



Value-based Building Renovation- A Tool for Holistic Assessment Case Study: Por Hotel

Witoon Tipanet

Faculty of Architecture, Rangsit University, Pathum Thani, Thailand

E-mail: Innorsu@gmail.com

Abstract

Research on the 2016 renovation of POR hotel in Chiang Mai, Thailand revealed a holistic approach that will assist architects with the prioritization of hotel renovation projects. The purpose of this article is to present a simple and holistic assessment during the design phase and the evaluation after the completion. The article highlights the benefits of renovation and focuses on the values and interests of the stakeholders. The approach considers the factors of planning, requirements, design and investment impacted on the value of the project. Data is collected directly from the stakeholders by using information and interview templates. The article concludes with appreciation for the value of existing architecture with the synchronization of hotel renovation and hospitality trends.

Keywords: *Stakeholders, evaluation, renovation, building, hotel*

1. Introduction

Renovation of buildings currently increased attention in Thailand driven by an aging building stock. The economic value of property may be split into two parts: site and building. While the site value may increase as a result of land development to reflect society's desire for newer and more efficient facilities (Wang & Adeli, 2014). Depreciation is technically defined as the loss in existing use value of property. The hospitality industry is a major source of revenue for Chiang Mai and due to its touristic and business significance the number of travelers increased rapidly. Chiang Mai currently has 33,593 rooms in 831 registered and unregistered properties and anticipates an additional 524 rooms by the end of 2019 (Ruentaveesil, 2015). Most properties are located in the Old City district of Chiang Mai which is the heart of the northern region of Thailand.

Even though the demand for renovation is increasing there is fairly limited research on the subject going on in Thailand. The foundation for this article is the benefits of the renovation in terms of reduced time and cost. The cost of renovation is approximately 30-40% lower than the cost of new construction (National Statistical Office Thailand, 2017). Another benefit is the environmental sustainability of renovation that impacts matters such as renewable resources, pollution and depletion of non-renewable resources; matters that can continue indefinitely (Astmarsson, Jensen & Maslesa, 2013). Hence, renovation can be benefit for the existing building stock.

2. Objectives

The objective of this article is to present the main findings and in particular to present a simple and holistic assessment that can assist all stakeholders in prioritization during the stages of renovation projects. The aim was to collect general knowledge in practice, and to identify the areas where further research and development could add the value to the renovation projects. The results of the analysis are based on a qualitative assessment aimed at guiding the objectives and supporting the user representatives and professional stakeholders in the renovation project. The analysis provided the possibility to collect and analyze renovation related data from different perspectives. This tool would allow the systematic data collection, analysis, and transfer among stakeholders. This approach can be used for the generation of specific procedures and could be adapted for other cases by changing the set of criteria so that they respond to the different environment.



The article is substantiated by literature review in section 3. The methodology of the empirical study is explained in section 4. The article ends with the results and discussions in section 5, and conclusions in section 6.

3. Literature reviews

In Chiang Mai renovation is significant due to limited availability of land for property development and a high demand for hotels, therefore available existing buildings inner the city can easily be transformed into a hotel. The renovation of buildings can also be related to the changes in land use, especially in old town of Chiang Mai. It has for a long time been generally recognized that is one of the most popular tourist destination in the region mainly due to its value for money driven by affordable hotel pricing and lower cost of living and traveling (Ruengtaveesil, 2015).

Building renovation is the process of fixing or replacing existing parts of the building to improve its performance, either to its original state or better (Jensen, 2008). At the same time, building renovations also provide the possibility to change functions and architectural expression to meet future needs (Gohardani, Björk, Jensen, Maslesa, Kanarachos & Fokaides, 2013). It can be in the form of rebuilding or retrofitting a building as part of modernization or adaptation to change the function and can also be in the form of restoration or preservation of cultural heritage like historic buildings (Itard, Meijer, Vrin & Hoiting, 2008). The focusing in building renovation is mostly on functional efficiency, aesthetics and asset value, but there are also the other benefits of building renovations such as improvement of environmental sustainability and maintaining the historical heritage (Wang & Adeli, 2014). There are a number of tools developed to support building renovation, and there is a simple approach that can support the initial goal setting among the primary stakeholders and support the dialogue between non-professional user representatives and building professionals.

4. Materials and Methods

The research applies a qualitative multi-method approach, including interview survey and investigation. The interview survey comprises 6 semi-structured interviews with different types of stakeholders with a relation to the project. A requirement specification and outlines of the tools were developed based on the interview survey that took place in November 2016 and February 2017 to test the quality and relevance of the requirement specification and outlines. The case study included interviews with the main stakeholders, study of documents, site visits, and participation in site meetings. The evaluations were collected by using standard information and interview templates, which were prepared for this specific case study. Each interviewee was presented with the same basic information (see example in Table 1-3). The interviewees were asked to give their evaluation as a score on a five-point scale for each of the 6 parameters showing in Figure 2-3 and Table 5-6. Together with each score they were also asked to give the main reason for their score.

5. Results and Discussion

Interview questions are standardized with minor deviations depending on the stakeholders. The evaluation of a project is based on subjective assessments, but supported by project facts. Furthermore, there are an explanation for each rating. The evaluation is illustrated as shown in Figure 2-3. It rates parameters and their factors with grades 1-5 from low to high. The rating was made before and after the renovation which makes it possible to compare the expectations with the final results. The advantages are that it takes a short time to do the evaluation, the graphical illustration of results is easy to understand and the model provides a quick overview of the current situation, seen from a certain stakeholder's perspective. It can be useful in the early stages of the renovation projects, in order to improve the matching of expectations between different stakeholders and defining the success criteria for a project (Jensen, 2008). After the project is completed, the evaluation results from the initial phase can be used to determine whether the success criteria are fulfilled or not, and there is also possibility to evaluate the project in the



second time. The evaluations can internally be used to compare “before and after” situation, and externally for experience exchange and comparison between different projects.

POR Hotel consists of one low-rise building located near Changpuak municipality office, 0.5 km north of the city center. The building was operated as a brothel hotel from 1968 until 1980 and left abandoned from 1980 until 2016. The building area of the project is about 1200 square meters. With a proper renovation project design, the architects successfully transformed the existing building to a Boutique Hotel which has 30 guest rooms with a swimming pool. In the project, architect has made an effort towards the integrated architecture, interior and landscape design.



Figure 1 Image before and after Building renovation

At the beginning, there were three requirements: assessment of the possibility of transforming the exist building into a hotel, control of the investment, limitation of the building codes and city planning. All of space in the building was redesigned through maximizing the use of existing structure. Through the professional suggestions from the mechanical and electromechanical engineers that none of the existing systems can be used. For the new function, the logistics flow has been relocated, also some of areas has been arranged to meet the requirements of the hotel combining the existing conditions. Through a specific design strategies and proposals, a satisfying work has laid a solid foundation based on the control of the investment. Above all, the property has feasibility to be reconstructed.

The landscape, interior, architectural space of the building provides constant sensory stimulations to the guests from the moment they arrive. The integrative design of the hotel starts from the entrance with the tropical architecture concept and confines to the main building of the hotel by emphasizing the integration of the garden. In the design of the entry sequence used the impact of natural plantation and swimming pool as a part of architectural feature, in order to create a unique visual environment and sequential spatial experience for the guests.

The following sections were identified: (1) planning, (2) project requirements and (3) project design parameters. All criteria elements were divided into categories in an attempt to increase the effectiveness to discussion between the project stakeholders. Each of these categories has between four and six specific categories for evaluation. Table 1 presents a description of each category and potential elements to be evaluated within the planning section.

**Table 1** Project planning categories

Category	Description	Elements
building use	Determining functionality	A boutique Hotel with a swimming pool
project validation	Determining requirements and expectations	Needs of target group, area requirements, building codes and city planning
project costs	Assessing the effort required versus the available funding	total investment 30 MB with 60% financing and 40% capital
Time schedule	Assessing the effort required versus the available time	Proposed project end date, schedule milestones and deadlines
building considerations	Assessing the effort required to meet the objectives	adaptability, volume of space, useable area, front and back of the house areas, other operational areas

Table 2 Project requirements analysis

Category	Description	Elements to modify and replace
feasibility	Assessing the cost effectiveness of design and materials	Overall project scope, cost of investment, construction methods, and sustainable design
capacity	Assessing the capacity requirements	Power, water, telecommunications, IT, wastewater treatment, water filtration, sewer systems, parking areas, access roads
Structure	Assessing the efforts required to modify the existing structure	Layout, requirements, structural grid, and structural integrity
M&E and sanitary	Assessing the need to replace existing systems	Air conditioning systems, large engines in for example elevators, thermal distribution, water heating, lighting fixtures, lighting controls, electrical circuits and plumbing fixtures and connections
exterior	Assessing the efforts to demolish, modify or renovate the building features	Windows, doors, insulation, roofing, embedded structures and archeological survey
interior	Assessing the need to replace existing equipment	front and back of the house including rooms, public areas, kitchen

Table 3 Design parameters analysis

Category	Description	Elements to design
civil design	Determining the scope of work	Site utilities, elevation and profile views, equipment location, landscape, drainage system, underground utilities
Architectural design	Addressing the issues and recognizing the necessary effort to reach the criteria	Accessibility requirements, character of building design, acoustic system, planning and zoning review, circulation, technology and hardware standards, furnishings and reuse of materials
structural characteristics	Determining the structural design criteria	Structural system, design load parameters and functional spatial constraints
mechanical/electrical/IT characteristics	Developing mechanical, electrical and IT design parameters	Air condition requirements, system redundancy conditions, plumbing requirements, fire protection, lighting and emergency power requirements

The planning of the renovation started in late 2016, aiming for a short process that included a design and alterations according to the actual conditions of the project. The duration of this project was estimated 4 months and there were a number of tasks to be carried out both before and after the renovation. A schedule established the good relationship between task and time, and gave various parties involved responsibility. The renovation was accomplished according to estimated time and cost accurately. The total cost of the renovation was 15 MB which is approximately 8,200 baht per SQM, comparing to 12,500 baht



per SQM for the construction of new buildings. Although no specific numerical goals of reduction were set up, it can be said that it is a very ambitious goal with strong determination, as it is 34.4 % for a substantial reduction in comparing with the new construction.

The case study is based on interviews with the main stakeholders during the planning of the 4-month renovation project in late 2016 and the completion of the project in early 2017. Each category is divided in sub-division parameters. The categories and the parameters are generic in relation to building renovation. Factors are shown for each category and parameter for the case study in Table 4.

Table 4 The evaluation of POR hotel

Parameters	Descriptions	Contents
Project planning	A fundamental activity in the management and execution of renovation projects.	Initiating, planning, executing, monitoring and controlling and closing
Project requirements	Assessing overall project demand, construction cost, construction methods, and economics of sustainable design	the estimation of the required capacity to match the building codes and city planning
Project design	Redesigning the project through maximizing the use of existing structure.	The civil engineering, architecture, structure, M&E and sanitary work tasks.
Project sustainability	a fundamental requirements focus on sustainability	Environmental, economic and social impacts toward the project.
Project schedule	The potential to maintain the project time schedule	predicting situation in advance and adjust milestones well ahead of time to meet the deadline
Investment	The potential to maintain the total cost of investment and add value for the property	Overall project cost, property value defines as land and improvements made to the project

Table 5-6 shows that the stakeholders agree on some parameters and disagree on others. After completion of the renovation all stakeholders give higher grades for the parameters of investment, planning, schedule and design. Even though during the renovation all stakeholders tried to maintain the project requirements and to have less impact on environment and resources, the grade for these parameters was lower than expected. The design, planning and investment are considered the most significant parameters and the results are better than expected. The viewpoints amongst stakeholders toward the sustainability and project requirement are quite different and the results are lower than expected.

Table 5 The results before renovation

Project parameters	Architect and designers	Owner and representatives	Engineers	Contractors
Planning	3.0	3.5	3.5	3.0
Requirements	5.0	4.0	3.0	3.0
Design	3.5	4.0	3.0	3.0
sustainability	4.0	3.5	2.0	2.5
schedule	3.5	3.0	2.0	4.0
Investment	3.0	4.0	3.5	2.5



Table 6 The results after renovation

Project parameters	Architect and designers	Owner and representatives	Engineers	Contractors
planning	4.0	4.0	3.5	3.0
requirements	4.0	3.5	3.5	3.0
Design	5.0	5.0	4.5	5.0
sustainability	2.0	3.0	1.0	2.0
schedule	3.5	3.5	3.0	3.5
Investments	5.0	5.0	5.0	4.5

The research collected the subjective views of the 4 stakeholders before and after the renovation. The parameters allow the comparison between before and after renovation, and create a tool that is simple to use and creates easy understandable overviews that take the different views of the stakeholders into account. This tool furthermore illustrates the value of the qualitative and quantitative parameters of the renovation project from different perspectives.

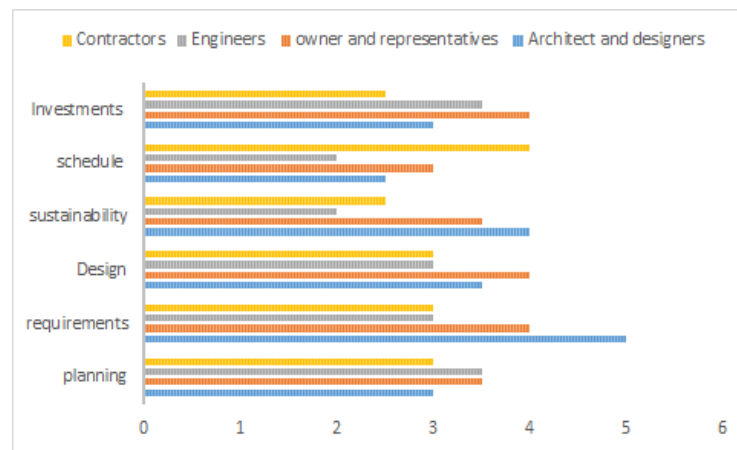


Figure 2 The results before renovation

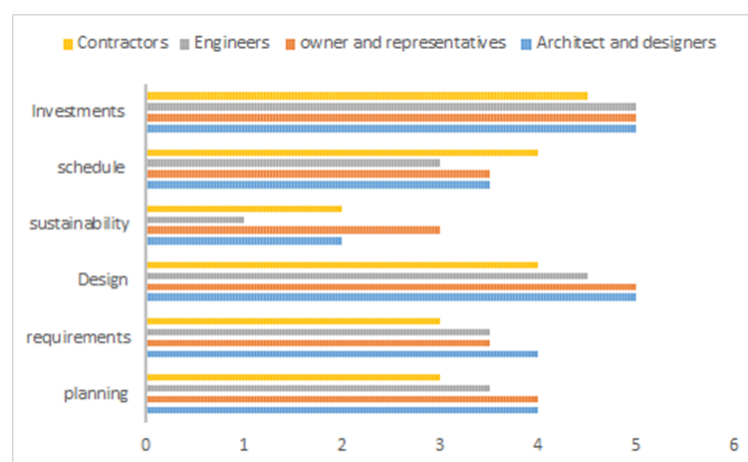


Figure 3 The results after renovation

The holistic assessment is the main purpose used as a decision support tool in the renovation (Gunay, O'Brien, & Beausoleil-Morrison, 2013). It is a process-oriented approach that can be used by anyone with insight in the project. It can furthermore be used as a communication tool between architects,



designers, engineers, contractors and owners in making evaluations on the basis of expectations. The approach is able to monitor and evaluate the obtained results which provided the opportunity to compare alternative proposals. This tool can be used to illustrate cases in the form of inspirational project.

6. Conclusion

Since the approach is addressing different groups of stakeholders it is easy to understand and simple to use. Data is collected through interviews with primary stakeholders and there are no new technical calculations in the approach. This research has documented the initiation of hotel renovations and revealed in a simple and holistic assessment that can assist stakeholders during the various stages of renovation projects. It is planned as a holistic and qualitative approach to define objectives and clarify expectations as possible tool to follow-up on decisions and evaluate results. It is a value based and process oriented tool, which focuses on the different views and interest of the involved stakeholders. This can be used to manage objectives and expectations to guide design activities and evaluate design solutions. Project sustainability is influenced the value to the property and sustainability is not just about cost-savings and environmental issues. It is also a question of social responsibility and quality of life for the end-users. However, the case study also showed that the perception in the renovation caused satisfaction among the stakeholders.

7. References

- Astmarsson, B., Jensen, P.A. & Maslesa, E. (2013). Sustainable renovation of residential buildings and the landlord/tenant Dilemma. *Energy Policy*, 63, 366-362.
- Gohardani, N., Björk, F., Jensen, P.A., Maslesa, E., Kanarachos, S. & Fokaides, A. (2013). On stakeholders and the decision making process concerning sustainable renovation and refurbishment in Sweden, Denmark and Cyprus. *Journal of Architecture & Environment*, 1(2), 21-28.
- Gunay, H.B., O'Brien, W. & Beausoleil-Morrison, I. (2013). A critical review of observation studies, modeling, and simulation of adaptive occupant behaviors in offices. *Building and Environment*, 70, 31-47. from https://www.lhbank.co.th/Files/economic/economic_20161207093444.pdf
- Itard, I., Meijer, F., Vrins, E. & Hoiting, H. (2008). Building renovation and modernization in Europe: State of the art review. *Final Report*. Delft University of Technology, Delft, The Netherlands.
- Jensen, P.A. (2008). Facilities management for practitioners and students. Book. *Centre for Facilities Management Research*, DTU Management Engineering.
- National Statistical Office Thailand. (2017). *Statistic of hotel and guest house business in Thailand*. Retrieved from National Statistical Office Thailand. <http://service.nso.go.th/nso/nsopublish/themes/files>
- Ruengtaveesil, J. (2015). Current situation of the tourism and hotel industry (Land and House Bank Report). Retrieved from LH Bank
- Wang, N.M. & Adeli, H. (2014). Sustainable building design. *Journal of Civil Engineering and Management*, 20, 1-10.