant, 5- Very Unimportant

Table 9 tabulation indicates that among 129 respondent, 49.6% of them used the building after conservation work purposely for hybrid usage and followed by new purpose 39.5%. And for adaptive reuse purpose and implementation, 47.1% comes from hybrid usage and the rest 52.9%. The result shows that the adaptive reuse concept is getting high value compare to others type of conservation work. Technically, this result supports the primary purpose of the paper to enlighten the importance of adaptive reuse concept.

Table 10 indicates that all general factors with their item are consistent with value mode and median is two (2). Significantly respondent choose that all item in elements influence is critical at the level of importance to base on their knowledge and experience. According to Chua Yan Piaw, (2013), due to a Likert scale approach, the mean value was not calculated because the input data is an ordinal data, the proper and a fair analysis for the output is mode and median approach. This rule stated that nonparametric statistical tests were appropriate, and the arithmetic mean the recommended statistic for interval data (Harpe, 2015), not an ordinal data.

Table 11: Reliability Test - Split-half method on general thought to factor influence in a decision-making process for adaptive reuse model for heritage building within the indicator

Reliability Statistics			
Cronbach's Alpha	Part 1	Value	.870
		N of Items	15 ^a
	Part 2	Value	.795
		N of Items	14 ^b
Total N of Items			29
Correlation Between Forms			.746
Spearman-Brown Coefficient	Equal Length	.855	
	Unequal Length	.855	
Guttman Split-Half Coefficient (Interpretation – Good)			.852
a. The items are: 1. Structure Integrity, 3. Work and how to work, 5. Design, 7. Physical features, 2. Compartmentalisation, 4. Flow space, 6. Atrium, 8. Corridor service channel, 2) Market, 4) Access to site / building, 6) Planning constraints, 2) Glass, 4) Natural light, 6) Solar access, 1) Financial source.			
b. The items are: 3) Budget takeover, 2) Fire protection, 4) Internal quality, 6) Comfort, 8) Energy efficiency, 1) Nearby building, 3) Conservation, 5) City master plan, 7) Ownership, 2) Value of statics, 4) Public interest, 6) Neighbourhood, 1) Utility, 3) Services.			

(Source: Authors 2017)

Table 11 shows that Spearman-Brown Coefficient value in equal length is 0.855 is more than 0.7 value accepted and interpreted as a good significant value. Significantly indicates the reliability of the collected data.

According to a Table 12, alfa (α) value range from the maximum value at 0.915 to a minimum at 0.754 indicates that the amount of coefficient scale at the range of an acceptable to an excellent value of interpretation. Cronbach-alfa have a direct interpretation (Bland & Altman, 1997) and easy to signify. Significantly the result can be concluded that the reliability test of the questionnaire exceeds the level of satisfaction in term of internal validity and item in factors influence preliminarily is proven accepted for further investigation.

Table 13 revealed that physical factor scores for the 1st rank, followed by the social factor with 2nd position. The politic and an infra structure at the lowest level from the ten elements considerable.

Table 12: Reliability Test – Cronbach-alfa method on general thought to factor influence in a decision making process for adaptive reuse model for heritage building within the indicator

Factor Influence	Item	Cronbach Alfa (α)	Reliability coefficient Scale
		0.891	Good
Social	7	0.894	Excellent
Environment	9	0.834	Good
Physical	7	0.836	Excellent
Economic	7	0.915	Good
Function	9	0.809	Acceptable
Technology	7	0.754	Good
Politic	7	0.894	Acceptable
Law and regulation	9	0.755	Acceptable
Infrastructure	3	0.772	
Finance	3		

(Source: Author 2017)

Table 13: General ranking on factor influence in a decision making for adaptive reuse model for heritage building by expert perception

Factor Influence	Rank	Mean	S.D
			.6939
Physical	1	1.1473	.41807
Social	2	2.0698	.53691
Economic	3	2.8450	.45869
Function	4	4.0233	.28037
Environment	5	4.9147	.37176
Finance	6	6.1008	.68554
Law and regulation	7	7.1938	.52285
Technology	8	7.9922	.57261
Infra structure	9	8.9845	.93909
Politic	10	9.6250	

(Source: Authors 2017)

Note - Ranking determination base on the lower range of the score. The smaller the score is the high ranking of the factors influence, due to the item coding of ordinal data. A system ranking range from (1) most important to (10) less important.

5.0 Concluding Remark

Generally from the demography profile and experience wise in conservation work dealing with an adaptive reuse concept, statistically revealed a significant positive outcome that strengthens the finding.

At the confirmation level of the entity, reliability test results with the split-half method and alfa-Cronbach for each entity overall achieved a level of acceptance. Significantly respondent agreed with the entire entity list including with the seven of the previous existence list from literature reviews. The main confirmatory entity namely social, economic, function, physical, infrastructure, technology, law and regulation, politic, environment and finance. In parallel, the confirmation towards the mean ranks revealed that the most critical entity is physical and the relevant discovery entity structurally will substitute to contribute in a decision-making process towards developing an adaptive reuse model for the heritage building.

The finding and confirmatory result towards entity from this research structurally will contribute to the preliminaries stage procedure in developing an adaptive reuse model as the main ingredient succeeding the model.

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7.0 References

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