

Collaborative Risk Management Impacting the Success of Infrastructure Development under Public Private Partnerships

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Abstract. The aim of this paper is to investigate the importance of collaborative risk management in infrastructure development under public private partnerships (PPPs). When public and private sectors engage in collaborative risk management in PPPs, there is greater motivation by both partners to enhance the quality of life for the community, add value to the community and integrate the project objectives with the interest of the public. By using content analysis as the research method, this paper concludes that collaborative risk management addresses some of the core issues relating to PPPs, and ensure that PPPs will be successful.

Keywords: Collaborative Risk Management, Public Private Partnerships, Content Analysis

1. Introduction

Extant research in risk management under public private partnerships (PPPs) focuses on risk allocation by the respective stakeholders [1, 2]. There is a general lack of research in collaborative risk management where the public and private sectors work towards risk sharing rather than risk allocation or risk transfer. The justification for risk allocation is underlined by the argument that risk should be transferred to the party best able to manage it [1]. This rationale increasingly leads to the public sector transferring as much of the risk to the private sector as possible [3]. This is justifiable because the transfer of risk from the public to private sector provides greater transparency in the recognition and pricing of risk. Private sector financing creates incentives for the performance of the investment which would lead to its delivery within time and budget. However, it also requires the private sector to increase pricing for taking on a higher risk. Higher use-pay prices can lead to lower usage, and consequently lower revenue. This undesirable situation will result in the private sector facing financial problems. On the other hand, as long as the completed infrastructure is available for the use by the community, the public sector claims the PPPs to be successful. Therefore, the definition of successful PPPs is tenuous because it depends on the viewpoint of the respective stakeholders.

Within Australia, there is growing academic and professional interest in the understanding of the success of PPPs. Some of the previous studies and researches consider timeliness of completion and keeping project cost within budget as a measure of successful PPPs [4]. Selsky and Parker [5] contend that partnership continuance and longevity as benchmark for successful PPPs. In contrast, Thia and Ford [6] provide another view by using community acceptance of the project, and community perception that the project delivers economic benefits. An empirical based case study was used to evaluate two PPPs in New South Wales: Lane Cove Tunnel (LCT) and Cross City Tunnel (CCT). The study shows that LCT was considered successful initially because collaboration between the stakeholders enhances community acceptance and delivers economic benefits to the community. However, the lower collaboration between the stakeholders in CCT led to a lower community acceptance and did not deliver economic benefits expected by the community. The community's backlash against CCT led to lower revenue and CCT was put under receivership within 15

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months of operation. In the case of LCT, increasing toll charges were rejected by the community and it was also put under receivership after 3 years of operation. Both projects were unsuccessful financially.

This paper extends the findings of Thia and Ford [6] to provide additional insights on collaborative risk management in PPPs. Using the same two cases and basing on public record set out in published literature from the media, professional journals and reports from government and quasi government agencies, this study uses content analysis to investigate the extent of collaborative risk management in LCT and CCT. It will provide understanding that PPP projects requires collaborative risk management by the public and private sectors to ensure longevity of PPPs. Lack of collaborative risk management would lead to increasing incidents of financial distress faced by the private sector, and eventual lower participation by the private sectors in PPPs.

2. Literature Review

PPPs involve the creation of collaborative arrangements to deliver essential infrastructure for the community through the efficient use of assets and resources. Grimsey and Lewis [7] provide insights into academic and practitioner views on whether PPPs provide value for money for projects undertaken both by the State and Federal governments in Australia. Their study shows that a cost-benefit analysis is conducted by the public sector, and the projects are assessed for their value for money against a benchmark called public sector comparator interest test. The study comments that infrastructure development was favorably assessed by the public sector through risk allocation. However it is less clear how private sector might share this view [6]. The scope for risk reallocation during operational phase is limited [8], and therefore explicit information from the beginning about risk allocation to the private sector would give clarity of the overall project risk [1]. El-Gohary, et al. [9] argue the need to understand how stakeholders in PPPs adopt strategic approach to risk but fell short of asserting the need for collaborative risk management.

Thia and Ford [6] develop a framework to test the extent of correlation between partners' collaboration and public acceptance of PPPs. The study concluded that there was a positive correlation between the two variables. Learning from the failure of CCT, there was greater operational collaboration between the public and private sectors in LCT. The partners were able to align the needs of the wider community with the goals of project. As a result the project received greater public acceptance when it began operation. LCT was considered a success but after three years of operation, public acceptance diminished and the lower revenue resulted in LCT facing financial problems. A major limitation in their study is the reluctance of individuals and public sector employees to provide information on public issues relating to the development of the projects. This hampered the knowledge on the degree of collaborative risk management.

Regan and Smith [10] conduct informal and confidential interviews with senior executives from the financial services community, and analyze the effects of prevailing uncertainty in privately financed infrastructures under PPPs. The study shows the need for realignment in risk allocation based on the recent problems of PPPs. Realignment some of these risks can impact the value for money outcomes of PPPs. However, this does not marginalize the value of PPPs in the prevailing economic environment. Instead, it is argued that there are opportunities for both government and industry to refine existing PPP models.

This paper posits that redefining existing PPP model should first reexamine risk management under PPPs. By using content analysis, this paper uses two cases to investigate collaborative risk management between the public and private sectors. The extent of risks being transferred or shared determines the level of collaborative risk management. This paper identifies three key areas that need collaborative risk management in order that the infrastructure development can be successful. The research questions in each of these areas are then investigated to determine whether there is collaborative risk management to address the concerns. The areas of concerns and the respective research questions are as shown in Table 1.

Table 1: Areas of Collaborative Risk Management

1. Projects enhance the quality of life for the community	2. Projects provide value for money to the community	3. Projects' objectives integrate with the interest of the community
RQ 1.1 Was there collaborative risk management to improve travelling	RQ 2.1 Was there collaborative risk management to formulate an	RQ 3.1 Was there collaborative risk management for greater public sector

conditions?	acceptable toll charge?	financing and concessions?
RQ 1.2 Was there collaborative risk management to reduce the impact of environmental issues?	RQ 2.2 Was there collaborative risk management to formulate lower periodical increase in toll charge?	RQ 3.2 Was there collaborative risk management for greater public sector management?

3. Methodology

Qualitative research is generally a descriptive work. It refers to people's own written or spoken words and observable behavior. Qualitative researchers are concerned with the meaning people attached to things in their lives. The central theme in qualitative research is understanding people from their own frames of reference, and recognizing reality as they experience it [11]. Qualitative researchers empathize and identify with the people they study in order to understand how those people see things. Content analysis as a qualitative research method has an increased acceptance in the fields of accounting and finance [12]. Content analysis can include statement analysis [13, 14], meaning analysis [15], quantitative content analysis [16], and qualitative content analysis [17]. Holsti [18] considers content analysis to be any technique for making inferences by objectively and systematically identifying specified characteristics of messages. Supporting this approach, Stemler [19] views this methodology as a "systematic replicable technique for compressing words of text into fewer content categories based on explicit rules for coding". It enables researchers to include textual information, and systematically identify its properties. This can include identifying the frequencies of most used keywords. Therefore, content analysis requires a study of information to recognize themes and patterns in the communication [13]. Most of this information appears randomly. The ability to recognize the patterns, and searching for recurring words, such as the key word in context (KWIC) or themes from this information provide the basis for this research methodology.

After patterns and themes have been identified and categorized through deduction, conclusions can be formulated by analyzing the phrasing and meaning of the transcripts [18]. One of the most important tasks is to formulate core questions in the analysis by examining "who says what, to whom, why, and to what extent and with what effect" [20]. Texts and documents, as a form of human communications, are the most common subjects used in content analysis.

In order that content analysis is relevant to this study, four key technical requirements should be established. First, the categories of classification ought to be clearly defined. Second, information must be objectively determined to belong or not to belong to a particular category. Third, the information must be quantifiable. Fourth, categorizing information must be consistent through the use of a reliable coder [12]. Codifying in content analysis requires recording qualitative and quantitative information into pre-defined categories in order to derive patterns. Correct codification allows published information to be analyzed systematically, objectively and reliably [21]. The frequency indicates the importance of subject.

By placing a specific segment of content into a given category, a recording unit is created [18]. Generally, the specific segment of content can be words, sentences or paragraphs [22]. Word counts allow the measurement of frequencies but it can be subjective as it does not tell us the significance associated with the word each time it is being used. Gray, et al. [22] argue that sentences are preferred in written communication if the task is to categorize inferred meaning. Use of sentences as a basis for coding is likely to provide complete, reliable and meaningful measurement for analysis [23]. Using the paragraph as a unit of analysis requires a greater accuracy in interpreting the inferred meanings and deciding on the category.

This paper uses sentences as the preferred unit of analysis because it allows codifying the inferred meaning of our independent variables as objectively and reliably as possible. In addition, repeated sentences with the same inferred meanings from one source of published information would increase the significance.

4. Findings and Analysis.

Data from three key sources are used in this study. Published literature from the media is important since reporting is investigative in nature. Professional journals are the second source of published literature.

These journals provide wider coverage. The third source of information is based on reports from government and quasi government agencies. These reports analyzed the concerns and motivations of all the stakeholders.

The research questions allow the unit of analysis to be codified as presented in Table 1. Central to addressing these questions is that the interpretation depends upon their theoretical perspectives [11]. The effect of size and scope of the source of information are important consideration in developing the coding to be used for content analysis. Nine sources of information over a period of six years, from 2005 to 2010 were used in this study. Published literature from the three media based sources, three professional journals, and three agencies' reports were used. Inferred meanings from each of these sources are codified. Each identifier is then categorized as to whether there was collaborative risk management. The number of times that there was collaborative risk management to address the concerns were counted and tabulated in Table 2.

Table 2: Findings of Research Questions

Project	RQ 1.1			RQ 1.2			Ttl	RQ 2.1			RQ 2.2			Ttl	RQ 3.1			RQ 3.2			Ttl	Overall Total
	a	b	c	a	b	c		a	b	c	a	b	c		a	b	c	a	b	c		
CCT	1	3	4	5	7	4	24	1	4	5	0	2	3	15	1	3	5	3	5	4	21	60
LCT	5	7	5	5	7	4	33	3	7	7	5	5	7	34	3	3	6	4	6	6	28	95

Note: a: published literature form media (total 21 articles from three sources); b: professional journals (total 8 articles from 3 journals) c: government and quasi government agencies' reports (total 17 articles from 3 agencies)

The study finds that misleading road signs and road closures caused confusion to drivers, more so for CCT than was the case for LCT. The drivers were also frustrated that misleading road signs channeled them into the tunnel and prevent them from using alternative roads. However, there were generally more positive statements for both CCT and LCT regarding attempts in collaborative risk management to address the environmental issues arising from the projects. The total lower positive statements indicate that CCT was considered not to enhance the quality of life for the community as much as was the case for LCT.

With regards to research questions 2.1 and 2.1, the high toll charges and its frequent increases led to lower user demand of CCT as reflected in most of the statements. The low positive statements for CCT reflected the lack of collaborative risk management in this area, and were responsible for CCT to be considered not to add value to the community. This was an area that LCT learnt from the experience of CCT, and LCT decided to adopt moderate charges and less frequent increases. LCT was therefore regarded to provide value for money to the community through collaborative risk management.

There were generally low positive statements for both CCT and LCT in addressing the research questions 3.1 and 3.2. This showed that the projects' objectives were not fully integrated with the public interest. Most of the reports indicated that insufficient public sector funding, concessions, and management were regarded to be responsible for the lack of collaborative risk management.

Overall, this study shows that there was a lack of collaborative risk management in CCT and this led to the financial problems faced by the private sector during operations. Both the public and private sectors were engaged in widely publicized disputes. On the other hand, this study shows that there was better collaborative risk management in LCT and the user demand was steady in the first three years. However, the lack of collaborative risk management in terms of public sector funding, concessions, and management led to LCT facing financial problems after three years of operations.

5. Summary and Conclusions.

In contrast to quantitative researchers emphasis on reliability and replica-ability in research, qualitative researchers emphasize the meaningfulness of their studies [24]. This is not to dismiss that qualitative researchers are unconcerned about the accuracy of their data. A qualitative study is not an impressionistic off-the-cuff analysis based on a superficial look at a setting or people. It is a piece of systematic research conducted with demanding, though not necessarily standardized, procedures [11].

Like any other qualitative research, content analysis has several limitations since qualitative evaluations are always subject to the errors of human judgment [19, 22, 23]. Expectedly, one of the main limitations is

the subjectivity involved in the interpretation of the inferred meanings and the subsequent coding [19, 21, 25]. If key words are used as the coder, there is lesser problem in the codifying. However, when sentences or paragraphs are used, codifying the inferred meanings can be subjective. Milne and Adler [23] stress that in order for valid references to be drawn, reliability of data and instrument used in the coding is critical.

Qualitative content analysis can be used to investigate issues where quantitative analysis fails to provide complete understanding in PPPs. Applying this research method in PPPs needs further refinement and development if research advances are to be made. Consistency in the application and framework will enable more meaningful and reliable research in this field. This study shows that both the PPP projects cannot be considered as successful. The government and quasi government reports support that there was collaborative risk management, and the PPPs were successful because the projects meet the government guidelines, and deliver social and economic services to the community [26]. This is opposite to views reported in media publications and professional journals. It is expected that different publications will have different interpretations of similar situation because people have different experiences, learn different meanings and hold different views. Although the inferred meanings are polarized, Glaser and Strauss [27] contend that maximized variation in the settings selected is necessary to broaden the applicability of theoretical insights. The study shows the importance of collaborative risk management to address some of the core issues relating to PPPs. It will also ensure that PPPs can be financially viable in the long term, and therefore successful.

The limitation of content analysis does not diminish the significance of this study. The quantitative analysis of the issues involved in PPPs has so far not addressed the reasons many of these projects were not successful. The use of qualitative analysis expands the scope of understanding PPPs to provide better understanding of risks in PPPs, and how collaborative risk management can impact the success of PPPs.

6. References:

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