

# Critical Success Factor on Iconic Building Management in Malaysia

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## ABSTRACT

Iconic building defined as a building that offer a new briefed image, be high in figure of form and be obvious from the city. Iconic Buildings differ from monuments as they symbolize the place where built in city scale or country scale; buildings that have historic or cultural values of their own or even connected to a significant place or person. Generally, they are different, regarding the design, size, visual appeal, or architectural style etc. Buildings and the environment are indistinguishably linked. The buildings become part of the physical environment, stirring the city image, living conditions, social wellbeing and economic profile. Iconic buildings are good examples for this mutual relationship. Their distinctiveness plays a key role in configuring their surroundings. And their impact ripples could extend to cover the whole city as related to the typology of buildings themselves. Iconic building plays a crucial role in promoting economic growth and urban development. However, over time the time, features of iconic buildings have been changed. During each time period, the architectures of the building have special aspects. There are four special characteristics elements should be present in any iconic building including unique design, large scale, high level and specific message signified by the building. However, all the features can affected maintenance of the iconic building. The issues and challenges of iconic buildings including to manage physical maintenance of iconic buildings, documentation in multiple formats, information silos, changing usage, natural and manmade hazard, pollution, financing, sensitive adaptation of iconic buildings, and material. Instead, the maintenance for iconic building needs have a critical success factor for better facilities management. Given this context Therefore, the objective of this study is to identify and compile critical success factors in order to give a positive impact of facilities management on iconic building in Malaysia. Delphi Method was selected as a reliable qualitative method based on the local context in developing critical success factor of iconic building ranking through the viewpoints of local expert panels. It is believed that the viewpoints can deliver guidance to the researcher in recognizing the quality of each iconic building factors in local environment. There are three rounds Delphi Method used through expert panels in various field including facility manager, architecture, contractor, consultant and association. The study was successful in evaluating the critical success factor of iconic building in local context and it is expected to provide insights to the facilities management industry in Malaysia to manage iconic building.

**Keywords:** Iconic Building, Criteria, Delphi Method, Expert Panel, Critical Success Factor

## INTRODUCTION

Iconic buildings can benefit cities on multiple levels. The iconic building is not easy to maintain since it consider as a city image, from city branding point of view, it is noticed today many cities market themselves

by the iconic themselves. [1]. The iconic building is emphasize about quality of the building. The Petronas Towers in Kuala Lumpur are a stunning example. By having been the tallest towers in the world for six years, they brought a lot of attention to Kuala Lumpur and helped define it as a leading city in Asia. Kuala Lumpur embraces many different cultures and has grown into a city with a very exciting mix of traditional and modern, adding that this mentality is ideal for the development of new landmark projects. Surely, the building of KLCC need to be well maintain to and need to use proper way to ensure the quality and city image is preserved. According to Riza et.al [2], city branding has to be concerned with culture and history, economic growth, and social department, infrastructure and architecture, landscape and environment among other things, can be combines into a known identity which is accepted by all people. Accordingly, the impact of iconic buildings became a branding tool, which provide recognition immediately and reputation instantly through building new iconic edifices. This is make attention to visitors and investors on the economic, social and cultural process of urban development. Worldwide, the investment in building maintenance is huge as it represents almost 50% of the total turnover of construction activities. Building maintenance is also categorised as the commonest function listed in facilities management activities. Investment in building maintenance is huge all over the world.

In most countries, it represents almost 50 per cent of the total turnover of the construction industry. The value of buildings depends on the quality of the maintenance invested in them. Maintenance management involves obtaining maximum benefit from the investment made on the maintenance activities. Maintenance in buildings in Malaysia is on the increase regardless of size, type, location, and ownership. The current maintenance management procedures in Malaysia are, however, condition and reactive based. The weaknesses in the current procedures are the primary problems because they do not explicitly link maintenance needs with building performance with respect to the building users. The building users measure the performance of a building with various criteria. The condition of a building is just one of those criteria. This research establishes the need for a building maintenance management system that is based on the concept of value in the effort to lead towards the optimization of building maintenance programs. Maintenance management that is value based allows users to be proactively put at the center of maintenance management during decision-making processes and takes into consideration both the objective and subjective requirements of users. [3].

The serious problem prevalent in Malaysia is the lack of funding for the maintenance and improvement of basic services at the state and local government levels. This may be due to low wages, lack of workers and equipment to carry out the maintenance work and lack of routine inspections. As a result, there are serious and consistent problems in daily basic services that are not addressed thus posing a security risk to the people. Some of these issues need to be resolved as soon as possible because they threaten the safety and health of the public. The iconic building involves many people who come to visit. So it is very important to take care of its maintenance. [4]. In an effort to provide the best services and improve the country's economy, the development of infrastructure such as highways, port roads, military camps and educational facilities becomes the government's priority in every annual national budget. The provision of infrastructure is carried out with good design and architectural considerations, but often ignores the aspects of cost engineering and cost considerations when occupying assets developed by the government. This causes the government or asset owners to bear high maintenance, operation and energy costs every year to ensure that all service activities are provided at the best rate for the well-being of the people. For example, the Kuala Lumpur City Hall (DBKL) in 2018 spent RM147.9 million to repair and maintain flats involving civil, electrical, mechanical, lift work and cleaning contracts. The North South Highway (PLUS) in 2016 reportedly spent RM1 billion on highway maintenance, involving work on slopes, bridges, tunnels and rest areas along the highway. [5].

The figure 1 shows the data of property market in Q3, 2022. Thus, commercial buildings state 16.8% which is second place after residential sector with 53.7%. This data shows the iconic buildings (commercial) is the vital property in Malaysia. Thus, the maintenance of iconic building in Malaysia needs improvement through the critical success factor. The purpose of this paper is to come out with criteria of iconic building using Delphi Method to develop the critical success factors framework.

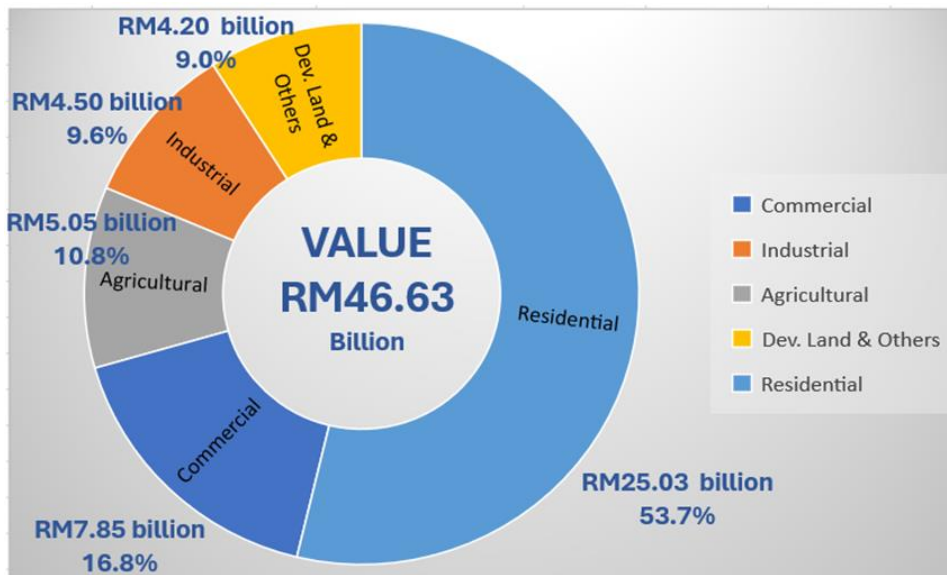


Fig. 1: A sample line graph using colors which contrast well both on screen and on a black-and-white hardcopy

The term ‘icon’ refers to an item or person viewed as being a symbol of something [14]. When the term ‘icon’ is used to refer to an ‘Archaeological Building’, such as churches, cathedrals, temples and the tombs of pharaohs, it indicates the beauty of the building, its strength and its steadfastness over the ages, but when it refers to a modern high-rise building, it is not necessary for it to have a touching story that people share to be iconic [15]

The previous research for the iconic building about the framework of iconic buildings’ impact write by Khaled Elhagla (2020). Kavaratzis [16], suggests a conceptual framework that classifies three levels of impacts :

- The first level signifies the physical attributes of iconicbuilding that distinguishes it as recognizable feature fromwhich a city can be seen.
- The second level comprises the iconic building as a market-ing tool that affects city image to enhance its potentials tomarket itself.
- The third level is concerned with users and their interactionswith the iconic building and among themselves.

Based on Khaled research, there are three iconic building impact such as city image, community and tourism. Khaled paper discussed the impacts of iconic buildings on urban-ism. The study presented the effects of iconic buildings on urban development and how people interact with the built environment. Hence, iconic buildings can produce benefits for the com-munity in a diverse range of categories such as culture and productivity. Based on a theoretical literature, one of the principles to urbanism is the quality of life. Therefore, the criteria of iconic buildings impacts add up to a high quality of life well worth living, and create places that enrich, uplift, and inspire the human spirit. The research proposed a framework as a tool to evaluate the Iconicity performance of the iconic buildings. Furthermore, it can be applied to any building to measure its performance and how it effects the urban environment.

Besides that, Burj Khalif is one of the iconic building in Dubai. Burj Khalifa which is currently the tallest building in the world which replaced the previous owner ‘Taipei 101’, it was designed to be the cornerstone of large-scale development in Dubai based on the government's decision to diversify the oil-based economy. The construction of this skyscraper was a very important turning point in the history of architecture, as this building has established itself as one of the most famous high-rise buildings in the whole world and in the history of mankind. Just a year after its completion, the tower made a dramatic appearance in the fourth episode of ‘Mission Impossible’. Where the building hosted the most important scenes of action, which can be seen from a very far distance [17].

Other than that, the Gherkin is considered as the most famous building in the city with its distinctive architectural style. The building appeared in recent films such as 'Harry Potter', 'Half Blood Prince', 'A Good Year', 'Basic Instinct 2', and 'Match Point'. Since 2010, 'Sky News' has been broadcasting its popular show 'Jeff Randall Live' from a studio in the building [18]. • Design concept: It is designed in 'Neo-futuristic/Structural expressionism', and has a panoramic upper dome, dubbed the lens. The diameter of the building measures 49 meters at the base and increases to 56.5 in the widest part and decreases to 26.5 on the highest floor, giving the appearance of a rocket or cucumber as London residents believe. This design improves the flow of wind around the facades because every floor rotates 5 degrees to previous one, which reduces pressure on the structure and prevents it from being directed to ground level. Most rooms overlook the outside [19]. It has a form of a radial plan. Walls and ceilings were covered with a continuous triangular skin of glass, allowing the entry of natural light. The building uses energy-saving methods that make it consume half the energy of a similar tower. The voids on each floor create 6 shafts which provide a natural ventilation system for the whole building [17]. Shafts draw warm air from the building in the summer and heat the building in the winter using passive solar heating.

## EVOLUTION OF ICONIC BUILDINGS

Iconic buildings are usually the most prominent example of the mutual interaction between place and architecture. Driving iconic building identity from the natural and built environment where they emerge and exist in. Throughout the centuries, the power of place due to development of architecture has been known and widely experienced. Examples of primeval architecture affected the place and how it affected, Exhibits the role of physical and social settings in the development of an architectural thought and product. Some theoreticians and professionals in architecture through a phenomenological approach try to put this into perspective. In this regard, Norberg-Schulz [6] points out the role of perception, man's experience and existence in understanding the power of place in architecture. He brings back the ancient Roman concept 'Genius Loci', the spirit of a place. In addition, Vittorio Gregotti defined an understanding of nature and the role of man plays in nature. His understanding 'building the site' is shown to be manifested in the works of Alvar Aalto and Louis Kahn. [7]

The Saynatsalo town hall (1948-1952) is one of the spectacular works of Alvar Aalto which created according to the man's experience. Consideration to the life style of society, human being, emotive impact and man's experience is the particular property of the Saynatsalo town hall. This architectural project is a symbol of community and social equality that Aalto has designed it extraordinary. [8]. The National assembly building by Louis Kahn is another architectural construction that represents the abstraction image. In this case, designer (Louis Kahn) attempted to create a comprehensible representative imagery to consider the vernacular traditions. Through the eye of Sarah William Goldhagen, Kahn —some times consciously, some times unconsciously — 'oriented' his work toward the perceived demands of his audiences: his buildings were powerful aesthetic propositions to debates that preoccupied many. [8].

### Criteria and Sub Criteria of Iconic Building in Malaysia

The quality of life is rather a multidimensional concept which gives different impressions to different persons. There are some definitions used in reference to quality of life such as life satisfaction, a combination of human enjoyment and excellence. Iconic buildings affect cities by improving the quality of life focusing on the human satisfaction with different urban attributes such as transportation, quality of public spaces, recreational opportunities, land use patterns, population and building densities, and ease of access for all to basic goods, services and public amenities. Several city planners and funding organizations have tried to objectively measure the quality of urban life throughout a variety of quality of life indicators. These indicators are related to social/cultural, economic and environmental wellbeing. They provide and develop the quality of life in the urban context. The following section explores the definition criteria of Iconic Building:

**FM trend (technology):** To preserve cultural resources which have root in the past civilization besides to achieve the technology and scientific is the main purpose of iconicity.

**Life-Cycle Cost Analysis (LCCA):** Reducing, reusing, and recycling materials to limit waste and keep it out of landfills

**Upscaling Staffing:** Training maintenance staff and facility managers that minimize equipment and system failures

**Logistic/location:** To create a powerful place, consideration to the identity of place is essential

**Parking:** Parking structures and management and maintenance of the parking

**Maintenance:** Several types of maintenance are necessary to create an overall building maintenance strategy: Corrective maintenance, Scheduled or planned maintenance and Preventive maintenance

**Concerned with users and their Interactions:** Contrast in texture of spaces, different shape, and colour represented a spectacular space

**Physical attributes:** Create a balance & harmony in geometrical form

**Specific message signified by the building:** Create a balance & harmony in geometrical form

**Unique design:** A symbol of architecture that pushes boundaries via digital design and use of more efficient materials

**Large scale:** An ordinary building high

**City image:** Innovative design besides the spectacular construction of this iconic building generated a new image

**Community:** Maximize economic benefits

**Sustainability:** Sustainability is the balance between the environment, equity, and economy

**Tourism:** Tourism is a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment.

TABLE I CRITICAL SUCCESS FACTOR OF ICONIC BUILDING IN MALAYSIA

No	Critical Factor	Success	Details
1	FM trend (technology)		Iconicity could be split into dual aspect or representation. Initially, it could be visibly synonymous to the building being famous in its environment at least, and on the other hand it may be seen as aesthetically enriching and symbolic in one sense.
2	Life-Cycle Cost Analysis (LCCA)		The operation costs are annual costs, excluding maintenance and repair costs, involved in the operation of the facility. Most of these costs are related to building utilities and custodial services. All operation costs are to be discounted to their present value prior to addition to the LCCA total.
3	Upscaling Staffing		Upskilling involves improving the skills and knowledge of individual employees within their current roles, upscaling focuses on expanding the scale or scope of business operations to achieve organizational growth and success.
4	Logistic/location		Logistic prominence is an irrefutable characteristic for iconic buildings. The environment in which the building is located must have a positive impact as a result of the iconic building. People's perception of the place must be largely influence by the presence of the iconic building.



5	Parking	Platinum Park Open Air Car Park for iconic building, smart parking. Fully unified Smart Parking System with multi cashless payment options. The drivers do not need to retrieve and pay using a parking ticket when they enter and exit.
6	Maintenance	<b>Corrective maintenance</b> that involves repairing something that has broken. <b>Scheduled or planned maintenance</b> that is carried out regularly, such as changing an air filter in an HVAC system on a recommended schedule. <b>Preventive maintenance</b> that is performed to keep equipment operational or extend its life, such as patching rooftops to prevent leaks. This includes predictive maintenance, which uses tools to collect and analyze data in order to identify possible defects before they result in system or equipment failure.
7	Concerned with users and their Interactions	The best iconic buildings have to include Public open space that should be provided with adequate amenities for social interaction, comfort and convenience, such as Lighting, Seating, Waste Receptacles, Telephones and Internet, directional signage, bicycle racks, drinking fountains, shelters, and public restroom
8	Physical attributes	Iconic building should represent a high quality detailing, and achieve a distinctive character respectful of surrounding. The placement, height, massing, materials, details and facades of buildings should encourage the vision of the building with its identity and character to provide a visually pleasing and physically development.
9	Specific message signified by the building	Iconic buildings became a branding tool, which provides recognition immediately and reputation instantly through building new iconic edifices. This draws attention for visitors and investors on the economic, social and cultural process of urban redevelopment.
10	Unique design	Good building design supports creative and innovative methods that adds richness, diversity and turns a useful place into a unforgettable place
11	Large scale	Different recreational chances should encourage year-round activities where a variety of commercial and amusement uses should meet citizens' needs, and attract visitors to the city
12	City image	Monumental buildings, public sites or other special characters are the ones which form the image of a city. For better or worse, personage visual reliance is used to represent architecture and the environment around it.
13	Community	The Iconic building should be welcoming to visitors of all ages, culture and interests, including seniors and the disabled
14	Sustainability	Sustainable buildings play a crucial role in mitigating climate change by reducing energy consumption and greenhouse gas emissions.
15	Tourism	Architecture is a touristic consumption good and an objectified cultural capital. According to Maitland and Newman (2008) "visitors are not drawn by tourist attractions but by qualities of place and culture – 'architecture', 'people', 'food', 'culture' and 'diversity. Increase tourist visit, Tourist overnight stay, Increase elements of attraction, Recreational facilities, Introduce new types of tourism, Investment opportunity, Opening new tourism markets.

## METHODOLOGY: THE DELPHI METHOD FOR EVALUATION OF CRITICAL SUCCESS FACTOR FOR ICONIC BUILDING

### Delphi Method

The Delphi method is an iterative process used to collect and distil the judgments of experts using a series of questionnaires interspersed with feedback. The questionnaires are designed to focus on problems,

opportunities, solutions, or forecasts. Each subsequent questionnaire is developed based on the results of the previous questionnaire. The process stops when the research question is answered.[9]. The method can also be used as a judgment, decision-aiding or forecasting tool [10], A Delphi traditionally involves an anonymous survey using questionnaires with controlled feedback to allow iteration within a panel of experts [11]. It is also understood as a tool for reaching expert consensus through scientific discourse and helping to solve complex situations in which, while scientific knowledge elements are relatively certain, the relations between variables are very complex [12]. The method is found appropriate for developing indicators [13]. The choice of a specific design and the methodological of a Delphi process dependent on the research question defined by the analyst and vary significantly among studies. The Delphi study presented here was devised in a structured format to assess a critical success factor for iconic building criteria drawn from the literatures.

### Establishing expert panel

The criteria of performance management were validated by 7 experts in the facilities management field. They are senior management personnel / officers from the government agencies and practitioners. All selected respondents have working experience of more than 10 years onwards. This method includes three rounds of allocation of the questionnaire to the expert panel in the field of facility manager, architect, contractor, consultant and association as Figure 2.

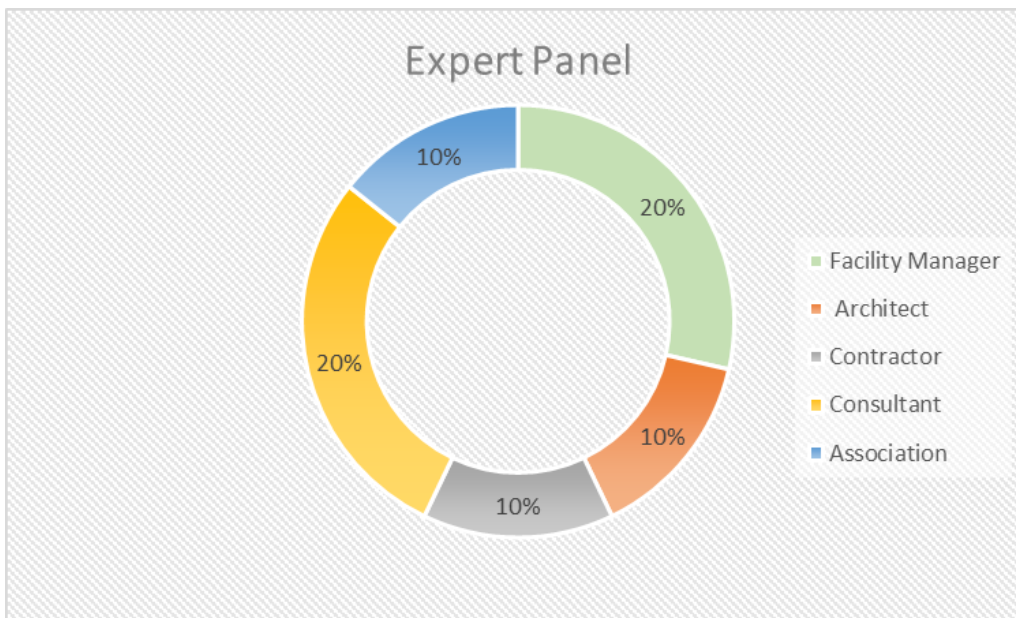


Fig. 2: Numbers of expert selected

### Analysis of Ratings

After the first round, the aggregate ratings were calculated. Table 3,4 and 5 shows the distribution of the frequencies of expert’s ratings of indicators in first, second and third rounds. We based thresholds for retaining criteria items was based on the combined criteria (frequencies) and the level of agreement among participants as well as the stability between rounds at the second and third round. Only indicators that satisfied these criteria wholly were considered to have reached consensus.

## RESULTS AND DISCUSSION

Table 3 describes the results of the first rounds. Seven (7) experts gave their consent to participate in Delphi process. According to literature review (benchmarking process), there are fifteen (15) criteria. The rest criteria is FM trend (technology), Life-Cycle Cost Analysis (LCCA), Upscaling Staffing, Logistic/location, Parking, Maintenance, Concerned with users and their Interactions, Physical attributes, Specific message signified by the building, Unique design, Large scale, City image, Community, Sustainability and Tourism.

Based on the result of 1<sup>st</sup> round Delphi, the criteria for community include as a critical success factor for iconic building. The expert panel suggested community as a criteria. This criteria is agreed by others expert panel. The result shows 100% for the community criteria. Other than that, the result of 2<sup>nd</sup> round Delphi, the criteria of sustainability and tourism was suggested by expert panel as one of critical success factor for iconic building in Malaysia. The results also shows 100% for the sustainability and tourism criteria. The last result of 3<sup>rd</sup> round Delphi method, all the expert panels was agreed with all the criteria that suggested at 1<sup>st</sup> and 2<sup>nd</sup> round of Delphi Method.

TABLE II DELPHI METHOD ANALYSIS

Critical Success Factor	1 <sup>st</sup> Delphi Round	2 <sup>nd</sup> Delphi Round	3 <sup>rd</sup> Delphi Round
FM trend (technology)	0.9	0.9	0.9
Life-Cycle Cost Analysis (LCCA)	0.9	0.9	0.9
Upscaling Staffing	0.8	0.8	0.8
Logistic/ location	0.8	0.8	0.8
Parking	0.9	0.9	0.9
Maintenance	0.8	0.8	0.8
Concerned with users and their Interactions	0.9	0.9	0.9
Physical attributes	0.9	0.9	0.9
Specific message signified by the building	0.8	0.8	0.8
Unique design	0.9	0.9	0.9
Large scale	0.8	0.8	0.8
City image	0.9	0.8	0.8
Community	<b>1.0</b>	1.0	1.0
Sustainability	-	<b>1.0</b>	1.0
Tourism	-	-	<b>1.0</b>

Table 2 describes the results of the second round of Delphi process. The results show all the criteria was accepted by expert because the overall rating was over than 60%. According to Maitland and Newman (2008) “visitors are not drawn by tourist attractions but by qualities of place and culture – ‘architecture’, ‘people’, ‘food’, ‘culture’ and ‘diversity’”. The significance of buildings and built environments to tourism is undisputable and the economic and social influences they offer to tourism are important. The city being distinct and having recognized identity can be inherited by many factors; Identifiable image as Dubai in UAE, Mega events as Cannes in France, Nature as Maldives islands, etc. and identifiable image created by iconic architecture. [20].

## CONCLUSION

Finally, based on result from Delphi process start from 1<sup>st</sup> round until 3<sup>rd</sup> round analysis, it can be concluded that the result shows there are fifteen (15) suitable categories of iconic building can be adapted in local context to develop the critical success factor for iconic building in Malaysia. The main criteria including FM trend (technology), Life-Cycle Cost Analysis (LCCA), Upscaling Staffing, Logistic/location, Parking, Maintenance, Concerned with users and their Interactions, Physical attributes, Specific message signified by the building, Unique design, Large scale, City image, Community, Sustainability and Tourism. This criterion will be used as a criteria to develop a critical success factor for iconic building framework in Malaysia using the questionnaire survey on facility manager at selected case studies. It can be betterment benchmarking for Facilities Management Industry in general and expected to provide insights to the stakeholders in improving their skills and knowledge decision how to manage the iconic building in Malaysia.



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