



# Critical failure factors of public-private partnership low-cost housing program in Thailand

LCH program  
in Thailand

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## Abstract

**Purpose** – Numerous studies to date have demonstrated the public-private partnership (PPP) project procurement method's failure to deliver low-cost housing (LCH) to low-income groups (LIGs) in developing countries. The purpose of this paper is to investigate critical failure factors (CFFs), and how they cause the failure of PPP-LCH program.

**Design/methodology/approach** – Grounded Theory methodology was used to gather and analyze the data in order to identify, categorize, and develop the logically causal relationships among CFFs that cause PPP-LCH program failure.

**Findings** – Ten CFFs in various phases of PPP-LCH project life cycle caused PPP-LCH program failure. Some CFFs resulted from ineffective PPP policy and strategy, while some were beyond the control of the project/program management team. These CFFs were inter-/intra-related to one another in a particular way.

**Originality/value** – Despite the increase in PPP-LCH projects/programs for LIGs in practice and the prevalence of failure, the studies of PPP-LCH project/program failure still suffer from insufficient conceptual clarity about the causes of these failures. The lessons learned, to some extent, help decision makers in both public and private sectors to reduce the probability of the PPP-LCH project/program failure by clearly explaining the nature of each CFF.

**Keywords** Public-private partnerships (PPPs), Thailand, Critical failure factors (CFFs), Low-cost housing (LCH) programme

**Paper type** Case study

## 1. Introduction

A shortage of decent and affordable houses coupled with less land availability for residential usage and land price skyrocketing in the major cities have caused low-income groups (LIGs) to endure unlivable housing conditions and tenure insecurity (Susilawati and Yakobus, 2010; Yap and Wandeler, 2010). Most governments in the developing world encouraged LIGs to have access to sustainable homeownership with a livable environment by introducing the popular public-private partnership (PPP) method to deliver low-cost housing (LCH) projects. However, a majority of PPP projects were aborted before contract implementation because of high transaction costs (Jefferies and McGeorge, 2009), political disagreement (Cheung *et al.*, 2010), and inability to resolve legal issues (Zhang, 2005a). The characteristics of these PPP LCH (herein called PPP-LCH) projects are unique. The outputs of other PPP projects are managed by the multidisciplinary teams to ensure project sustainability. The results of the projects are fragmented because they are owned and managed by individual householders, who have low or irregular incomes and also may be poorly educated.



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Many empirical studies demonstrated that most PPP-LCH projects in developing countries, including Thailand, failed to deliver their intended purpose of enabling LIGs to have access to sustainable homeownership (Gough and Tran, 2009; Sufian and Mohamad, 2009; Susilawati and Yakobus, 2010; Waibel *et al.*, 2007; Yap and Wandeler, 2010). The failure of these projects not only wasted the allocated funds within the budget but also undermined the national economy, because the insecure tenancy slowed down the individual productivity. The challenge lies in identifying, analyzing, and categorizing the critical factors that brought about PPP-LCH program failure.

This research aims to investigate critical failure factors (CFFs) of the PPP-LCH program in Thailand. However, to examine the program failure through CFFs, it is imperative to know the failure definition. *Oxford: Advanced Learner's Dictionary* (Hornby, 1995) provides the definition of "failure" as "lack of success in doing or achieving something." According to this definition, who or what fails are both considered. As a result, the program failure is defined and failure to whom is identified. In line with the definition of the project success according to Baccarini (1999), the program failure can be defined as the set of program objectives that were not hierarchically met. The program development failed to meet program schedule, cost, and product specification. The program also failed to achieve the program objectives of enabling LIGs to have access to homeownership. These objectives were established by a program-initiating organization who took responsibility for the program's success/failure. The program-initiating organization is sometimes referred to as the sponsor, client, or owner.

Although the study is focussed on the Thai environment, the results are useful for the governments in other developing nations that aim to initiate a PPP-LCH program for LIGs. This includes foreign companies intending to participate in PPP projects in Thailand. The scope of the program is focussed on the partnership of government agencies and private profit-based organizations in order to deliver new and ready-to-occupy LCHs for LIGs, who own and occupy the property.

## 2. CFFs

Studies on critical success/failure factors were first introduced in the 1960s (Belassi and Tukul, 1996). Most of the early research emphasized the CFFs rather than critical success factors (CSFs). Later most scholars' studies focussed on CSFs. Consequently, the studies on CFFs were few. Perhaps, this was because responsible organizations were reluctant to reveal their failure efforts, failed to learn their failure lessons (Pan, 2005), or failed to keep records of their failed projects (McManus and Wood-Harper, 2003). Additionally, CFFs, to a large extent, have been studied and became synonymous with risk factors (Ke *et al.*, 2010), problems (Zhang, 2005a), negative factors (Cheung *et al.*, 2010), and barriers (Zhang, 2005b).

In fact, the CSFs were developed from CFFs which were viewed as the deficiency or defectiveness of various critical factors (Pinto and Mantel, 1990) and potentially caused the failure of projects in every stage of project life cycle. Meanwhile, CSFs were the critical factors, whose existence in every stage of project life cycle significantly contributed to and were vital for the success of a project (Toor and Ogunlana, 2009). A project's success/failure resulted from the combination of, interrelation and interaction of CSFs/CFFs under certain features of the project and external factors (Belassi and Tukul, 1996; Toor and Ogunlana, 2008). The studies of CSFs and CFFs conceptually aimed to accomplish project objectives by improving project management

practices (McManus and Wood-Harper, 2003; Pan, 2005; Zhang, 2005a) through studying best practices and lessons learned from successful/unsuccessful projects.

In practice, CSFs were applied to analyze the potential reasons of project success/failure, select project team members, allocate limited resources, and forecast performance level of a project before it commenced. They also provided an underlying decision framework and helped the firms to decide their strategic standing on the project (Toor and Ogunlana, 2008). On the other hand, CFFs provided a set of indicators or identifiable conditions so that problems with a project can be identified and addressed before it had failed (Pinto and Mantel, 1990). They were also used to prepare a contingency plan and alternative approaches for the project that had high risk (McManus and Wood-Harper, 2003). According to those CFFs', they were used, particularly in PPP projects, as fundamental information to prepare a list of risk factors for proper risk allocation (Ke *et al.*, 2010), to identify CSFs (Zhang, 2005a), and to improve protocol of project development (Zhang, 2005b).

### 2.1 CFFs in PPP projects

The study on the attractive and negative factors of adopting the PPP method to deliver the projects (Cheung *et al.*, 2010) pointed out that the critical factors arose from multiple sources. For example, PPP project arrangements were complex and involved copious stakeholders with conflicting objectives and interests. These arrangements led to extensive negotiation. Other sources included socio-economic and political as well as legal and institutional frameworks. These critical factors were risks, which once properly identified, analyzed, understood, and evaluated by all parties, were allocated to the party best able to manage these risks. Risks allocated beyond the capacity of the parties brought about project failure (Cheung *et al.*, 2010). Appropriate risk allocation was a part of contractual arrangements (Zhang, 2005a). The contract parties' obligations and financing instruments were clearly stated because they determined the structure of the partnership (Yuan *et al.*, 2009).

However, due to the nature of PPP project arrangements, the transaction costs of the project procurement, and implementation were exaggerated (Jefferies and McGeorge, 2009). The legal framework of most countries was established to cope with the traditional project procurement method with emphasis on command and control (Cheung *et al.*, 2010). In fact, PPP projects needed special legislation by governments (Algarni *et al.*, 2007). This legislation was established in order to formulate effective contractual vehicles for PPPs that were compatible with a nation's legal system (Zhang, 2005a). As a result, these high transaction costs and ineffective legal framework caused the projects to be less viable financially and in an unattractive investment environment. Most projects were aborted before a contract was made.

Both public and private sectors were the cause of these projects' failure. Government's defective PPP policy and strategy led to poor procurement incentives and lack of coordination among government agencies (Sanghi *et al.*, 2007). Inexperienced, poor-organized and less-committed public agencies, including corruption, resulted in inefficient PPP project implementation. Meanwhile, the private sector, due to its lack of experience and expertise to handle the legal, technical, financial, and managerial issues during project execution, suffered project suspension and potential losses when using PPP project implementation (Li *et al.*, 2005; Zhang, 2005b). Interorganizational conflicts of interests and objectives (Cheung *et al.*, 2010) and cultural differences (Iyer and Sagheer, 2010) resulted in partnering risk. This partnering risk coupled with lack of partnering skills and good relationship

with host government authorities (Zhang, 2005a) led to ineffective cooperation among PPP entities.

Strong public opposition due to people's attitudes on private sector profit-making (Li *et al.*, 2005), end users' inability to afford the cost (Zhang, 2005a), and lack of transparency in contract award (El-Gohary *et al.*, 2006) brought about project termination and/or delay in delivering the intended program. Obviously, the lack of understanding of the PPP concepts, impractical PPP policy and strategy, and inefficient contract award method impeded the project success.

Uncontrollable factors also were a cause of PPP project failure. Changes in law (Zhang, 2005b) resulted in unexpected requirements. Political patronage caused unnecessary project cost. Political instability and coalition often led to changes in PPP policy and plans (Iyer and Sagheer, 2010). Interest rate volatility and inflation rate fluctuation had an impact on project costs (Xenidis and Angelides, 2005). These intervening factors needed monitoring to prevent their negative impact.

Although these causes of failure were project-based factors, they can be applied to programs. A program, as an effective project governance mechanism, provides a bridge between projects and organizational strategy. It is embedded and aligned to the evolving needs of the organization and shelters the projects from an external turbulent and uncertain environment (Shao and Müller, 2011). A standard approach was therefore adopted. Project procurement method, bidding documents, project approval procedures, decision-making framework, cost (\$/unit) and so on were standardized. Most project-based factors, particularly in terms of process, management, and organization, were program based. Some project-specific factors such as project teams and geotechnical conditions could be also applied to the program because the project teams were selected through a standardized recruitment framework. The project teams' qualifications were evaluated to also overcome such conditions. Besides, the external factors such as political and socio-economic condition, and legal and institutional framework being country-specific, automatically affected the program.

### *2.2 CFFs in PPP-LCH projects/programs*

Housing studies revealed that most PPP-LCH projects for LIGs performed in a poor manner and were ineffective, as presented in Table I. The purpose of these projects was not fulfilled because of LIGs' inability to have access to homeownership. The causes of these failures highlighted, to a large extent, the inefficiency of the proposed projects, that included aspects of project and housing finance, production, policies, administration, and regulations. The performance of the PPP-LCH projects, driven by stakeholders, relied on stakeholders' diverse socio-economic and cultural background as well. Therefore, the failure of these projects was derived from the deficiency of critical factors of PPP project procurement and implementation. Defective legal and institutional framework, the limitations of housing finance and stakeholders' attitudes encumbered PPP-LCH project success.

### **3. Program background: PPP-LCH program in Thailand**

Thailand has faced accumulative inadequate housing for LIGs since the 1980s. In 2003, the Royal Thai Government intended to alleviate this problem by enabling LIGs to have access to sustainable homeownership. A PPP-LCH program known as "Baan Ua Arthorn (we care)" was introduced (Boonyabanacha, 2005). The program's target of 601,727 housing units to be completed within five years was set up by the government. National Housing Authority (NHA) was designated to take responsibility of the

| Country         | Program or project performance and causes  |
|-----------------|--|
| Indonesia       | The quality of low cost housing products was poor due to substandard construction (Susilawati and Yakobus, 2010; Widoyoko, 2007)<br>The LCH Program was cancelled because of lack of economic viability and subsidies (Susilawati and Yakobus, 2010)<br>The number of units sold was uncertain because the housing finance subsidy approval process was complicated (Susilawati and Yakobus, 2010)<br>LIGs were unable to have access to homeownership because they did not have financial documents for the housing mortgage (Susilawati and Yakobus, 2010; Widoyoko, 2007) |
| Malaysia        | Too many houses were built in the same place (Zainun <i>et al.</i> , 2010)<br>The quality of construction materials was low. This resulted in low functional performances (NHD, 2011)<br>LIGs were unable to have access to homeownership because of LIGs' financial difficulties and attitudes (Sufian and Mohamad, 2009)   |
| The Philippines | The project was delay and the quality of housing products were substandard because developers were exploiting the program to increase their profits (Ramos, undated)<br>LIGs were unable to have access to homeownership because their financial profiles were poor, and financial institutes perceived them as high default risks (Llanto, 2007)  |
| Thailand        | The program was abused by politicians for their own benefit (Yap and Wandeler, 2010)<br>The program housing target was reduced because the program was no longer supported by the government (NHA, 2010)   |
| Vietnam         | The project was cancelled because of lack of economic viability (Gough and Tran, 2009)<br>The project investment failed due to the competition among administrative units (Waibel <i>et al.</i> , 2007)<br>LIGs were unable to have access to homeownership because of poor administration and corruption (Gough and Tran, 2009)   |

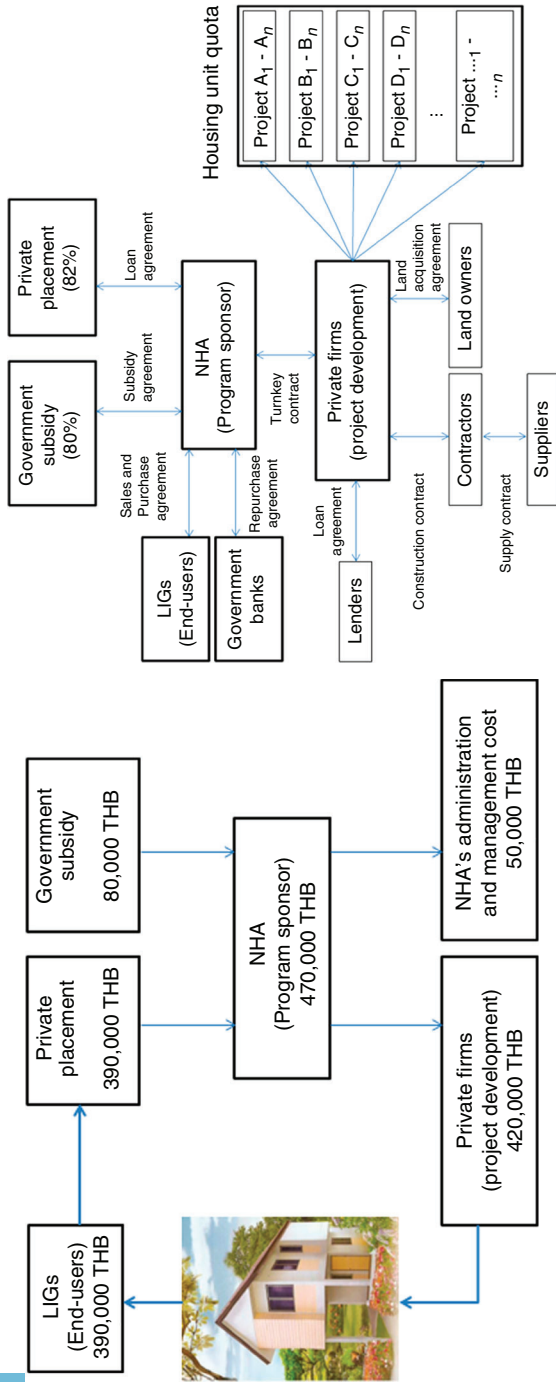
**Table I.**  
PPP-LCH project/program performance

program. The form of PPP procurement method that was applied to the program was called "Turnkey." The model of the financial structure was based on one housing unit and the project's contractual structure was depicted in Figure 1.

The government subsidized the program with 80,000 THB (US\$2,673) per housing unit. The rest of the program's capital venture was loaned by the NHA. The program's debt/equity ratio was 82:18. The NHA paid this capital venture to private firms for project development and the NHA's administration and management. In all, 420,000 THB (US\$14,033) was the cost of the project development and 50,000 THB (US\$1,671) was spent on administration and management cost. The obligation of private firms was to deliver the completed projects to NHA on a specific date. Then the NHA sold the houses to eligible home buyers at 390,000 THB (US\$12,857) per unit with the right of housing usage for the first five years. After that, NHA transferred the right of homeownership to them. These terms and conditions were aimed to prevent housing speculation. The program was a non-profit program.

Due to less financial viability but significant national economic value and social benefits, the NHA, as the program owner, provided attractive procurement incentives through an offtake agreement and payment method. The NHA's purchasing guaranteed 100 percent of the number of housing units constructed at a fixed price. An advance payment, after the signing of quota contracts, made on the basis of housing unit quota, was provided as deposit. This included the land price being paid after each project contract was signed and the land was transferred to NHA. After that, a traditional progress payment method was followed.

**Figure 1.**  
The financial structure based on one housing unit and the project's contractual structure



Financial structure based on one housing unit

Project's contractual structure



These payment methods were applied in the PPP scheme in order to motivate the private sector or contractors by easing up on their familiar risk environment of traditional project procurement approach such as construction risk. However, the contractors had to bear the initial project capital costs prior to contract signing. This included the capital cost of land acquisition, a technology investment of mass housing production, and construction financing. Meanwhile, the NHA achieved the intended purposes of using PPPs, as an innovative project procurement method in terms of time saving and cost saving, time and cost certainty, and value for money.

During the tendering process, there was no competitive bidding. Only the conditions of eligible location and presale or Soft Market Test (SMT) were considered in project approval for minimizing transaction costs. The private sector's obligations were location selection, doing feasibility studies, presale of the housing units, and design and construction.

According to these terms and conditions, more than 90 project companies participated in the program in order to develop PPP-LCH projects nationwide. The program consisted of 232 turnkey projects. The project size ranged from a minimum of 93 units to a maximum of 5,872 units. Housing units were sold to qualified home buyers at the same price for all locations and housing types. The initial qualifications of the home buyers were families earning <15,000 THB (US\$494.50) per month in 2003, which gradually increased by 4 percent annually. "Rent-to-own" agreements were made available to ensure LCHs had been delivered to the target group.

However, the program was found to be ineffective. The Office of the Auditor General of Thailand (OAG) investigation showed in 2007 that NHA launched deficient terms of reference (TOR) documents in terms of contractor prerequisites that omitted the contractors' past experience. In 2009, OAG revealed that the program was behind schedule and found that there was inefficient sales management. The program target was finally reduced to 281,556 units in 2009 by the government (NHA, 2010). In 2010, as shown in Table II, only 19 percent of projects were completed on time, 24 percent of housing units were available and 43 percent of LCH units were sold for cash. This sales performance implied home buyers might not be LIGs.

| Project status         | Number of projects | Number of housing units | Sold for cash | Sales performance (units)          |   |              |
|------------------------|--------------------|-------------------------|---------------|------------------------------------|---|--------------|
|                        |                    |                         |               | Rent-to-own agreement <sup>a</sup> | Sales and purchase agreement <sup>b</sup> | Unsold units |
| On time completion     | 45                 | 77,378                  | 49,950        | 7,308                              | 5,170                                     | 14,950       |
| Completion with delay  | 133                | 119,866                 | 52,302        | 19,878                             | 17,435                                    | 30,251       |
| Progressing with delay | 42                 | 34,883                  | 240           | 0                                  | 24,535                                    | 10,108       |
| Termination            | 12                 | 4,782                   | 0             | 0                                  | 3,644                                     | 1,138        |
| Total                  | 232                | 236,909                 | 102,492       | 27,186                             | 50,784                                    | 56,447       |

**Notes:** <sup>a</sup>Rent to own agreement is the legal agreements between the NHA and homebuyers which relate to the right to use the housing unit and pay the installment, interest rate, until the loan maturity. The agreement occurs after the sales and purchase agreement is completed. <sup>b</sup>Sales and purchase agreement is the legal agreements between the NHA and homebuyer which shows that homebuyer agrees to buy and the NHA agrees to sell the housing unit. The agreements relate to the deposit and down payment during the project construction

**Source:** NHA (2010)

**Table II.**  
The performance of  
PPP LCH program in  
2010, Thailand

In addition, some contractors became bankrupt. Meanwhile, NHA faced a huge burden of liability. The program has been also notorious in terms of political corruption (Yap and Wandeler, 2010).

#### 4. Research methodology

This research aimed to investigate CFFs in the PPP-LCH program and how they caused program failure. CFF is synonymous with Risk that is involved in an activity and decision making because either the outcome or consequence of CFF was unclear and demanded human decision-making and action to mitigate the problem (Akintoye and Chinyio, 2005). On the other hand, the decision and action resulted in the other CFFs. The study involving human decision making and action is complicated. Consequently, Grounded Theory (GT) was adopted because it is renowned for its application to human behavior and investigation of conditions that affect the behavior and its consequences. It is a discovery-orientated method which promotes a contextual analysis of empirical data and facilitates a theory-generating path from it. The previous studies on the failure of PPP-LCH project/program contributed only to the list of CFFs and lacked the integration of CFF concepts to explain why they caused the project/program's failure.

According to GT method of data collection, analysis and the eventual theory, these processes stand in close relationship with one another. Thorough GT analysis is an iterative, process-orientated, and analytical procedure. The procedure involves systematic asking of generative and concept-relating questions that include: memoing, theoretical sampling, systematic coding procedure, and constant comparative method until theoretical saturation or no emergence of new properties, dimensions and relationships during the analysis (Strauss and Corbin, 1994, 1998).

##### 4.1 Data collection

*4.1.1 Semi-structured interview template.* The causes of PPP project success/failure depend on the policy makers' comprehension of the PPP principles and the competence of a project management team. PPP policy, strategy, and the managerial abilities are the key points necessary to cope with uncertainties and the day-to-day problems. These skills are paramount in order to achieve the project's success and reach the organizational goals. Since these people in industry and public organizations were busy and expected the interview meetings to have an agenda and have research questions, the non-technical and technical literatures were intensively reviewed in order to develop a semi-structured interview guideline and create sensitivity to the meanings of data. These literatures were related to CFFs, success/failure criteria (FC), risks, risk management, PPP projects, and project management issues.

Consequently, the dominant questions of the semi-structured interview protocol developed were: Drivers, Organization's Objectives, Barriers, Project Success Criteria, and Output/Outcome. The questions created with objectivity were separated into three groups according to the participant profile as shown in the list below. The Organizations' Objectives and Project Success Criteria indicated the specific requirements that operational organizations aimed to achieve in both business and project levels. The Drivers and Barriers illustrated how the paradigm of intrinsic and extrinsic hindrances impeded the project execution. Output/Outcome showed the performances of projects, and organizations against the project, and organizational



goals. With these five subjects, the execution of PPP-LCH program was thoroughly examined to determine what made it fail and how.

#### *Interview questions*

Questions for NHA participants:

- What were the factors leading up to the origination of PPP-LCH program?
- How did NHA develop the PPP-LCH projects?
- According to projects supervised/involved by you, how do you measure project performance? And what were the results?
- According to the results (success/failure), what made the project a success or what made it fail? What are your thoughts on the success or failure of the program?

Questions for project company participants:

- Why did your project company participate in the PPP-LCH project?
- How did your project company develop the PPP-LCH projects?
- According to projects supervised/involved by you, how do you measure project performance? What results did you get?
- According to the results (success/failure), what contributed to the project's success/why did project fail? What are your thoughts on the success/failure on this matter?

Questions for tenant participants:

- How did you acquire the house?
- How long have you been there?
- How do you feel when you live in the home?

*4.1.2 Sampling and theoretical sampling.* According to GT method, it is difficult to initially identify the theoretical sample. Only the initial sampling can be planned. Therefore, according to the researcher's personal relationship and informal interviews with NHA staff, two key participants were introduced and subjected to an in-depth interview. Both were in top management and a part of the program's development team. The program was established and implemented in 2003. These interviews were aimed at generating as many categories as possible in order to maximize opportunities to compare the data that determine how categories vary in terms of their properties and dimensions. Then, a snowball sampling as a theoretical sampling was implemented. According to the phenomena, often mentioned by the participants, the other NHA staff who were experts on the phenomena under investigation were requested to introduce their point of view. After each interview session was completed, the significant documents were provided by the interviewees. These documents consisted of the TOR which indicated the scope of project stakeholders' work, a turnkey contractual form, and program progress report indicating who all contractors were in charge of the projects.

Based on the program progress report, the contractors were selected according to their profiles and projects' success/failure in terms of time of completed projects and

sale performance. These selection criteria aimed to compare the existing or lacking of critical factors that would lead to success or failure. The criteria to select the project communities were the polarization levels of tenants' experience in community development. The investigation of the tenants' experience aimed to compare the dissimilarity/similarity of the housing occupiers' characteristics. Finally, the theoretical saturation was reached after assessing 30 interviewees. The list of participants and their profiles is presented in Table III. The interviewees included 15 participants from the private sector and 13 respondents from NHA, most of who were formal power-holding senior managers of projects or organizations. The remaining two groups were tenants differing in experience levels of community development from two PPP-LCH projects.

Interviews and observations on project site visits, along with secondary data such as the documents from NHA and OAG were collected and analyzed through the GT method. The collection and analysis of multiple sources of evidences, known as "triangulation" method, aimed to overcome the misinterpretation of subjective

| No. | Participant sector | Position   | The number of project involvement |
|-----|--------------------|--|-----------------------------------|
| 1   | Private            | Project managerial consultant                              | 8                                 |
| 2   | Public             | Director of construction management department             | 73                                |
| 3   | Public             | Senior architecture  | –                                 |
| 4   | Private            | Project engineer   | 1 <sup>a</sup>                    |
| 5   | Public             | Project manager  | 21                                |
| 6   | Public             | Senior administrator                                       | –                                 |
| 7   | Public             | Director of law and land act                               | –                                 |
| 8   | Public             | Deputy director of surveying and land ownership            | –                                 |
| 9   | Public             | Director of community management department                | 69                                |
| 10  | Public             | Director of construction management department             | 79                                |
| 11  | Private            | Project director   | 32                                |
| 12  | Public             | Director of marketing and sale department                  | –                                 |
| 13  | Public             | Deputy governor  | –                                 |
| 14  | Public             | Director of community management department                | –                                 |
| 15  | Private            | Project director   | 26                                |
| 16  | Private            | Country manager  | 1 <sup>a</sup>                    |
| 17  | Public             | Director of construction management department             | 44                                |
| 18  | Private            | Project director   | 16                                |
| 19  | Private            | Special project development director                       | 4                                 |
| 20  | Private            | Senior admin & Accounting manager                          | 3                                 |
| 21  | Public             | Deputy governor  | –                                 |
| 22  | Private            | Project manager  | 6                                 |
| 23  | Private            | Project manager  | 13                                |
| 24  | People             | The representatives of community A                         | 1                                 |
| 25  | People             | The representatives of community B                         | 1                                 |
| 26  | Private            | Project manager of outsource company                       | 1                                 |
| 27  | Private            | Senior administrator of cooperative company                | 1                                 |
| 28  | Private            | (Thai project company – project cancellation) <sup>b</sup> | –                                 |
| 29  | Private            | (Foreign project company – bankruptcy) <sup>b</sup>        | 2                                 |
| 30  | Private            | (Foreign project company – bankruptcy) <sup>b</sup>        | 1                                 |

**Table III.**  
Research participants' profiles

**Notes:** <sup>a</sup>Participants worked in the same project company; <sup>b</sup>informal interview due to interviewees' personal reasons

information from interviewees. Gathering data on the same topic through a variety of means is a way of validating research results (Corbin and Holt, 2005).

## 4.2 Data analysis

*4.2.1 Open coding.* The first interview content was recorded and transcribed verbatim. The interview content, which may be words, sentences, or paragraphs, was broken down according to the key points of participants' statements on their project performance measurements, risks or problems of PPP-LCH project implementation, and performances. These key points were named or coded using the researchers' words consistent with the terminology of the construction industry standard. The reasons of coding and interpretations were noted as "memos" in order to develop research archives, and define direction for further data collection and analysis.

The codes were grouped based on their sharing common characteristics. Then the groups were labeled. The labels implied concepts, which emerged from the rational of grouping. The concepts were the composition of hierarchical FC, sources or types of risks or problems of PPP-LCH project implementation, and the performances of projects and organization. The new data collected were recorded and transcribed verbatim, coded, and compared with these existing concepts in terms of similarities and differences. New concepts emerged and the existing concepts were strengthened. These recordings, coding, categorizing, and constantly comparing methods were applied for all data collected until theoretical saturation was reached.

*4.2.2 Axial coding.* The concepts from open coding were categorized again in a more abstract viewpoint and became sub-categories and categories according to their relationships in terms of the FC, the sources and types of risks, and the performance. The process of linking concepts to their categories and sub-categories was "axial coding" as shown in Table IV. According to open and axial coding, three major categories emerged: FC, CFFs, and the PPP-LCH Program Failure.

Phenomenon 1 – FC. According to the GT methodology, dimension represents the location of a property along a continuum or range (Strauss and Corbin, 1998). Therefore, two totally different modes of performance measurement of properties can be identified as to the success or FC dimensions. The FC is the unacceptable standard of performances. Unacceptable performance needs corrective actions to fulfill the gap between actual and planned performance through a decision-making, resource allocation, or even changing the program's policy. FC consisted of three concepts, i.e. project management, the project itself, and business. The relationship between the project and organization occurred because organizations initiated the projects in order to achieve their strategic goals (PMI, 2004). The occurrence of FC was unintentional and subjective. There are no exact quantitative criteria to measure this FC when the FC is applied to evaluate situations for taking actions.

NHA adopted Project Delay and Less Effective Demand to assess which projects should be terminated, separated, or completed. Due to self-financial support, NHA used Unsold Units and Organization Loss with a debt of approximately 60,000,000,000 THB (US\$1,978,000,000) to show FC to allocate resources for sales promotion and change the home buyer qualification. The change was in home buyer eligibility to middle-income groups downwards and organizations that provided welfare to employees. This change implied that NHA focussed on organization's sustainability rather than the program's objectives.

The project companies applied Project Cost Overrun rather than Project Delay for determining when projects should be slowed down. This situation was prevailing

**Table IV.**  
The categories of  
PPP-LCH program failure

| Categories                      | Sub-categories                                | Axial and open coding Concepts   | Codes   |
|---------------------------------|---|--|---|
| Failure criteria (FC)           | Project Level                                 | Project management   | Project Delay<br>Project Cost Overrun<br>Project Lower Specification Requirement<br>Less Effective Demand<br>Project Loss<br>Project Functional Under-performance<br>Project Termination<br>Unsold Units  |
|                                 |   | Project or Product   | LIGs' Homeownership Inaccessibility and Insecure Tenure<br>Organizations' Loss or Bankruptcy<br>Organizations' Incompetence<br>Organizations' Inability to Penetrate New Market<br>Organizations' Inability to Expand Market Share<br>LIGs' Homeownership Inaccessibility and Insecure Tenure   |
| Critical failure factors (CFFs) | Organizational Level                          | Business   | Produce around 600,000 Housing Units within 5 years<br>No Preliminary Feasibility study<br>The Conspiracy between Professional Third Parties and Project Companies or NHA staff<br>Artificial Documents and Demand<br>High Individual Autonomy<br>No Supervision Standard Protocol<br>The High Number of Projects in the Same Regions<br>Omitting Contractors' Past Performances<br>Relying on Soft Market Test (SMT) or Presale and Location Evaluation for Project Approval<br>Relying on Professional Due Diligence for Project Procurement and Management |
|                                 | Micro Conditions<br>Policy Pressure           | Populist Policy  |   |
|                                 | Public Client's Ineffective Change Management | Lack of Professional Due Diligence<br>Audit<br>No Supervision Standard |   |
|                                 | Poor Bidding Documents                        | Lack of Program View<br>Defective and Deficient TOR Documents          |   |

(continued)

| Categories | Axial and open coding<br>Sub-categories                                | Concepts   | Codes  |
|------------|--|--|--|
|            | Inappropriate Contractors  | Defective and Deficient Contract Documents<br>Intentional Incentive Exploitation Contractors | Unfair Contract<br>Tight Contract Schedule<br>Artificial Demand<br>Artificial Documents<br>Inexperience Contractors<br>Incompetent Contractors   |
|            | Public Client's Undermined Organizational Culture and Staff's Behavior | Inexperience Contractors<br>Incompetent Contractors  | Incompatible Management between Production and Construction<br>Managerial Inability to perform due to project large size and Resource Inaccessibility  |
|            | LIGs' Difficulties   | Self-preservation  | Time Consuming on Each Construction Activities Approval<br>Rule and Procedure conformity   |
|            | Macro conditions   | Social Harmony<br>Non-transparency Behavior  | Avoid Open Conflict with Colleague<br>Project company's Unexpected Cost<br>Maladministration   |
|            |  | High Individual Autonomy<br>Financial Difficulties<br>Attitudes and Behaviors                | High Individual Autonomy<br>Irregular, Unstable and Low Income<br>Inability to See the Benefits of Homeownership<br>Less Priority to Housing Mortgage Installment<br>Politicians' Intervention |
|            |  | Political Risks  | Opponents' Government<br>Subsidy Re-interpretation<br>The Number of Housing Target constructed reduction   |
|            |  | Economic Crisis  | Construction Material Price Volatility<br>Market Interest Rate Escalation  |
|            |  | Relative Law and Policy Risks  | EIA regulations<br>Project Compensation Delay  |
|            |  | The Limitation of Housing Finance  | Stringently Eligible Borrower Criteria<br>Housing Mortgage Finance Criteria Constraints<br>Inflexible Housing Installment Method   |

(continued)

Table IV.

| Categories           | Sub-categories                                      | Axial and open coding Concepts  | Codes  |
|----------------------|---|---|--|
| Program failure (PF) | Inability to Achieve Program and Organization goals | LIGs' Inability to Obtain & Sustain Homeownership<br>Organizations' loss<br>Organizations' Incompetence | LIGs' Inability to Obtain and Sustain Homeownership<br>High Sunk Cost<br>Debt of Approximately 60,000,000,000 THB (\$1,978,000,000 USD)<br>High Number of Project Delay, Termination<br>Unsold Units |



when they faced Construction Material Price Volatility in the construction phase. They intended to wait for the price reduction. This, in turn, caused the NHA to face demand risks due to Project Delay.

Phenomenon 2 – CFFs. CFFs are the group of vital factors that brought about the project/program failure. CFFs were composed of two sub-categories macro and micro conditions. Macro conditions were the group of CFF concepts occurring at the national level and being out of the control of the PPP-LCH project/program management team. The sources or types of CFFs in the macro conditions related to political, economic, law and policy, and housing finance. Micro conditions were the group of CFF concepts occurring in the project/program environments. The root causes of CFFs in the micro condition related to the deficiency and/or defective issues of policies, management, and documents including hostile stakeholders' attitudes. Some concepts of both macro and micro conditions were inter-/intra-related to one another in a particular way.

Phenomenon 3 – the PPP-LCH program failure. The PPP-LCH Program Failure refers to the output of the projects when they were unable to meet the project time schedule and stated specification. This outcome of projects came out when the project output failed to enable LIGs to have access to homeownership within livable environment. This also included the unexpectedly adverse impact when they affected the reputation and financial loss of program-initiating organization of the NHA. The accumulative failures of projects reflected the program failure because a program is a group of related projects that are managed in a coordinated way to meet the organizational strategic goal (PMI, 2004). In addition, the performances of the program could be measured by examining the organization's performance, particularly NHA, because only one program was implemented at that time.

Many of the PPP-LCH projects ran over budget and their time schedule. Some projects were terminated and became NHA's Sunk Cost. This included the separated projects, where some housing units were completed according to the number of effective demand and the rest were canceled. Some of them were completed but the housing units were not sold-out. This project Sunk Cost (incomplete houses that NHA had to pay for) and Unsold Units resulted in NHA's financial loss. To sustain the organization, NHA decided to change the qualification of home buyers, which led LIGs to have less opportunity to obtain homeownership. Most projects' building functions were moreover under-performed, affecting LIGs' living environment. Consequently, the accumulative failure of project development and project product resulted in the failure of the program's purpose of enabling LIGs to have access to homeownership with a livable environment, and NHA's financial loss and disrepute.

*4.2.3 Selective coding.* Selective coding is the process of integrating categories and identifying a central category according to centrality and frequency. The relationships among the categories were explained in this research. Logic diagram technique was adopted to integrate all categories and identify the core category, Program Failure. The concepts in each category were examined and placed into an analytic model of Program Failure paradigm to reflect the position of the data collected or the circumstances of CFFs' root cause. This was in parallel with PPP-LCH project life cycle as presented in Figure 1, a theoretical framework. The benefits of this framework not only provided the critical factors categorized according to their shared common characteristics, but also depicted the logically causal relationships among the critical factors causing program failure. Each concept as an antecedence is connected to other concepts as successors. The dotted frames presented latent factors, which were the transition point of the phenomena (Figure 2).

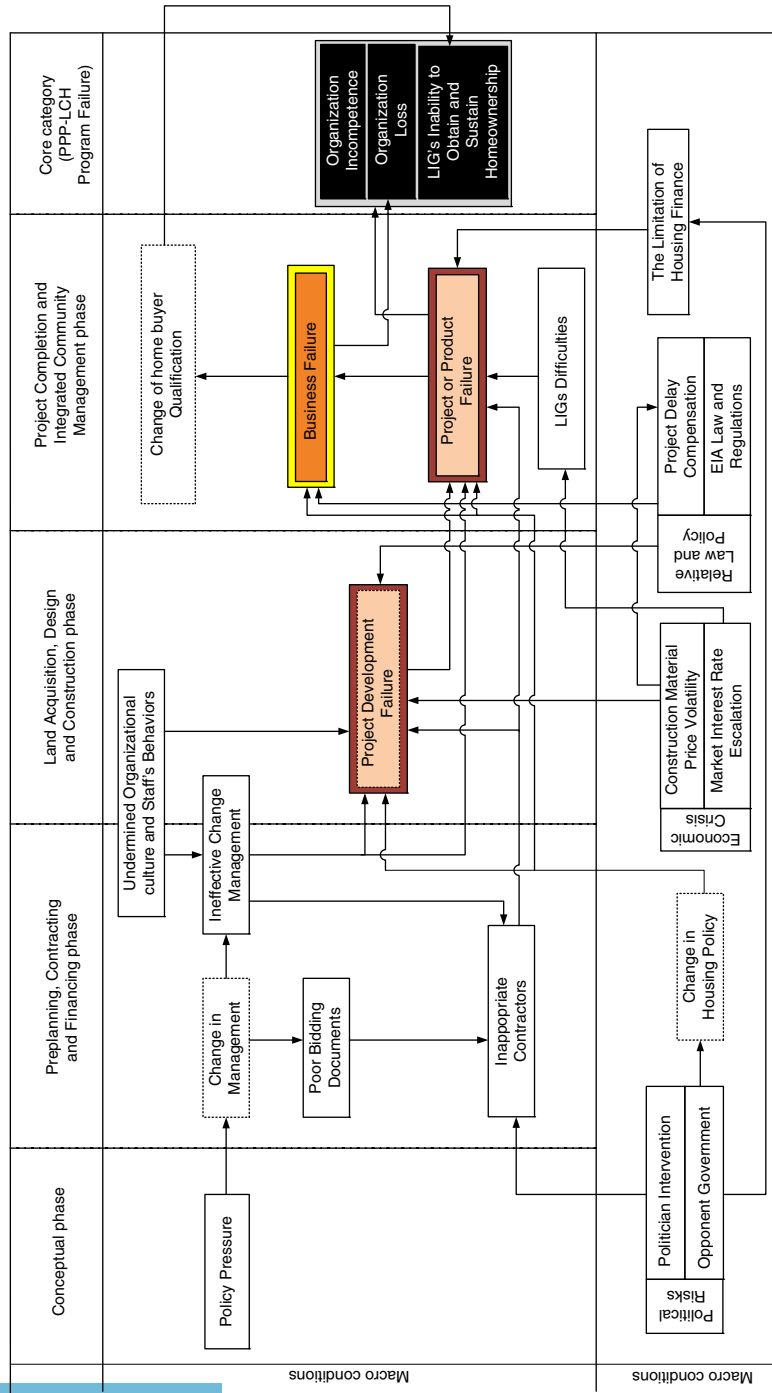


Figure 2.  
Theoretical framework

## 5. Result

The original concept of the framework subjected to CFF category, which an antecedence of its category is Policy Pressure occurring in the Conceptual phase of a project life cycle. The Policy Pressure caused the NHA to change its management and prepare bidding documents in an accelerated manner, due to a short time frame, compared to the program size. However, change in management needed management in charge for entire organizational management system change including cultural disagreement. With lack of understanding of the concepts of change management and to some extent, hostile organizational culture, NHA confronted the problem of Ineffective Change Management influencing the projects' procurement and implementation. On the other hand, bidding documents were defective and deficient. These Poor Bidding Documents and Ineffective Change Management coupled with Politicians' Intervention in project approval resulted in Inappropriate Contractor acquisition. The occurrence of Opponent Government resulted in the change in the housing policy, and Construction Material Price Volatility including Relative Law and Policy affected the PPP-LCH project execution. As a result, Project Development Failure occurred. Excessive time and cost were apparent for most projects, while some projects were terminated. Inability to deliver the projects on time exposed NHA to encounter investment risks.

Once the projects were completed, LIGs' Difficulties and the Limitation of Housing Finance associated with Market Interest Rate Escalation brought about Project Failure due to LIGs' Homeownership Inaccessibility. NHA, therefore, had to face a large number of Unsold Units leading to default risk as a Business Failure. Consequently, NHA shifted its focus to maintain the organization by using a Change of Home Buyer Qualification because the program was also no longer supported by the opponent government which perceived it as a populist policy. Inability to achieve the program goal of LIGs' homeownership accessibility and sustainability associated with carrying a large amount of liability were the highlights of Program Failure.

## 6. Discussion

### 6.1 Policy pressure

This CFF is Populist Policy. The establishment of PPP policy and strategy required painstaking preliminary feasibility study based on public needs rather than political benefits. The well-defined qualifications of home buyers imply the program target of the number of housing units needed and housing price. The government should moreover consider the responsible public agency's capacities and experience in the project procurement method before designation.

According to the research results, the qualifications of home buyers covered various strata of LIGs, who were able and unable to afford the program housing price. Thus, these qualifications led to the consideration of the large number of decent and affordable houses as the program target. The allocation of the program target was beyond the NHA's capabilities. Therefore, the PPP-LCH program was exposed to failure risk.

### 6.2 Public client's ineffective change management

This CFF referred to Lack of Program View Points, Lack of Professional Due Diligence Audits, and No Supervision Practice Standard. Change management is crucial when organizations inevitably encountered a new challenge and when a typical management approach was unable to handle it. The most important issues of change

management are what should be changed, and how to change it in order to make the entire organization management system effective.

According to the research findings, NHA applied change management throughout the organization structure, from functional to matrix in order to accomplish the program target. However, under the new structure, the lack of integration and interaction among Business Units in project approval procedure resulted in the self-competition of PPP-LCH projects. In addition, the organization's new management system relied on professional due diligence but lacked a professional due diligence audit. NHA therefore faced Artificial Demand and Documents. There was also no practical guideline protocol or feasible decision framework to support NHA staff's inspection. Consequently, Public Client's Ineffective Change Management brought about failure in its organizational and project level cases.

### *6.3 Poor bidding documents*

This CFF referred to Defective and Deficient TOR and Contract documents. In the construction industry, bidding documents are one of the determinants of a project's success or failure. Deficient or ambiguous agreements result in poor project performance, and mismatching stakeholders' requirements and litigation.

The findings showed that the Defective and Deficient TOR coupled with Ineffective change management and Politicians' intervention exposed NHA to confront Inappropriate Contractors. Moreover, the stipulation of project purchasing criteria, depending on Presale and Location Evaluation, brought about the oversupply of PPP-LCH projects. The result of Presale could not prove that the demand was effective or artificial. The location checklist did not mention the proximity of the other projects. Therefore, the PPP-LCH projects faced completion risk and NHA encountered business risks.

### *6.4 Inappropriate contractors*

This CFF referred to Intentional Incentive Exploitation, Inexperience, and Incompetent Contractors. The qualification of contractors that consisted of project management team competence, project owner's goal comprehension, well-performed project completion commitment, and reliability are imperative to achieve project success.

The research results showed that, due to attractive project procurement incentives, Intentional Incentive Exploitation Contractors created an Artificial Document of Letter of Guarantee in order to become the eligible contractors, and created Artificial Demand in order to gain project approval. Then, they acted as brokers and spent their advanced payment for other businesses. In addition, inexperienced and incompetent contractors exposed their PPP-LCH projects to completion risk. These Inappropriate Contractors were the major causes of the failure of project outputs and outcomes.

### *6.5 Public client's undermined organizational culture and staff's behavior*

This CFF referred to Self-preservation, Social Harmony, High Individual Autonomy, and Non-transparent Behavior. Organizational culture affected project performance because it influenced staff's decision-making and behavior.

The research finding showed that the Self-preservation cultural feature of civil servants made NHA staff hold-off on their decision-making when they faced uncertainty or hesitation. Avoiding Open Conflict with Colleagues and High Individual Autonomy, which are valued by the national culture of Social Harmony, and ego-orientation, respectively, had a negative impact on the NHA's inter-and

intra-organizational cooperation. In addition, there was maladministration such as certain supplier specification. As a result, these cultural traits and behavior affected the efficiency of the contractors' project management, and NHA's competence and reputation were undermined.

#### 6.6 LIGs' difficulties

This CFF referred to LIGs' Financial Difficulty, Attitudes, and Behaviors. LIGs' homeownership accessibility depends on the conformity of housing price and LIGs' affordability through loan maturity. This includes the recognition of homeownership benefits as self-investment. LIGs' homeownership sustainability requires LIGs' self-discipline. Therefore, LIGs' homeownership accessibility and sustainability depends on continual LIGs' affordability, attitude, and behavior.

The research findings showed that although the government which introduced the program, provided the ad hoc housing finance method, the method was favorable with the LIGs who earned 10,000-15,000 THB (US\$329.7-\$494.5) per month. Most home buyers earned lower than these amounts. In addition, the method was later cancelled by the opponent government because it affected the financial performance of the government banks due to high LIGs' default rate. The traditional approach of the housing finance was adopted. LIGs working in an informal sector and earning irregular income did not have formal financial documents to verify their ability to make regular payments until the loan maturity. Consequently, they were unable to have access to homeownership.

#### 6.7 Political risks

This CFF referred to Politicians' Intervention and Opponent Government. Government policy needs political support in order to create an efficient course of action. The intervening of politicians is inevitable. On the other hand, the change of government may result in the cancellation or change of existing policies. This change of government has an effect on the strategic planning of the public sector. Therefore, Political Risks have a high impact on the program's implementation.

The research finding showed that Politician's Intervention in project approval exposed NHA to Inappropriate Contractors and projects with an unlivable environment. The emergence of Opponent Government led to Subsidy Re-interpretation and Project Housing Unit Quota Reduction. The change of subsidy method resulted in the changes of the program cash flow. Project Housing Unit Quota Reduction led NHA to face project Sunk Cost due to the separation of completed and in progress housing units within the same projects. Consequently, it is clear that the impact of Political Risks resulted in project and business failure.

#### 6.8 Economic crisis

This CFF referred to Construction Material Price Volatility and Market Interest Rate Escalation. The success/failure of a PPP-LCH project output depends on project cost control while the success/failure of PPP-LCH project outcome depends on housing finance cost and LIGs' affordability.

According to the research finding, the emergence of Construction Material Price Volatility caused project development failure, because the price of materials was more than twice the initial estimate. Most project companies consequently intended to decelerate their work and wait for material price reduction. Project delay was inevitable. In addition, the occurrence of Marketing Interest Rate Escalation reduced

LIGs' housing affordability due to higher housing mortgage rate installments. Therefore, under Economic Crisis, NHA faced a demand risk because of delay in LCH delivery and demand reduction.

#### *6.9 Relative law and policy risks*

This CFF referred to EIA Laws and Regulations, and Project Delay Compensation Policy. Relative law and policy is important for project and program execution. Breaking a law can have a great impact on the project's outcome and the occurrence of a new policy directly results in the government agency's business failure.

According to the research findings, due to the inconsistency between contract schedule and traditional EIA project approval process, NHA decided to accredit the project companies to initiate projects with new EIA approval procedures. However, only few project companies abided by them. This led most projects to encounter a project termination notification.

In addition, the Project Delay Compensation Policy, aiming to alleviate the private sector economic problems, ignored the impact on financially self-supported government agencies. Consequently, NHA encountered project delay and cost overrun risks despite initially transferring them to project companies. This new policy led NHA to struggle in program financing cost payments.

#### *6.10 The limitations of housing finance*

This CFF referred to Stringently Eligible Borrower Criteria, Housing Mortgage Finance Criteria Constraints and Inflexible Housing Installment Method. Housing finance is crucial for LIGs' homeownership accessibility and sustainability. It therefore needs sophisticated practitioners to establish a housing finance system, compatible with LIGs' financial profile.

The findings showed that the housing finance method was traditional and same as other income groups. The eligible borrower criteria relied on formal financial documents. In addition, the interest rate was high and LIGs were demanded to pay fixed amount installments on time in order to sustain LIGs' homeownership. Therefore, according to LIGs' Difficulties coupled with the intended purpose of enabling LIGs to have access to sustainable homeownership, LIG housing finance schemes required flexibility in time, payment amount, and a lower market interest rate to achieve success.

### **7. Conclusion**

This research demonstrates the causes of PPP-LCH program failure in Thailand by applying GT methodology to identify, categorize CFFs, and then develop their causal relationship that lead to the program failure. Ten CFFs were found. Ineffective Change Management, Poor Bidding Documents, and Inappropriate Contractors originated from the ineffective PPP policy and strategy. Undermined Organizational culture and staff's behavior related to innate disregard of the public client agency. This included LIGs' difficulties. In addition, the emergence of Political Risks, Economic Crisis, Relative Law and Policy and the Limitation of Housing Finance were out of the control of the management teams. The concurrence and interrelation of these CFFs in various stages of PPP-LCH project life cycle resulted in not only the failure of project output and outcome but also the failure of program-initiating organization's performance. As a result, the failure of the program was obvious.



The findings of this paper showed that the interrelationship among CFFs and the emergence of them influencing each phase of PPP-LCH project life cycle is beneficial for both policy makers and operational practitioners. A better understanding of key determinants, causing PPP-LCH program failure, assisted decision makers of both public and private sectors to prepare a strategic risk management framework. Although, the research findings indicated the causes of PPP-LCH program failure in the Thai environment, these lessons learned helped them to minimize the probability of program failure.

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