

**Value Co-creation for Public–Private
Partnership (PPP) Projects in China:
A Holistic Framework from Antecedents to
Outcomes of Interaction**

by **Juanwen LIU**

Thesis submitted in fulfilment of the requirements for
the degree of

Doctor of Philosophy

under the supervision of Prof. Shankar Sankaran,
A/Prof. Yongjian Ke and Prof. Jinbo Song

University of Technology Sydney
Faculty of Design, Architecture and Building

January 2024

Certificate of Original Authorship

I, Juanwen LIU, declare that this thesis, is submitted in fulfilment of the requirements for the award of the degree of Doctor of Philosophy, in the School of Built Environment at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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This research is supported by the Australian Government Research Training Program.

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Signature: Juanwen LIU

Date: January 2024

Acknowledgements

I am profoundly grateful to the individuals who played a pivotal role in the completion of my thesis.

First and foremost, my heartfelt thanks go to my supervisors, especially my principal supervisor, Professor Shankar Sankaran. His mentorship has been invaluable, shaping both my academic pursuits and personal growth. Professor Sankaran's guidance and reassurance helped me overcome self-doubt during the writing process. His passion for academia has been a constant source of inspiration.

Professor Sankaran's support extended beyond academia. He introduced me to his wife and encouraged my participation in school activities, expanding my social circle. He even helped me find job opportunities, easing my financial burdens. During a challenging period when I had to return to China, he remained concerned about my well-being and provided comfort and encouragement, enabling me to complete my dissertation.

I am also grateful to my co-supervisor, Associate Professor Yongjian Ke, who provided crucial support. His accomplishments in the field inspired my study, and I owe thanks to my external supervisor, Professor Jinbo Song, from Dalian University of Technology, for his mentorship and dedication.

I extend my gratitude to the China Scholarship Council (CSC), the University of Technology Sydney (UTS), the Design, Architecture, and Building (DAB) faculty, and the graduate research school (GRS). Their support and companionship enriched my academic journey.

The CSC scholarship made my international study possible, enhancing both my academics and personal life. UTS offered a conducive learning environment with excellent resources, approachable professors, and a supportive atmosphere that

fostered growth.

DAB and GRS provided unwavering support, offering educational workshops, networking opportunities, and administrative guidance. The administrative staff were always compassionate and helpful.

I cherish the friendships formed during my studies, with individuals like Xiaohang, Shiyu, Carol, Megan, Jeff, and others who inspired personal growth. I also appreciate the friends I made in Australia, such as Chunlin, Cassie, Alfred from the Traditional Chinese Medicine hospital, Mandy and her family from the language buddy program, and Lin, Lei, Yuan, and others from the badminton club, who stood by me during a crucial phase of my life.

Finally, I express deep gratitude to my parents. Their unwavering love and financial support allowed me to focus on my studies without distractions. During challenging times, their care and support aided my physical and mental recovery. My accomplishments owe much to their unconditional guidance and love.

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List of Abbreviations

B2B	Business to business
B2C	Business to customer
BOT	Build-Operate-Transfer
EPC	Engineering procurement construction
PPPs	Public–Private Partnerships
RBV	Resource-based view
SOE	State owned enterprise
SPV	Special purpose vehicle
VCC	Value co-creation
VfM	Value for money
VM	Value management
ViU	Value-in-use

Abstract

Public–Private Partnerships (PPPs) have gained worldwide popularity as they are able to leverage private sector expertise and resources to efficiently deliver innovative infrastructure projects, accelerate development, share risks, improve service quality, and stimulate economic growth while addressing government budget constraints. However, concerns persist regarding transparency, accountability, and potential profit-driven compromises in essential services.

Addressing these challenges requires innovative approaches, and the concept of value co-creation (VCC) emerges as a promising avenue for achieving sustainable solutions. By focusing on collaborative efforts to generate long-term value outcomes, VCC offers a framework to navigate the complexities of PPPs and promote the alignment of interests among stakeholders. This thesis explores the integration of VCC principles into the PPP model, investigating the components of PPP project value, exploring impactful VCC practices to enhance project value, and analysing contextual factors that may shape the VCC process in PPP projects.

In pursuit of this objective, a multiple case study methodology was employed, with an analysis of five PPP projects in China in three industries. The findings present a conceptual framework derived from this research delineating the intricate process of VCC within PPP projects, elucidating the associated value outcomes and the contextual factors influencing them. The study identifies seven mid-term value outcomes (risk mitigation, effective procedure, innovative solution, competence enhancement, trust improvement, solidarity, and sense of belonging) and eight long-term value outcomes (financial feasibility, lifecycle investment saving, profit, scale economy, environmental value, people welfare, reputation, and regional value) that encapsulate the inherently subjective and dynamic nature of project value.

Two core practices, resource management and relationship management, are instrumental in illustrating collaborative processes within PPP projects. Resource management practices encompass dialogue, development, and deployment approaches, while relationship management practices include goal alignment, partnership commitment, and collective leadership approaches. It is also highlighted that how institutional motivators and organizational enablers shape the VCC process in PPP projects.

In conclusion, this research contributes to the theoretical understanding of value co-creation in PPPs by elucidating VCC processes, identifying key value outcomes, and examining contextual factors. For practical implications, it offers a robust framework for enhancing stakeholder collaboration throughout the PPP project lifecycle. This framework empowers project practitioners with guiding principles to promote the alignment of public and private interests, ultimately fostering sustainable project value outcomes.

Key words: Value Co-creation; Value Outcomes; Public–Private Partnerships; Resource Management; Relationship Management; Case Study

Chapter 1 Introduction

This chapter introduces the research study. It presents the background information relevant to the research, then articulates the problem statement, and establishes its connection to pertinent literature from diverse fields, such as project management, marketing and general management. The research objectives and questions are outlined after the study's research aims. Last, the chapter provides an overview of the research strategy adopted to address the research questions. The primary objective of this chapter is to establish a robust theoretical and empirical foundation for the study.

1.1 Research Background

1.1.1 The PPP Project Context

Public–Private Partnerships (PPPs) have gained significant attention and have been implemented in various countries worldwide. PPPs are often considered to be more advantageous than traditional procurement methods, as they provide better risk sharing, higher efficiency, and quality outcomes (Jefferies & McGeorge, 2009). As the European Commission (2003) has suggested, PPP projects offer several benefits to governments, including accelerated infrastructure provision, timely project implementation, reduced entire-life cost, reduced government risk exposure, improved service quality and innovation, and enhanced management of public expenditure (Liu et al., 2017).

As an alternative to traditional infrastructure procurement methods, PPPs have gained widespread popularity in the past two decades as long-term arrangements between public and private sectors aimed at sharing risks and responsibilities while taking advantage of each sector's respective skills (Akintoye et al., 2003). This is especially true in developing countries (Liu, Love, Davis, et al., 2015; World Bank, 2017), where

PPPs have been used to address the contradiction between the increasing demand for new infrastructure and the government's limited financial capacity (Chan et al., 2011; Jefferies & McGeorge, 2009). PPP projects are characterised as inter-organisational collaborative projects that combine public and private institutional logics.

One of the main advantages of PPPs is their ability to accelerate infrastructure provision (Hodge & Greve, 2019). By allowing the public sector to translate capital expenditure into ongoing service payments, PPPs enable infrastructure projects to be implemented more quickly than traditional procurement methods. In addition, allocating design and construction responsibility to the private sector ensures timely project implementation. Furthermore, PPPs can reduce full lifecycle costs and motivate performance by providing strong incentives for the private sector to minimise costs and improve management throughout a project's lifecycle (Koppenjan, 2005). This reduces the financial burden on governments and ensures that infrastructure projects are completed within budget and on schedule. Another advantage of PPPs is the risk sharing between the public and private sectors (Delmon, 2017). By engaging the private sector in sharing construction and operational risks, governments can mitigate risk exposure compared to conventional procurement methods, thereby enhancing the likelihood of successful project outcomes. Moreover, private sector expertise and performance incentives can improve service quality and innovation (Zhang, 2005). Private sector involvement can also enhance public expenditure management by increasing accountability and transparency, thereby reducing the likelihood of corruption.

While PPP projects have been touted as a solution to address infrastructure development challenges, they are not without criticisms. Concerns have been raised about the potentially high costs, lack of transparency and accountability, inappropriate risk allocation, social and environmental impacts, and limited flexibility associated with PPP projects. Scholars have questioned the value for money of PPP projects and

suggested that they may be more expensive than traditional procurement methods (Hodge & Greve, 2007) due to higher financing costs, transaction fees, and profit margins for private sector partners. The procurement process for PPP projects may also lack transparency and accountability (Zhang & Tariq, 2020), leading to doubts about fairness and effectiveness. Risk allocation is a crucial issue in PPP projects, and failure to allocate risks reasonably can result in project failure (Ke, Wang, Chan, et al., 2010). For instance, during the construction phase of the Sydney Airport Rail Link in the 1990s, several challenges such as delays, cost overruns and technical difficulties were encountered, leading to significant financial challenges for the private sector partner. The risks were then transferred back to the NSW government, which had to rescue the project, resulting in additional costs, delays and an increased financial burden on the government. PPP projects have also been criticised for prioritising private profit over public interest, leading to negative social and environmental impacts (Jayasuriya et al., 2020). Furthermore, PPP contracts may be inflexible, making it challenging to adapt to changing circumstances or to terminate the contract in the case of problems (Klijn & Koppenjan, 2016).

It is important to note that various countries define these partnerships differently. Usually, these partnerships are defined as a collaborative effort between the public and private sectors to deliver public services and infrastructure projects through a long-term contractual agreement (Grimsey & Lewis, 2007). Nevertheless, it's crucial to highlight that PPP definitions vary across different countries (see Table 1-1, adapted and expanded from Kwak et al. (2009), potentially influencing their implementation and success.

Table 1-1 Definitions of PPPs

Sources	Definitions
HM Treasury	An arrangement between two or more entities that enables them to work cooperatively towards shared or compatible objectives and in which there is some degree of shared authority and responsibility, joint investment of resources, shared risk-taking, and mutual benefit.
World Bank	The term “Public–Private Partnerships” has taken on a very broad meaning. The key elements, however, are the existence of a “partnership” style approach to the provision of infrastructure as opposed to an arm’s-length “supplier” relationship... Either each party takes responsibility for an element of the total enterprise, and they work together, or both parties take joint responsibility for each element... A PPP involves a sharing of risk, responsibility, and reward, and it is undertaken in those circumstances when there is a value-for-money benefit to the taxpayers.
European Commission	A partnership is an arrangement between two or more parties who have agreed to work cooperatively toward shared and/or compatible objectives. There is shared authority and responsibility; joint investment of resources; shared liability or risk-taking; and ideally, mutual benefits.
Canadian Council for Public–Private Partnerships	A PPP is a cooperative venture between the public and private sectors, built on the expertise of each partner that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards.
Australian National Audit Office	A contractual arrangement between a private party and a public agency for the provision of public assets or services.
Grimsey and Lewis (2007)	PPPs can be defined as arrangements whereby private parties participate in or provide support for the provision of infrastructure, and a PPP project results in a contract for a private entity to deliver public infrastructure-based services.
Kivleniece and Quelin (2012)	Long-term collaborative relationships between one or more firms and public bodies that combine public sector management or oversight with private partners’ resources and competencies for the direct provision of a public good or service.

The differences in PPP definitions and frameworks across countries arise from several factors, such as legal and regulatory environments, political and cultural contexts, and institutional structures. These variations in PPP definitions can impact the implementation and outcomes of PPP projects. For instance, in countries where PPPs are mainly seen as a way to transfer risks to the private sector, the private sector may end up assuming too much risk, leading to financial instability and project failure (Song et al., 2019). In contrast, in countries where PPPs are viewed as a collaborative effort between the public and private sectors, there may be better risk sharing and more successful outcomes. Therefore, it is essential to understand the different PPP definitions and frameworks across countries and their potential impact on project implementation and outcomes. This understanding can help policymakers, practitioners and scholars to identify best practices and improve PPP project outcomes across different contexts.

1.1.2 PPP Projects in China

This research aims to research PPPs in China and provide valuable knowledge and insights for other countries for several reasons. First, China has one of the world's largest and most active PPP markets, with a wide range of projects in various sectors. As a result, the Chinese experience can provide valuable lessons for other countries looking to develop their PPP frameworks (Chan et al., 2010). Second, China's PPP market has evolved rapidly in recent years, with significant changes to the legal and regulatory framework governing these partnerships (Li & Wu, 2017). This has resulted in a range of innovative PPP models and financing structures that have not been widely adopted in other countries. By studying the Chinese experience, other countries can gain insights into the potential benefits and risks of these new models. Third, China's PPP market has also faced significant challenges, such as project delays, funding constraints and inadequate risk allocation. By examining these challenges and the solutions developed to address them, other countries can gain insights into how to

effectively manage the risks and challenges associated with PPP projects. In addition, China's experience with PPPs reflects its unique political, economic and social context. Finally, as a student from China, the researcher has convenient access to empirical data. By studying how PPPs have been developed and implemented in this context, other countries can gain insights into how to adapt and tailor PPP frameworks to their own specific contexts and challenges.

Since the definitions and implementation of PPPs vary across different countries, it is important to provide a clear understanding of what PPPs entail in the context of China. This research is being conducted in China, as it is currently experiencing a significant surge in infrastructure investment (Ansar et al., 2016). As a result, PPPs have gained significant popularity in the country. In China, PPPs refer to collaborative arrangements between the public and private parties aimed at bolstering the provision of public goods and services, as well as enhancing supply efficiency (National Development and Reform Commission, 2021). Through mechanisms such as franchising and equity cooperation, this mode of long-term cooperation enables the sharing of benefits and risks and serves as a common international investment and financing approach in the infrastructure sector.

One notable characteristic of PPP projects in China is that the private party involved is often a state-owned enterprise (SOE) instead of a purely private investor. This is because many of the largest and most influential companies in China are state-owned, and the government has a strong presence in many sectors of the economy. As a result, the participation of SOEs in PPP projects is seen as a way to leverage their expertise and resources to support the development of public services and infrastructure. This also allows the government to maintain a certain level of control and oversight over the implementation of PPP projects. However, the involvement of SOEs in PPP projects has also raised concerns about fairness and competition. Some critics argue that SOEs have an unfair advantage in the PPP procurement process, as they may have access to

government subsidies and other forms of support that are not available to private companies. This could lead to a lack of competition and potentially higher costs for taxpayers.

Another notable characteristic of PPP projects in China is the PPP legal system, which lacks a national-level law and has confusing and conflicting lower-level regulations. While there are regulations and guidelines in place, they are not always clear or consistent, and there are gaps in the legal framework that leave room for interpretation and uncertainty. This imperfect regulatory environment can create challenges for both public and private partners in PPP projects. For public partners, it may be difficult to navigate the legal and regulatory landscape and to ensure that the terms of the partnership are fair and transparent. For private partners, the lack of clear guidelines and regulations can make it difficult to assess the risks and potential returns of a PPP project.

Since the widespread implementation of PPP projects in China in 2014, one of the key challenges has been the lack of adequate risk assessment and management in many of these projects. Risks come from the way in which private investment is often structured as “equity” when it actually functions as “debt”. This means that the private party invests in the project and is entitled to a share of the profits but is also guaranteed a fixed return on their investment regardless of the project’s success or failure. This arrangement is sometimes referred to as “hidden debt”, as it can result in a significant financial burden to government. In practice, this means that local governments may use PPP projects as a way to finance public infrastructure and services without directly borrowing money. However, because private investment is structured as equity, it is not included in the government’s official debt statistics, which can create a misleading picture of the government’s financial situation. This approach to financing PPP projects has led to concerns about the financial risks associated with these partnerships,

particularly for local governments. If a project fails to generate the expected returns, the government may be left with significant debt and few options for recouping its loss.

The Chinese government has taken a number of steps to promote and support the implementation of PPP projects. First, it has established a legal and policy framework that provides guidance and support for PPP initiatives and creates a more stable and predictable environment for PPP projects. This includes developing more effective performance governance frameworks, allocating risks more equitably between public and private partners, and creating mechanisms for withdrawing or renegotiating PPP contracts when necessary. The most remarkable move to improve PPP performance is that the Chinese government has established a PPP centre that serves as a central coordinating body for PPP projects across the country. This demonstrates the government's commitment to the PPP model as a way of delivering infrastructure and public services in a more efficient and cost-effective manner.

Second, the government is committed to promoting open and fair competition between SOEs and private companies in the PPP market. This is intended to create a level playing field for all participants and to ensure that the best partners are selected for each project. To achieve this, the government has introduced measures to increase transparency and accountability in the PPP procurement process, as well as to prevent anti-competitive practices. This encourages private companies to participate in PPP projects, which can bring fresh ideas, innovation and expertise.

Third, the Chinese government is committed to strengthening scrutiny and fighting "fake" PPP projects. This includes removing "fake" projects, where the private investment is structured as "equity" when it actually functions as "debt", from the PPP centre's database and implementing more rigorous screening and due diligence procedures to ensure that only genuine PPP projects are supported. These efforts are intended to reduce the government's fiscal risks in the PPP model and to prevent abuses and fraudulent practices from undermining the success of PPPs in China.

Overall, PPP projects in China are characterised by their complexity, requiring a high level of expertise, skill and experience in managing risks and aligning the interests of all parties involved.

1.2 Problem Statement

In PPPs, ensuring value for money, particularly in the public interest, is of paramount importance. In fact, pursuing value outcomes instead of prescribed project deliverables is a vigorously advocated tenet in project research (Morris, 2013). One distinguishing feature of value is subjectivity. Thus, value can only be determined by the beneficiary (Vargo & Lusch, 2007a). In PPP projects, various stakeholders with differing and sometimes conflicting value expectations must be taken into account, creating a significant barrier to value creation. Another key feature of value is dynamics. Value is not static but dynamic, meaning that it may not be immediately apparent in the short term but can be constructed or destructed over time (Fuentes et al., 2019). For example, the Sydney Opera House was initially estimated to cost around AUD 7 million and be completed in four years. However, it ended up costing approximately AUD 102 million and took over 14 years to finish. However, the project has been considered a success in the long term due to its significant symbolic and economic value (Murray, 2003). In contrast, projects that prioritise cost and time savings over environmental, quality and objective considerations may result in value destruction in the long term.

In order to achieve value creation in PPP projects, it is crucial to recognise the two key features of value: subjectivity and dynamics. PPPs pose significant challenges to value creation due to the involvement of multiple stakeholders with varying and often conflicting value expectations, as well as their long-term nature that requires a focus on long-term value creation. Thus, in the PPP context, achieving value creation requires collaboration among all relevant stakeholders, including primary stakeholders (i.e., the public and private parties) and external stakeholders such as end-users, consultants,

finance institutions and society. Consequently, the value creation objective in PPP projects is often accomplished through a process of value co-creation.

This research defines value co-creation (VCC) as a process of reciprocal value creation (Vargo & Lusch, 2015) through collaborative interaction (Escandon-Barbosa et al., 2021; Payne et al., 2007; Prahalad & Ramaswamy, 2003) in the form of resource integration (Chih et al., 2019; Vargo & Lusch, 2018) and relationship management among actors (Grönroos & Voima, 2012; Vargo & Lusch, 2011). This is the key to realising value creation in PPP projects.

VCC holds great potential for enhancing the outcomes and effectiveness of PPP projects (Payne et al., 2007; Vargo & Lusch, 2015). It emphasises the collaborative involvement of various stakeholders, including public authorities, private entities and end-users, in jointly creating value throughout the project lifecycle (Fuentes et al., 2019; Vargo & Clavier, 2015).

However, the practical implementation of VCC principles within PPP projects often faces significant challenges, resulting in missed opportunities and suboptimal project performance. Despite the increasing recognition of the importance of collaborative and inclusive approaches in PPPs, there is a lack of comprehensive understanding and guidance on how to effectively incorporate VCC principles into the planning, execution and management of PPP projects (Bovaird, 2004; Delmon, 2017).

Key challenges around value co-creation (VCC) in PPP projects

The first challenge identified in the extant literature is the fragmented knowledge on the value of PPP arrangements. Despite criticisms that PPPs may not be value-for-money (Hodge & Greve, 2007), there is no consensus on what constitutes value in a PPP project, nor a detailed presentation of value outcomes (Hueskes et al., 2017). In project management research, the value-driven approach is increasingly being taken seriously, but evaluating the value remains the greatest difficulty. The importance of

value, including its definition, creation and capture, has gained considerable attention in business research, especially in the area of project management (Martinsuo, Klakegg, et al., 2019).

The current conceptualisation of value in project management literature faces limitations when applied to PPP projects, requiring a re-conceptualisation of value. It is essential to adopt a holistic and multidimensional perspective on value that encompasses economic, social, environmental and public value in the PPP context. For instance, economic value assessment should consider the long-term revenue streams and potential cost savings of PPP projects (Hueskes et al., 2017). Assessing social value requires the identification and quantification of social benefits, such as job creation and improved quality of life (Akbari Ahmadabadi & Heravi, 2019). Environmental value should be integrated into VCC by employing robust environmental assessment tools and frameworks (Zhang & Tariq, 2020). Additionally, public value, including improved service quality and citizen satisfaction, needs to be considered in PPP projects (Xiong et al., 2020). Although scholars advocate for re-conceptualising value to encompass the dynamic interactions among stakeholders, long-term project goals, and the broader societal impacts of PPP projects, we still lack a comprehensive perspective on value that can fully capture the complexity and nuances of VCC.

Furthermore, another challenge in achieving holistic value knowledge lies in the tendency to conflate the value creation process with its content, thereby impeding analytical discussions. Many existing studies do not make a clear distinction between the two, leading to a general discussion of value creation. Differentiating the value creation process from the value creation content allows for a more focused and precise analysis of how value is actually co-created in a specific context. The value creation process refers to the activities, interactions and collaborations undertaken by stakeholders to jointly create (Vargo & Lusch, 2011). It encompasses the dynamic and

iterative nature of VCC, involving various stages such as idea generation, resource integration, knowledge sharing and problem solving. Understanding the process helps identify the specific mechanisms, strategies and practices that enable effective VCC.

On the other hand, the value creation content refers to the actual outcomes, benefits or value propositions that result from the co-creation process (Grönroos, 2017). It focuses on the tangible and intangible value that is co-created and delivered to stakeholders. This could include improved service quality, enhanced customer experiences, increased efficiency, environmental sustainability or social impact. By analysing the value creation content, researchers can identify areas for improvement, value leakage, or misalignment between the co-creation process and desired outcomes. This understanding informs decision-making, resource allocation, and strategic planning to enhance the effectiveness and efficiency of VCC initiatives, ultimately fostering a deeper understanding of the value generated.

By making a clear distinction between the value creation process and the value creation content, researchers can delve into the mechanisms, dynamics and determinants that influence the co-creation process. This enables a more comprehensive understanding of the factors that enable or hinder effective VCC. It helps identify the roles, contributions and responsibilities of different stakeholders, as well as the interactions, knowledge flows and coordination mechanisms that drive VCC success. This analytical distinction enhances theoretical development, methodological approaches, and practical interventions related to VCC. Moreover, understanding the value creation content allows researchers and practitioners to evaluate the outcomes and impacts of VCC efforts. It helps assess whether the co-created value aligns with the intended objectives, expectations and needs of stakeholders. By analysing the value creation content, researchers can identify areas for improvement, areas of value leakage, or misalignment between the co-creation process and the desired value outcomes. This understanding informs decision making,

resource allocation, and strategic planning to enhance the effectiveness and efficiency of VCC initiatives.

The second challenge identified in this study pertains to the under-exploration of the VCC and value management (VM) approach to value creation in PPP projects. While VCC and VM approaches have been increasingly applied in various business contexts, their application in the PPP project context has been limited. The VCC and VM approaches aim to create value for all stakeholders, including those in the marketing and engineering areas. However, there is a need for a deeper understanding of how to effectively apply these approaches in PPP projects where multiple stakeholders with diverse interests and objectives are involved. For example, in the project context, there might be no actual customers but only actors who interact with each other, and in most cases, value propositions refer to service exchanged for service instead of financial transactions (Laursen, 2018). Additionally, there is a need for a more comprehensive framework that integrates VCC and VM into the PPP context, taking into consideration the specific characteristics of PPP projects. Therefore, further research is needed to explore the application of VCC and VM approaches in PPP projects and to develop a framework that guides managers in implementing these approaches effectively.

Implementing VCC and VM approaches in PPP projects requires a framework capable of accommodating the intricate and diverse stakeholder landscape. PPP projects involve multiple stakeholders with different interests and objectives, including public and private partners, regulatory bodies, community groups and end-users. The existing frameworks for VCC and VM approaches are mainly focused on the traditional business context, and their applicability in the PPP project context is limited (Green & Sergeeva, 2019). On the other hand, traditional PPP frameworks primarily focus on contractual arrangements and financial aspects, often neglecting the collaborative and participatory aspects necessary for successful VCC (Grönroos & Voima, 2012). The absence of specific methodologies, frameworks and best practices tailored to VCC in

the context of PPP projects further exacerbates the obstacles. As a result, stakeholders may rely on ad-hoc approaches or outdated models that do not adequately account for the collaborative and participatory nature of VCC, hampering the achievement of project goals and stakeholder satisfaction. Therefore, there is a need for a more tailored and context-specific framework that guides managers in implementing VCC and VM approaches in PPP projects.

The implementation of VCC and VM approaches in PPP projects faces additional challenges due to the inherent nature of PPP settings, which predominantly function within a Business-to-Business (B2B) context. VCC, as conceptualised within the service-dominant logic framework by Vargo and Lusch (2004), has predominantly been developed and studied in the Business-to-Customer (B2C) context, which presents notable differences in terms of stakeholder dynamics, motivations and operational considerations.

In the B2C context, VCC focuses on the collaborative engagement between businesses and end-users to create value through interactive and personalised experiences (Vargo & Lusch, 2004). This dynamic entails a direct relationship between service providers and individual customers, enabling a high degree of customisation and immediate feedback. However, the B2B context of PPP projects introduces distinct obstacles due to the multifaceted stakeholder landscape, involvement of public authorities, private entities, contractors, subcontractors and intermediaries. These diverse stakeholders have varying interests, goals and decision-making processes, hindering the direct interaction and personalised experiences typical of B2C settings. The differences in stakeholder dynamics between B2B and B2C contexts pose obstacles in aligning expectations, coordinating efforts, and fostering effective collaboration among diverse stakeholders within PPP projects. The multiplicity of stakeholders, each with their own motivations, priorities and power dynamics, can result in conflicting interests and difficulties in reaching consensus on VCC objectives. Moreover, the contractual nature

of PPP arrangements often emphasises performance metrics, risk allocation and financial considerations, which may overshadow the collaborative and relationship-building aspects essential for successful VCC.

It is noteworthy to acknowledge that, within the B2B context of PPP projects, a unique dynamic emerges where end-users could assume roles beyond mere customers. They might actively participate in the project's lifecycle or contribute inputs that impact project outcomes. For instance, in a transport infrastructure PPP, commuters could be considered both end-users and contributors by providing valuable insights into route preferences, station locations and user experience enhancements.

However, despite such end-user engagement, the B2B context of PPP projects presents distinct variations compared to the B2C context that originally inspired the concept of VCC. Specifically, in the B2B realm, the complexities introduced by multiple stakeholders are paramount. These complexities demand a broader understanding of resource management and relationship dynamics.

Resource management plays a crucial role in VCC in PPP projects. It involves identifying, allocating and optimising resources such as financial capital, human capital, equipment and technology to support the collaborative efforts of stakeholders (Osei-Kyei & Chan, 2015). Effective resource management ensures that the necessary inputs are available to enable VCC activities, such as knowledge sharing, collaboration and innovation. However, resource management in the context of PPP projects requires special attention due to the complex contractual arrangements, diverse stakeholder interests, and the need for equitable distribution of resources among the involved parties.

Relationship management is also a critical aspect of VCC in the B2B context of PPP projects. Successful VCC relies on building and maintaining collaborative relationships among stakeholders, fostering trust, effective communication and mutual understanding (Matinheikki et al., 2016). Establishing and nurturing strong

relationships can enhance knowledge exchange, cooperation and joint problem solving, facilitating value creation throughout the project lifecycle. However, managing relationships within the multi-stakeholder environment of PPP projects presents obstacles related to power dynamics, conflicting interests, and divergent organisational cultures.

The third challenge identified in this study is the influence of institutional and organisational antecedents on VCC practice in the PPP project context has been under-investigated. Institutional factors refer to formal and informal rules, norms and beliefs that govern the behaviour of actors in a specific setting, while organisational factors refer to the structures, processes and practices that shape the behaviour of actors within an organisation. In service-dominant logic, Vargo and Lusch (2015) argue that institutions play a crucial role in the co-creation of value as institutions are necessary for the creation, distribution and exchange of value and that institutions help shape the norms, rules and practices that govern economic activity. Similarly, in the PPP project context, both institutions and organisations play a critical role in shaping the behaviour of the public and private partners, as well as other stakeholders involved in the project.

Despite the acknowledged importance of institutional and organisational antecedents in shaping the practices of VCC in PPP projects, little research has been conducted on this aspect. The existing studies have mainly focused on the role of institutions in the formation of PPP projects (Pérez-D'Oleo et al., 2015), with less emphasis on how institutional and organisational factors influence the VCC practices of PPP projects. Moreover, the existing studies have tended to focus on incomplete institutional frameworks that only contain legal and regulatory frameworks rather than on a holistic approach that contains norms and beliefs that shape the behaviour of actors in the PPP project context.

Consequently, there is a gap in understanding how informal institutions interact with formal ones and how they collectively shape actor behavior in PPP projects.

Additionally, there is scant research exploring how organisational factors, such as governance structures, cultural dynamics, and partner capabilities, impact VCC practices in PPP projects. Given the diverse organisational structures and cultures involved in PPP projects, comprehending the interplay between organisational and institutional factors is vital for fostering successful VCC.

1.3 Research Aim, Objectives and Questions

Several key challenges have been identified in the preceding sections that require further investigation to achieve the research aim. First, there is a lack of consensus on PPP project value, which has hindered the development of a comprehensive understanding of how value can be created. Second, the VCC and VM approach to value creation in PPP projects has not been thoroughly explored, as this approach has not been fully integrated into the PPP context. Finally, the influence of institutional and organisational antecedents on VCC practice in the PPP project context has been under-investigated. Addressing these challenges is essential for developing a holistic framework to guide PPP project managers in effectively implementing VCC practices.

Thus, three research questions and two sub-questions have been formulated to guide the investigation.

RQ 1: What is the meaning of value to different stakeholders involved in a PPP project throughout its entire lifecycle?

RQ 2: How is value co-created in a PPP project throughout its lifecycle, and what are the mechanisms of VCC in PPP projects? This is divided into two sub-questions:

RQ 2.1 What are the specific VCC activities involved in PPP projects? and

RQ 2.2 What are the mechanisms of VCC for value creation in PPP projects?

RQ 3: Which contextual factors enable and facilitate project VCC activities in PPP projects, and how do they influence VCC practice?

The first question is to determine the meaning of value for various stakeholders throughout the PPP project's entire lifecycle. The second question is concerned with identifying how project value is co-created and the VCC mechanisms involved in PPP projects. It also seeks to identify the specific VCC activities that take place in PPP projects. Finally, the third question aims to examine the contextual factors that enable and facilitate VCC activities in PPP projects. These research questions are crucial in understanding the complexities of PPP projects and developing a comprehensive framework for guiding managers in implementing VCC practices effectively.

Overall, this research aims to investigate the VCC mechanism in PPP projects, and to develop a comprehensive framework that can deepen the theoretical understanding of this process and provide practical guidance for managers to effectively engage in PPPs. By examining the VCC process in both theory and practice, this study seeks to provide a more nuanced understanding of how PPP stakeholders can collaborate to create value, and to offer insights into the key factors that facilitate or hinder successful VCC in PPP projects. Ultimately, this research aims to contribute to the knowledge of VCC in PPP projects and provide practical implications for managers to enhance project value and achieve success. In order to overcome challenges and achieve research aims, three key objectives have been identified in this research, as shown in Table 1-2:

1. To specify the subjective and dynamic nature of value by taking an inclusive perspective that considers multiple stakeholders and the entire project lifecycle.

The subjective and dynamic nature of value is a complex and multifaceted concept that requires a more inclusive perspective of multiple stakeholders and the entire lifecycle. This objective aims to provide a more comprehensive understanding of how value is perceived and created by various stakeholders throughout the lifecycle of PPP projects. Achieving this objective requires a detailed analysis of the different perspectives, interests and objectives of the stakeholders involved in PPP projects, as well as the different phases and stages of the project lifecycle.

2. To identify the specific VCC activities that are applicable to PPP projects. This objective can be divided into two sub-objectives:

2.1 To examine the relationships between VCC elements and project value activities.

2.2 To explore the mechanisms behind VCC activities for the creation of value for stakeholders.

The first sub-objective focuses on identifying the VCC activities in PPP projects, which can be a challenging task due to the diverse and complex nature of PPP projects. This objective aims to provide a clear and comprehensive understanding of the different VCC activities that are involved in PPP projects, and how these activities contribute to value creation for various stakeholders. In addition, this objective aims to examine the relationships between different VCC elements and project value activities, to help identify the most critical factors that contribute to the success of PPP projects.

The second sub-objective focuses on investigating the mechanisms of VCC activities for stakeholder value creation. Achieving this objective requires a detailed analysis of how different VCC activities are implemented and how they contribute to stakeholder value creation. This objective also helps identify the most effective VCC activities and mechanisms that can be used to create value for various stakeholders involved in PPP projects.

3. To identify relevant institutional and organisational factors and examine their implications for VCC activities.

The third objective aims to identify relevant institutional and organisational factors and examine how they impact VCC activities in PPP projects, contributing to a holistic understanding of the contextual dynamics shaping successful VCC implementation. Institutional and organisational factors play a crucial role in shaping the context and conditions in which PPP projects are implemented. Achieving this objective requires a

detailed analysis of the different institutional and organisational factors that affect VCC activities in PPP projects, and how these factors can be managed to ensure the successful implementation of VCC activities.

Table 1-2 Research challenges, questions and objectives

Research challenges	Research questions	Research objectives
Fragmented knowledge of PPP project value	1. What does value mean to different stakeholders involved in a PPP project throughout the entire lifecycle?	To specify the subjective and dynamic nature of value from an inclusive perspective of multi-stakeholders and the entire lifecycle.
Lack of understanding of how value can be created for PPP projects in a VCC approach	2. How is project value co-created throughout the project lifecycle? What is the VCC mechanism of PPP projects? 2.1 What are the VCC activities? 2.2 What are the mechanisms of VCC for value creation?	To identify what are the VCC activities in the PPP project. To examine the relationships between VCC elements and project value activities. To investigate the mechanisms of VCC activities for stakeholders' value creation.
Few studies examined the implications of institutional and organisational antecedents on VCC practice in the PPP project context	3 What contextual factors impact project VCC activities, and how?	To identify relevant institutional and organisational factors and examine their implications for VCC activities.

1.4 Overall Research Strategy

This study focuses on exploring VCC in PPP projects based on the literature of VCC and service science from marketing (Vargo & Lusch, 2015) and VM literature from engineering (Thiry, 2013). The study adopts a qualitative research approach to identify

genuine project value from a multi-stakeholder perspective and examine how value is co-created through stakeholder engagement. A multiple case study design is employed, starting with a pilot study to refine data collection methods, followed by the establishment of the case context and the development of a conceptual framework to guide data analysis and interpretation.

The scope of this research is PPP projects in China. This scope has been selected due to the following reasons:

Significance of PPP in China: China has been actively promoting PPP as a mechanism for infrastructure development and public service delivery. The Chinese government has launched various initiatives and policies to encourage private sector participation in sectors such as transportation, energy, healthcare, and education. This makes China an important context for studying PPP projects.

Rapid Growth of PPP Projects: China has witnessed a rapid increase in the number of PPP projects since the year of 2004. This growth presents a rich landscape for examining various aspects of PPP implementation, including VCC practices.

Unique Institutional Context: China's institutional environment, including its regulatory framework, government policies, and market dynamics, differs from other countries. Understanding how these institutional factors influence VCC in PPP projects is essential for developing insights that are specific to the Chinese context.

Learning Opportunities: Studying PPP projects in China provides valuable insights and lessons that can benefit both domestic and international stakeholders. Given China's scale and influence in the global economy, understanding the dynamics of VCC in Chinese PPP projects can inform best practices and policy recommendations for similar initiatives worldwide.

To align with the research objectives, critical realism is adopted as the philosophical stance, which recognises the role of social and historical factors in shaping our

understanding of an objective reality that exists independently of human observation. Abduction is used as the reasoning logic, combining deductive and inductive reasoning to develop new hypotheses or explanations for gaps in the existing literature on the VCC process in PPP projects. The interactive process of VCC in PPP projects is a phenomenon that has been studied from various perspectives but lacks a structured understanding. Therefore, by examining data collected from interviews and summarising plausible patterns, this research aims to elaborate the theoretical understanding of the nature of value and the process of its co-creation in PPP projects.

1.5 Outline of the Thesis

The thesis has six chapters.

Chapter 1: Introduction

The introductory chapter presents the essential underpinnings of the research. The chapter identifies the main issues concerning VCC practices in PPP projects and how these challenges can be addressed through the principles of VM and co-creation. The rationale behind each of the research objectives, questions and aims is thoroughly explained, providing a clear context for the research. The chapter outlines the research strategy adopted and the key aspects of this investigation. Overall, this chapter sets the foundation for the subsequent chapters which further explore the theoretical and practical aspects of the research.

Chapter 2: Literature Review and Conceptual Framework

This chapter presents a comprehensive review of literature related to value creation across diverse fields, such as project management, marketing and service literature. This review establishes the conceptual foundation for this research and provides a critical analysis of the various concepts surrounding value. Based on this review, a conceptual framework is proposed which serves as the foundation for data analysis.

This framework enables a deeper understanding of VCC and VM practices in PPP projects and their impact on project success.

Chapter 3: Research Design

This chapter presents the research design, encompassing the research methodology and methods employed for this study. The chapter provides an overview of the context surrounding the five cases examined in this research. It explains how the research was conducted from philosophical, critical and practical perspectives. This chapter outlines the methods used to collect and analyse data while demonstrating the validity of the research. Overall, this chapter provides a solid foundation for the subsequent chapters, highlighting the robustness of the research design.

Chapter 4: Findings and Discussion – Value Outcomes

The findings and discussion are presented into two parts (chapters). The first part, Chapter 4, focuses on the first research question, which aims to identify the subjective nature of value in PPP projects by exploring the diverse perspectives of different stakeholders. Additional research questions emerged from the analysis, which includes the relationship between different value outcomes and the methods to assess the value of PPP projects. The discussion part of the chapter critically discusses the main findings in relation to the existing literature. Drawing on the detailed discussion of project value and its components, including the benefits and costs, this study proposes an inclusive value assessment approach for PPP projects that has significant theoretical and practical implications.

Chapter 5: Findings and Discussion – Value Co-creation Process and Contextual Antecedents

This chapter aims to answer the second and third research questions with the focus on the resource management and relationship management practices that define the PPP VCC process. The chapter examines how these practices are enabled or motivated by

various contextual factors. In-depth discussions on the approaches that enable effective resource management and relationship building among stakeholders are provided, with a particular emphasis on their contribution to the co-creation of value for the project and all parties involved. The chapter also presents a set of propositions based on the findings from the previous chapter that explore the implications of these VCC practices on value outcomes. Finally, the chapter provides a comprehensive understanding of the contextual antecedents, including institutional factors and organisational enablers, of the VCC process, contributing to the final framework of the PPP VCC mechanism. Overall, this chapter provides valuable guidance for researchers and practitioners interested in enhancing the success of PPP projects through VCC by offering a detailed discussion of these practices and contextual factors. Overall, Chapters 4 and 5 explore all research questions set for this study.

Chapter 6: Conclusions, Limitations and Recommendations

This concluding chapter summarises the main contributions of this research, including the implications for industry stakeholders, particularly the public and private parties involved in PPP projects. The chapter also acknowledges the limitations of this research, highlighting areas for further investigation and development. Finally, this chapter concludes with a call for further research to continue exploring the dynamic and complex nature of VCC in PPP projects, with a focus on refining and improving the conceptual framework and practical implications presented in this study. Overall, this chapter provides a comprehensive summary of the contributions and implications of this research, as well as a roadmap for future research in this field.

The set of appendices provide supporting material, complementing the findings and analysis presented in this research.

Chapter 2 Literature Review and Conceptual Framework

2.1 Introduction

This chapter sets the groundwork for the research study by conducting a comprehensive review of relevant literature related to the research question, which aims to examine how value outcomes are co-created in a PPP project by all the involved stakeholders. The main focus of this chapter is to explore the concept of VCC and corresponding practices in the context of PPP projects. The overarching goal is to develop a conceptual VCC mechanism framework that can explain how different stakeholders co-create value in a successful PPP project based on which the multiple case study is conducted and analysed.

To achieve this goal, the literature review is divided into two parts: the first part explores the creation of value in projects while the second part delves deeper into the concept of value across various management literature, with a particular emphasis on marketing and service-related literature, as this field publishes many articles about VCC.

Based on the literature review, the chapter proposes a conceptual VCC mechanism framework that identifies the key components and processes involved in VCC in PPP projects. The conceptual framework proposed in this chapter provides a theoretical foundation for understanding how value is co-created in successful PPP projects, and the multiple case studies that follow test and refine this framework. By examining various perspectives and theories on value creation and co-creation, the chapter establishes a solid foundation for the research and sets the groundwork for further exploration and analysis in subsequent chapters.

2.2 The Evolving Perspectives and Approaches in Project Management

Modern project management (PM) can be traced back to World War II when it was initially developed for military and construction projects. Since then, project management has evolved and become a set of theories, principles, methodologies and practices that are used worldwide (Vidal & Marle, 2008).

2.2.1 The Project Context

The modern world is characterised by a heavy reliance on project-based processes. These processes are integral to most organisations, whether government entities or private industries, as they facilitate change and revenue generation. Due to their significance, projects have become increasingly formalised, with the project-based organisation structure becoming more common. This formalisation gives projects greater legitimacy and structure and provides organisations with a recognised business process for any initiative labelled as a “project”. Indeed, the project-based approach has become a key aspect of modern organisational operations.

Projects are temporary endeavours designed to achieve specific goals within a defined timeframe and budget (Davies, 2017). The definition suggests three inherent characteristics of projects. The temporary nature of projects means that they have a clear beginning and end date, and once the project objectives have been achieved, the project is complete. Specific goals imply the uniqueness of projects; that is, they are unique and have specific goals and objectives that need to be achieved. “Defined timeframe and budget” indicates projects need to operate within specific constraints, including time, cost and quality.

Emerging from the degree of uncertainty, ambiguity and dynamism inherent in a project as well as the interaction of various contextual factors shaping a project, the concept of project complexity serves as a significant starting point for understanding and managing projects. Scholars identified several dimensions of project complexity,

including technical complexity, organisational complexity and social complexity (Baccarini, 1996; Bakhshi et al., 2016; Vidal & Marle, 2008). Technical complexity refers to the complexity of the project's technical requirements, such as the degree of technological innovation required. Organisational complexity refers to the complexity of the project's organisational context, such as the number of stakeholders involved or the degree of interdependence between project tasks. Social complexity refers to the complexity of the project's social context, such as cultural differences or political influences. Project managers must navigate the complexities of a project environment that is often dynamic and unpredictable, and they must ensure that the project objectives are achieved within the constraints of time, cost and quality. In their systematic review of project complexities, the authors underscore the multifaceted nature of project complexity by highlighting the interplay between technical, organisational and social dimensions, emphasising the need for project managers to adeptly navigate these intricacies while delivering on project objectives within time, cost and quality constraints (Geraldi et al., 2011). Furthermore, the study underscores the importance of acknowledging that project complexity is not static but rather emerges from the evolving dynamics of a project environment, underlining the significance of adaptability and proactive management strategies to address the inherent uncertainties and ambiguities in complex projects.

2.2.2 Three Levels of Project Management

One dominant literature strand that led to broadening the scope of project management is from “project management” to “the management of projects” proposed by Morris (1994). Project management and the management of projects are two related but distinct concepts. While both are concerned with achieving project objectives, they differ in their focus and scope. Project management is a discipline that involves the application of knowledge, skills, tools and techniques to plan, execute and control projects effectively. It is a formal process that follows a structured approach, typically

involving five phases: initiation, planning, execution, monitoring and controlling, and closing (Kerzner et al., 2022). The project management process is iterative, meaning that it involves continuous monitoring and adjustment to ensure that the project stays on track.

Morris (1994) proposed the concept of the “management of projects” as an extension of traditional project management. Morris argued that the traditional approach to project management was too narrow, and there was a need to broaden the focus to include the overall management of the project, including the project environment, stakeholders and strategic goals. The management of projects approach emphasises the importance of integrating project management with broader organisational strategies and goals. It also emphasises the importance of stakeholder management and communication to ensure that projects align with the needs and expectations of all stakeholders. Morris’s approach recognises that projects do not operate in isolation but are influenced by the broader organisational context. This includes factors such as organisational culture, structure and strategy. Thus, effective project management requires an understanding of these contextual factors and the ability to align projects with broader organisational goals.

In 2011, the concept of managing projects was expanded to three levels by Morris and Geraldi (2011). As shown in Figure 2-1, the first level, the technical core, is concerned with project delivery and focuses on techniques and processes. The technical core is the foundation of project management, which focuses on delivering the project’s technical requirements efficiently and effectively. It includes processes, techniques and tools to manage scope, schedule, budget, resources, risks and quality. The project manager and the project team are responsible for the technical core. Their primary objective is to complete the project on time, within budget, and to the required quality standard.

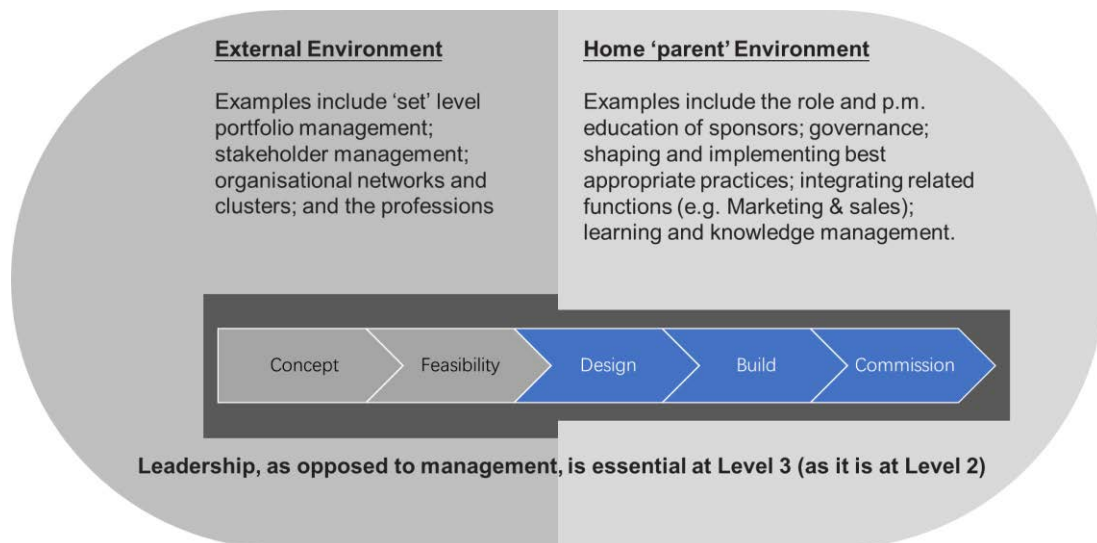


Figure 2-1 Levels 1 to 3 in the management of projects

(Source: Morris, P. and Geraldi, J. (2011) Managing the institutional context for projects, *Project Management Journal*, 42, 6, Fig. 1, p. 23)

The second level, the project's strategic wrap, expands the domain to include the project's front-end development and definition and protects the technical core from environmental turbulence. It is concerned with the relationship between the project and stakeholders' strategies, the importance of getting the front-end right, and the value and effectiveness of the project. The strategic wrap ensures that the project is strategically aligned with the organisation's goals, vision and mission. It also addresses stakeholder management, communication and engagement. The project sponsor and the project board are responsible for the strategic wrap. Their primary objective is to ensure that the project is strategically aligned, well-defined and valuable.

The third level, the institutional level, is about managing the context within which the project occurs to enhance its effectiveness in the long term. This level is concerned with processes, standards, guides and agreements outside of particular projects' individual management issues and predominantly in their institutional environment. The institutional level focuses on improving the organisation's project management capability, maturity and performance. It includes developing project management

methodologies, processes and standards, providing project management training and development, and implementing project management governance and oversight. The project management office (PMO) is responsible for the institutional level. Its primary objective is to improve the organisation's project management capability, maturity and performance to ensure long-term project success.

In fact, institutional theory has gained relevance in the field of project management due to the increasing recognition of the importance of institutional factors in shaping project outcomes. This has led to a range of research examining the influence of institutional factors, such as norms, values and regulatory frameworks, on project performance, governance and stakeholder relations (Panayides et al., 2015; Qiu et al., 2019). Additionally, scholars have explored the role of institutional work, which involves actors' efforts to create, maintain and disrupt institutional structures and norms in shaping project outcomes (Javernick-Will & Levitt, 2010; Matinheikki et al., 2021). The research has provided valuable insights into the complex and dynamic institutional environments in which projects are embedded and has highlighted the need for project managers and researchers to be attuned to these institutional factors.

Overall, Morris's concept of the management of projects represents a shift from a narrow focus on project management to a more holistic approach that integrates project management with broader organisational strategies and goals. This approach recognises that projects are not standalone entities but are influenced by the broader organisational context and require a more integrated and strategic approach to project management.

This perspective shift is pertinent to the PPP projects of interest. Li and Wu (2017) argue that the first-generation PPP model in China was primarily concerned with reducing procurement costs and increasing efficiency in delivering public services. However, the second-generation PPP model in China, as seen in France and other civil law countries, positions PPP as a tool for leveraging regional economic development

through partnerships between the public and private sectors. The emphasis is on stimulating social capital investment through market-oriented reforms and improving the charging and price formation mechanism, which allows for investment return based on market-oriented operations. The focus is no longer solely on the government's ability to pay financial funds but rather on the PPP's driving role in regional economic development and market mechanism maturity.

Li and Wu further argue that PPPs can be a useful tool in achieving sustainable development goals, particularly in areas such as education, healthcare and elderly care, where the pressure on government finances and technical management limitations make it difficult to achieve these goals through government departments alone. The PPP model can better balance the contradiction between the provision of public goods and the need for sustainable development. Therefore, the future direction of PPPs, i.e., the third-generation PPP model in China, must focus on the needs of people and put people first, elevating the operation concept and target positioning of the PPP model to new heights.

2.2.3 The Hard and Soft Paradigm of Project Management

Another trend has influenced project management to focus on both hard and soft paradigms, moving away from a sole emphasis on the hard paradigm. This discourse has become increasingly prevalent in academic literature and industry practices. The phrases "hard" and "soft" are frequently used in both practical and academic contexts of general and project management. However, their meanings are often unclear and indefinite. In general, the term "hard" often refers to technical or tangible aspects of management, such as tools, methods and processes. On the other hand, "soft" often refers to the intangible aspects of management, such as human behaviour, organisational culture and communication.

From the perspective of the philosophical stand, Pollack (2007) suggests that hard approaches to management are based on a positivist, reductionist and realistic philosophy, which emphasises the pursuit of objective knowledge. In other words, hard approaches seek to understand complex systems by breaking them down into smaller parts and analysing them in a logical and systematic manner. Hard approaches focus on finding the best solution based on objective data and facts. In contrast, soft approaches are rooted in constructive and interpretive schools of thought. Soft approaches focus on the human element of management, recognising that individuals and groups have different perspectives and experiences that influence their understanding of complex systems. Soft approaches emphasise the creation of knowledge through collaboration and communication among stakeholders. The goal is to develop a shared understanding of the problem and potential solutions rather than finding the one “correct” answer.

From the perspective of approaches to problem solving and decision making, Green (1994) suggests that value engineering follows a hard systems thinking approach that emphasises optimisation, while VM takes a soft systems thinking approach focused on learning and improvement.

In the project context, the hard paradigm emphasises the technical and quantitative aspects of project management, such as schedule and budget management, risk assessment and performance measurement (Sanderson, 2012). The focus is on achieving project goals through a structured, linear approach, often using methodologies such as Waterfall. In contrast, the soft paradigm emphasises the human and social aspects of project management, such as communication, team dynamics, stakeholder engagement, and leadership (Ahsan & Gunawan, 2010). The focus is on building relationships, fostering collaboration, and creating a positive work environment to promote creativity, innovation and adaptability. Soft methodologies such as Agile and Scrum prioritise flexibility, responsiveness and continuous improvement.

The shift from a hard to a soft paradigm reflects a growing recognition that project success depends not only on technical competence but also on the ability to manage human and social factors effectively. This shift has implications for project managers, who must develop new skills and competencies to manage both the hard and soft aspects of project management, as well as for organisations, which must adopt new structures, processes and cultures to support this new paradigm (San Cristóbal Mateo et al., 2022).

To better illustrate the hard and soft paradigms of project management, Crawford and Pollack (2007) developed a framework to better understand the concepts of “hard” and “soft” in project management. They identified seven dimensions that contribute to a project’s hardness or softness: goal/objective clarity, tangibility, success measures, project permeability, solution options, degree of participation and stakeholder expectations. Detailed connotations are summarised in Table 2-1.

Table 2-1 The hard and soft dimensions framework

Dimension	Hard	Soft	Comments
Goal/objective clarity	Goals are already well-defined and don't need further examination	There may be ambiguity in goals and instead, focus on learning, exploring and defining problems	The soft method helps to prevent incorrect identification of the problem. The approach then shifts towards negotiation, debate, and finding common ground.
Goal/objective tangibility	Goals can be defined in clear, measurable terms	Goals can be more challenging to define and often require subjective interpretation and judgment	Project managers need to be aware of the level of the tangibility of their goals and adjust their approach accordingly
Success measures	Quantitative measures provide an accurate reflection of reality	Qualitative analysis provides an in-depth understanding of a situation	Project managers should be aware of the limitations and strengths of both approaches and use a combination of methods for a comprehensive understanding of their projects
Project permeability	Limited number of project influences inside and outside project control	Large number of project influences inside and outside project control	When the determination of a clear boundary and specified scope is more problematic, soft methods that focus on learning, exploration and problem definition may be more appropriate.
Solution options	Efficient delivery with predetermined solutions is handed down without room for discussion	There is an opportunity for questioning assumptions and thus exploring alternatives and seeking innovative solutions	The soft paradigm could be considered the "optimal approach" that arises from inter-subjective, rational argumentation
Degree of participation	Team members are considered experts in their respective fields with clear roles and boundaries	People are encouraged to cross professional boundaries and negotiate between multiple perspectives	The effective hard method may be suitable for simple, routine projects, while the participative soft method may be more suitable in complex, multifaceted projects where participant ownership is necessary
Stakeholder expectations	The emphasis is on control, assuming the predictable behaviour of people	The emphasis is on culture, meaning and value, assuming people are part of a complex system	Given the importance of understanding different stakeholder expectations, soft methods that require greater stakeholder interaction are more effective in complex projects

Based on the framework summarised in Table 2-1, it can be argued that PPP projects have more soft elements than hard ones. PPP projects often involve complex and ambiguous goals from the outset, and stakeholders may have different interpretations of what the project should achieve. Therefore, a soft method approach allows for exploration, learning and defining problems to ensure that the project's goals are clear and agreed upon by all stakeholders.

Besides, PPP projects involve complex relationships between public and private entities, and the success of such projects cannot be solely measured by quantitative metrics. The qualitative analysis provided by soft methods can help project managers gain an in-depth understanding of the complex factors that contribute to the success or failure of PPP projects.

From the stakeholder-related dimension, PPP projects are often complex and involve various stakeholders from different sectors who have different interests, priorities and expectations. Therefore, PPP projects can be seen as having a large number of project influences inside and outside project control. Also, there may not be a single predetermined solution that can be handed down without room for discussion in PPP projects.

Most importantly, participation and collaboration between stakeholders is crucial for the success of the PPP project. Thus, soft methods that focus on learning, exploration and problem definition are more suitable for PPP projects as they facilitate open communication and cooperation between stakeholders, leading to better problem solving and decision making.

When exploring the development of project management, it becomes apparent that projects are anticipated to provide value to their stakeholders beyond the mere delivery of products. It is expected that projects offer long-term strategic value to their constituents (Martinsuo & Killen, 2014). The following sections explore the theoretical underpinnings of project value and the approaches employed to create value in projects.

2.3 Broad Examination of Value Concept in Management Literature

In the realm of project management, the search for distinct knowledge unique to this field is a common pursuit in the literature. For example, the Project Management Body of Knowledge (PMBOK®) guide only delineates knowledge relevant to project management that is not readily available in other fields and this approach did not adequately cover the knowledge required for project management as a profession (Morris, 2013).

To that end, this section aims to first examine the concept of value as described in the broader management literature before narrowing its focus to the context of PPP projects. Through this approach, better understanding of the common and specific knowledge required for successful value creation in PPP projects and its distinctiveness from other management fields is provided.

2.3.1 Value-in-use vs Value-in-exchange

In general, people seek to pursue value for money or, more broadly, the best value possible. However, the question of what constitutes genuine goodness has been queried throughout the history of humankind (Hart, 1971), making value an abstract and subjective concept. To address issues related to value, which encompasses what is regarded as valuable and/or desirable (Biedenbach & Jacobsson, 2016), a term called “axiology” has emerged, which aims to synthesise and examine questions pertaining to value priorities (Given, 2008).

Various approaches exist to comprehend and interpret value. One of the archetypes is summarised by Rescher (1969), who classifies value into eight categories: material and physical value; economic value; moral value; social value; political value; aesthetic value; religious value; and intellectual value. While this classification provides a universal perspective of what is typically valued, a triadic-dimension argued by Hartman (1961) includes intrinsic, extrinsic and systemic values and exhibits the logic

of value creation. Intrinsic value refers to the value with which something is endowed itself, rather than the value achieved in a specific context or through certain ways (Hartman, 1991). Extrinsic value is defined as “not supposed to be good in itself but in its function” (Hartman, 1991). Systemic value means that something must fulfill a specific logic structure set up for such a value, resulting in a binary criterion in which something is either valuable or not valuable at all, without an intermediate position (Biedenbach & Jacobsson, 2016). Similarly, Pojman (2005) divides value into intrinsic and instrumental ones, with the former meaning inherently valued and the latter referring to effectual functions to achieve worth pursued (Biedenbach & Jacobsson, 2016).

To clarify the value construct, Bowman and Ambrosini (2000) employ the distinction between use value and exchange value. Use value is subjective and contextual, referring to the quality of a product or service perceived by customers with regard to their actual need, while exchange value is the monetary amount realised at the point of exchanging such products or services (i.e., the price the consumer is willing to pay for the product) (Bowman & Ambrosini, 2000). Thus, value creation depends on the subjective value realised by the target user or buyer who is the focus of value creation whether an individual, organisation or community. However, Lepak et al. (2007, p. 182) suggest that “subjective value realisation must at least translate into the user’s willingness to exchange a monetary amount for the value received”. Similarly, from a service-dominant logic perspective, Vargo et al. (2008, p. 145) argue that “value is fundamentally derived and determined in use – the integration and application of resources in a specific context – rather than in exchange – embedded in firm output and captured by price”.

In the realm of business, value-in-exchange pertains to the price that consumers are willing to pay for the goods and services offered by a firm (Bowman & Ambrosini, 2000). As profit-maximising entities, firms employ various strategies to achieve the highest value-in-exchange possible (Lepak et al., 2007). However, it is important to

note that value-in-exchange is contingent upon value-in-use. Hence, firms should prioritise the pursuit of value-in-use rather than value-in-exchange, as the latter is a consequence that emerges from its antecedent, which is value-in-use.

Furthermore, value-in-use pertains to the benefits and utility that consumers derive from the products and services offered by a firm (Leroy et al., 2013). This concept is rooted in the notion that consumers purchase goods and services not for their inherent value, but for the benefits that they provide. Hence, firms should focus on delivering superior value-in-use to their customers, as this is what drives demand and ultimately leads to higher value-in-exchange. It is also worth noting that value-in-use is not limited to the functional benefits that a product or service provides. Rather, it encompasses a range of intangible factors such as emotional attachment, social status and environmental impact (Payne et al., 2007). Hence, firms should aim to create products and services that not only fulfill their functional needs but also accord with their emotional and social aspirations while minimising any negative impact on the environment.

In conclusion, while value-in-exchange is a crucial component of a firm's success, it is ultimately dependent on the value-in-use that its products and services provide. Thus, firms should prioritise the pursuit of superior value-in-use as this drives demand and ultimately leads to higher value-in-exchange. By creating products and services that cater to the diverse needs and aspirations of consumers while minimising negative externalities, firms can build sustainable competitive advantages and long-term profitability.

2.3.2 Value Creation Content vs Value Creation Process

Based on the philosophical discussion of value, value has been endowed with a variety of contextual connotations, and its characteristics of long-term process and multi-stakeholder involvement have been identified in the field of management. At the

organisational level, Thomas and Mullaly (2008) categorise three approaches to assess the value of an organisation: the return on investment approach, which quantitatively focuses on the cost–benefit ratio; the balanced scorecard approach, which includes financial and non-financial measures; and the organisational competency approach, which emphasises the long-term and sustainable competitive advantage of companies.

At the project level, some scholars adopt the 3E view, which is economy, efficiency, and effectiveness, to elaborate on value creation. Economy refers to maximising inputs with regard to the money invested; efficiency refers to maximising outputs with regard to inputs, and effectiveness refers to maximising outcomes with regard to output. To achieve value for money of a project, it is necessary to maximise outcomes for every dollar invested into it (Burger & Hawkesworth, 2011). While economy and efficiency focus more on the financial facet, effectiveness measures if the designed outcome has been attained, moving beyond the uni-dimensional perspective to focus more on the lasting effects beyond the project itself. This perspective emphasises the need to treat value creation as a long-term and ongoing process (Chang et al., 2013).

In addition to the emphasis on the long-term view of value, academic attention is also paid to the individual-specific nature of value in projects. The Institute of Value Management (2010) defines value as “the relationship between satisfying needs and expectations and the resources required to achieve them”, drawing attention to the significant role that diverse stakeholders play in determining value. This emphasis is further explained in the definition of value management, which aims to improve and sustain the best balance between satisfaction and resources through reconciling various value priorities from diverse stakeholders (Institute of Value Management, 2010).

According to Chang et al. (2013), value creation has two important characteristics that must be considered: content and process. The content of value creation refers to what is considered valuable, who values it, and where the value resides. Meanwhile, the process of value creation distinguishes the process of capturing value from its creation.

By understanding these two aspects, value creation can be seen as an ongoing and long-term process that involves various stakeholders. A synthesis of existing literature (broadly in general management or specifically in engineering and project management) on value and VCC is provided in the table below.

Table 2-2 A synthesis of existing literature on value and VCC

Literature	Key Findings
Vargo and Lusch (2004)	Introduced the concept of service-dominant logic which emphasises VCC as a collaborative process between customers and providers. Emphasised the importance of shifting from a goods-dominant logic to a service-dominant logic.
Prahalad and Ramaswamy (2004)	Argued that value is co-created through interactions between firms and customers. Stressed the need for firms to view customers as active participants in the value creation process rather than passive recipients of value. Introduced the concept of the “co-creation experience”.
Grönroos (2011)	Proposed a “service logic” approach to VCC, emphasising the central role of services in value creation. Highlighted the importance of customer integration, relationship development, and continuous dialogue in the co-creation process.
Payne et al. (2007)	Developed a framework for managing VCC that includes four key processes: understanding, creating, delivering, and capturing value. Emphasised the need for firms to align their resources, capabilities and processes with customer needs and preferences.
Ramaswamy (2011)	Introduced the concept of “cocreation platforms” as a way to facilitate VCC in networked environments. Emphasised the role of technology in enabling collaboration and knowledge sharing among stakeholders.
Edvardsson et al. (2011)	Explored the application of VCC in the context of infrastructure projects. Highlighted the importance of involving multiple stakeholders, such as clients, contractors and end-users, in the VCC process. Emphasised the need for effective communication and collaboration among stakeholders.

Value creation is a complex and multi-dimensional construct that can be influenced by a range of factors. The individual-specific nature of value highlights the importance of recognising the diverse perspectives and priorities of stakeholders in determining value. At the same time, the process of capturing value from value creation emphasises the need to consider the various stages involved in the value creation process, from ideation to delivery and beyond.

In summary, value creation is a dynamic and multifaceted concept that requires a comprehensive understanding of its content and process. By recognising the importance of these two aspects, stakeholders can work together to create and capture value in a sustainable and mutually beneficial way.

2.3.3 Value vs Values

Understanding the difference between values and value is crucial in the fields of management and project management. Values refer to the beliefs and principles that guide decision making and behaviour, whereas value refers to the worth or benefit derived from a particular action, investment or project (Martinsuo, Klakegg, et al., 2019).

In the context of public administration, the difference between value and values is that value is more concerned with the tangible benefits and outcomes of public policies or services, while values are more concerned with the ethical and normative dimensions of public administration. The two streams of public value research – the managerial perspective (Rf. Moore, 1995) and the normative perspective (Rf. Bozeman, 2007) – reflect these different emphases. The managerial perspective focuses on the efficient delivery of services and the achievement of specific outcomes, while the normative perspective places greater emphasis on the ethical and moral considerations of public administration. The managerial perspective of public value research is grounded in the notion that public policies and services should be designed and delivered in a way that

maximises their value to citizens (Petrescu, 2019). This perspective views public administration as a means to achieve specific goals and outcomes and emphasises the importance of performance measurement and evaluation. It is concerned with improving the efficiency and effectiveness of public services, while ensuring that they meet the needs of citizens and contribute to the public good. The normative perspective of public value research, on the other hand, places greater emphasis on the ethical and normative dimensions of public administration (Bozeman, 2002). This perspective acknowledges that public policies and services are not neutral, and that they can have differential impacts on different segments of society. It advocates for a more inclusive and participatory approach to public administration, one that is guided by principles of transparency, accountability and fairness. It recognises the importance of values such as social justice, equity and democracy in shaping public policies and services (Williams & Shearer, 2011).

In project management, delivering value is the ultimate goal (Thiry, 2002). This means that a project should provide benefits or outcomes that meet the needs and expectations of stakeholders, while also being completed on time, within budget, and to the required quality. Project managers must balance the competing demands of stakeholders and ensure that the project's objectives align with the organisation's overall strategy and values. In contrast, values are more abstract and subjective. They reflect an organisation's culture and beliefs and guide decision making and behaviour (Martinsuo, Vuorinen, et al., 2019). Values can influence project selection, prioritisation and governance. For example, an organisation that values sustainability may prioritise projects that reduce its environmental impact, even if they are not the most profitable. Values can also impact project outcomes, as they may influence the way in which stakeholders perceive and evaluate a project's success.

While values and value are distinct concepts, they are interconnected. The values of an organisation and its stakeholders can impact the perception of a project's value (Vuorinen & Martinsuo, 2019). For example, a project that aligns with an

organisation's values may be seen as more valuable, even if it does not generate the highest financial return. On the other hand, a project that conflicts with an organisation's values may be seen as less valuable, even if it generates significant financial returns. In summary, values and value are both important concepts in management and project management. Values guide decision making and behaviour, while value refers to the worth or benefit derived from a particular action or investment. Both concepts are interconnected and can influence project selection, prioritisation and governance, as well as project outcomes and the perception of a project's value.

2.3.4 Key Insights on Value and Its Creation in the Context of PPP Projects

The review of management literature has highlighted three central insights. These arguments are as follows:

First, rather than creating multiple dimensions of value, researchers should focus on creating a unique definition of value that considers its usefulness from the client's perspective. This research aims to explore the expressions of value outcomes that emerge from the usefulness of a project, especially in the PPP context.

Second, the concept of value has multiple meanings in the management literature, and there is a lack of communication between different management streams. Notably, the service-dominant logic framework originating from the marketing discipline and VM methodologies originating from the engineering discipline offer the most robust literature on value. However, combining these two streams of literature and adapting them to unique project settings requires further investigation and examination.

Third, there has been a shift from a transactional and independent approach to value creation to a more interactive approach. This approach has been refined in the service-dominant logic constructs, such as VCC, which may provide more useful value outcomes, particularly to client organisations. Service-dominant logic may be

considered a long-awaited model to move away from neo-classical economics (Fuentes, 2020).

For this thesis research focus on PPP projects, three primary arguments regarding value and its creation are proposed as above by drawing on the perspective of PPP projects. Referring back to the main focus of this study on project management, the following section is a more in-depth examination of the idea of value in the project context. It delves deeper into the concept of value and analyses it in relation to project settings, to provide a more thorough understanding of how value can be created and maximised in projects.

2.4 Analysis of Value Concept in PPP Project Context

2.4.1 Value vs Similar Concepts

The definition of value in the context of PPPs is a complex and multifaceted concept that varies among stakeholders. Since PPP projects involve diverse stakeholders and last for a long time, capturing value from various stakeholder perspectives and throughout the full lifecycle of the project is crucial to its success. Despite value being seldom mentioned in PPP literature, scholarly explorations on value within the context of PPP projects are emerging, with studies focusing on constituent facets such as performance measurement, social responsibility and sustainability.

The concept of value in PPP projects is evolving, with a growing recognition of its importance in ensuring project success. Stakeholders' perceptions of value are varied, and capturing value from diverse perspectives is necessary to achieve genuine success in PPP projects. While studies on evaluating PPP projects beyond the traditional "time-cost-quality" view are fruitful, further research is needed to explore the different dimensions of value in PPP projects.

Value vs performance

PPP infrastructure projects are essentially construction projects, and thus it is necessary to draw on the experience of construction performance measurement to evaluate them effectively (Liu, Love, Smith, et al., 2015). Successful delivery of PPP projects is influenced by several factors, including performance measurement (Liu, Love, Smith, et al., 2015; Osei-Kyei & Chan, 2015; Osei-Kyei et al., 2017). Performance measurement is fundamental in ensuring project success by providing stakeholders with valuable information (Liu, Love, Smith, et al., 2015; Yuan et al., 2009). In the construction industry, performance is typically assessed through key performance indicators (KPIs) and performance measurement systems (PMSs) (Bassioni et al., 2004). However, it has been argued that KPIs are often used as a marketing tool rather than being integrated into business management, and that they should be combined with an overall performance measurement system for effective use (Beatham et al., 2004). According to Neely et al. (2001), performance measurement is the evaluation of past actions' effectiveness and efficiency, and it needs to be extended to the ex-ante and whole lifespan (Love et al., 2015).

As a result, recent research has focused on systematically evaluating PPP projects' performance with broader and more inclusive views. Some of this research has concentrated on the longevity of PPP projects and has asserted that performance measurement throughout the entire lifecycle is scarce (Love et al., 2015). Meanwhile, Verweij (2015) has highlighted the significance of stakeholders' engagement in the implementation phase of PPP projects, emphasising that managers' externally-oriented actions lead to satisfactory outcomes, while their internally-oriented actions lead to unsatisfying ones. Robinson and Scott (2009) argue that stakeholders' perceptions remain consistent in some situations but can conflict with each other in others.

Through a multi-case study on the effectiveness of performance monitoring on compliance with output specifications, it was found that the principal (public partner),

agent (private partner), and independent audit body all held different views on output specifications, leading to divergent opinions on performance monitoring systems and payment mechanisms (Liu et al., 2016). Other scholars have developed multi-dimensional evaluation frameworks, such as the Yuan et al. (2009) conceptual model of performance objectives, which has three separate packages: project inputs, requirements of stakeholders, and project implementation. Despite several comprehensive measurement frameworks established in previous research, performance measurement tends to omit the significant impact of PPP projects on the community, leaving critical issues regarding social responsibility and sustainability unaddressed.

Project value, on the other hand, is a multifaceted concept that extends beyond the traditional boundaries of performance measurement (Yeo, 1991). While performance measurement primarily evaluates a project's efficiency and effectiveness in achieving predetermined objectives, project value encompasses a broader spectrum of considerations. Project value incorporates not only the quantitative aspects of project delivery but also the qualitative and long-term impacts it has on stakeholders, society and the environment.

To delve deeper into this distinction, it is crucial to highlight that project performance measurement typically focuses on specific key performance indicators (KPIs) and metrics that are often associated with cost, time and quality (Chang et al., 2013). These metrics are essential for evaluating the immediate success of a project, ensuring it stays on budget, adheres to the schedule, and meets quality standards. However, they may fall short in capturing the project's wider implications, such as its contribution to sustainability, social wellbeing and stakeholder engagement.

In contrast, assessing project value entails a more comprehensive analysis that considers not only the project's immediate outcomes but also its long-term effects (Laursen & Svejvig, 2016). This evaluation takes into account the project's ability to

create lasting value for the community, the environment and the economy. It encompasses a holistic perspective that goes beyond traditional performance metrics, delving into areas like environmental sustainability, social responsibility and the project's alignment with broader societal goals. Furthermore, project value assessment is a forward-looking and comprehensive approach that recognises the interconnectedness of projects within their broader context (Smyth et al., 2018). Consequently, project value assessment aims to determine the project's overall impact and its ability to bring about positive, sustainable change in the community it serves (Martinsuo & Killen, 2014).

Value vs social responsibility

Social responsibility has gained significant attention in the construction industry, particularly in infrastructure projects, which have significant impacts on the community and the environment (Loosemore & Lim, 2016). Socially responsible infrastructure projects usually involve various stakeholders with different interests and value orientations that are often incompatible with each other. As a result, social responsibility has emerged as a crucial value orientation (Van Marrewijk, 2007) that contributes significantly to the success of infrastructure projects, most of which are delivered through PPP models (Zhang et al., 2015). Therefore, taking on social responsibility is a critical aspect of successful infrastructure project development (Wang et al., 2017).

The concept of social responsibility is multi-dimensional, encompassing ecological, economic, environmental, ethical, legal and political responsibilities (Zhou & Mi, 2017, p. 1386). As PPP projects progress, the power and status of the seven stakeholder groups (governments, developers, main contractors, district councils, consultants, non-government organisations, and end-users) regarding social responsibility change (Lin, Ho, & Shen, 2017). It is also pointed out that exploring the role of stakeholders and the

relationship between them could be a potential research agenda in the future (Zhou & Mi, 2017). It is worth noting that while previous research has established comprehensive measurement frameworks, the impact of PPP projects on the community's social responsibility and sustainability has not received sufficient attention, leaving critical issues unaddressed.

However, social responsibility represents only one facet of the broader concept of project value. While social responsibility is crucial, project value assessment takes a more comprehensive approach. It goes beyond examining only the ethical, societal and environmental dimensions of a project, as it encompasses various other facets, such as economic viability, innovation and long-term sustainability. Project value assessment inherently incorporates social responsibility as one of its elements, recognising it as a critical component of a project's overall impact. Consequently, project value assessment provides a more holistic evaluation of a project's contribution to society, the environment, and the economy, considering a broader spectrum of value creation aspects beyond social responsibility alone.

Value vs sustainability

There is an increasing emphasis placed on sustainability within the construction industry and urban development (Koppenjan & Enserink, 2009; Ortiz et al., 2009). Studies have concluded that PPPs are significant in achieving sustainability in economic systems (Khayrullina & Arzamastseva, 2018). Sustainability, as defined by the World Commission on Environment and Development (WCED) (1987), refers to development that meets present generation needs without jeopardising the ability of future generations to fulfill theirs. PPP projects can have an impact on community sustainability across three dimensions: natural environment, regional life support system, and community fragmentation (Mouraviev & Kakabadse, 2016). Shen et al. (2016) add that sustainable infrastructure development is crucial and propose a triple-

bottom-line sustainability performance-based evaluation model comprising economic, social and environmental indicators.

However, there is a research gap regarding a comprehensive assessment of the real value of PPP projects in social infrastructure projects from an integrated perspective across the entire project lifecycle and different stakeholders. Therefore, this study aims to fill this gap by summarising and analysing value-related studies from both lifecycle and stakeholder dimensions.

In comparing project value and sustainability, it is important to note that while sustainability is a critical aspect of project value, the terms represent distinct yet interconnected concepts. Sustainability emphasises the long-term viability and responsible stewardship of resources, with a focus on meeting current needs without compromising future generations' wellbeing (Baba et al., 2021). It encompasses environmental, social and economic considerations, making it a comprehensive framework for evaluating a project's impact on society, the environment and the economy. On the other hand, project value is a broader concept that encompasses various dimensions beyond sustainability, including economic efficiency, innovation, stakeholder satisfaction and overall societal impact. While sustainability is an integral component of project value, the latter extends to evaluate a project's contribution to a wider range of stakeholders and its capacity to create enduring benefits for the community, the environment and the economy (Green & Sergeeva, 2019).

Thus, this study posits that for PPP projects to effectively capture the value associated with social responsibility and sustainability, a comprehensive assessment of project value must be conducted through integrated horizontal and vertical dimensions. Specifically, this entails evaluating the project's lifecycle dimension and stakeholder dimension to ensure that all relevant factors are considered in the assessment process. By evaluating PPP projects in a comprehensive and integrated manner, decision makers can make informed decisions that balance economic, social and environmental

considerations and achieve desirable outcomes for all stakeholders.

2.4.2 Dimensions of Value

The concept of value has been a significant area of focus in management literature as organisations search for alternative ways to create value. However, the meaning of value may differ across various stakeholders, resulting in diverse interpretations across different fields of management. As a result, it is essential to recognise that the perception of value may vary among stakeholders, and understanding their unique perspectives can lead to better outcomes for all involved parties. It is also essential to note that the perception of value may change over time, even for the same stakeholder. This evolution may be due to the pursuit of value, which could change as new priorities emerge, or the experience of value, which may evolve through the utilisation of the service.

Project lifecycle dimension

According to the European Investment Bank (EIB) (2012), the development process of a PPP infrastructure project typically comprises eight phases: project selection and definition, PPP option assessment, getting organised, pre-tendering work, bidding process, contract and financial close, contract management, and ex-post evaluation. However, the literature offers alternative classifications of the PPP lifecycle. For instance, Liu, Love, Davis, et al. (2015, p. 5) summarised the above eight phases into three major interrelated phases: (1) initiation and planning; (2) procurement; and (3) partnership (e.g., construction, operation, and maintenance). Lin et al. (2017) divide the PPP lifecycle into three stages: the initiating and planning stage, the execution stage, and the controlling and closing stage. Similarly, Love et al. (2015) argue that current performance evaluation of PPP projects focuses on input, output and outcome while omitting evaluation of process. This study adopts the conventional classification

used by the European Investment Bank and treats the partnership phase as two separate phases from a process perspective as a construction phase and operation and maintenance (O&M) phase aiming to ensure a more precise theoretical evaluation framework. While studies on stakeholders are fruitful, evaluating PPP projects from the process dimension is scarce (Love et al., 2015). Based on the division of lifecycle process, Liu et al. (2017) put forward a performance measurement framework regarding PPP social infrastructure projects consisting of a series of indicators from five dimensions: stakeholder satisfaction, strategies, processes, capabilities, and stakeholder contribution. Lin et al. (2017) investigated the dynamic stakeholder power regarding social responsibility in the construction project lifecycle, and identified a set of social responsibilities in three phases of construction projects. In a study of corporate social responsibility, Zhao et al. (2012) also shed light on the issues and performance indicators at the project level regarding PPP projects based on four phases divided from PPP projects' entire lifecycle. Based on a lifecycle assessment perspective, Ortiz et al. (2009) highlighted the growing importance of sustainability in the construction industry and the role of lifecycle assessment (LCA) in achieving sustainability objectives. They discussed the methodology and application of LCA, compared different LCA approaches, and emphasised the need for a balanced approach to development that considers social, economic and environmental factors.

Multi-stakeholder dimension

Due to the complex composition of stakeholders with diverse value orientations involved in PPP projects, Kwak et al. (2009) stress that integrating multiple stakeholders effectively would be conducive to delivering successful outcomes. Notably, increasingly more scholars have paid attention to evaluate PPP projects in an inclusive view with comprehensive indicators and stress the relationship between goal congruity as well as multi-value integration and PPPs' success. PPPs have been researched not just within the project management area but have also received

academic attention from other disciplines such as legal, social development, and sustainability. Thus, several stakeholders have been identified from different perspectives and research focus. In general, these stakeholders can be divided into three groups: public sector, private sector and general public (Henjewe et al., 2011; Yuan et al., 2012). Based on the general classification, Yeung et al. (2008) took the infrastructure sector as another stakeholder dimension. Paying special emphasis to social infrastructure, Liu et al. (2016) classified key stakeholders as public client, creditor, shareholder, concessionaire, subcontractors, end-users, and professional employees of service provision. Another comprehensive classification by Lin et al. (2017) is governments, developers, and main contractors; district councils; consultants; non-government organisations; and end-users. After integration and comparison and considering the particularity of PPP projects in China, this thesis study classified the stakeholders as 1) public sector, 2) private sector, 3) creditors, 4) end-users, 5) professional employees of facility and service provision, and 6) community and general public.

An array of indicators has been identified under the multi-stakeholder dimension. Yuan et al. (2009) identified a list of performance objectives from different stakeholders in an attempt to reflect their best-value orientation. Reckoning performance objectives as the foundation of performance measurement and management, in a subsequent paper Yuan et al. (2010) defined the level of performance objectives, through which to explore preliminarily how to integrate all stakeholders' points of value through a fuzzy entropy method. Further, Yuan et al. (2012) pointed out that, although performance objectives vary due to different standpoints of stakeholders, the key performance indicators (KPI) should be consistent because all the stakeholders need to compromise and collaborate to ensure PPP projects provide value for money.

Based on this argument, Yuan et al. (2012) developed a conceptual model for KPIs in PPP projects including three perspectives and five aspects: 1) the perspective of project inputs (consisting of physical characteristics of projects); 2) the perspective of the

requirements of stakeholders (consisting of financing and marketing; innovation and learning; stakeholders); and 3) the perspective of project implementation (consisting of the project process). Yeung et al. (2008) established a set of qualitative indicators to measure partnering performance in Hong Kong's construction industry. The indicators were derived initially from interviews with major stakeholders involved in the partnership, which are the private sector, public sector and infrastructure sector, and then refined them into seven groups as time performance, cost performance, top management commitment performance, quality performance, trust and respect performance, effective communications performance and innovation and improvement performance. With a special focus on operational management, Osei-Kyei and Chan (2017) explored the different perceptions of stakeholders based on the critical success factors of PPP projects. Koppenjan and Enserink (2009) explored how to reconcile the private participation and sustainability within urban infrastructure development and summarised a set of governance practices.

2.4.3 Principal Concepts Discrimination

Value is a central and multifaceted concept that is extensively discussed in this research. With the aim to differentiate confusing concepts and clarify the connotation of these concepts in this research, this section clarifies the various value-related concepts that are referred to in this study.

The concept of *project value* is used to provide context for this research, specifically in relation to PPP projects. In this context, project value refers to the overall benefits created for the entire project, which includes value creation for all stakeholders involved in the project, minus all relevant costs. Project value is the independent variable in this research, and the ultimate aim is to investigate how to maximise the project value of a PPP project.

Value creation, on the other hand, refers to the amount of value that is created through

various VCC activities. Despite a possibly more precise way to describe value creation by referring to it as the emergence or formation of value (Grönroos & Voima, 2012), the term “value creation” is commonly used and accepted in academia, and therefore it is used in this research. However, as there are different categories and timing of value creation during the entire PPP project lifecycle, the noun, *value outcomes*, is used to refer to different categories of benefits that are created, dictating dimensions of the interdependent variable.

Moreover, *value co-creation* refers to the actions taken by stakeholders with the aim of creating value. It has the verb attribute in the research and represents the dependent variable in the research. It involves the active participation of multiple stakeholders in the creation of value, rather than being solely generated by the service provider or the client. In the context of PPP projects, VCC involves a collaborative process between the public and private sectors to create value for all stakeholders, including the government, private sector partners, and the public at large.

The concept of VCC is closely related to the notion of *value proposition*, which is the set of benefits that a service provider promises to deliver to the client or end-users. In the context of PPP projects, value proposition should be aligned with the interests and needs of all stakeholders, and it should be based on a thorough understanding of their expectations and requirements. Effective value proposition can help to ensure that the project delivers the intended benefits and creates sustainable value for all stakeholders.

2.5 Analysis of Service-Dominant Logic and Value Management Literature

As stated in the second argument in Section 2.4, the concept of value has multiple meanings in the management literature, and there is a lack of communication between different management streams. Notably, the service-dominant logic framework originating from the marketing discipline and VM methodologies originating from the

engineering discipline offer the most robust literature on value. However, combining these two streams of literature and adapting them to unique project settings requires further investigation and examination. The disparate interpretations of the concept of value in different management fields imply a need for a more comprehensive understanding of its meaning. Given the significant contributions of the service-dominant logic framework and VM methodologies to the value literature, further exploration of these areas of inquiry, particularly regarding their adaptation to unique project settings, is crucial. Such investigations allow for a deeper understanding of the complexities of value creation and provide insights into the most effective strategies for creating value in different project contexts.

2.5.1 Service-Dominant Logic and Value Co-creation

The main theoretical foundation of this research is VCC. VCC is a business concept that emphasises the collaborative creation of value between a company and its customers or other stakeholders (Payne et al., 2007; Prahalad & Ramaswamy, 2004). It suggests that value is not created solely by the company or producer, but rather through a joint effort between the company and its customers (Normann & Ramírez, 1993). In this theory, the customer is not merely a passive recipient of the company's offerings, but an active participant in the value creation process. The company provides the resources, products or services, while the customer provides their own knowledge, skills, experiences and preferences to create a unique value proposition that satisfies both parties (Karpen et al., 2015; Vargo & Lusch, 2007a). The implementation of this theory requires a shift in mindset from the traditional view of customers as passive receivers of value to an active, collaborative partner in the value creation process. This can involve a range of activities such as co-design, co-production, co-marketing, co-innovation and co-creation of knowledge (Fuentes et al., 2019).

There are two main research strands identified in the VCC literature. One strand,

represented by scholars such as Stephen L. Vargo and Robert F. Lusch, is the well-known service-dominant logic perspective in service science. The two renowned scholars with an active community of scholars have facilitated the evolution of this theoretical perspective. In service-dominant logic, Vargo and Lusch (2018) argue that VCC occurs through a series of interactions between the firm and the customer. These interactions involve the integration of resources, especially the operant resources (Constantin & Lusch, 1994), from both parties to achieve mutually beneficial outcomes. Service-dominant logic is built on a set of axioms that emphasise the centrality of VCC, the importance of relationships, and the role of knowledge and information (Vargo & Lusch, 2015). VCC emphasises the role of customers as active participants in the creation of value who co-created value with firms by bringing their own resources, knowledge and experience to the service encounter.

Service-dominant logic further suggests reexamining the role of customers from a perspective of networks and systems, and thus introduces the concept of “service ecosystems” which are networks of firms, customers and other stakeholders that interact to create and deliver value (Vargo & Lusch, 2011). In a service ecosystem, value is not created by isolated firms but by the interactions between actors, such as customers, suppliers, competitors and regulators. This means that a service firm cannot fully control the value that is created within a service ecosystem but must instead work collaboratively with other actors to create value for all participants.

Differentiating from Vargo and Lusch’s emphasis on the broader network of actors involved in VCC, another strand, represented by scholars such as Grönroos, Ramaswamy and Prahalad, examines how value is created in the context of services by defining the concepts of VCC and value creation, and exploring the roles of both the customer and the firm in this process. In their views, VCC is analysed as a function of the interactions between these two main entities not among a network. In addition, Grönroos (2017) stresses that customers not only determine value, but they are also the value creators. The firm can facilitate customers’ value creation by providing potential

value, which evolves into value-in-use during consumption. By establishing a platform of co-creation during direct interactions, the service provider and the customer can merge their processes into one interactive, collaborative and dialogical process, allowing the firm to co-create value with the customer. Although the concept of VCC is not clearly defined, it is generally believed that both customers and firms contribute to it, making it a comprehensive process. There is a need to differentiate between the roles and actions of the service provider and the customer in this process (Grönroos, 2012). On this point, Grönroos holds a different view from Vargo and Lusch's more systemic view of emphasising the interconnectedness of all actors involved in value creation.

Other than this difference, both strands acknowledge the importance of interaction. Such interaction is twofold. The first aspect of interaction is resource integration (Vargo et al., 2008), which refers to how actors combine their resources and capabilities during interaction to create value. This could include the exchange of information, expertise, technology or other resources that enable actors to co-create value. The second aspect of interaction relates to the relationship among actors involved in the interaction (Lambert & Enz, 2012). This refers to the social dynamics, trust and mutual understanding between actors that enable them to work together effectively. When actors have a strong relationship, they are more likely to collaborate and co-create value, leading to positive outcomes for all involved.

2.5.2 Value Management Methodology and Value Co-creation

VM is a systematic process that aims to optimise the value delivered by a project or organisation while minimising the costs and risks involved (Martinsuo & Killen, 2014). According to Thiry (2013), VM is a structured approach that involves identifying and defining the functions required to meet the customer's needs and wants, analysing the value of these functions, and developing innovative solutions that meet these needs

more effectively and efficiently than traditional approaches. This relates to two dimensions: the fit with expectations and the achievability of the solution. Meeting expectations requires a neutral or positive ratio between the achieved outcomes and expected outcomes, while achieving solutions requires a balance between available and requested competence (Thiry, 2013).

Although VM stresses receiving an equitable return, whether in goods, services or money, for something exchanged (SAVE International, 2007), it is not just about cost-cutting but involves a holistic approach to creating value, including considering the entire lifecycle of a project or product, assessing the potential impact of new technologies and innovations, and actively involving stakeholders in the process.

Function is a fundamental concept that refers to the expected performance of the customer in terms of their needs and wants (British Standard Institution (BSI), 2012). Function analysis is a critical activity in VM methodologies used to identify what the customer truly values, regardless of feasibility considerations (British Standard Institution (BSI), 2020). Functions are typically use-oriented and independent of specific solutions. For example, a closet is a solution, while storing things is a function. However, storing things can be accomplished by other solutions besides a closet, such as storage boxes or garages. Functions are typically described as an active verb followed by a measurable noun, such as “closet” = “store things”. This approach encourages creative alternatives to be generated based on the customer’s needs, rather than relying solely on the project team’s competence. Function analysis distinguishes VM from other problem-solving or process improvement methods and fundamentally connects VM and VCC. At the project level, functions can be associated with business benefits since a project aims to seek benefit.

VM and VCC are two interconnected concepts that aim to create value for customers. VM focuses on identifying the customer’s needs and wants and developing solutions to meet those needs, while VCC emphasises the collaborative efforts of multiple

stakeholders in creating value. Both concepts are aimed at enhancing customer satisfaction and creating long-term value for all stakeholders involved in a project. Function analysis, a critical activity in VM, aligns with VCC, which emphasises the co-creation of value through collaborative efforts between stakeholders. At the project level, functions can be associated with business benefits, since a project aims to seek benefit. Therefore, VM and VCC are complementary and can be used together to enhance the value proposition of a project.

2.6 Analysis of Value Co-creation in the Management of Project Literature

2.6.1 Institutional Factors

Institutional factors in PPPs: Gaps and reasons for investigation

With the inception of organisations as a field of research in 1950, scholars started to investigate organisational structures and behaviours from the institutional perspective (Dimaggio & Powell, 1983). As Vargo and Lusch (2015, p. 18) maintained, value creation cannot be fully understood without “including the institutions and institutional arrangements that enable and constrain value creation”. However, while previous research efforts in infrastructure project management have examined VCC mechanisms in some detail, the role of institutions in shaping or hindering VCC behaviours in the PPP context remains largely understudied especially empirically (Pérez-D’Oleo et al., 2015), despite the relevance of this issue.

Research and discourses regarding institutional theory vary significantly, with one notable difference being the diverse levels of analysis employed by scholars in the field of project management (Scott, 2014). Although taking a risk to be arbitrary given the extremely wide range of social phenomena, Scott (2014, p. 105) identified six levels of analysis in institutional research: world system, society, organisation field,

organisational population, organisation, and organisational subsystem. These categories are divided according to the scope of the phenomena encompassed. Using data from the World Bank and the institutional framework developed by (Kaufmann et al., 2009), one extant salient research stream has focused on the influence of institutional environment and factors on the governance of PPP projects such as risk allocation (Wang et al., 2019) and transferring (Percoco, 2014), adoption of PPP projects (Panayides et al., 2015), PPP project termination (Ruiz Díaz, 2020), and PPP project success (Pérez-D'Oleo et al., 2015). However, this research provides a cross-national perspective on PPP project governance from a macro institutional perspective on a global level. However, so far, very little research has been done to reveal institutional impacts on PPP projects at the meso level, which is the organisational level (the project).

Therefore, the thesis research fills this gap by focusing on investigating institutional factors at the project level with regard to their impacts on stakeholders' practice on VC, particularly in the Chinese context. Given this research objective, the three mutually supporting and reinforcing pillars of institutional factors developed by Scott (2014) are used.

Among others, institutional factors are asserted in the thesis research to be amongst the most influential factors having effects on VCC behaviours. The first reason is that a PPP per se is an institutional arrangement (Akbari Ahmadabadi & Heravi, 2019). Each stakeholder involved in a PPP project brings their own institutions to the project and therefore institutional arrangements are assembled collectively. Thus, Vargo and Lusch (2015) argue institutions to be the coordinating mechanisms of VCC. Furthermore, as van Marrewijk et al. (2008) suggested, decisions regarding a PPP project mainly represent three levels: first, to decide whether to invest resources into a certain project; second, to decide whether to adopt PPP as the delivery approach; and finally, how to manage the PPP project for better performance. It should be noted that decisions regarding the first two levels are beyond the scope of this research and the focus of this

research is on activities practised by stakeholders at the level of PPP projects (as a temporary organisation). Thus, the second reason for only investigating institutional factors effects in the thesis research is because the focus is on how to do the project right instead of how to do the right project. From this point, other factors that matter, such as economic environment, are not discussed in this research given it is more related to the adoption or the success of PPPs (Hueskes et al., 2019).

An overview of institutions

The institution is a multifaceted concept that has been studied by numerous scholars for centuries from various dimensions, levels and perspectives and has resulted in a variety of arguments, analytic elements, differences and debates. For example, Berger and Thomas (1967, p. 58) referred to institutions as symbolic systems that are “experienced as possessing a reality of their own, a reality that confronts the individual as an external and coercive fact”. Seen from a more objective perspective, institutions are referred to as a system of norms that “regulate the relations of individuals to each other” (Parsons, 1990, p. 327). Davis (1949, p. 71) defined institutions as “a set of interwoven folkways, mores, and laws built around one or more functions”. Ostrom (2009) considered institutions are social norms and rules. Thornton and Ocasio (2008, p. 804) defined institutional logic as “the socially constructed, historical patterns of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organise time and space, and provide meaning to their social reality”. Aiming to bring some order to the discussion, Scott (2014, p. 56) proposed a broad definition of institutions through a comprehensive review of institutional research since 1970s: “Institutions comprise regulative, normative, and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life”.

Scott’s definition of institutions has two parts. One part is the symbolic system which

includes rules, norms and cultural-cognitive beliefs and the other part is the associated activities and resources that produce and sustain the symbolic system. This is aligned with many other institutional theorists who have been empathising on the mutual effects between institutions that are constructed socially among actors and actors who are subject to constraints of institutions. Relevant concepts and perspectives are well developed such as institutionalisation (Parsons, 1937), institutional entrepreneurs (DiMaggio, 1988), institution logic and institutional work (Thornton & Ocasio, 2008), and institutional change (Scott, 2014). However, it should be noted that while such effects are closely intertwined, the impacts of actors on institutions from an agent-based point of view are outside the scope of the analysis of this study. This research only focuses on the institutional effects and processes to allow a more concentrated examination of VCC behaviours. Thus, only the first part of Scott's definition is discussed, that is, the three pillars of institutions: the regulative system, normative system and cultural-cognitive system.

According to Scott (2014, pp. 59-70), regulative institutions are associated with "rule-setting, monitoring and sanctioning activities" with the underlying logic being instrumental: they are devised for increasing interests and they are conformed with to seek rewards or avoid punishment. The normative system consists of *values* and *norms* that "impose constraints on social behaviour" and at the same time, "empower and enable social action". Values relate to what should be achieved while norms are connected with how to achieve it. Finally, the cultural-cognitive system refers to the "shared conceptions that constitute the nature of social reality and create the frames through which meaning is made". This pillar stresses the cognitive frames, which mediate humans' response to external stimuli through different interpretive meaning-making processes as well as the cultural frameworks that shape such internal interpretive processes.

Built on the delineation of the three pillars, Scott (2014) also suggested empirical indicators for each of them. For the regulative system, rules, laws and formal structures

of control such as sanctions and rewards are relevant. For the normative system, accreditations and certifications according to formulated standards by relevant institutions are included. For the cultural-cognitive system, common beliefs and shared logics of action which most of the time are in the form of being taken for granted have been recently developed (Scott, 2014). While these suggested empirical indicators provide concrete objects for studying institutions, the attributes relating to them require further elaboration. According to Hair (2018), constructs consist of the focal object and the attribute. The focal object is the entity that the construct is meant to measure while the attribute is the certain feature that the construct is about to describe. Since the objects of each pillar have already been derived, the next paragraph focuses on the attributes they represent.

Institutional factors manifest independently across various research domains, including Critical Success Factor (CSF) investigations, examinations of drivers and barriers impacting the success of PPP projects, risk identification inquiries, and assessments related to stakeholder satisfaction. The three constituent components, regulative systems, normative systems and cultural-cognitive systems, combine to create a comprehensive framework for understanding institutions as a whole. However, it is worth noting that these components represent somewhat divergent concepts and, as such, require careful delineation. Scott (2014) emphasises the importance of not only recognising these three components but also differentiating them from one another. With this in mind, the thesis research endeavours to explore both the common attributes and the unique facets of each of these three components.

Definitions and characteristics of the three pillars

The following section elucidates how the three aforementioned pillars can be mapped onto the context of PPPs, with a specific focus on the organisational level. In the Chinese PPP project context, the regulative pillar manifests itself in the form of

relevant regulations given there is no national PPP law yet. One common attribute that all of the three institutional pillars share is constraints. North (1990) defined institutions as the constraints which are devised by people and affect the interactional activities of people. Thus, all the institutions including regulations are basically constraints put on behaviours of social actors which, however, are not necessarily negative. As opposed to this, the maturity of legal and regulatory frameworks as well as the supervision system is important to PPP success (Eyboosh et al., 2011; Hwang et al., 2013; Osei-Kyei & Chan, 2015; Xu et al., 2012). Such constraints are imposed through enforcement which means any violation will result in punishment by law. Another attribute linked with the regulative system is complexity. This can be found in both literature and in practice. In the literature, factors such as changes of laws and political support are identified as risks (Bing et al., 2005; Eyboosh et al., 2011; Hwang et al., 2013; Ke, Wang, & Chan, 2010; Ng & Loosemore, 2007; Osei-Kyei & Chan, 2015). In China, after a boost in the development of PPP projects from 2014 to 2018, many regulations have been published to normalise PPP development. Thus, the attributes of the regulative pillar in the PPP context are constraints and complexity.

Similar to the regulative system, the normative system works first as constraints on actors' behaviours as it guides actors on what should be achieved and how to achieve it. In Chinese PPP project practice, PPP demonstration projects represent a highly promoted and vigorously supported model. PPP demonstration projects are initiatives that encourage the adoption of standard PPP models, with the objective of establishing exemplary and easily reproducible implementation practices. These projects also strive to establish robust normative frameworks that facilitate the widespread adoption and effective implementation of PPP standards, promoting the sustainable development of PPPs. For example, demonstrative projects are easily financed and make it easy to get public support. Another attribute of the normative system is conflict. All the stakeholders involved in a PPP project normally hold various or even conflicting values which thus lead to distinct norms of behaviours such as different working

methods and know-how (Bing et al., 2005; Hwang et al., 2013; Ke, Wang, & Chan, 2010). This makes a clear mutually beneficial goal (Khan et al., 2013) in the front end of the project very important.

The constraints of the cultural-cognitive system function in the form of frames within which social actors perceive the world (Schmeltz, 2014) and respond accordingly. In the PPP context, this is relevant to how different stakeholders consider a PPP project which is manifested in different ways such as the mutual trust among principal stakeholders, the public support to the project, and the negative attitude among actors. It also represents a major attribute as change. Such change can be exemplified by the public support for a PPP project when such infrastructure projects can really provide enhanced service for people, and the government function transforms from the service provider to a service purchaser. Also, taking the citizen as the most important stakeholder of a public (service) project is increasingly reflected in the “New Public Management” wave to create public value (Kelly et al., 2002).

2.6.2 Mapping Value Co-Creation into PPP Context

According to Grimsey and Lewis (2007), the core of a PPP lies in the purchase of a stream of services with pre-determined terms and conditions, rather than the acquisition of an asset by the public sector. In contrast to traditional project management, which is often considered a rigid process with fixed goals and resources, VCC in projects is characterised by a learning process that seeks to improve the understanding of the situation and address it more effectively (Thiry, 2013).

Researching VCC in the context of PPP projects is a relatively new area of research. Through the contributions of scholars from different fields on extending and expanding the concept, VCC research has expanded in different directions both in theory and in practice resulting in an abundant output yet an equivocal conceptualisation on an ambiguous theoretical base (McColl-Kennedy et al., 2012). To be more specific, VCC

is investigated in extant research based on separate focus and theoretical domains resulting in a lack of convergence of the concept (Hamidi et al., 2019). To reveal the core conceptual elements of VCC, Ranjan and Read (2014) conducted a comprehensive and rigorous literature review on VCC and concluded that there are two main theoretical dimensions of VCC with three conceptual elements under each dimension. The first dimension is *co-production (CoP)* with *knowledge*, *equity* and *interaction* as subordinate conceptual elements while the second dimension is *value-in-use (ViU)* with *experience*, *personalisation* and *relationship* as subordinate conceptual elements (Ranjan & Read, 2014). Similar arguments can be found in previous research that also views VCC from the perspectives of both the production process and consumption process (Etgar, 2007; Lember et al., 2019; Lusch & Vargo, 2016; Voorberg et al., 2014).

In the marketing field, customers are increasingly encouraged to participate in the production process by firms to create value (Bendapudi & Leone, 2018) through interactions, deep engagement, interactivities and resources sharing. Such activities are motivated by the willingness and ability of both parties based on equal dialogue with shared decision-making power (Etgar, 2007; Lember et al., 2019; Prahalad & Ramaswamy, 2004; Voorberg et al., 2014). However, VCC remains to be extended beyond the production process where customers are viewed as co-producers to the consumption process where customers' subjective evaluation matters. Vargo and Lusch (2007a) contended that value can only be created when the consumption process begins, and the value created therein is value-in-use. It is worth noting that co-production and value-in-use are connected together rather than being separate from each other (Lusch & Vargo, 2016). Such combination characterises VCC among actors within social constructions.

However, the concept of co-production and value-in-use cannot be directly mapped into the PPP context. In the marketing field, co-production is characterised by the active participation of customers in various activities conducted through the production

process (Voorberg et al., 2014), involving various forms of cooperation between customers and firms (Etgar, 2007). As active co-producers instead of passive receivers of products or services (Bendapudi & Leone, 2018), customers may engage in the production process through direct or indirect interactions and information seeking and sharing with firms (Prahalad & Ramaswamy, 2004). Similarly, co-production in public service research entails shaping public services by involving active input from citizens (Lember et al., 2019).

Although co-production and co-creation are used interchangeably in some studies (Gebauer et al., 2010), most scholars consider co-creation as an umbrella concept encompassing co-production (Galvagno et al., 2014). As suggested in Ranjan and Read (2014)'s work, another main dimension discussed under the concept of VCC is *value-in-use* (ViU). As can be interpreted literally, value-in-use can only be generated during the consumption process when a certain product or service is used (Grönroos, 2011; Vargo & Lusch, 2018). However, such value needs to be framed in advance. The importance of value-in-use is brought to the fore by Robert Lusch and Stephen Vargo's extensive studies (e.g., Lusch & Vargo, 2014; Vargo & Lusch, 2007a, 2015; Vargo & Lusch, 2018) supported by other contributing scholars (e.g., Grönroos, 2011; Karpen et al., 2011; Payne et al., 2007) on service-dominant logic. The service-dominant logic sees service as the basis of exchange and asserts value can only be determined by the service receivers based on their own perception and the context. As opposed to value-in-exchange, value-in-use will not be realised until the customers consume or use a product or service (Payne et al., 2007). Thus, value is generated through experiential interactions under individual perceptions embedded in relationship networks (Vargo & Lusch, 2011).

However, this research adopts a different level of observation and unit of analysis from previous research. For the level of observation, the exchange phenomenon is mostly observed at a meso-social level which consists of organisations, systems and networks (Leroy et al., 2013). Regarding public service provision, the level of observation is

mostly set as the macro-social level, including the whole society (Voorberg et al., 2014). However, significant value is created at all levels of observation (Austin & Seitanidi, 2012). As such, this research integrates the two levels of observation mentioned above but with the emphasis on a variety of relevant stakeholders (i.e., individuals, organisations and communities) involved in a PPP project. Therefore, both the sources and users of value creation (Lepak et al., 2007) are expanded to discuss VCC in the PPP project.

For the unit of analysis, most extant studies have focused on actors while some other research has looked at organisations (Leroy et al., 2013). That is because in marketing and public service research the exchange process often happens where the customers (and customer networks) or citizens (and communities) are uncertain but the product or the service provided create certainty. In other words, the objective of exchange is uncertain, but the content of exchange is certain. However, in the context of PPP projects, the exchange process differs. While certain stakeholder groups, such as public and private partners (first-order stakeholders), employees, end-users, and communities (second-order stakeholders), are involved, the nature of the service being exchanged remains uncertain. The thesis study takes the PPP project as the unit of analysis and discusses how value can be co-created in it for various stakeholders at different levels of observation (Fuentes & Smyth, 2016).

2.6.3 Value Co-Creation Elements

The creation of value involves determining what value to create and how to create it. In the traditional value creation process, the focus is on maximising production efficiency and achieving value-in-exchange, which is the monetary amount obtained in exchange for goods or services.

In project management, value creation occurs at different stages of a PPP project, starting from the initiation phase followed by the procurement phase and extending to

the implementation phase. However, these stages are not always clearly distinguishable due to the complexity of PPP projects, which often involve multiple sub-projects and sub-systems. For instance, while a PPP project may have distinct design and construction stages, these stages often have multiple sub-stages, making it challenging to differentiate them clearly (Eriksson et al., 2017). Additionally, a PPP project may involve various sub-systems, each with its design and implementation processes. In such cases, the production of one sub-system may occur before the design of another sub-system, further complicating the value creation process.

It is crucial to acknowledge these complexities and understand that value creation in PPP projects requires a holistic approach that considers the various stages and sub-stages of the project. By doing so, project managers can identify areas where value can be created and optimise their efforts to ensure the project's success.

To overcome this complexity, this research does not divide the value creation process into stages that parallel the PPP project phases, but instead groups the activities according to the management of resources and relationships. This approach helps to map the value creation practices in the context of PPP empirically. This perspective is in accordance with the conclusion derived from the pilot case studies, discussed in Chapter 3, where the interviewees suggested changing the division dimension from “phase” to another relevant dimension. This is because many of the identified indicators are designed in one phase of the PPP process and then applied in a later phase. Therefore, using “phase” as the division dimension may not accurately capture the interdependencies between different phases and their impact on value creation. Instead, other relevant dimensions, such as “stakeholder engagement” and “resource management”, could be used to capture the dynamic nature of value creation in PPPs.

Relationship management

Relationship management is a critical practice that involves analysing and investing in

long-term relationships with stakeholders in PPP projects, going beyond the basic features of a product or service, and seeking to achieve long-term benefits. According to Smyth and Edkins (2007), relationship management entails creating comprehensive strategies and processes to partner with selected counterparts and stakeholders, thereby fostering sustainable relationships that create superior value (Zou et al., 2014). This involves identifying, establishing, maintaining, enhancing, and, if necessary, terminating relationships, as highlighted by Grönroos (2000).

To be effective, relationship management must go beyond transactional interactions and focus on building trust, mutual understanding, and a shared commitment to achieving common goals. This requires an understanding of the needs and expectations of stakeholders and adapting strategies to create a positive impact on their business and the broader community. The benefits of successful relationship management are numerous, including increased stakeholder satisfaction, improved project outcomes, and a better reputation for the organisation.

This section explores relationship management as another element of VCC in project management, especially in PPP projects. The review focuses on several themes that have emerged from the literature including relational contracts, social value creation, teamwork quality, stakeholder management strategies, trust, relationship learning, and project governance.

One of the key themes that emerged from the literature is the importance of relational contracts for VCC in PPP projects. Baker et al. (2002) define relational contracts as agreements that rely on trust, cooperation and the exchange of information between the parties involved. According to Baker et al., relational contracts are particularly useful in situations where formal contracts are inadequate due to the complexity and uncertainty of the project. Similarly, Dyer and Singh (1998) argue that cooperative strategies and relational contracts can provide sources of interorganisational competitive advantage. Another theme that emerged from the literature is the

importance of social value creation and relational coordination in PPP projects. Caldwell et al. (2017) argue that social value creation can be achieved through relational coordination between public and private partners. They define social value creation as the process of creating economic, social and environmental value for all stakeholders involved in the project. The authors suggest that relational coordination can facilitate social value creation by increasing communication, trust and cooperation between the partners.

Teamwork quality is another theme that emerged from the literature. Hoegl and Gemuenden (2001) define teamwork quality as the extent to which team members share a common understanding of the project goals and objectives, communicate effectively, and collaborate to solve problems. The authors argue that high quality teamwork is essential for the success of innovative projects. Similarly, Mills and Razmdoost (2016) suggest that managing VCC requires effective teamwork and collaboration between stakeholders. Stakeholder management strategies also emerged as a key theme in the literature. Jayasuriya et al. (2020) explore the impact of stakeholder management strategies on managing issues in PPP projects. The authors suggest that effective stakeholder management can help to prevent issues and conflicts from arising during the project. The authors propose three stakeholder management strategies including the identification of key stakeholders, the development of appropriate communication strategies, and the use of appropriate conflict management strategies.

Trust is another important theme in the literature. Jiang et al. (2016) examine the relationship between trust and project success from the perspective of both owners and contractors. The authors suggest that trust can facilitate communication and cooperation between the parties involved, which can lead to a successful outcome. Similarly, Kadefors (2004) explores trust in project relationships and suggests that trust is built through a process of social interaction and communication between the parties involved.

Relationship learning is another theme that emerged from the literature. Kohtamäki and Partanen (2016) explore the co-creation of value from knowledge-intensive business services in manufacturing firms. The authors suggest that relationship learning can facilitate VCC by increasing the knowledge and understanding of the partners involved. The authors propose that relationship learning can be achieved through a process of communication, interaction and collaboration between the partners.

Finally, project governance is a key theme that emerged from the literature. Müller et al. (2015) examine the impact of relational norms on information technology project success and the moderating effect of project governance. The authors suggest that relational norms can facilitate communication and cooperation between the parties involved, which can lead to a successful outcome. The authors propose that project governance can moderate the effect of relational norms on project success by providing a framework for decision.

Resource management

In service-dominant logic, the creation of value in service exchanges is seen as a collaborative effort between the service provider and the customer. This collaborative process involves the use of two types of resources: operant and operand resources.

Operant resources are the resources that the service provider controls, such as their knowledge, skills and abilities, as well as their communication and interaction with the customer. These resources are essential in creating value through the interaction between the service provider and the customer. On the other hand, operand resources are the physical goods, technology and other tangible resources that are used in the production and delivery of services. These resources are transformed or consumed through the application of operant resources.

Service-dominant logic emphasises that value is co-created through the interaction of

operant and operand resources. Both the service provider and the customer actively participate in the co-creation of value, as they contribute their own operant resources to the exchange. This highlights the importance of the service provider–customer interaction in the value creation process. The use of operant resources is crucial for service providers to differentiate themselves from their competitors by creating unique value propositions that cater to the specific needs and preferences of their customers. By leveraging their operant resources, service providers can create a competitive advantage that allows them to provide a more personalised and tailored service.

Resource management is a key element of VCC in project management, which is similar to its application in PPPs requiring attention from project managers. VCC emphasises that the value of a project is not just created by the project team but also by the stakeholders, including the clients and the contractors. Such interactions involve and mainly refer to the resource integration (Vargo & Lusch, 2007a).

For example, Grönroos (2011) critically analysed the concept of VCC in service logic. The author emphasised that VCC should focus on interaction and collaboration between stakeholders to achieve common goals. This perspective is relevant to PPP projects, where multiple stakeholders collaborate to achieve a common goal. Moreover, the study by Keeys and Huemann (2017) examined project benefits co-creation and its role in shaping sustainable development benefits. The study concluded that effective resource management is necessary for project benefits' co-creation in PPP projects. The authors suggested that project managers should focus on stakeholder engagement and collaboration to co-create value. In a study by Fuentes et al. (2019), co-creation of value outcomes was examined from a client's perspective on service provision in projects. The study revealed that clients' contribution to the project team's resource management is critical to the success of the project. Therefore, resource management in projects should not only focus on internal project team activities but also on external collaboration with clients.

Some scholars also study resource management in combination with other areas such as relationship management, value management and stakeholder management. In their study, Suprpto et al. (2015) investigated the role of relational factors in owner–contractor collaboration, and the mediating role of teamworking. The authors found that effective resource management in PPP projects is essential for building and maintaining strong relationships between the project owner and contractor. Effective collaboration and resource management are critical to achieving VCC in PPP projects. Furthermore, in a study by Normann and Ramírez (1993), the authors suggested that VCC should focus on designing interactive strategies that promote collaboration and resource sharing among stakeholders. The authors emphasised that resource management should be considered from a broader perspective that includes stakeholders’ roles and interactions. In addition, a study by Martinsuo and Killen (2014) focused on VM in project portfolios, identifying and assessing strategic value. The authors concluded that resource management should prioritise strategic value creation in PPP projects. Project managers should also focus on the stakeholders’ needs and expectations in VCC.

Several articles highlight the importance of understanding the VCC process from a dyadic perspective. Aarikka-Stenroos and Jaakkola (2012) discuss how joint problem solving is critical to co-creation in knowledge-intensive business services. Similarly, Razmdoost et al. (2019) emphasise the role of multiple stakeholders in co-creating value in unique service exchanges. These studies suggest that resource management in VCC should focus on fostering collaboration and interaction among stakeholders. Another theme that emerges from the review is the significance of absorptive capacity in VCC. Aboelmaged and Hashem (2019) explore the mediating effects of sustainable organisational capabilities on green innovation adoption in SMEs. They argue that firms with higher absorptive capacity are better equipped to leverage external knowledge resources and co-create value with stakeholders. Similarly, Sirmon et al. (2007) highlight the importance of managing firm resources to create value in dynamic

environments. This study suggests that resource management for VCC should focus on building absorptive capacity and aligning resource allocation with dynamic business environments.

Previous studies also shed light on the role of marketing interaction and service innovation in resource management for VCC. Ballantyne and Varey (2016) argue that creating value-in-use through marketing interaction involves a process of relating, communicating and knowing. This study suggests that effective resource management for VCC should focus on understanding customer needs and preferences. Lusch and Nambisan (2015) provide a service-dominant logic perspective on service innovation, arguing that innovation should be co-created with customers to improve value-in-use. This study suggests that resource management for VCC should focus on identifying and allocating resources to support service innovation. Lenney and Easton (2009) argue that effective resource management in VCC requires firms to identify and manage four key elements: actors, resources, activities, and commitments. This study suggests that resource management should be aligned with the VCC process, with a focus on ensuring that the right actors are involved, the right resources are allocated, the right activities are performed, and the right commitments are made. Finally, Takahashi and Takahashi (2022) emphasise the need to analyse the front-end dynamics of VCC with multiple stakeholders. They argue that resource management should focus on aligning stakeholder interests, managing power dynamics, and building trust among stakeholders.

In conclusion, this section highlights several themes in resource management for VCC in PPP projects. The review emphasises the importance of understanding the VCC process from a dyadic perspective, building absorptive capacity, focusing on marketing interaction and service innovation, aligning resource management with the VCC process, and analysing front-end dynamics. Collaboration and communication among stakeholders, as well as the interaction of risks and relationships between stakeholders, are crucial factors that influence the success of projects. These insights can inform

effective resource management strategies for VCC in PPP projects.

2.7 Conceptual Framework

The conceptual framework plays an essential role in case study research by providing a guiding structure for the analysis of data in a case study. It provides a foundation for examining both conceptual and empirical evidence, ensuring that the research question is addressed effectively. The conceptual framework of this research is presented in Figure 2-2 which is based on four major fields of research in project and value management as well as research in the service science of marketing. The conceptual framework has been designed to investigate the process of co-creating and assessment of value outcomes.

From the project management literature, Morris (2013) has inspired this research on providing useful insights into how value can be (co-)created and configured, particularly in the front-end of a project. This research argues that the assessment of value should be conducted throughout the project lifecycle, with a particular focus on the front-end, where the most value can be created and configured. This indicates the dynamic nature of value in the context of a project as well as a new perspective of the project lifecycle. In this research, the extended lifespan of projects with a special emphasis on the project front-end is especially pertinent to PPP projects. From the management of value and project literature, this research is influenced by Thiry (2013) and integrates VM into the overall project management framework to ensure that it is an integral part of the project planning and implementation process. The thesis research argues that it is essential to adopt a comprehensive and integrated approach that combines VM with project management that incorporates value as a key element of project success. This requires identifying stakeholders, understanding their requirements and expectations, and defining the project objectives and outcomes accordingly.

From the VCC literature, Vargo and Lusch (2018) and Grönroos (2012) influenced the research the most. The scholars suggest that VCC occurs through a series of interactions between the firm and the customer. These interactions involve the integration of resources, especially the operant resources (Constantin & Lusch, 1994), from both parties to achieve mutually beneficial outcomes. Both strands acknowledge the importance of interaction. Such interaction is twofold. The first aspect of interaction is resource integration (Vargo et al., 2008), which refers to how actors combine their resources and capabilities during interaction to create value. This could include the exchange of information, expertise, technology or other resources that enable actors to co-create value. The second aspect of interaction relates to the relationship among actors involved in the interaction (Lambert & Enz, 2012). This refers to the social dynamics, trust and mutual understanding between actors that enable them to work together effectively. This relational aspect of interaction underscores the importance of social dynamics, trust, and mutual understanding in fostering effective collaboration and VCC. Indeed, when actors have a strong relationship, they are more likely to collaborate and co-create value, leading to positive outcomes for all involved.

While both Vargo and Lusch and Grönroos offer invaluable insights into the mechanisms of VCC, they espouse differing perspectives on the nature of interaction. Vargo and Lusch adopt a systemic view that emphasises the interconnectedness of all actors involved in the VCC process, highlighting the holistic and interdependent nature of value creation endeavors. In contrast, Grönroos examines VCC through the lens of direct interaction between involved parties, focusing on the direct exchange of resources and capabilities.

For this research, the perspective of direct interaction is more appropriate, given its alignment with the organisational-level collaboration inherent in VCC initiatives within the project management context. By focusing on the intricacies of direct interaction between organisational actors, this study seeks to elucidate the mechanisms

through which collaborative efforts at the organisational level for VCC outcomes.

Furthermore, it is imperative to underscore the conceptualisation of project value within the VCC literature, which emphasises value-in-use over value-in-exchange. This shift in perspective underscores the paramount importance of delivering value to end-users or customers, thereby emphasising the practical significance of VCC endeavors within the project management domain.

In essence, by drawing upon the insights of Vargo and Lusch, Grönroos, and other seminal scholars in the VCC literature, this research endeavors to advance our understanding of the intricate dynamics underpinning VCC within organisational settings, with a particular emphasis on the collaborative endeavors at the organisational level. Through a nuanced exploration of the mechanisms of resource and relationship integration, this study aims to elucidate the pathways through which organisational actors can effectively collaborate to co-create value and deliver meaningful outcomes to stakeholders.

Based on the management of projects and value, as well as the service science in marketing, this research proposes the conceptual framework as presented in Figure 2-2. It has four key elements: interaction environment, interaction practice, interaction performance and project value.

Interaction practice is the focal element in the framework. By stressing the role of the customer, scholars in marketing and service science suggest that interaction is the premise for firms to deliver value to customers (Vargo & Lusch, 2018). By definition, interaction refers to “mutual or reciprocal action or influence” (Merriam Webster Online, 2023). The element of interaction practice aims to find out reciprocal actions conducted by different stakeholders as different roles to maximise the project and their own projects. Based on the theoretical perspective of service-dominant logic, this element puts emphasis on “service” and “actor”. According to Vargo and Lusch (2007b), service refers to the application of knowledge and skills which are operant

resources. By emphasising VCC actors, this research focuses more on the roles that public and private parties play in a dyadic relationship. Through a nuanced examination of resource integration and the dynamics of relationships between these parties, this research seeks to uncover the mechanisms through which VCC unfolds within the project management landscape. By delving into the intricate interplay of actions, influences, and relationships among stakeholders, this element aims to elucidate the pathways through which value is co-created, negotiated, and exchanged within the PPP project. Moreover, it underscores the importance of fostering collaborative and synergistic interactions among stakeholders, thereby fostering a conducive environment for VCC to thrive.

In essence, the concept of interaction practice serves as a guiding framework for understanding the complex interdependencies and dynamics inherent in VCC processes within project management contexts. By shedding light on the reciprocal actions and interactions between stakeholders, this element offers valuable insights into the mechanisms through which value is generated, exchanged, and realised within project ecosystems, ultimately paving the way for more effective and value-driven project outcomes.

At the heart of the framework lies the overarching goal of attaining project value, which serves as the ultimate objective driving the endeavors among PPP stakeholders. Embracing the paradigm shift advocated by Prahalad and Ramaswamy (2004), the framework pivots towards the pursuit of value-in-use rather than the traditional value-in-exchange paradigm. This paradigm shift underscores the imperative of prioritising the end-user experience and the tangible benefits derived from project outcomes, thereby redefining the notion of project value.

Central to the framework's conception of project value is the recognition that it encompasses not only the tangible outcomes delivered by the project but also the inherent value perceptions of both the public and private parties involved. Project

value is thus viewed as a multifaceted construct which is more than financial transactions, encompassing the broader spectrum of stakeholder value propositions and aspirations.

Moreover, project value is intricately influenced by several factors, chief among them being the interaction practice and performance exhibited through PPP collaboration. Interaction practice, rooted in the dynamic exchange of actions and influences among stakeholders, serves as the cornerstone upon which VCC efforts are founded. It encapsulates the collaborative endeavors undertaken by diverse stakeholders to maximise project value and advance their individual objectives.

In parallel, interaction performance emerges as a pivotal determinant of project value, serving as both a consequence of interaction practice and a driver of value realisation. The efficacy and effectiveness of interactions among stakeholders directly contribute to the attainment of project objectives and the delivery of value to stakeholders.

Furthermore, the characteristics of stakeholders and the institutional factors that shape the interaction environment exert significant influence on project value. Stakeholder characteristics, such as their motivations, capabilities, and expectations, shape the dynamics of interaction and ultimately impact the VCC process. Similarly, institutional factors, including regulatory frameworks, cultural norms, and governance structures, shape the context within which interactions occur, thereby influencing the outcomes of VCC efforts.

Ultimately, the realisation of project value depends upon a harmonious interplay between interaction practice, performance, stakeholder characteristics, and institutional factors. By comprehensively addressing these dimensions, the framework seeks to provide a holistic understanding of the mechanisms through which project value is generated, exchanged, and realised within the project management domain, thereby paving the way for more effective and value-driven project outcomes.

Together, these four key elements of the conceptual framework provide a

comprehensive and integrated perspective on the co-creation of value in PPP projects. By focusing on the interactions between stakeholders, the framework acknowledges the importance of collaboration and the role of stakeholder engagement in delivering successful PPP projects. The framework also emphasises the dynamic nature of value creation, recognising that value is not a fixed or static concept but rather a process that unfolds over the lifecycle of the project.

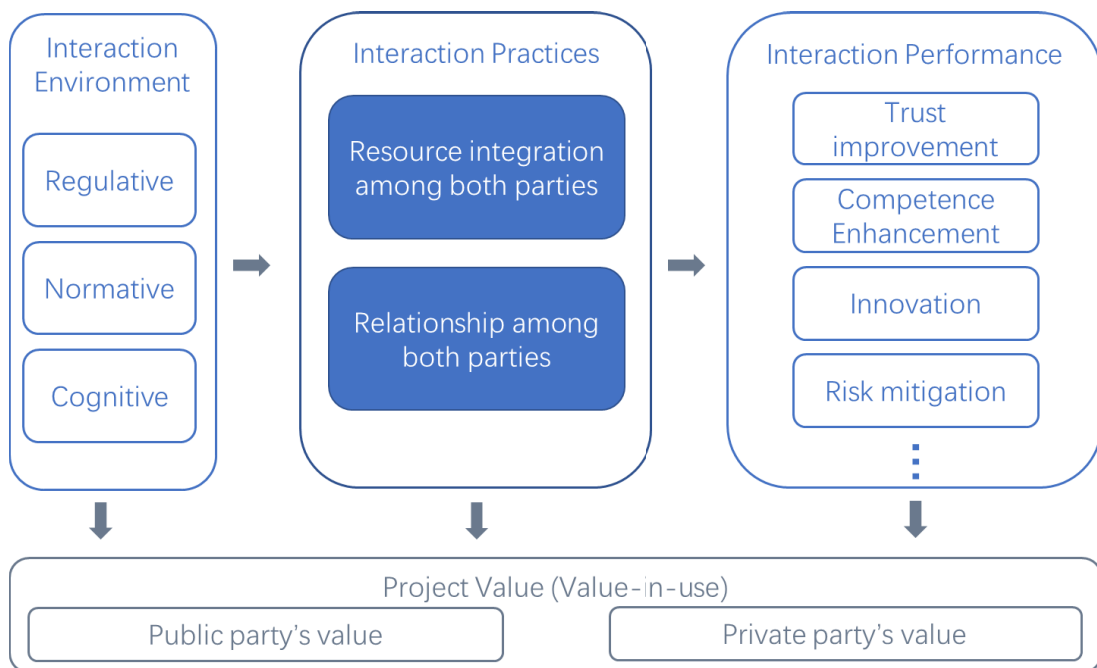


Figure 2-2 Tentative framework for VCC in PPP projects (developed for this study)

2.8 Chapter Summary

This chapter focused on the need to understand how value can be designed and configured across the project lifecycle. The key research question is exploring how value outcomes can be co-created in PPP projects. The chapter provided a critical review of the evolution of project management perspectives and approaches, highlighting the shift towards value delivery. The concept of value and VCC in both the wider management literature and projects has been examined in depth. It highlights that the concept of VCC is primarily studied in marketing and service-related literature,

with a focus on examining value from the perspective of the client organisation rather than the supplier organisation. The chapter extensively examined the service-dominant logic and value management methodologies, which are considered as two robust frameworks to analyse the concept of VCC. The next chapter presents the research design, which is influenced by the conceptual analysis in this chapter and provides the foundations for this research. The aim is to explore how value outcomes are co-created at the micro-level of the project through direct interaction.

Chapter 3 Research Design: Methodology and Method

The research design constitutes a critical blueprint for conducting this study. Section 3.1 outlines the philosophical foundations, including ontology and epistemology, and distinguishes between deductive, inductive, and abductive approaches to theory development. The abductive approach is adopted in this research. Strategies for the study are also discussed, covering case selection, data collection, and data analysis. Detailed information is provided on sampling methods and interview protocols. Section 3.2 introduces the essential process of collecting and analysing data within the research design. Finally, in Section 3.3, research quality is assessed based on validity and reliability.

3.1 Research Design - Methodology

The research is designed in the decision sequence suggested by Saunders et al. (2019), of first determining the research philosophy, followed by the reasoning approach, methodological choice, strategy and time horizon, before choosing the data collection techniques and data analysis procedures. The research process is illustrated in Figure 3-1 and is further elaborated in Sections 3.1 to 3.3.

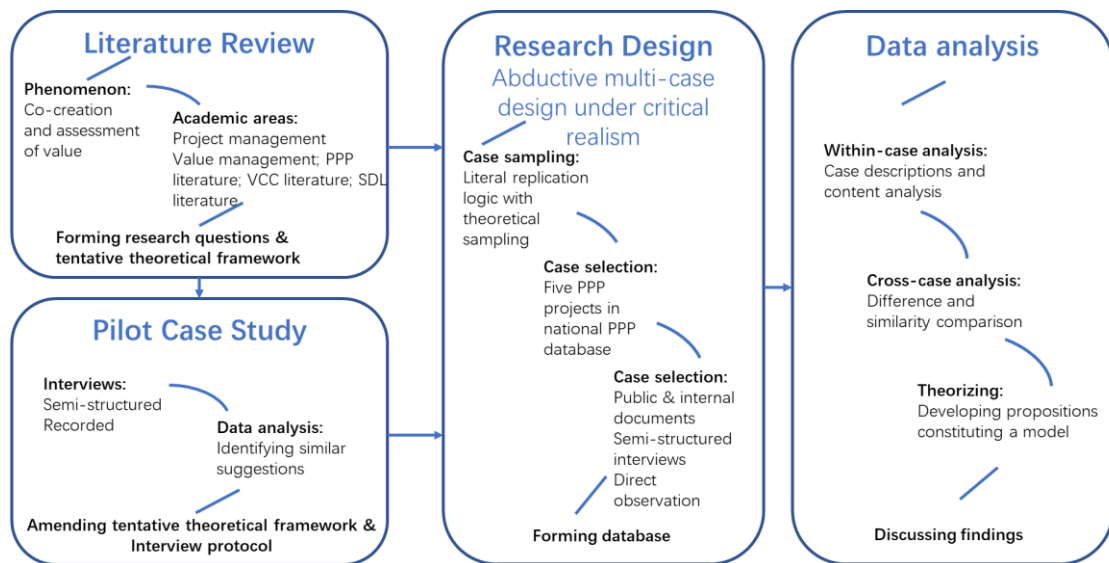


Figure 3-1 Main phases and activities of the research process

3.1.1 Philosophical Underpinnings

Research philosophy refers to a set of beliefs and assumptions that underpins the way that one develops knowledge (Saunders et al., 2019). These beliefs and assumptions manifest how one believes the nature of reality is (ontology) (Miles et al., 2020) and what knowledge one thinks to be valid and legitimate (epistemology) (Burrell & Morgan, 1979).

Specifically, ontology is a philosophical perspective that shapes how researchers view and study their research objects. In the field of social science, research objects can include organisations, management practices, individual experiences in the workplace, and various events and artifacts within these contexts. The researcher's ontology, therefore, influences how they understand and interpret the world of social science, which subsequently determines the focus of their research project. For instance, a researcher who adopts a positivist ontology would view the world of social science as a fixed, objective reality that can be studied through objective, empirical methods. In contrast, a researcher who takes a constructivist ontology would view the world of

social science as a socially constructed reality that is shaped by individuals and their interactions. This would lead to different research questions and methods of inquiry.

Epistemology refers to a researcher's assumptions about knowledge and what is considered valid and legitimate knowledge, as well as how knowledge can be communicated to others. In the field of social science, there are various types of knowledge that can be considered legitimate, including numerical data, textual and visual data, facts, opinions, narratives and stories. The multidisciplinary nature of social science research implies that researchers may adopt different epistemological perspectives when conducting their research. For example, some researchers may adopt an empirical or positivist epistemology, where they believe that objective and measurable data are the only legitimate forms of knowledge. Other researchers may adopt a constructivist or interpretivist epistemology, where they believe that knowledge is constructed through social and subjective processes and that personal experiences and interpretations are just as valid as objective data. Furthermore, the diverse range of knowledge in social science research means that different research methods can be used to generate valid and legitimate knowledge. These methods can include archival research, which involves analysing historical documents and records, and autobiographical accounts, which involve studying the personal experiences and perspectives of individuals.

There are five major philosophies in social science: positivism, critical realism, interpretivism, postmodernism and pragmatism (Saunders et al., 2019). Of these, critical realism is chosen as the philosophical foundation of this research.

Philosophical underpinning of this research: critical realism

Critical realism is a philosophical underpinning that aims to understand the relationship between the external, social world and the internal, subjective experiences of individuals. Critical realism claims an external and independent reality not

accessible directly through observation, and at the same time, accepts that each social actor has their own interpretation of the reality according to different social conditioning (Saunders et al., 2019). Critical realists emphasise the importance of understanding the bigger picture of which we see only a small part and the need to identify what we do not see through practical and theoretical processes. Critical realist research also focuses on providing an explanation for observable organisational events by looking for the underlying causes and mechanisms through which deep social structures shape everyday organisational life.

As this research intends to identify genuine project value from a multi-stakeholder perspective and how value is co-created in the entire lifecycle through stakeholder engagement, critical realism matches well with this realist ontology and interpretivist epistemology (Tashakkori & Teddlie, 2010). It helps to identify one possible but not necessarily the only possible explanation of the phenomenon (Bhaskar, 2016). This makes critical realism the most suitable philosophical underpinning of this research.

Ontologically, critical realism suggests that VCC practices and value outcomes observed in PPP projects are objective where they are carried out. However, critical realism also recognises that this objective reality is often complex and multifaceted and may be influenced by social and cultural factors that shape the way individuals perceive and interpret the reality. Epistemologically, critical realism acknowledges that the subjective experiences and perceptions of individuals involved in PPP projects are also important in shaping how value is co-created.

Critical realism allows the researcher to go beyond just describing the observable events and instead examine the underlying structures and mechanisms that shape those events. This can provide a more comprehensive understanding of the phenomenon and help identify potential areas for intervention or improvement.

3.1.2 Approach to Theory Development

The theory development approach, which is also called the reasoning approach (Lehtinen & Aaltonen, 2020), is a crucial aspect of research design. Theory development refers to the process of constructing explanations or models that help to explain observed phenomena or patterns. There are mainly three approaches of theory development: deductive reasoning, inductive reasoning, and abductive reasoning (Saunders et al., 2019). The three reasoning approaches are compared in Table 3-1, adopted from Saunders et al. (2019).

Deductive theory development involves deriving hypotheses from existing theory and testing them through empirical research, which leads to a confirmatory research design. In other words, it starts with a general statement, or premise, and then applies it to a specific case to derive a conclusion. This is why deduction is often described as generalising from the general to the specific. In this process, the researcher first develops a general theory or hypothesis based on existing knowledge and observations. The researcher then makes specific predictions or deductions about what should happen in a particular situation based on that theory or hypothesis. If the premise is true and the reasoning is valid, then the conclusion must also be true. This deductive process is commonly used in scientific research to test hypotheses or theories where quantitative data is used most of the time given that quantitative data has the ability of precise measurement.

Inductive theory development, on the other hand, involves generating theories or hypotheses from the data collected through exploratory research, which leads to an exploratory research design. In other words, it starts with specific observations or data, and then makes generalisations or hypotheses based on those observations. This is why induction is often described as generalising from the specific to the general. In this process, the researcher first collects data through observation or experimentation, and then looks for patterns or themes in that data. Based on those patterns or themes, the

researcher forms a hypothesis or generalisation about how the phenomenon works. Inductive reasoning is commonly used in exploratory research, where the goal is to identify patterns or relationships in the data that can then be used to generate new theories or hypotheses. However, unlike deduction, induction does not guarantee that the conclusion is true. Rather, it provides a framework for generating new ideas or theories that can then be tested using deductive reasoning or other methods.

Abductive theory development is a combination of the two, where hypotheses are generated from data while taking into account existing theories. It starts with specific or sometimes surprising observations or data, and then generates hypotheses called plausible theory that can explain those observations. Unlike deduction and induction, abduction involves identifying possible explanations for a phenomenon without knowing whether they are true or false. This is why abduction is often described as generalising from the interactions between the specific and the general. In this process, the researcher first collects data through observation or experimentation, and then looks for patterns or themes in that data. Based on those patterns or themes, the researcher forms a tentative hypothesis or explanation for how the phenomenon works by going back and forth between the data and the existing theories. This hypothesis is then tested using additional data collection and analysis, with the goal of either confirming or refuting the hypothesis. Abductive reasoning is commonly used in hypothesis-generating research, where the goal is to generate new theories or hypotheses that can then be tested using other methods. However, it can also be used in hypothesis-testing research, where the goal is to develop explanations for unexpected or anomalous observations.

Table 3-1 Deduction, induction and abduction: from reason to research

	Deduction	Induction	Abduction
Logic	In a deductive inference, when the premises are true, the conclusion must also be true	In an inductive inference, known premises are used to generate untested conclusions	In an abductive inference, known premises are used to generate testable conclusions
Generalisability	Generalising from the general to the specific	Generalising from the specific to the general	Generalising from the interactions between the specific and the general
Use of data	Data collection is used to evaluate propositions or hypotheses related to an existing theory	Data collection is used to explore a phenomenon, identify themes and patterns and create a conceptual framework	Data collection is used to explore a phenomenon, identify themes and patterns, locate these in a conceptual framework and test this through subsequent data collection and so forth
Theory	Theory falsification or verification	Theory generation and building	Theory generation or modification; incorporating existing theory where appropriate, to build new theory or modify existing theory

Reasoning approach of this research: abduction

Abduction is adopted in this research aiming to combine the credibility of deductive reasoning rooted in the extant literature on value, with the creativity of inductive reasoning from new empirical insights and the researcher’s own experience (Alvesson & Skoldberg, 2018). The interactive process of VCC is a phenomenon that, on one hand, has been studied from various perspectives, and on the other hand, requires more exploration on structured understanding that is lacking in existing literature. This situation is perfectly suited for abduction. Abduction can be used to develop new hypotheses or explanations for the gaps in our current understanding of the VCC process in PPP projects. By examining the data collected from interviews and

summarising plausible patterns of what might be the mechanism behind the VCC process, this research intends to elaborate the theoretical understanding on the nature of value and the process of its co-creation in PPP projects.

3.1.3 Methodological Choice and Research Strategy

It is generally accepted that there are three main methodological choices in research: quantitative, qualitative, and mixed methods. Normally, quantitative research involves collecting and analysing numerical data, while qualitative research involves collecting and analysing non-numerical data such as words, images and video recordings. Mixed methods research involves using both quantitative and qualitative methods in a complementary way to gain a more comprehensive understanding of a phenomenon. However, this is an intuitionistic view but can be a narrow distinction that is not sufficient for choosing between quantitative and qualitative research methods. Instead, the choice of methodology should be informed by philosophical assumptions and approaches to theory development and strategies (Yin, 2016).

There are many choices of research strategy under different methodological choices. The quantitative method normally includes experiment and survey while the qualitative method normally includes archive research, ethnography, grounded theory, action research and case study. The selection of methodological choice and research strategy is not only based on the philosophical stance but also on the nature of the research.

Methodological choice and research strategy of this research: qualitative research design and multiple case study

This research uses critical realism as its philosophical stance. Critical realism is a philosophical position that emphasises the existence of an objective reality that is independent of human observation, but also recognises the role of social and historical factors in shaping our understanding of that reality. Critical realism emphasises the

need for theories to be grounded in empirical evidence, but also recognises the limitations of empirical methods in capturing the complexity of social phenomena. Given the philosophical assumption of critical realism, a qualitative research method would be appropriate for this research. Qualitative research methods are well-suited for exploring complex social phenomena and understanding the subjective experiences of individuals. Qualitative research methods allow for a deep exploration of the underlying meaning and context of social phenomena, which aligns with the critical realist emphasis on the role of social and historical factors in shaping our understanding of reality. Furthermore, critical realism emphasises the need for theories to be grounded in empirical evidence. Qualitative research methods can provide rich and detailed empirical evidence that can be used to develop and refine conceptual frameworks.

Qualitative research methods also correspond to the exploratory nature and theory building objective of this research. This research aims to explore how value is perceived by different stakeholders in the whole lifecycle and opens the black box of the mechanism whereby these value outcomes are co-created by various stakeholders. Given the subjective nature of value, this research seeks to understand every stakeholder's value perception. In addition, given the complexity of the VCC process contextual factors must be considered.

Multiple case study is adopted to study the VCC phenomenon in this research. Multiple case study design involves conducting an in-depth investigation of multiple cases that share similar characteristics, which can help to develop a deeper understanding of the underlying phenomenon (Eisenhardt & Graebner, 2007). This research strategy is particularly useful in this research, as it allows exploration of a wide range of factors that may influence the VCC phenomenon being studied. Studying multiple cases can help identify similarities and differences across cases, and develop a more nuanced understanding of the underlying factors that influence VCC.

Multiple case studies can also help to identify patterns and relationships that may not be apparent from a single case study.

3.1.4 Approach to Case Selection

Before the case selection, it is important to define the case and bound the case first (Yin, 2018). “Case” in a case study typically refers to a particular entity or phenomenon that is being studied in depth. This could be an individual, a group of individuals, an organisation, a specific event or situation, a process, or any other distinct entity or phenomenon that is the subject of analysis. In this research, the case is defined as a PPP project.

To select appropriate cases, the first step is a literature review. The process began with an extensive literature review focused on infrastructure PPP projects in China, encompassing various industries. This review helped identify previous case studies, both within and outside China, that were pertinent to the research questions and objectives. These prior studies served as a valuable resource for identifying potential cases for replication logic. Then, initial screening was performed to identify a pool of potential cases. This involved assessing the relevance and alignment of the identified cases with the research’s theoretical framework and objectives. Then, drawing on the conceptual framework of the study, which aimed to generalise the VCC process in infrastructure PPP projects across different industries, cases were selected based on their potential to contribute to the development of theoretical concepts and constructs identified in the literature or previous research.

To ensure that the chosen cases align with the research objectives and enhance the study’s validity, generalisability and theoretical development, the replication logic is adopted. Replication logic is different from the statistical sampling logic used in survey research, but is rather a form of theoretical sampling. Replication logic in case selection refers to the process of selecting cases for a case study that are similar or

comparable to previous cases that have been studied. By selecting cases that are similar to previous cases, researchers can test the validity and generalisability of their findings across different contexts and situations.

There are two main types of replication logic in case selection: literal replication and theoretical replication. Literal replication involves selecting cases that are similar to previous cases in terms of their characteristics and features. For example, a researcher might choose to study a new company that is similar to a company that was previously studied in terms of its industry, size and organisational structure. The goal of literal replication is to test whether the findings from the previous case study can be replicated in a new, similar case. On the contrary, theoretical replication involves selecting cases that are different from previous cases in terms of their characteristics and features but are expected to yield similar findings based on the same theoretical concepts and mechanisms. This also involves selecting cases based on their potential to contribute to the development of theoretical concepts or constructs identified in the literature or previous research. The goal of theoretical replication is to test whether the theoretical concepts and mechanisms identified in the previous case study can be generalised to different contexts and situations.

Theoretical replication is adopted in this research aiming at generalising the VCC process in infrastructure PPP projects in China regarding various industries. While theoretical replication was a primary consideration, practical factors such as accessibility and feasibility were also taken into account. Ensuring access to relevant stakeholders and data within a reasonable timeframe was crucial. Additionally, the geographic location of the cases and logistical considerations were weighed.

Five PPP project cases from three industries are selected, labelled Case Alpha, Beta, Gamma, Delta and Epsilon. The goal of the selected cases is to provide the maximum amount of information and insights relevant to the research questions. In addition, the research uses both retrospective and current investigation methods. Retrospective cases

have the advantage of allowing for controlled selection since the success or failure of the case is already known. However, they are susceptible to recollection bias and may face difficulties in establishing a clear sequence of past events. On the other hand, current investigations may be more time-consuming and open-ended, but they offer certain advantages when studying complex behaviours since they eliminate the issue of relying on the memory and ability of interviewees to verbalise such constructs. Case Epsilon uses the current perspective as it is still in its construction phase. This also provides the opportunity to directly observe how different stakeholders created value together.

The quantity of cases selected in this research is dependent on the concept of saturation. Saturation refers to the point in the data collection process at which new data no longer provides additional insights or information relevant to the research questions or objectives. When saturation is reached, it suggests that the sample of cases or participants selected is sufficient and additional data collection is unlikely to yield new or meaningful insights.

3.2 Data Collection and Analysis Process – Methods Selected

Data analysis involves organising, interpreting and drawing conclusions from the data collected during the research process. The goal of data analysis is to identify patterns, relationships and insights that can help answer the research questions and contribute to the development of new knowledge.

The data analysis process includes several key steps. First, a pilot case study is conducted to test the research approach and refine the data collection methods such as interview questions. Then, the case context is established to provide a clear understanding of the specific phenomenon being studied. Finally, the process of data collection and analysis is described in detail with a description of adaptive theoretic reasoning logic.

3.2.1 Pilot Case Studies

To test the data collection procedures, interview questions and case selection criteria to ensure that the study's objectives can be met, three pilot case studies were conducted. In the case study context, a pilot test is not a pretest. The pretest is an opportunity to conduct a formal rehearsal of the data collection plan, with the aim of ensuring that the final plan is as accurate as possible. During the pretest, the researchers use a methodology that is as close as possible to the final plan, in order to minimise errors and bias, and increase the accuracy and validity of the study results. On the contrary, a pilot test is a small-scale trial run of a study's procedures, methods or instruments. The pilot test is typically conducted before the full study to identify and correct any potential problems or issues that may arise during the full study. The goal of a pilot test is to refine and improve the study design and methodology to ensure that the full study runs smoothly and efficiently.

In the three pilot case studies, 17 experts were interviewed from the public party, the bank, the academic and the consultant company with at least 3 years of experience of PPP projects (see Table 3-2). The main objectives of the pilot case studies were to find out what is perceived as value by different stakeholders throughout the entire project lifecycle of a PPP and to explore the mechanism among all the stakeholders on how to reconcile these different value perceptions and co-create value for PPP projects used to build social infrastructure. The pilot case studies were conducted systematically according to a protocol (see Appendix 2).

The results of the pilot case studies were threefold. First, the participants suggested that it is better to separate the value measurement indicator from the value success factor. According to them, the value indicators identified from previous research and literature are sometimes confused with the factors that contribute to them. By separating these two concepts, it is possible to clearly identify the specific factors that contribute to long-term value creation and assess the impact of each factor on value

creation. In fact, this differentiation contributes to the classification of mid-term value outcomes and long-term value outcomes that are derived from empirical data which lead to a more accurate and comprehensive understanding of value creation in the context of PPPs.

The second suggestion was to change the division dimension from “phase” to another relevant dimension such as “stakeholder engagement”. This is because many of the identified indicators are designed in one phase of the PPP process and then operated in a later phase. Therefore, using “phase” as the division dimension may not accurately capture the interdependencies between different phases and their impact on value creation. Instead, another relevant dimension, such as “stakeholder engagement”, could be used to capture the dynamic nature of value creation in PPPs. Indeed, the resource management practices and relationship management practices summarised from the data reflect the dynamic nature of value and the co-creation process without clearly focusing on “phases”, but in a more integrated way.

The third suggestion was to apply VM principles to investigate how to achieve maximum value for all stakeholders in the context of PPPs. VM is a structured approach that involves identifying and prioritising stakeholders’ needs and preferences, defining project objectives, and optimising the use of resources to achieve those objectives. This was not considered in the pilot test because initially the researcher took a position to criticise the tendency to focus on cost-efficacy of project research. However, criticism should not be focused on cost management but on the lack of consideration of all the stakeholders (subjectivity) and the entire lifecycle (dynamics). By applying VM principles to PPPs, researchers can identify the most effective ways to maximise value creation for all stakeholders, including public and private sector partners, investors, and end-users. This contributes to the definition of value in this research which can lead to more successful and sustainable PPP projects that generate maximum value for all stakeholders involved.

Table 3-2 Overview of participants in the pilot case studies.

No.	Sector	Experience in PPPs (years)	Position
1	Public sector	7	Implementation Specialist
2	Bank	6	PPP Specialist
3	Academic	3	Lecturer
4	Academic	12	Professor
5	Academic	9	Assistant Professor
6	Academic	5	Lecturer
7	Academic	4	Lecturer
8	Academic	5	Postdoctoral Researcher
9	Academic	4	Lecturer
10	Consultant company	3	Senior Consultant
11	Consultant company	3	Senior Consultant
12	Consultant company	5	Manager
13	Consultant company	8	Manager
14	Consultant company	8	Manager
15	Consultant company	3	Senior Consultant
16	Consultant company	9	Manager
17	Consultant company	11	Manager

3.2.2 Case Context

All the five cases selected for the main study are registered in the National PPP Database which means they are all legitimate PPP projects. Due to the rapid promotion of PPP projects by central state-owned enterprises (SOEs) in recent years, accumulated risks need to be resolved. Such risks mainly come from the contract arrangement of the public party such as a repurchase agreement and promised return to attract private investment. This “debt nature in the name of equity” of the private party’s investment expanded the hidden debt of the government side and increased the financial risks of local governments. As such, since 2017, the central government has carried out long-

term and systematic reforms on PPPs to weed out illegitimate PPP projects from the National PPP Database. The selected cases are described below. Tables 3-3 and 3-4 present the overview characteristics of the five cases and compare the demographic characteristics of the cases. The organisation structure of each case is in Appendix 3.

Table 3-3 Overview of case characteristics

Case Code	Industry	Area	Investment	Starting time	Cooperation period	Payment Mechanism
Alpha	Sewage treatment	Liaoning Province	164 million RMB	2017	28 years	End-user Payment
Beta	Sewage treatment	Hebei Province	484 million RMB	2015	30 years	End-user Payment
Gamma	Municipal roads	Liaoning Province	23 billion RMB	2015	25 years	Government Payment
Delta	Municipal roads	Shandong Province	560 million RMB	2017	15 years	Government Payment
Epsilon	Health industry	Shandong Province	666 million RMB	2016	22 years	Feasibility gap subsidy

Table 3-4 Comparison of the demographic characteristics of the five cases

	Alpha	Beta	Gamma	Delta	Epsilon
End-user payment	√	√			√
State-owned enterprise as private party	√		√		
Government fiscal capacity	Good	Poor	Good	Poor	Good
Project scale	Small	Medium	Large	Medium	Medium

Case Alpha

Case Alpha is a PPP project focused on sewage treatment, consisting of two sections. One section involves the construction of a state-of-the-art sewage treatment station and surrounding pipe networks, while the other involves taking over old pipe networks from the government and maintaining them. The private party in charge of Case Alpha is a state-owned public company that has advanced sewage treatment techniques.

What makes Case Alpha unique is that it represents the first underground sewage treatment station in the north-east region of China, with a roof that has been afforested. The water standard set by this project exceeds national requirements, making it an exemplary model for other sewage treatment projects in the country. In addition, the station plays a vital role in the area's economic development, particularly in attracting new manufacturing companies. Its ability to solve wastewater problems and provide affordable reclaimed water is a valuable asset to the local government in attracting new investors.

Overall, Case Alpha is an innovative and effective PPP project that demonstrates the value of PPPs for sewage treatment. By combining the expertise of a state-owned public company with the support of the local government, Case Alpha has been able to achieve impressive results, providing a high-quality water supply for the region while also supporting economic growth through attracting new businesses.

The construction of an underground sewage treatment station with a roof that has been afforested is an innovative approach that is both environmentally friendly and aesthetically pleasing. The use of advanced sewage treatment techniques by the state-owned public company overseeing Case Alpha has allowed the project to surpass national water quality standards. This achievement, coupled with the station's ability to provide cost-effective reclaimed water, has played a pivotal role in attracting new manufacturing companies to the area. As a result, it has not only created jobs but also spurred economic growth, showcasing how PPPs can deliver both public and

substantial economic benefits to the local community.

The success of Case Alpha has led to its replication in other parts of China, as policymakers recognise the value of the PPP model in addressing the country's pressing water and sanitation challenges. By leveraging the strengths of both the public and private sectors, Case Alpha and other similar projects have demonstrated the potential of PPPs to drive sustainable development and improve the lives of people in China and beyond.

Case Beta

Case Beta is another sewage treatment PPP project, but in this case, it was initiated by the private party involved. Prior to Case Beta, the private party had already been involved in operating a sewage treatment station for the public party. Through this experience, they realised that the demand for sewage treatment in the city was far greater than what was currently being met. This led them to initiate Case Beta as a new PPP project. The private party in charge of the project is a state-owned public company with a strong track record of successful operation and collaboration with the public party.

Case Beta is located in a poorer area at the national level, and the PPP model was used to build a critical urban infrastructure to improve the quality of life for local residents and promote regional development. By partnering with the private sector, the local government was able to address the area's pressing need for sewage treatment and enhance its overall infrastructure. The success of Case Beta demonstrates the potential of PPPs to drive sustainable development and improve the quality of life for people living in disadvantaged areas.

Case Beta represents an important collaboration between the public and private sectors to address a critical social and environmental issue. The lack of adequate sewage treatment infrastructure in many areas of China has long been a major concern for

policymakers, as it poses a significant risk to public health and the environment. With Case Beta, the private party's experience in sewage treatment operation and collaboration with the public party was critical in ensuring the project's success.

The location of Case Beta in a state-level poor area highlights the importance of infrastructure development as a means of promoting regional development and poverty reduction. Through the PPP model, the local government was able to leverage the expertise and resources of the private party to build much-needed infrastructure that supports the growth of the region's economy and improves the quality of life for local residents.

Overall, Case Beta is a compelling example of how PPPs can be used to tackle pressing social and environmental challenges in innovative and effective ways. By bringing together the strengths of both the public and private sectors, PPPs can drive sustainable development, improve infrastructure, and support the long-term prosperity of communities across China.

Case Gamma

Case Gamma is a significant municipal road PPP project that has been in the planning stage since 2002. Recognising the urgent need for a transportation solution, the government began exploring different options for improving the city's infrastructure. The government therefore invested heavily in feasibility analysis and due diligence work before deciding to adopt a PPP model. The main reason is that the government faced significant funding constraints, as the project was estimated to cost several billion dollars.

There was a careful selection of the private partner and the construction technique by the public party. This involved a rigorous evaluation of different construction techniques, with the government ultimately settling on the "immersed tube" technique for the undersea tunnel component of the project. This was because the private party

invited the public party to visit another nationally renowned subsea tunnel project and carefully explained and analysed the feasibility and advantage of their proposition.

During the construction process, the project confronted its first big challenge. The site of the tunnel construction was located in a highly sensitive environmental area, which required extensive environmental impact assessments and mitigation measures. But all the parties worked as a single team and took active action to amend the design scheme and get the permit to construct.

Case Gamma is expected to be operational by June 2023, with both the undersea tunnel and the complementary municipal road being completed at that time. Unlike the other four cases in the research, Case Gamma has not yet entered the operation stage. The decision to include this project was deliberate, as the research aims to provide a current perspective on the interactions between public and private stakeholders during the procurement and construction stages of the project. One of the key advantages of studying Case Gamma at this stage is the opportunity to observe first hand the ways in which stakeholders work together to co-create value for the project. This includes the researcher attending regular meetings with project participants to gain insights into their communication strategies and decision-making processes.

Case Delta

Case Delta is a municipal road PPP project that was planned and executed with the goal of solving the transportation problem in the region. The project was initiated by the government, which wanted to improve the road network and infrastructure in the area to support economic development. The private party involved in the project is a well-established company with expertise in road construction and maintenance, which made them an ideal partner for the government.

During the construction stage, the private party worked closely with the government to ensure that the road was built according to specifications and completed on time. The

construction process was carried out smoothly, and the road was put into operation shortly after completion. The private party's role in maintaining the road has also been essential, as it has ensured that the road remains in good condition even after years of heavy use.

One of the key benefits of Case Delta is that it has helped to alleviate the government's financial deficit problem. By partnering with a private company, the government was able to spread the cost of the project over a more extended period, which reduced the burden on the government's budget. Additionally, the government has recognised the private party's excellent work in maintaining the road, which has boosted their reputation and credibility in the industry.

The successful completion of Case Delta has had a significant impact on the region's economic development. The improved road network has made it easier for businesses to transport goods and access markets, which has led to an increase in economic activity in the area. As a result, the region has transformed into an economic development zone, attracting more investment and creating more job opportunities for local residents. This case has demonstrated the benefits of PPP models in infrastructure development, showcasing how PPPs can provide a win-win solution for both parties involved.

Case Epsilon

Case Epsilon is a unique PPP project that combines a public hospital and an aged care home into one comprehensive healthcare facility. The public hospital was initially a Chinese medicine hospital that had limited scale and patients, but through PPP, the government was able to upgrade it to a larger scale hospital that offers a combination of Chinese and Western medicine. This upgrade significantly alleviated the medical pressure in the local area, especially in the post-pandemic era. The government will pay for the hospital's construction over a period of 20 years.

For the aged care facility in Case Epsilon, the private party is required to build four buildings as a profitable aged care home whose service will be paid by the end-users, and the profits will be used to cover the construction costs. The private party is responsible for taking all the operational risks and sharing any excess earnings with the government. To enhance the competitiveness of the aged care home, Case Epsilon takes full advantage of the hospital's resources and opened a Hospital Green Channel for the aged residents in the care home. This channel provides immediate access to medical treatment, which can significantly reduce their anxiety and worries. In addition, Case Epsilon was intended to enable a policy transformation which allows the patients in the aged care home to use national medical insurance in the hospital. This results in lower expenses for hospitalised elderly people, while the private party earns more profits and is also motivated to provide better services. Overall, Case Epsilon is an innovative PPP project that combines healthcare and aged care, which not only meets the local residents' needs but also promotes a sustainable business model on the integrated solution of medical and elderly care.

3.2.3 The Process of Data Collection

Three types of evidence are collected in this research: documentation, interviews and direct observation. The selection of these data collection tools was guided by the aim of achieving a comprehensive understanding of the phenomena under investigation. Each type of evidence serves a specific purpose and contributes to the richness and depth of the case study, aligning with the principles of high-quality research advocated by Yin (2018).

Documentation, such as project reports, contracts, and policy documents, provides valuable historical context and background information essential for understanding the evolution and dynamics of the PPP projects examined in this study. By analysing these documents, it can uncover insights into project objectives, stakeholder roles,

contractual arrangements, and project outcomes.

Interviews offer a unique opportunity to gain insights directly from key stakeholders involved in the PPP projects, including representatives from public and private sectors, project managers, and other relevant parties. Through semi-structured interviews, stakeholders' perspectives, experiences, motivations, challenges, and decision-making processes can be explored, thereby capturing nuanced insights that may not be fully captured by documentary evidence alone.

Direct observation complements both documentation and interviews by providing firsthand insights into project activities, interactions, and dynamics as they unfold in real-time. By immersing myself in the project environment, I can observe stakeholder interactions, communication patterns, project management practices, and other contextual factors that may influence project outcomes. This method allows for the validation of information obtained from other sources and provides a deeper understanding of the context in which PPP projects operate.

In summary, the selected data collection tools – documentation, interviews, and direct observation – are deemed suitable for this research due to their ability to provide diverse perspectives, rich contextual insights, and a comprehensive understanding of the complex dynamics inherent in PPP projects. By triangulating evidence from multiple sources, this research aims to enhance the validity, reliability, and robustness of its findings.

The documentation used in this research includes two different types: publicly available electronic documents and internal documentation (see Table 3-5). Publicly available electronic documents include various reports, contracts and news articles related to the projects that can be found on the internet. These documents were collected systematically before conducting the interviews to provide a better understanding of the case contexts and to support the interview data. Internal documentation, on the other hand, includes meeting memos, tender materials,

completed contracts and performance reports that are not publicly available on the internet. Access to these internal documents, typically restricted to individuals directly involved in the project, has been made possible through a collaborative effort and the willingness of the interviewees to contribute to research endeavours. The interviewees, recognising the importance of the research and the need to advance understanding in the field, graciously shared these internal documents.

Prior to obtaining access, formal consents and permissions were diligently secured to ensure ethical and responsible data handling. This study received ethics approval from the UTS Human Research Ethics Committee (Approval Number: UTS HREC ETH18-2820), and all prescribed ethical guidelines and protocols were rigorously followed throughout the research process. A copy of the ethics approval is attached as Appendix 7. Stringent measures were implemented to safeguard the confidentiality and anonymity of sensitive information within the documents. This collaboration and commitment to ethical data practices have allowed a comprehensive examination of the project, offering valuable insights that contribute significantly to the research's depth and credibility.

Table 3-5 Overview of documentation data for the study

Case Number	Meeting memos (Times/pages)	VfM report (pages)	Financial affordability report (pages)	Implementation plan (pages)	Contract (pages)	Periodic performance report (Times/pages)
Alpha	3/18	30	22	174	84	None
Beta	5/23	27	24	168	89	1/125
Gamma	5/33	41	29	184	96	N/A
Delta	2/8	20	19	162	79	1/133
Epsilon	7/42	19	26	176	81	2/304

Using internal documentation enabled a deeper understanding of the cases being studied and improved the ability to explain the phenomena. By using both publicly available electronic documents and internal documentation, the researcher acquired a more comprehensive understanding of the case and its context by finding access to relevant information.

Five case projects were selected based on the theoretical sampling approach mentioned earlier and their accessibility. Each selected case had at least one designated contact person who facilitated the interview process. Public and private representatives, as well as third-party project participants, were approached for interviews through these initial contact persons. Table 3-6 provides an overview of the interviewees in each case.

Table 3-6 Overview of interview data for the study

Case Alpha				
Code	Party	Position	Project experience (years)	Time (mins)
A1	Public	Enforcement body	10	112
A2	Private	Project manager	14	105
A3	Private	Accountant	5	85
A4	Private	Operation manager	6	93
A5	Third party	Project consultant	6	100
Case Beta				
Code	Party	Position	Project experience (years)	Time (mins)
B1	Public	Enforcement body	9	108
B2	Public	Bureau of finance	9	95
B3	Private	Project manager	12	114
B4	Private	Operation manager	6	75
B5	Third party	Project consultant	7	81
Case Gamma				
Code	Party	Position	Project experience (years)	Time (mins)
G1	Public	Enforcement body	9	108
G2	Private	Contract manager	7	95
G3	Private	Engineer	10	114
G4	Private	Operation manager	9	75
G5	Third party	Project consultant	8	81
G6	Third party	External expert	18	96
Case Delta				
Code	Party	Position	Project experience (years)	Time (mins)
D1	Public	Enforcement body	8	112
D2	Private	Project manager	11	110
D3	Private	Contract manager	6	110
D4	Private	Operation manager	7	108
D5	Third party	Performance manager	5	98
Case Epsilon				
Code	Party	Position	Project experience (years)	Time (mins)
E1	Public	Enforcement body	7	98
E2	Public	Development and Reform Commission	12	106
E3	Private	Project manager	9	110
E4	Private	Contract manager	6	85
E5	Private	Operation manager	8	93
E6	Third party	Project consultant	6	80
E7	Third party	External expert	9	77

In total 28 interviews were conducted following a case study protocol developed for this research (see Appendix 1). The interviews commenced with inquiries on the interviewee's background, their specific role within the project, and the project's demographic characteristics. Interviewees were encouraged to articulate their perspectives on the assessment of a PPP project's value, followed by an evaluation of the project under consideration. Interviewees were also asked about project stakeholders, their interactions, and levels of engagement, aimed at gaining a comprehensive insight into the project's processes. Throughout the interviews, an open-ended semi-structured approach was employed, encompassing both closed and open-ended questions. Open-ended questions were specifically used within the sections addressing interaction practices, the project's interaction environment, and its interaction performance. This approach was chosen to prioritise the interviewee's individual narrative and their interpretation of roles, practices, events and causal relationships among these various factors.

Direct observation was conducted in Case Gamma which is in its construction stage. Despite being in the construction phase, Case Gamma was deemed suitable for the study as it provided a unique opportunity to gain insight into the project from a current perspective. For a period of four months, the researcher became part of the project team as an observer to conduct non-participant observations on the evolving collaboration among team members. Additionally, the researcher interviewed multiple project team members to gain a deeper understanding of their perspectives on the collaboration and the project as a whole. As a non-participant observer, the researcher did not actively participate in the project but rather observed both parties' interactions, behaviour and collaboration from an outsider's perspective. This allowed the researcher to gather data on how the team worked together, how they communicated, and how their collaboration evolved over time. Through these observations, the researcher was able to gain insights into the dynamics of the team and how they tackled challenges throughout the project.

3.2.4 The Process of Data Analysis

The data analysis process involved two significant phases: within-case and cross-case analyses. The primary focus was on examining projects, starting from the front-end phase and continuing until the implementation phase was completed. A conceptual framework derived from a comprehensive literature review on relevant and extant research provided a starting point of data analysis. The unit of analysis was the PPP project, and the analysis was conducted at the organisational level. The primary objective of the analysis was to acquire a comprehensive understanding of the roles and practices of stakeholders in VCC throughout the project lifecycle. This involved studying the different events and causality relationships among these practices, as they related to the interaction performance and the ultimate value of the project.

Within-case analysis

In the within-case analysis, each case was individually investigated as a standalone entity after the researcher familiarised herself with the interview transcripts and documentation of the project's events, and stakeholder interaction. The next step involved creating comprehensive case descriptions to summarise the main events of the project as well as the roles and interactions of involved stakeholders by making notes of first impressions and ideas (Hsieh & Shannon, 2005). This step was essential for gaining insights and understanding each case as a standalone unit. The third step involved preparing for conventional content analysis by formulating initial ideas and codes to capture how value is perceived by various stakeholders and how they co-create value for the project (Miles et al., 2020). This step was critical to ensure that all relevant information was captured and organised in a meaningful way.

Conventional content analysis was adopted to progress from specific details of the data to more general and abstract ideas, in order to conceptualise dimensions of interaction

practices and stakeholders' value perception. Conventional content analysis is a research method typically used to describe a particular phenomenon, such as the VCC process of PPP projects in the research. It is employed because the existing theories or literature on a phenomenon are incomplete and sometimes contradictory.

Adopting abductive reasoning, the analysis commenced with a preliminary understanding of the VCC phenomenon grounded in existing theories and literature. This understanding served as a guiding framework for the analysis process. The methodology involved iterative analysis and revision, where the initial understanding continuously evolved in response to emerging data and insights (Aarikka-Stenroos & Jaakkola, 2012). This analytical approach encompassed both deductive reasoning, which facilitated the identification of relevant concepts and themes based on the initial understanding, and inductive reasoning, which allowed the data to shape and refine these concepts and themes.

Here is an example of the analysis process and generation of the results through abduction (also see Figure 3-2). There are two second-order codes derived from empirical data which are then summarised as an aggregated dimension of mid-term value outcomes. These two second-order codes which are visible value and potential value are summarised under the abductive reasoning. In the VCC literature, experience is emphasised as having the most impact on the value perceived by the stakeholders (Ramaswamy, 2011). In service-dominant logic literature, interactions among stakeholders are viewed as the main mechanism of VCC. Thus, a preliminary assumption was held that value perceived by the stakeholders involved in the PPP projects may be classified according to their experience of different dimensions of interaction. By examining the patterns emerging from the data and comparing the patterns with extant literature of VCC, service-dominant logic and management of project and value, finally two second-order codes were generated which are visible value and potential value.

The goal of within-case analysis is to gain a comprehensive understanding of the case and its unique characteristics, as well as to identify patterns, themes and relationships that can inform further research. This process is essential in this research, as it helps to develop a detailed understanding of the phenomenon being studied and to be prepared for the cross-case analysis.

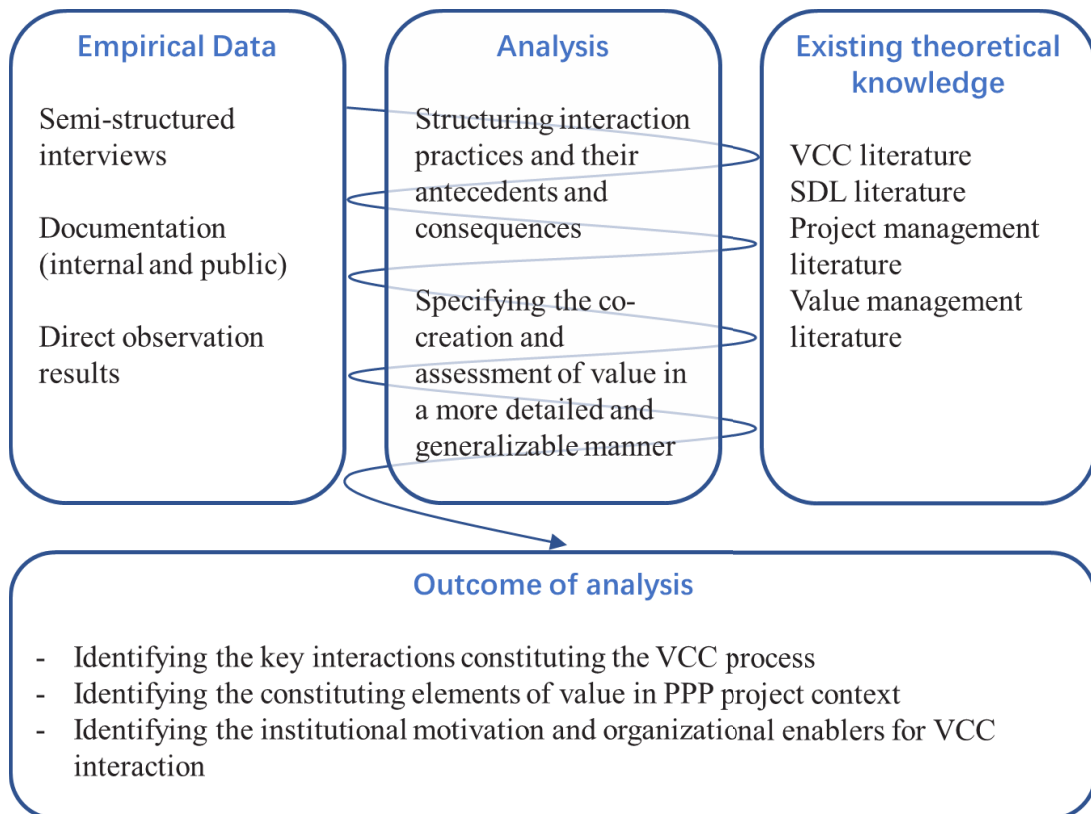


Figure 3-2 The analysis process and results generation through abduction

Cross-case analysis

The cross-case analysis in this research consists of two main phases aimed at developing a better understanding of how value is co-created and assessed by all the stakeholders involved in a PPP project. In the first phase, within-case code hierarchies and associated concepts developed from the five cases were compared, exploring their similarities and differences to create a single robust code hierarchy and set of concepts. This involved identifying tentative relationships between the codes, themes and

associated concepts for the five cases, refining these relationships through replication logic, and eliminating significant differences based on insufficient evidence. The result was a final code hierarchy that provided two dimensions of value outcomes and two dimensions of interaction practices.

An example of coding procedure is displayed as follows. An interviewee's detailed description "We tried to clarify our expectation as early as the market testing phase. This helped us rule out unqualified potential private parties to save time and facilitated our own reflection on whether the requirements are too impractical" was coded into the first-order code of "Value framing" and was then coded into the second-order theme of "Dialogue approach". A similar approach to conventional content analysis was followed to identify codes and themes related to VCC phenomenon and stakeholders' value perception. The first-order codes and second-order themes were compared for the differences and similarities between the cases. This allowed the identification of aggregated dimensions of "resource management" and "relationship management" that were common to all cases. Then cross-analysis of data was performed to confirm and refine the findings, ensuring that they were reliable and valid across all cases. This process of cross-validation helped to establish the robustness of the findings and ensure that they were not limited to a specific context or case.

In the second phase, a set of propositions was developed to explain the mechanism of VCC in PPP projects by elaborating the role of value perception of stakeholders. Based on the conceptual framework, it was interpreted and theorised about how stakeholders pursue and assess the value of a PPP project, and thus interact with each other for co-creating value for the project. Specifically, areas examined were what are the interaction practices, what project value outcomes can be achieved as the consequences of such interaction, and what are the antecedents of such interactions institutionally and organisationally. Finally, ten propositions were derived that constitute a model of these relationships addressing the research question.

3.3 Research Quality

The quality of any research design can be evaluated based on certain logical tests. These tests are commonly used to establish the quality of most empirical social research, and they also apply to case study research since it is part of this larger body. The work of Miles et al. (2020) aligns with the critical realist tradition and explores five primary issues that are interconnected to some extent. In this research, three of these issues are identified as overlapping with Yin (2018)'s perspectives. The three logical tests are as follows.

3.3.1 Construct Validity

This refers to whether the research accurately measures what it is intended to measure (Gibbert et al., 2008). In the case of case study research, this involves ensuring that the case is representative of the phenomenon being studied.

To increase the construct validity of the research, information was gathered from multiple sources in a way that promotes convergence and consistency in the data. The researcher also established a clear chain of evidence, which is also relevant during data collection. This involved documenting all of the steps taken during the study and the reasoning behind them, so that the research process can be easily traced and understood (Denzin & Lincoln, 2000). In addition, the draft case study report was reviewed by key informants. Having the report reviewed by individuals who are knowledgeable about the topic being studied can help ensure that the interpretation accurately reflected the participants' opinion. This also helps to identify any biases or errors in the research design and provides an opportunity for feedback and suggestions for improvement.

3.3.2 External Validity

This refers to whether the research findings can be generalised to other populations or contexts (Yin, 2018). In the case of case study research, this involves ensuring that the findings are not specific to the case being studied and can be applied to other cases (Lincoln & Guba, 1986).

To increase the external validity of the research, the research questions focused on the “how” and “why” of the VCC process, rather than just documenting events or activities. This helped to arrive at more meaningful analytic generalisations and made it easier to demonstrate the external validity of the findings. Multiple sources of evidence were used to ensure that the findings are consistent with other similar studies and were not just unique to the particular cases selected in the discussion section (see Chapters 4 and 5). The discussion encourages convergence and can help to establish the credibility and generalisability of the research.

3.3.3 Reliability

This concerns the consistency and stability of a study’s results over time and across different settings or researchers. In the case of case study research, this involves ensuring that the same findings can be obtained if the study were repeated (Krippendorff, 2004).

To increase the reliability of the research, detailed documentation of the procedures and methods used in the research was kept. This documentation was clear and explicit, detailing every step taken in the research process. Furthermore, a case study protocol was used and a case study database developed to address the reliability problem. The case study protocol (see Appendix 1) outlined the specific procedures and methods to be used in the research, while the case study database included all the relevant data and documentation. By making these resources available, other researchers can potentially replicate the study and arrive at similar conclusions.

3.4 Chapter Summary

This chapter outlined the research design and associated research process used in this study, including the methodology and methods used, as well as the five project case studies examined. It also provided details about the data collection and conceptual framework used for analysis. The chapter concluded by discussing the steps taken to ensure the quality and rigour of the research.

This chapter serves as a roadmap for the research, outlining the key components that inform the study's design and execution. It highlighted the importance of using a robust methodology and rigorous data collection methods to ensure the validity and reliability of the findings. It underscored the significance of having a well-defined conceptual framework to guide the analysis and interpretation of the data. Finally, the chapter emphasised the importance of quality control measures to ensure the research meets the highest standards of excellence.

Chapter 4 Findings and Discussion – Value Outcomes

Key findings of this research are reported in Chapters 4 and 5, each of which includes a section on findings and a section on discussion. Findings include the key codes, themes and dimensions (i.e., constructs) that are derived from within and across cases based on thematic pattern matching with code hierarchies and quotations as evidence, and cross-tabulation analysis of each theme against the five cases to provide a holistic view of all five cases and a foundation to analyse theoretical relationships among the constructs. Discussions include the answers to research questions by illustrating relationships and implications of the constructs according to the derived conceptual framework in Chapter 2 and comparing empirical findings in this research with previous relevant studies. Testable propositions are presented accordingly.

These two chapters are structured according to the logical process of VCC in PPP projects, which follows the three research questions explained in Chapter 1. Specifically, the two chapters answer the questions of what project value is pursued and attained by different stakeholders, how project value is co-created during the project lifecycle, and what factors enable and facilitate such co-creation practices.

This chapter addresses the first research question on what project value is pursued and obtained by various stakeholders involved in a PPP project. This is important because project value is increasingly receiving attention from academia and practitioners as a more inclusive and comprehensive perspective to assess a project over the traditional “iron triangle” as a success measure. Also, the main objective of this research is to investigate how to maximise project value for all stakeholders which makes a good understanding of project value a primary task.

Section 4.1 reports findings on project value by listing different value outcomes observed in the five cases. According to the temporal nature of project value, mid-term and long-term value outcomes are identified from the data. In addition, *long-term value*

outcomes are classified into *economic value* and *social value* according to the subjective nature of value. *Mid-term value outcomes* are summarised into *visible value* and *potential value* under the framework of service-dominant logic. Cross-tabulation analysis shows that public and private parties prioritise different long-term value outcomes but attach the same importance to mid-term value outcomes. Section 4.2 discusses the relationship among these finely sorted value outcomes that appeared in PPP projects and how to assess a PPP project in a value-oriented perspective. The phenomenon of neglecting value thinking is also discussed briefly.

4.1 Findings – Value Outcomes

This section describes the final code hierarchy regarding project value observed in the investigated five cases and divides them into respective categories according to the two features of value which were identified from the literature and confirmed in the data collected. Specifically, empirical evidence shows that project value is understood differently by different stakeholders at different times during the project lifecycle. There are two dimensions of project value outcomes: the horizontal dimension, relating to the project process; and the vertical dimension, relating to the various stakeholders involved. In the horizontal dimension, project value contains mid-term and long-term value outcomes, and in the vertical dimension, project value involves economic value and social value. Both dimensions are discussed in detail in this chapter.

4.1.1 Mid-term and Long-term Value Outcomes

Two code categories of value outcomes were identified that are important to consider in the entire PPP lifecycle: *mid-term value outcomes* and *long-term value outcomes*. Despite this classification not being new in project business and value literature, it highlights the dynamic feature of project value and allows a concrete discussion of the cumulative process of value creation.

It is worth noting that this research considers value of PPP projects only from the mid- and long-term timeframes and excludes the short-term value. This is because short-term value normally refers to the value-in-exchange instead of value-in-use that can be realised at the moment of exchange. However, in the PPP project context, value is perceived as being co-created from the exchange of service among all stakeholders in this research. Different from other contexts, such as commercial and marketing, the exchange of service in PPP projects normally does not result in instant value outcomes so that the short-term value outcomes are not discussed in the research.

Mid-term value outcomes refer to the benefits realised during the VCC process although they are not the ultimate goal of stakeholders. Compared with long-term value outcomes, mid-term ones are value outputs generated in the project lifecycle. They are either outcomes of value by themselves or are conducive to further value creation through facilitating VCC practices. There are seven mid-term value outcomes identified in the five cases: risk mitigation, effective procedure, innovative solution, competence enhancement, trust improvement, solidarity, and sense of belonging. Although these types of value outcomes are not the ultimate goal of beneficiaries, they are an essential stage in realising long-term value outcomes. Data shows that practitioners are aware of and acknowledge the merit of mid-term value outcomes. For example, the engineer from Case Gamma stated: “The success of a project is influenced by numerous factors, including the effectiveness of procedures. Long-term objectives are constructed incrementally from fundamental tasks and units of work.”

Mid-term value outcomes represent a process view of value creation. PPP projects usually last for at least 15 years and go through many stages. Just as in the saying “Three feet of ice does not form in a single day”, a PPP project must be viewed over the long run which represents a process perspective. On one hand, mid-term value outcomes obtained in the process can keep everyone informed about how the project is going. In other words, they can also act as the performance indicators showing whether the project is on the right track. However, these are the soft rather than the hard

indicators. Government payment criteria are a good example to illustrate this function of mid-term value. All the five cases specified clearly when and how much to pay the private party. The criteria include construction progress, delivery quality, service level and so on. These criteria could be taken as the mid-term value outcomes based on which the public party evaluates the private party's performance. In addition, qualitative criteria are used by all the five projects to impose a value-oriented principle on performance management rather than a strict and inflexible prescription. This encourages the motivation and innovation of the private party to a certain extent.

On the other hand, mid-term value outcomes obtained in the VCC process of a PPP project make different stakeholders understand each other's value perception more clearly. This can be observed from Case Delta as the operation manager said¹:

“Despite my primary role in road maintenance, I have been involved in the project from its inception. Numerous milestones must be met before my ultimate objective of providing cost-effective, high-quality road service can be achieved. For instance, I contributed to contract negotiations and assisted in securing a more equitable performance indicator list for our team. This accomplishment is expected to yield significant intermediate-term benefits, given its potential to enhance our ability to achieve our goal of providing high-quality road service at a reduced cost.”

The negotiated performance indicator list serves as a road map showing both parties' bottom line. This builds a solid foundation for their follow-up collaboration in the rest of the project.

Long-term value outcomes, on the other hand, refer to the sustainable results that a PPP project achieves over the entire lifecycle, even after the transition stage. They are

¹ All quotes in this thesis study are translated from the Chinese.

typically the ultimate goal of a beneficiary in conducting the PPP project which will evolve and endure across the entire lifecycle. Such value outcomes are embedded with the temporal nature and are not easy to assess before they are tested by time. However, they are able to be envisioned before they are claimed to become true. A government officer from Case Epsilon supported this view:

“Despite the limited two-year operational period of this healthcare centre, we are confident that it will continue to have a positive impact on the community beyond the initial two years. This is owing to the growing population of aging individuals, which ensures profitability, as well as the performance-based payment mechanism that incentivises private parties to maintain and deliver quality service.”

There are eight long-term values identified from the cases: financial feasibility, lifecycle investment saving, profit, scale economy, environmental value, people welfare, reputation, and regional value.

One defining feature of long-term value outcomes is that they should be sustainable which differentiates them from mid-term value outcomes. Sometimes the mid-term value outcomes may be the same as the long-term ones. For example, in both Case Alpha and Case Beta, high quality infrastructure service is the government’s primary expectation and is achieved in operation so far. However, the public party in both cases expressed that they would not relax their vigilance on performance governance until the project is successfully transferred to the government. This is because there have been cases that ended with a project failure despite a good start.

Another defining feature of long-term value outcomes is that they are of use to the beneficiaries in terms of their ultimate goals. While mid-term value outcomes sometimes serve as interim achievements during the VCC process, long-term value outcomes represent the stakeholders’ most pertinent goals. This can be supported by

the data as the government officer from Case Gamma said: “Although the investment is more than the original design after the change on the use right of the sea area, we still would like to continue the project because our objective is to connect the two districts facilitating the area’s development. We can see the long-term value of the project.”

Table 4-1 summarises the distinctions between mid-term and long-term value outcomes in the context of PPP projects.

Table 4-1 The distinctions between mid-term and long-term value outcomes

Aspect	Mid-Term Value Outcomes	Long-Term Value Outcomes
Nature and purpose	Benefits realised during VCC process	Sustainable results achieved over entire lifecycle
Timeframe	Intermediate stages of project lifecycle	Throughout project lifecycle and beyond
Examples	Risk mitigation, effective procedures, innovative solutions, competence enhancement, trust improvement, solidarity, sense of belonging	Financial feasibility, lifecycle investment savings, profitability, scale economy, environmental value, people welfare, reputation, regional value
Function	Performance indicators and soft indicators	Reflects sustainable impact and alignment with goals
Value perception	Enhances mutual understanding of value perceptions	Represents fulfilment of ultimate stakeholder goals
Sustainability	Important steps towards long-term goals	Lasting impact and benefits over extended timeframe
Alignment with stakeholder goals	Contributes to achievement of long-term objectives	Represents fulfilment of ultimate project purpose

Mid-term and long-term value outcomes have distinct characteristics. Mid-term value outcomes materialise during the collaborative VCC process, representing benefits

achieved in the project lifecycle. These outcomes, observed within intermediate project stages, serve as performance and progress indicators, shaping the project's trajectory. Examples include risk mitigation, effective procedures, innovative solutions, and trust improvement. They also facilitate mutual understanding among stakeholders regarding value perceptions. On the other hand, long-term value outcomes encompass sustained and enduring results achieved over the entire project lifecycle and beyond. These outcomes, such as financial feasibility, lifecycle investment savings and environmental benefits, align with stakeholders' ultimate goals. Long-term value outcomes underpin the project's lasting impact, representing the culmination of stakeholders' overarching aspirations. In essence, mid-term value outcomes are pivotal steps towards long-term goals, while long-term value outcomes epitomise the sustained and substantial achievements of PPP projects.

Given the discussion above, the thesis proposes:

Proposition 1. PPP project value shows its dynamic nature by being comprised of mid-term and long-term value outcomes.

Long-term value outcomes are discussed in detail in Section 4.1.2 while mid-term value outcomes are discussed in Section 4.1.3. The relationship among all these value outcomes identified in the cases is shown in Figure 4-1.

Mid-term value outcomes		Long-term value outcomes	
Visible	Potential	Economic	Social
Risk mitigation	Trust improvement	Financial feasibility	Environmental value
Effective procedures	Solidarity	Lifecycle investment saving	People welfare
Innovated solutions	Sense of belonging	Profit	Reputation
Competence Enhancement		Scale economy	Regional value

Figure 4-1 Value outcomes identified in the cases

4.1.2 Economic Value and Social Value

The previous section pointed out that PPP project value cannot be viewed in the same way but rather as mid-term and long-term value given the dynamic nature of value. For the long-term values, value outcomes vary among different stakeholders given the subjective feature of value. Although mid-term value outcomes also differ in different stakeholders' eyes, such differentiation is not the focus in this section. Mid-term value outcome archetypes based on experience, derived from the VCC research strand, are discussed in the next section.

There are two categories of long-term value outcomes summarised from the data: *economic value* and *social value*. Such classification is not limited to parties as different individuals in the same party may value things in different ways. However, there is a tendency that the private party focuses more on the economic value while the public party focuses more on social value as shown in Table 4-2.

Table 4-2 Different long-term value focus among parties and cases

Economic value	Public	Private	Alpha	Beta	Gamma	Delta	Epsilon
Financial feasibility	H	L	√	√	√		√
Lifecycle investment saving	H	H	√	√	√	√	√
Profit	M	H	√	√	√	√	√
Scale economy	L	H		√	√	√	
Social value	Public	Private	Alpha	Beta	Gamma	Delta	Epsilon
Environmental value	H	H	√	√	√	√	√
People welfare	H	M	√		√		√
Reputation	H	H	√	√	√		√
Regional value	H	L		√	√	√	

Note: “H” indicates the party shows high interest in the value while “L” indicates the party has relatively low interest in the value. The symbol “√” denotes that the indicated value has been observed in the corresponding case.

4.1.2.1 Economic value

Economic value refers to financial benefits pursued and realised from the PPP project by different stakeholders. First-order codes covering economic value include financial feasibility, lifecycle investment saving, profit, and scale economy. As shown in Table 4-2, most public parties are concerned about financial feasibility and lifecycle investment saving, while most private parties focus more on lifecycle investment saving, profit, and scale economy. The process of coding with economic and social value is shown in Figure 4-2.

Quotation examples	1st order codes	2nd order themes
"PPP has the advantage of enabling the smoothing of expenditures, making it a more practical option for executing such large-scale projects." (Government officer, Case Gamma)	➔ Financial feasibility	Economic value
"Our involvement in major decisions allowed us to implement cost-saving measures in line with our lifecycle investment plan." (Project manager, Case Beta)	➔ Lifecycle investment saving	
"While we are committed to fulfilling our obligations to society, we must also generate revenue and ensure the sustainability of our business operations." (Contract manager, Case Gamma)	➔ Profit	
"Companies that hold a greater number of franchise rights are generally perceived as more creditworthy by financial institutions." (Project manager, Case Beta)	➔ Scale economy	
"We acknowledge that the new regulation mandating us to enhance environmental protection standards is imperative." (Government officer, Case Gamma)	➔ Environmental value	Social value
"For me, the priority is not just saving money but also ensuring the timely completion of the road project. The sooner the road is completed, the sooner the public can benefit from it." (Government officer, Case Delta)	➔ People welfare	
"Maintaining a good reputation for the government is crucial, as it ensures accountability and builds trust with the people." (Government officer, Case Gamma)	➔ Reputation	
"The hospital upgrade PPP project has a positive impact on the local economy as it addresses the health needs of the people, which in turn boosts economic development." (Government officer, Case Epsilon)	➔ Regional value	

Figure 4-2 Coding process of economic and social value

Financial feasibility refers to the phenomenon that the government could not conduct the project without choosing PPP. Indeed, this is one of the PPP functions that it can smooth or assist with government expenditure and allow infrastructure development in an area when the fiscal budget is not sufficient. This value is emphasised by public parties in most of the cases other than Case Alpha. This may be because Case Alpha is smaller in scale than the other cases and because Case Alpha was an expanded project of a Build-Operate-Transfer (BOT) project which means the consideration of the PPP mode did not depend heavily on the financial feasibility, but rather the lifecycle investment saving. In the other four cases, financial feasibility is the foremost reason as well as the main economic value that the public parties pursued and obtained in the PPP projects.

Lifecycle investment saving refers to the phenomenon that the PPP mode could save investment compared with alternative methods in delivering infrastructure projects from an entire lifecycle perspective. There is repeated evidence obtained from the data

to support this phenomenon. Both public and private parties have acknowledged this economic value in all five cases. For the public party, lifecycle investment saving is another reason for choosing PPP as the infrastructure delivery mode. This does not mean that all infrastructure projects are suitable for PPP with less lifecycle investment. On the contrary, only the projects that have survived the Value for Money assessment can be delivered in PPP mode. For the private party, pursuing less lifecycle investment makes them become conscious about the importance of planning and designing, and be willing to input more money in the project front-end with the aim of saving later on.

Profit denotes literally how much profit the private party can earn. According to the data, profit is the most pertinent economic value the private party is concerned with. For example, the contract manager from Case Gamma said: “To be honest, our primary concern is profitability, even though we recognise our social responsibility as a state-owned enterprise. While we are committed to fulfilling our obligations to society, we must also generate revenue and ensure the sustainability of our business operations.” In other words, no matter how much other value can be obtained by the private party from a PPP project, they will not join the project if they know clearly there will be no profit or even a loss. The project manager in Case Epsilon said: “PPP projects are typically significant ventures that necessitate substantial investments. These projects differ from regular corporate operations, as each of them must be profitable in order to be successful.” On the other hand, the public party shows less enthusiasm for this economic value indicator. The contracts of all the five cases show that for the end-user payment and feasibility gap subsidy PPP projects such as Cases Alpha, Beta and Epsilon, the public parties signed a contract on the distribution of excess income with the private party; for the government payment cases, such as Case Gamma and Case Delta, the public parties have no relation with the project profit. However, in all five cases, the government officers all expressed that they need to control private parties’ profit at a reasonable level, that is, the profit should not be too high otherwise the public interests cannot be guaranteed, and the profit could not be too low, otherwise the

private parties cannot be motivated. In this sense, the project's profit is not just a value objective of the public parties, but an instrument to balance public interest and the private party's motivation.

Scale economy refers to the phenomenon that the private party has more bargaining power through the collaboration in a certain PPP project for their further collaborations with the government and/or financial institutions. There are two observations in the data that indicate that the private party can achieve scale economy from a PPP project. In Case Gamma and Case Delta, the managers in the private parties revealed that they could gain momentum in winning more projects from the local government given their relationship foundation built in the studied projects. Moreover, the project manager in Case Beta stressed another key economic benefit they derive from the PPP project, that is, they earned more credits from the finance institutions by having the franchise rights. This enables their company to get loans more easily from the bank as the franchise rights are considered a reliable asset. In other words, "companies that hold a greater number of franchise rights are generally perceived as more creditworthy by financial institutions" (Project manager, Case Beta). On the contrary, the public party does not show much interest in it.

4.1.2.2 Social value

Social value refers to positive social impact of the project on the broad community and the primary stakeholders as well. First-order codes identified in cases include environmental value, people welfare, reputation and regional value. It is worth mentioning that while the beneficiaries of social value are the people and community, the private party is the implementor of all the social values, while the government is accountable for them. The project consultant from Case Alpha said: "Despite the profit-seeking nature of capital, we also sincerely hope the project is successful in terms of its social impact, and we put lots of effort into it".

Environmental value refers to the extent to which the environment of PPP projects is protected and/or improved. Both the public and private parties are concerned with environmental value despite having different motivations. For the public parties, environment protection is becoming increasingly important in the government's job as the commonsense of the "environment is valuable" prevails. In China, protecting the environment while developing is a key emphasis in the work of the government. There are many related laws and regulations that are strictly implemented by environment bureaus. On the contrary, the private parties' pursuit of environmental value is mainly because of the imposed environmental laws and regulations. Especially for the industries such as sewage treatment in Cases Alpha and Beta, environmental value is the most important performance indicator. In other cases, such as Case Delta, the green belt's build and maintenance is also an important performance indicator. In Case Gamma, the environmental value even led to a huge design change for the whole project. As the first design of the immersed tube tunnel would destroy the environment for undersea life, as assessed by the environment bureau, the private party was forced to persuade the design company to change the original design. The project consultant from Case Gamma said: "The change in the assessment regulation was an unexpected risk, but fortunately, the government was understanding and covered the additional costs associated with the design change." This indicates that the public party not only values the environment, but is also willing to pay for it.

People welfare refers to the general happiness of the local community brought about by the PPP project. One basic function of infrastructure development is to improve the welfare of people in the local community. This is logically at the top of the list of the public party's value priority. For example, the sewage treatment plants in Cases Alpha and Beta contribute to the local environment and cleaner water and thus improve people's welfare. When choosing the private party, the public parties in the two cases put the sewage treatment capability at the top of the list to ensure people's welfare. In other situations, the public party would seek the chance to improve people's welfare

through innovative solutions. In the meantime, while the private party would cooperate as much as they can, they are not motivated to initiate such value pursuit. For example, in Case Gamma, the public party conceived of a plan to build playgrounds under the highway interchanges which they learnt when visiting another city. The government officer then communicated this idea to the private party in a timely manner. The engineer said “As they (the public party) shared the idea in time so that we were able to change the design as we haven’t dealt with the area under the highway”, “and of course, they pay us extra money for it.” This shows that the public party cares more about people’s welfare than the private party.

Reputation refers to the opinions held by the involved stakeholders in the PPP project about other stakeholders during and after the collaboration. The data shows that both public and private parties are concerned about reputation. For the public party, the government needs to build their reputation among people to maintain the government’s accountability. For example, the government officer in Case Gamma said: “Maintaining a good reputation for the government is crucial, as it ensures accountability and builds trust with the people.” Moreover, the public party needed to maintain their credit to attract more investment as the government officer in Case Bata said: “Paying on time is not only important for our own financial health, but also crucial to maintain the government’s reputation and credit. This in turn would attract more private capital to invest in our projects.” For the private party, reputation may serve as an advertisement for them to the local community so that they can reduce local resistance when constructing the infrastructure. For example, in Case Alpha, the private party used their patent technology to build an underground sewage treatment plant. They also built a playground on top of it for the community. This made the residents very happy as it was published in the local newspaper. With such good reputation, the private party won three other sewage treatment plant projects with neighbouring governments. Moreover, reputation means more to the private party if they want to expand into new business areas. The operation manager in Case Epsilon

said: “We are putting a lot of effort into building our reputation because we want to expand our business into health and eldercare through this project.”

Regional value refers to the phenomenon that PPP projects can help expand the local economy. For example, the government officer shared his view on Case Gamma’s strategic objective:

“The subsea tunnel is a crucial link connecting the G and Z districts of the city, which are separated by the sea. It enables the development of the G district by providing access to the resources and opportunities available in the Z district.”

A similar idea was expressed by the government officers in Cases Beta and Epsilon. In Case Beta, the government officer said: “after building the sewage treatment plant, we were able to invite more investment in this area because we not only can handle the sewage the plants generate, but also we can provide cheap reclaimed water to them.” In Case Epsilon the government officer also said that this PPP project activated the local economy because people’s health considerations are well taken care of, people are more likely to develop the economy. However, the data shows that private parties pay less attention to such value.

From a cross-case analysis, it is evident that the public party pays more attention to social value while the private party cares more about the economic value. For example, the government officer from Case Delta said: “For me, the priority is not just saving money but also ensuring the timely completion of the road project. The sooner the road is completed, the sooner the public can benefit from it.” The opinion from another government officer in Case Beta also supported that view: “Currently, the situation is such that the government has limited financial resources, while private entities have greater flexibility in selecting the cities and projects in which they wish to invest and construct. Therefore, it is imperative for us to present attractive projects that offer high profitability.” While the project manager in Case Gamma admits that the private party

cares more about finance, he also stresses that:

“We prioritise the social impact of the project because it reflects our professionalism and ethical values, which ultimately affects our reputation. Additionally, we have a sense of social responsibility towards the community and aim to make a positive impact through our projects.”

It is also interesting to find that the public party and private party of the same project could have different perceptions on value creation. For example, the project manager from Case Alpha said: “We are currently facing financial losses in operating the sewage treatment plant, as the actual operating costs were significantly higher than our initial estimates during the bidding process.” However, the government officer said: “The private party benefited greatly from this project, as it served as a successful model and led to the acquisition of seven additional similar projects in Northeast China.” This shows that different stakeholders not only experience the value differently, but they also view other’s value creation differently.

To sum up, the cores of each economic and social value outcomes are shown in Table 4-3.

Table 4-3 The core of each economic and social value outcomes

Constructs	Contents
Economic value	Financial benefits pursued and realised
Financial feasibility	The phenomenon that the government could not conduct the project without choosing PPP
Lifecycle investment saving	The phenomenon that PPP mode could save investment compared with alternative methods in delivering infrastructure project from an entire lifecycle perspective
Profit	How much profit the private party can earn
Scale economy	The phenomenon that the private party gains more bargaining power through the collaboration in a certain PPP project for their further collaborations with the government and/or financial institutions
Social value	Positive social impact of the project on the broad community and the primary stakeholders
Environmental value	The extent the environment of PPP projects is protected and/or improved
People's welfare	The general happiness of the local community brought by the PPP project
Reputation	The opinions held by the involved stakeholders in the PPP project about other stakeholders during/after the collaboration
Regional value	The phenomenon that PPP projects can help expand the local economy

The findings in this section show the subjective nature of value which requires inter-subjective interaction in managing PPP project value to satisfy various stakeholders involved. Thus, it is proposed:

Proposition 2. Project value is a subjective feature given by various stakeholders involved in the project. Long-term value outcomes include economic value and social value which require coordination in management and realisation.

4.1.3 Experience of Function vs Interaction

Value is highly subjective as different beneficiaries have different perceptions of it. This has been highlighted repeatedly in the service-dominant logic and broader VCC literature. Prahalad and Ramaswamy (2004) pointed out the experience of customers would be a new source of competitive advantage which can only be achieved through co-creation. In the same vein, Vargo and Lusch (2007a, p. 7) updated their fundamental premises on service-dominant logic and stressed that “value is always uniquely and phenomenologically determined by the beneficiary.” This subjectivity of value has also been supported by the empirical data and discussed in the previous section regarding long-term value outcomes. This section takes a further step in discussing this subjective feature by combining the experience of function and the experience of interaction and proposes the archetypes regarding mid-term value outcomes.

Value is assessed by the beneficiaries according to their experience when they consume the value propositions or service provided by other parties, and this leads to the subjective feature of value. In the process of VCC, beneficiaries’ experience depends on their experiences on the function and interaction. *Function experience* refers to how useful a person rates a service provided by others while *interaction experience* refers to how a person feels when engaging in an interaction with other parties. According to the extent of function experience and interaction experience, four value archetypes are summarised as shown in Figure 4-3.

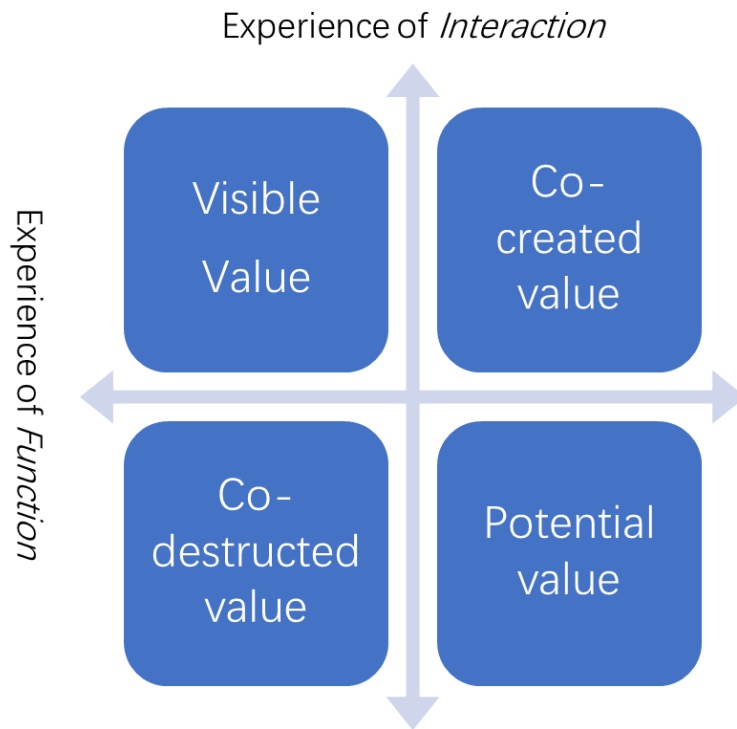


Figure 4-3 The archetypes of value outcomes according to experience

The top right quadrant indicates the better experience of function and interaction. Accordingly, *visible value* is defined as the value outcomes that are of better function experience and less interaction experience. Conversely, *potential value* is defined as the value outcomes that are of less function experience and better interaction experience. Mid-term value outcomes identified from the data include first-order codes such as risk mitigation, effective procedures, innovative solutions, competence enhancement, trust improvement, solidarity, and sense of belonging. As shown in Figure 4-1, visible value includes risk mitigation, effective procedures, innovative solutions, and competence enhancement while potential value includes trust improvement, solidarity, and sense of belonging. The boundaries between visible and potential value are to some extent blurred because of the subjectivity of experience. In general, visible value focuses more on the function experience and potential value focuses more on the interaction experience. The process of coding with visible and potential value is shown in Figure 4-4.

Quotation examples	1st order codes	2nd order themes
<p>"We acquired sufficient data and information pertaining to the site and project, allowing us to evaluate the associated risk level and incorporate it into our quotation." (Operation manager, Case Alpha)</p> <p>"As we had the freedom to select our own design and construction plans, we were able to execute the project smoothly without having to constantly report back to the government. This flexibility gave us the independence we needed to deliver results efficiently." (Project manager, Case Epsilon)</p> <p>"PPP projects require innovative solutions to overcome challenges and deliver successful outcomes. By bringing together public and private sector expertise, we can develop new and creative approaches that maximize efficiency, enhance service quality, and benefit the wider community." (Project Consultant, Case Epsilon)</p> <p>"We were able to successfully adjust to our new role in the project and improve our abilities to lead by setting objectives and governing through principles instead of participating in every detail." (Government officer, Case Gamma)</p>	<p>➔ Risk mitigation</p> <p>➔ Effective procedures</p> <p>➔ Innovative solutions</p> <p>➔ Competence Enhancement</p>	<p>Visible value</p>
<p>"Through the process of daily communication and biweekly meetings, we were able to cultivate trust between us. Working closely together allowed us to build a strong working relationship." (Project manager, Case Beta)</p> <p>"We feel like we're part of a team, and when we encounter challenges, we have each other's back." (Government officer, Case Gamma)</p> <p>"As many of my colleagues are newly hired, it's crucial to ensure that they feel a sense of belonging to the project in order to help them settle in." (Project manager, Case Alpha)</p>	<p>➔ Trust improvement</p> <p>➔ Solidarity</p> <p>➔ Sense of belonging</p>	<p>Potential value</p>

Figure 4-4 Coding process of visible and potential value

The value outcomes with both better experience of function and interaction are defined as *co-created value* while the value outcomes with both less experience of function and interaction are defined as *co-destructed value*. Long-term value outcomes discussed in the last section are co-created value. While co-destructed value is an important topic in VCC (Echeverri & Skålén, 2011, 2021; Fuentes, 2019; Prior & Marcos-Cuevas, 2016), it is out of this research's scope. As to the last archetype, co-created value refers to both parties collaborating in a reciprocal way and creating value-in-use for and with each other. What needs illustrating is that there are no explicit boundaries among visible value, potential value and co-created value. This is because of the subjective nature of value, which different stakeholders experience differently. The artificial classification proposed in this research aims to provide a relatively clear foundation to take a close look at what value looks like in the PPP projects and how it is co-created among stakeholders. Table 4-4 shows the different mid-term value focus among parties

and cases.

Table 4-4 Different mid-term value focus among parties and cases

Visible value	Public	Private	Alpha	Beta	Gamma	Delta	Epsilon
Risk mitigation	H	H	√	√	√	√	√
Effective procedures	H	H	√	√	√	√	√
Innovative solutions	L	H	√	√	√	√	√
Competence Enhancement	L	L		√	√		√
Potential value	Public	Private	Alpha	Beta	Gamma	Delta	Epsilon
Trust improvement	H	H	√	√	√	√	√
Solidarity	M	M		√	√	√	
Sense of belonging	L	M	√	√	√		√

Note: “H” indicates the party shows high interest in the value, “M” indicates the party shows medium interest in the value, and “L” indicates the party shows relatively low interest in the value. The symbol “√” denotes that the indicated value has been observed in the corresponding case.

4.1.3.1 Visible value

The pursuit of value-in-use reflects the underlying rationale of the subjective nature of value, that is, only the usefulness deserves effort. Mid-term value outcomes such as risk mitigation, effective procedure and innovative solutions can be regarded as *visible value*. This is because such value outcomes are perceived as direct contributors to realise long-term value that is pertinent to stakeholders’ concerns. Differing from long-term value outcomes that are valued by different stakeholders and appear in different cases, all visible value and potential value are observed from both public and private perspectives in all cases.

Risk mitigation refers to the extent to which risks can be mitigated for different stakeholders. This is one of the main functions of PPP and is valued by both public and private parties. For example, the contract manager from Case Epsilon said:

“The government’s sharing of population and industry data is crucial in determining future market needs and evaluating future market competition. These data help to manage risks associated with project operations, particularly in the early stages.”

The contract manager also confirmed that operational risk mitigation can be regarded as a mid-term value that is obtained in the VCC process and should be given high priority given its direct impact on the project success.

Effective procedure primarily relies on the successful execution of the procurement process, seamless financing arrangements, and obtaining necessary building permits. The procurement process involves negotiating contracts and requires close collaboration among all involved stakeholders. Smooth project financing requires timely disbursement of funds from the bank, as well as the use of a letter of guarantee mechanism to safeguard public interests. In addition to procurement and financing, securing building permits, including construction and environmental permits, is also crucial to the project’s overall success. These permits serve as the legal foundation for construction activities, and their timely acquisition is essential for project completion in the set timeframe.

Innovative solutions can be described as novel approaches that are used to address complex issues that arise during the course of a project. These solutions can take on a variety of forms depending on the particular circumstances, but they share the characteristic of being emergent and ground-breaking. An example of this can be seen in Case Gamma, where a newly enacted regulation mandated that the project team obtain a usage right for a sea area from the National Ministry of Ecology and Environment. This process was anticipated to be arduous and time-consuming, and as a result, the public and private stakeholders collaboratively developed a new design for an artificial island that allowed them to obtain the use right from the provincial level instead of the national level. This innovation also gave rise to new technological

advancements, such as the creation of an immersed tunnel.

Competence enhancement refers to the process whereby stakeholders involved in PPP projects develop and refine their professional skills, which in turn facilitates the success of the PPP venture. This phenomenon is often mutually reinforcing, as the enhanced competence of stakeholders can contribute to the effectiveness of the PPP project, while the project itself can serve as a platform for further competence enhancement. Many public sector entities involved in PPP projects have reported that their improved competence in areas such as project governance, as opposed to micro-management, has not only contributed to the smooth implementation of current projects but has also helped to advance the government's broader PPP agenda. For example, the government officer in Case Gamma said: "We were able to successfully adjust to our new role in the project and improve our abilities to lead by setting objectives and governing through principles instead of participating in every detail."

Indeed, competence enhancement is a critical aspect of PPP projects, as it enables stakeholders to better navigate the complex landscape of PPP development and implementation. Through the development of new skills and competencies, stakeholders can effectively manage risks, collaborate with partners, and achieve project objectives in a manner that aligns with the broader goals of the PPP initiative. This is also supported by the project consultant in Case Delta who suggested:

"Throughout the project, I noticed a significant improvement in my professional skills, particularly in areas such as policy interpretation, conflict resolution, and providing valuable recommendations.

Overall, this project provided me with valuable learning experiences."

As such, fostering competence enhancement among PPP stakeholders should be a key priority for governments and other entities seeking to develop and implement successful PPP projects.

4.1.3.2 Potential value

In the context of this research, achieving value-in-use is a complex task that cannot be achieved by any individual party alone. Instead, it requires collaboration and co-creation of value between multiple parties. Consequently, the experience of co-creating interactions has become an integral component of project value. This perspective is not novel in the field of marketing VCC literature. Payne et al. (2007) have explicated how customers engage in VCC through interactions with suppliers and the significance of the interaction experience. Prahalad and Ramaswamy (2004) also argued that the interaction between a company and its customers serves as the fundamental building block for facilitating the co-creation of experience. Empirical evidence from data analysis supports the notion that the interaction experience is crucial in VCC. For example, the project manager in Case Beta said:

“As I evaluate the project, the quality of interaction with the government is a crucial factor. When there’s reciprocal collaboration, it creates a positive working environment and helps increase efficiency and effectiveness by ensuring that the project team is well-coordinated.”

While a positive interaction experience may not directly generate the value that stakeholders prioritise, it can aid in the creation of tangible value and may even have the potential to evolve into long-term value. As a result, the thesis proposes that a positive interaction experience can be considered as potential value. Trust improvement, solidarity and competence enhancement are among the first-order codes identified through empirical analysis that reflect the potential value of a positive interaction experience. These codes illustrate the various ways in which positive interactions between stakeholders can lead to potential value such as improved relationships, increased trust and enhanced competencies.

Trust improvement pertains to the observable trend of stakeholders developing a higher

level of trust in each other throughout the VCC process. While it is true that there is an initial foundation of trust between public and private parties, this trust can be further enhanced as the VCC process progresses. In all five cases examined, trust improvement was highly valued by all stakeholders involved. For example, the operation manager in Case Alpha said:

“As our collaboration progressed, I noticed a growing sense of trust between us. This increased level of trust has allowed us to work together more cohesively and effectively, and we both value and aim to maintain it.”

Solidarity in the context of VCC refers to the phenomenon of mutual support and converging interests, opinions and objectives within the PPP project team. This trend was observed across several cases, with Case Gamma being a notable example. One government officer in Case Gamma stated that the team had a strong sense of solidarity, and that they worked together to address any challenges that arose. The private party engineer in the same case also shared this sentiment, emphasising the collaborative and supportive nature of the team as presented in the quote below:

“The public party was supportive to some extent, and we often faced external challenges together rather than directing our efforts against each other. For instance, when the project underwent a governmental leadership audit, we went above and beyond our responsibilities to assist the public party in preparing the necessary materials.”

Sense of belonging refers to the feeling of being valued and connected to the ongoing project. This was more frequently observed among private parties. In PPP projects, a sense of belonging among stakeholders is crucial for the success of the project. According to an external expert in Case Epsilon, when both parties feel like they are part of a community working towards a common goal, they are more likely to stay

committed to the project for the long term. This highlights the importance of fostering a collaborative and inclusive environment that promotes a sense of unity and shared purpose. Furthermore, as noted by the operation manager in Case Gamma, having a sense of belonging in a PPP project is not just about feeling connected to colleagues but also about feeling part of something bigger than oneself. This emphasises the need to communicate the project's larger purpose and how it can create positive change in the world. By creating an environment that fosters a sense of belonging and a shared vision for the project's success, stakeholders are more likely to remain committed to the project and work collaboratively towards achieving its goals. Thus, it is essential for PPP projects to prioritise the creation of a supportive and collaborative work culture that fosters a sense of belonging among all stakeholders involved.

To sum up, the cores of the visible and potential value outcomes are shown in Table 4-5.

Potential value may not be thought of highly by some of the stakeholders because of their own subjectivity on value perception, however it has the potential to transform into visible value or further the long-term value. Hence, the following proposition is developed:

Proposition 3. Mid-term value outcomes include visible value and potential value according to how the beneficiaries experience the function of the service and the interaction when the service is exchanged.

Table 4-5 The cores of the visible and potential value outcomes

Constructs	Contents
Visible value	Value outcomes that are of better function experience and less interaction experience
Risk mitigation	The extent risks can be mitigated for different stakeholders
Effective procedure	The procurement procedure, smooth project financing and various building permits
Innovative solutions	The innovative ways solving different problems occurred in the project process
Competence enhancement	The phenomenon in which stakeholders experience improvements in their professional skills
Potential value	Value outcomes that are of less function experience and better interaction experience
Trust improvement	The phenomenon in which various stakeholders increasingly trust each other in the VCC process
Solidarity	The phenomenon in which there is mutual support within the PPP project team and every party's interests, opinions and objectives are converging
Sense of belonging	The feeling of being valued, and connected to the current project

4.2 Discussion – Value Outcomes

This chapter aims to answer the first research question “what does value mean to different stakeholders involved in a PPP project?” Section 4.1 showed the dynamic and subjective nature of value in the PPP project and how different stakeholders pursue different value outcomes at different times.

In the course of data analysis, this question generated two more questions: “what is the relationship between different value outcomes?” and “how to assess the value of a PPP project?” This discussion makes an effort to answer these two additional questions.

Cross-case analysis indicates the relationship between mid-term and long-term value

outcomes. The comparison between the findings and previous studies suggests an assessment framework of PPP projects in a value-oriented perspective. In addition, empirical evidence also suggests that such value assessment application in practice is not enough.

4.2.1 The Relationship between Mid-term and Long-term Value

There are three relationships between mid-term and long-term value outcomes identified from cross-case analysis. Mid-term value outcomes are the results achieved in the near term, usually before the operation stage in PPP projects. Long-term value outcomes, on the other hand, refer to the sustainable results that a PPP project achieves over the entire lifecycle, even after the transition stage. In the first situation, mid-term value outcomes and long-term value outcomes sometimes appear to be similar. Nevertheless, as discussed previously, the defining feature of long-term value is sustainability. Hence, the secret of transforming such mid-term value outcomes (mostly, visible value) into long-term outcomes is to try to duplicate and sustain the realised value.

The second situation would be mid-term value outcomes in conflict with the long-term ones. The most representative example would be the cost now or cost later question, and cost later would probably lead to more cost. To maximise mid-term value outcomes, some project managers are inclined to save the cost as much as possible in the construction stage. However, such cost saving would possibly incur more costs in the following operation stages. In this situation, successful project experiences suggest that the long-term value outcomes should outweigh the mid-term value outcomes.

In the third situation which is also the most common one, mid-term value outcomes would be conducive to long-term value outcomes. Both visible value and potential value have the ability to facilitate long-term value outcomes.

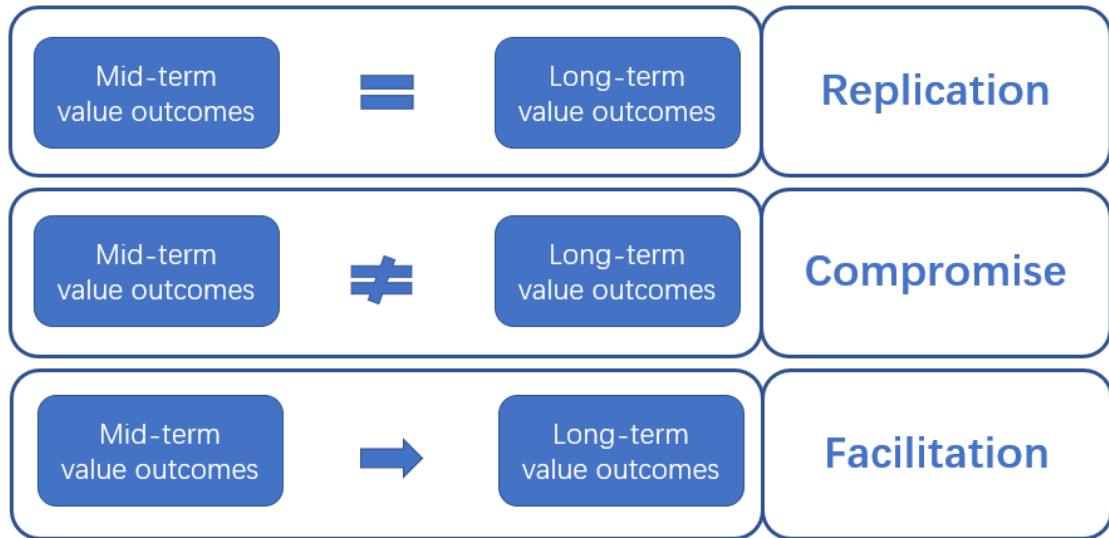


Figure 4-5 Relationships between mid-term and long-term value and respective strategies

By identifying the above three types of relationship between the mid-term and long-term value outcomes, this research can help project stakeholders to better understand the dynamics of value creation and sustainability in PPP projects. Three respective strategies (as shown in Figure 4-5) usually adopted by stakeholders, i.e., replication, compromise or facilitation, are summarised from the cases. Overall, by understanding the different types of relationships between mid-term and long-term value outcomes in PPP projects, stakeholders can make more informed decisions and take actions that support the long-term sustainability of the project and its value to society.

4.2.1.1 Mid-term value outcomes comply with long-term value outcomes

In the cases, there were several respondents reporting that mid-term value outcomes are the same as long-term ones for themselves. Taking Case Beta as an example, one of the long-term goals of the private party was to build a sound relationship with the public party. After the effective and smooth contract negotiation, the public and private parties achieved a solid relationship. As the government officer said: “we were satisfied with our partner [the private party], they are professional, active and reliable”.

However, as the project manager from the private party said: “there is a good relationship foundation between us, but the relationship requires maintenance”. A good relationship has been achieved as a mid-term value does not automatically ensure it can be sustained in the long term.

In this situation, stakeholders chose to maintain the achieved mid-term value outcomes for a long-term purpose. In the above example, potential value such as a good relationship provides the opportunity to become a long-term value outcome. In fact, most of the visible value realised in the mid term would fit with this situation. This is reasonable because visible value is perceived by the beneficiaries as useful and as a direct contributor to the long-term value. For example, one of the most important long-term value outcomes is to satisfy the end-users’ needs and meet their expectations. However, during the entire PPP project lifecycle, on many occasions of a long duration project, such fulfilments of expectations are always required and achieved as mid-term value. The engineer in Case Gamma said: “The problem is how to meet everyone’s need in the long run”.

The achievement of mid-term value outcomes often leads practitioners to adopt the “replication” strategy to sustain these outcomes. Specifically, if stakeholders perceive that the achieved outcomes align with long-term goals, they tend to identify the underlying practices that led to such outcomes and replicate them to ensure the desired outcomes persist over time. In other words, when VCC members achieve visible or potential value outcomes that are consistent with their goals, they seek to maintain those mid-term value outcomes by emulating the practices that were instrumental in their attainment.

The adoption of the replication strategy to sustain mid-term VCC outcomes is driven by incentives. When stakeholders achieve such outcomes, they are motivated to continue the behaviours that led to their success, with the expectation of obtaining further value. The success of this strategy depends on two key factors identified in the

case analysis. First, stakeholders must be able to identify the VCC practices that led to the perceived positive mid-term outcomes. For example, the private party in charge of Case Alpha identified the value of using advanced sewage treatment techniques and afforesting the roof of the underground treatment station, which led to the project exceeding national water quality standards and providing an environmentally friendly and aesthetically pleasing infrastructure. Similarly, local government in the same case identified the value of attracting new manufacturing companies to the area through the affordable reclaimed water provided by the sewage treatment station, which led to job creation and economic growth. The private party involved in operating a sewage treatment station for the public party identified the value of increasing sewage treatment capacity to meet the high demand in the city, which led to initiating Case Beta as a new PPP project. The local government identified the value of improving infrastructure and enhancing the quality of life for local residents in the state-level poor area, which led to partnering with the private party to build the much-needed sewage treatment infrastructure through the PPP model.

However, there could be several reasons why stakeholders may not be able to identify the VCC practices that led to the perceived positive mid-term outcomes. One possible reason is that the benefits of VCC are often diffused and intangible, making it difficult to pinpoint the exact practices that led to the positive outcomes. For example, while stakeholders may perceive improved trust and collaboration as a positive outcome, it may be challenging to identify the specific VCC practices that contributed to this outcome. Another reason could be a lack of awareness or understanding of the VCC concept itself. Stakeholders who are not familiar with the VCC approach may not recognise its contribution to the mid-term outcomes they are experiencing. Finally, it is possible that stakeholders may not prioritise the identification of VCC practices. Instead, they may be more focused on the outcomes themselves, such as improved infrastructure or increased economic growth, without necessarily tracing these outcomes back to specific VCC practices. While stakeholders may not always be able

to identify the specific VCC practices that led to positive outcomes, it is important for them to recognise the benefits of the approach and continue to foster collaboration and innovation in future projects.

Second, stakeholders must have a comprehensive understanding of the lifecycle of the VCC process in PPP projects and be committed to ensuring that the value lasts beyond the medium term. Thus, to sustain the achieved VCC outcomes in PPP projects, stakeholders need to possess both the capability to identify the successful practices and the willingness to maintain the value over the long term. For example, in Case Gamma, the government and the private party worked as a single team to overcome the environmental challenges faced during the construction stage, demonstrating their commitment to ensuring the project's long-term sustainability. The project has not yet entered the operation stage, but the stakeholders are already taking steps to co-create value that will last beyond the medium term. In Case Delta, the private party's role in maintaining the road has been essential, as it has ensured that the road remains in good condition even after years of heavy use. This demonstrates their commitment to ensuring that the value created by the project extends beyond the medium term. In Case Epsilon, the private party is responsible for taking all the operational risks and sharing any excess earnings with the government, which incentivises the private party to provide better services and ensures the project's long-term sustainability. The project also takes full advantage of the hospital's resources to provide better healthcare services to the elderly residents in the care home, demonstrating the stakeholders' commitment to co-creating value that lasts beyond the medium term.

However, in PPP projects, stakeholders may not always have a comprehensive understanding of the lifecycle of the VCC process or be committed to ensuring that the value lasts beyond the medium term. There are several reasons for this, such as the lack of long-term planning, limited communication and collaboration, or misaligned incentives. In addition, external factors such as changes in government policy or economic conditions may also impact stakeholders' commitment to ensuring the value

lasts beyond the medium term. These factors can lead to a focus on short-term gains and neglect of the long-term sustainability of the project. For example, if the private partner is primarily motivated by short-term profits, they may focus on maximising their returns during the construction and operation stages of the project without considering the long-term impact on the community or the sustainability of the project. Similarly, if the government is primarily concerned with meeting immediate infrastructure needs, they may prioritise the construction stage over long-term maintenance and monitoring, which can lead to a loss of value over time. To ensure the success of the VCC process in PPP projects, it is essential that stakeholders have a shared vision and commitment to sustainability. They should be willing to invest in ongoing maintenance and monitoring to ensure the asset's longevity and the long-term benefits for all involved parties.

In addition, the mid-term value outcomes that are aligned with long-term ones are normally taken as indicators assessing project performance (Liu et al., 2016). This is because such mid-term value outcomes provide a perspective of process in the course of the PPP project (Yuan et al., 2009). In fact, sustaining mid-term value over the long run helps to build trust and confidence among stakeholders. When stakeholders see that the project is delivering consistent and sustainable value over time, they are more likely to support and invest in the project. This can help to attract additional funding, improve stakeholder relations, and ultimately contribute to the long term. Thus, this research involves such mid-term value outcomes in the PPP project value assessment framework as well, as elaborated in Section 4.2.2.

To sum up, sustaining mid-term value over the long run is crucial for the success of PPP projects. By focusing on both mid-term and long-term value outcomes, project stakeholders can create a sustainable and successful PPP project that delivers value to society over the long run. Stakeholders are encouraged to choose a replication strategy to sustain the material value for the long run. Such mid-term value outcomes contribute to the holistic assessment of PPP project value.

4.2.1.2 Mid-term value outcomes conflict with long-term value outcomes

According to reports and feedback from participants in Cases Alpha, Gamma, Delta and Epsilon, there is a conflict between mid-term and long-term value outcomes. Mid-term outcomes are related to cost and time savings through efficient procedures. This conflict between mid-term and long-term outcomes was identified as a commonality among the cases studied. For instance, in Case Alpha, the government wanted the private party to begin construction before receiving authorisation from the environmental protection department. The project manager said:

“I couldn’t accede to the demand as the risk was high. Illegal construction not only would impact the project but our company as well. All I could do was to assist the public sector to get the permit as soon as possible and got well-prepared to start construction.”

In Case Epsilon, the private party encountered difficulties when attempting to secure a loan from a bank. The bank requested additional information about the project and an endorsement letter from the government. A government officer explained that this requirement was sensitive because the regulations on PPP projects prohibit the government from promising to pay back the loan if the private party is unable to do so. However, after consulting with professionals, an endorsement letter was generated that included liability exemption. A similar phenomenon was observed in Case Delta as the operation manager said:

“We invested more money on the good quality cable when [we] constructed the road and it was worth it because we know that if the cable has any problems in the next 15 years, we need to pay more to repair it.”

In Case Alpha, the mid-term value outcome was saving time in construction. However, this could only be achieved at the expense of high legal risks. Similarly, in Case

Epsilon, the mid-term value outcome was secure a loan more quickly and successfully, even if it meant taking on potential legal risks. In Case Delta, the mid-term value outcome was saving construction cost, but at the expense of high operational and maintenance cost in the future. These conflicts between mid-term and long-term value outcomes are not uncommon, and a singular focus on mid-term efficiency can lead to criticisms in academia (Morris, 2013). Critics argue that such a focus can neglect important environmental, social and governance considerations necessary for long-term sustainability (He et al., 2019). Additionally, prioritising efficiency over long-term value can result in inadequate investment in maintenance and upkeep, leading to deteriorating infrastructure and decreased value over time. An overemphasis on efficiency can also stifle innovation and flexibility, limiting a project's ability to adapt to changing circumstances and deliver long-term value (Sanz-Llopis & Ostermann, 2020).

The respondents in the cases chose to compromise mid-term value for sustainable long-term benefits, and credited the success of the projects to this decision. In PPP projects, compromising between mid-term and long-term value is crucial to ensure sustainability and long-term success. Focusing solely on mid-term value outcomes, such as cost savings or efficiency, can lead to a project design that neglects the long-term needs of stakeholders. Conversely, prioritising long-term value outcomes, such as sustainability or social impact, may not generate enough mid-term value to justify the investment and support required for project success. Striking a balance between mid-term and long-term value outcomes can produce a sustainable outcome that benefits all stakeholders, including the public, private partners and the environment. This approach ensures the project meets current needs without compromising the needs of future generations, ultimately leading to project success.

However, it is true that some stakeholders may prioritise immediate values over long-term ones, particularly if they are not involved in the project for a significant period. To address this issue, it is recommended that PPP projects engage in stakeholder

management and communication to ensure all stakeholders understand the importance of balancing mid-term and long-term value outcomes. This can involve explaining the potential long-term benefits of the project, as well as engaging with stakeholders to understand their priorities and concerns (Vuorinen & Martinsuo, 2019).

Stakeholder management and communication is a critical aspect of PPP projects, as it helps to ensure that all stakeholders are informed and engaged in the project decision-making process (Van Du et al., 2021). This involves identifying and prioritising stakeholders based on their level of interest, power and influence in the project, as well as their potential impact on the project's success (Xue et al., 2020).

Once stakeholders are identified, it is important to engage with them throughout the project lifecycle, using a variety of communication channels and strategies, including meetings, workshops, surveys and social media. This allows stakeholders to provide feedback and input on project plans and activities, and helps to build trust and understanding between the public and private partners.

In addition to stakeholder engagement, it is also important for PPP projects to be transparent and accountable in their decision making and reporting (Ramaswamy, 2011). This can involve publishing regular progress reports, financial statements, and environmental and social impact assessments, as well as engaging in open dialogue with stakeholders on key project issues and concerns. By actively involving stakeholders in the project decision-making process, PPP projects can better align mid-term and long-term value outcomes with stakeholder interests and values, leading to greater project success and sustainability.

To sum up, while mid-term value outcomes are important for the success of PPP projects, they should be considered in the broader context of the project's long-term sustainability and value creation. An overemphasis on mid-term gains can lead to a neglect of important considerations and ultimately undermine the success and value of the project over time. On the contrary, talking about ideals could hinder project

implementability. In this situation, compromise between the mid-term and long-term value outcomes is encouraged.

4.2.1.3 Mid-term value outcomes are conducive to long-term value outcomes

Typically, the achievement of mid-term value outcomes lays the foundation for the realisation of long-term value outcomes. As demonstrated in all the cases, experts concurred that mid-term value outcomes not only have intrinsic value but also facilitate the creation of other values, including both mid-term and long-term ones. Thus, mid-term value outcomes can act as a catalyst towards the attainment of long-term value.

On the one hand, it is evident that visible value outcomes are instrumental in achieving long-term value outcomes in PPP projects. This can be achieved through stakeholder efforts to improve their competencies and foster innovation. By continuously seeking to improve and innovate, stakeholders can identify and address potential risks and opportunities for value creation. One way to do this is by using sensor technology, which can provide stakeholders with real-time data and insights to facilitate better decision making, enhance efficiency, and minimise risks. For instance, in Case Beta, the project manager recognised that traditional technology required periodic emptying of the water tank to replace wastewater treatment components, leading to increased costs and time wastage. Consequently, he proposed a new technology that could replace the components in the water, which was driven by the anticipation of future operational risks and led to significant lifecycle cost savings.

Visible value outcomes are defined as value outcomes that are highly useful, easily observable, and provide evidence of success. They can build confidence among project stakeholders, increase cooperation, improve communication, and promote a shared commitment to the project's long-term success. The contract manager in Case Gamma emphasised the importance of achieving visible success in the mid-term as a means of

gaining confidence and enthusiasm for the project's long-term potential. This can sustain engagement and commitment over time, and provide momentum and motivation to the project parties. In addition, visible value outcomes can be a useful source of feedback for enhancing the project's long-term performance. They indicate where the project has been successful and where it has not met expectations. Through analysis and reflection, stakeholders can identify opportunities for improvement and adapt their approach to better meet the project's requirements.

In Case Epsilon, the private party used feedback on the number of elderly individuals receiving care, satisfaction levels among care recipients and their families, and cost savings achieved through the PPP arrangement to identify areas for improvement in elder home care services. This included expanding service offerings, enhancing the speed and quality of healthcare, and identifying opportunities for cost savings through efficient resource use and changes to service delivery. One noteworthy improvement was the public party allocating the medical expense of elderly care home patients in the hospital to the private party income and allowing patients to use national medical insurance in the elderly care home. This not only reduced expenses for hospitalised elderly individuals but also motivated the private party to offer better services while earning higher profits. The example mentioned here illustrates how visible value outcomes can also play a vital role in building public trust and support for a project. By showcasing the positive impact of the project on the elderly and their families, visible value outcomes can create a sense of confidence and trust among the public, leading to increased investment in the project and its long-term success.

On the other hand, potential value outcomes can act as a catalyst for achieving visible value outcomes, thereby contributing to long-term success. Trust is a crucial factor for successful PPP projects, as it creates an environment of cooperation and collaboration between public and private sector partners. Improved trust between partners can help to mitigate risks by fostering a more transparent and accountable relationship, where risks and challenges are openly discussed and addressed. Respondents in Cases Beta,

Gamma and Epsilon all reported the importance of trust in their collaboration. In Case Gamma, the project faced significant risks related to financing, construction and operational issues. To mitigate these risks, the partners established a risk-sharing framework that included provisions for sharing revenue and losses. The partners were able to establish a high level of trust, which helped them to work together effectively and resolve issues quickly. As a result, the construction of the undersea tunnel is expected to be completed on time and within budget, and once it starts operating, it is expected to relieve traffic pressure, optimise city function, and promote urban integration. The establishment of trust not only contributes to the project's success in the short term but also lays the foundation for a more sustainable and fruitful partnership in the long term.

The relationship between potential value and visible value is interdependent and cyclical, with visible value acting as a foundation for potential value creation, which in turn contributes to the creation of more visible value. The creation of visible value outcomes can provide feedback that helps to identify areas for potential value creation, which can then be used to generate more visible value.

The recognition of the dynamic and cyclical relationship between visible value and potential value highlights the significance of the facilitation strategy in this scenario. Rather than a simple linear relationship, VCC is an ongoing, reinforcing process in which each type of value contributes to the other. The participants in the cases studied demonstrated an understanding of this relationship and effectively used it to maximise the long-term value of PPP projects. For instance, in Case Epsilon, the completion of the construction phase of the new hospital and elder care home represents a visible value outcome. This outcome can provide feedback to identify potential areas for improvement in the operations of the hospital and elder care home, such as more efficient patient flow, better management of medical equipment, improved medical treatment processes, or enhanced staff training. These potential value opportunities can then be harnessed to create more visible value, such as increased patient satisfaction,

improved health outcomes, or higher staff productivity. Another example can be seen in Case Alpha where stakeholders focused on creating visible value through improved communication channels that can also lead to potential value creation. The public and private parties established regular meetings and progress reports during the process. Thus they can identify potential areas for improvement in the project. These areas included streamlining processes, reducing costs, and enhancing the quality of service delivery. By addressing these areas, the parties created more visible value, such as improved project outcomes and higher levels of stakeholder satisfaction.

Based on the data analysed, the following key points can be identified for stakeholders to implement a facilitation strategy in PPP projects as a way to co-create value:

- **Establish clear communication channels:** It is essential to establish clear and open channels of communication between the public and private parties involved in the project. This can include regular meetings or progress reports, as well as the use of technology to facilitate remote communication.
- **Identify and address potential conflicts:** Early identification and resolution of potential conflicts or disagreements between the public and private parties can prevent them from becoming significant issues later on. This could involve the use of a neutral third-party mediator or the establishment of a dispute resolution process that all parties agree to follow.
- **Develop a risk-sharing framework:** A risk-sharing framework that outlines how the public and private parties will share risks and rewards throughout the project is critical. This can include provisions for sharing revenue and losses, as well as contingency plans in case of unexpected events or changes in the project scope.
- **Provide training and support:** Providing training and support to local communities and stakeholders can help them understand and participate in the project. This can include workshops or training sessions on project management or technical skills, as well as community engagement activities such as town hall meetings or public

forums.

- Use feedback to identify areas for improvement: Feedback from stakeholders can be valuable in identifying areas for potential value creation. Surveys or focus groups can gather feedback, and data analytics can identify trends and patterns in stakeholder experiences. The feedback can then be used to inform process improvements, staff training programs, or other initiatives aimed at improving the quality of service delivery.

By implementing these key points, stakeholders can facilitate the co-creation of value in PPP projects, leading to improved project outcomes, higher levels of stakeholder satisfaction, and increased long-term value.

The VCC practices supporting the transitions from mid-term value outcomes to long-term ones are illustrated in the next chapter. However, based on the above identification of mid-term and long-term value outcomes and discussion on their relationships, the following proposition is developed:

Proposition 4. The mid-term value outcomes could eventually transform into the long-term value outcomes in the form of replication, compromise and facilitation through different VCC practices.

4.2.2 The Assessment of Value in PPP Projects

According to Martinsuo (2020), the term “value” has two distinct meanings. The first refers to a belief or perception of what is important or valuable, while the second meaning refers to the amount of worth or value assigned to something. In the context of PPP projects, the categories of value that are pursued and obtained by stakeholders over the medium and long term are determined by their beliefs and perceptions of what is valuable. However, this focus on the categories of value only represents a portion of

the overall assessment of value, as it does not address the amount of value created. Therefore, it is necessary to consider both the categories of value and the amount of value created when evaluating PPP projects.

Chapter 2 established that value is a quotient that reflects the discrepancy between benefits and costs (Lepak et al., 2007), or the difference between expectations and experiences (Bowman & Ambrosini, 2000). In light of the subjectivity inherent in the concept of value discussed earlier, the latter definition of value, which focuses on the contrast between expectations and experiences, is more suitable. This perspective is supported by empirical evidence, for example, a government officer from Case Gamma said:

“If you ask me about how much to pay is the most cost efficient, I may not have the exact answer. However, I do have an expectation of the cost and the quality. Such expectation comes from previous experience of EPC project.”

Merely identifying the categories of value achieved is insufficient to evaluate the overall value of a PPP project. It is equally important to assess the amount of value that has been created. This notion is reinforced by the statement of a government official in Case Beta who emphasised the importance of considering all the efforts, such as financial, temporal and human resources invested, when assessing the final value of a PPP project. The official also noted that while the benefits of the project should be taken into account, the most crucial factor to consider is its social impact.

The traditional project assessment approach, known as the “iron triangle”, has been heavily criticised in project research for its overemphasis on cost management (Morris, 2013). In contrast, VM also emphasises cost savings, but only if all necessary functions are met (Thiry, 2013). This means that cost management should not be blamed if all stakeholders’ expectations are fulfilled. This viewpoint is supported by a government officer from Case Epsilon, who stated that the private party’s cost is not the primary

concern, as long as they [the private party] meet the performance indicators without opportunism. The government is willing to assist the private party in saving costs through optimising performance indicators. This highlights the importance of considering various values and sacrifices in achieving them when assessing the project value. In other words, scholarly criticism is not directed towards cost management itself, but towards the lack of stakeholder consideration (subjectivity) and lifecycle perspective (dynamics). Consequently, this research defines value as *the degree to which a PPP project's outcome satisfies all stakeholders' expectations, given the resources invested throughout the project's lifecycle*.

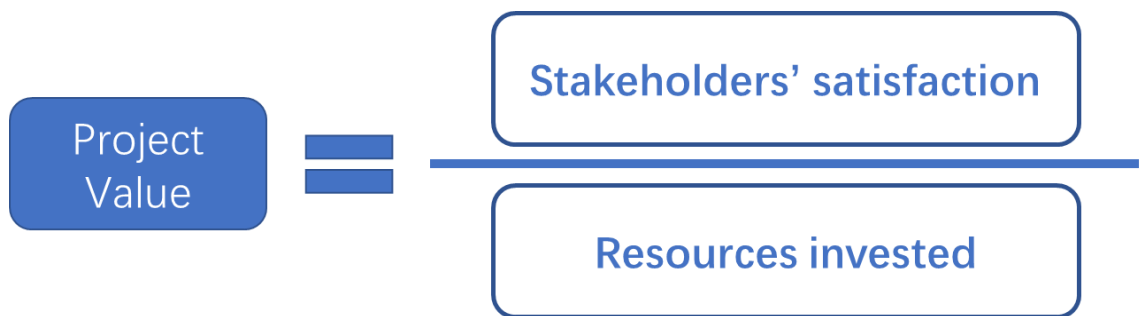


Figure 4-6 Project value assessment framework

This definition includes the subjective and dynamic nature of value considering all stakeholders' value perceptions during the whole lifecycle while attending to the cost incurred by the benefits. In order to assess the value of a PPP project according to this definition, a framework (as shown in Figure 4-6) is proposed to take into account the expectations of all stakeholders throughout the project's lifecycle and balance the benefits against the costs.

According to Bowman and Ambrosini (2000), value is determined by the quotient of expectations and experiences. In the context of PPP projects, experiences are determined by stakeholders' needs and temporal duration. Stakeholders' needs reflect the subjective nature of value, and it is essential to identify all the stakeholders

involved in the PPP project, including the public sector, private sector, and any other stakeholders, such as local communities, NGOs and other interest groups. Once identified, a stakeholder analysis should be conducted to determine the expectations and values of each stakeholder group, aiding in the understanding of what each group hopes to achieve from the PPP project.

Temporal duration refers to the duration for which the obtained value can be sustained. As PPP projects are typically long-term projects, it is crucial to identify the various phases of the PPP project, from planning to implementation and operation. Stakeholders' perceptions may vary throughout these periods, making it crucial to consider how to sustain the value during the entire lifecycle.

On the other hand, the concept of expectation in the context of PPP projects is influenced by the resources invested and past experiences. Resource investment refers to the tangible and intangible inputs that stakeholders put into the project, which affect their expectations of the outcomes. The higher the investment, the greater the expected return. Similarly, the higher the expected benefits, the more stakeholders are willing to invest in the project. Past experience also plays a crucial role in shaping expectations. If a stakeholder has achieved similar benefits with the same level of investment in the past, they are likely to have the same expectations for future value creation.

In summary, the value of a PPP project should be assessed through weighing experiences and expectations. It is necessary to identify all stakeholders involved in the project, and to identify the expectations and values of each stakeholder group, which will help to understand what each group hopes to achieve from the PPP project. The resources invested, both tangible and intangible, should also be considered as they determine the expectations of stakeholders. Similarly, previous experiences with the same investment will influence stakeholder expectations for the next value creation. Furthermore, temporal duration should be taken into account, as the sustained value of a PPP project is critical over its lifecycle. This structured approach allows for the

consideration of all stakeholders' expectations and experiences during the various phases of the PPP project, from planning to implementation and operation, while balancing the benefits against the costs. However, what is worth mentioning is that there is no one-to-one correspondence between cost and benefits, so it is important to assess the value in a holistic way.

The assessment framework of value proposed in this section is conceptual in nature. In this research, the framework was used to assess stakeholders' opinions on their projects based on their subjective rating. During the study, preliminary research was conducted to develop a conceptual value assessment index. How to develop a practical assessment index is also discussed in the future research section in Chapter 6. For this conceptual value assessment framework, the proposition is:

Proposition 5. Project value should be assessed from the relationship between the satisfaction of stakeholders' expectation in terms of mid-term and long-term value outcomes and the resources invested for the outcomes.

4.2.3 Neglect of Value Thinking

An important finding to emerge from the analysis is that both public and private parties are not paying enough attention to project value. In other words, the primary stakeholders more or less lack a systematic value thinking. This claim can be shown in the data from two aspects: the subjective aspect and the temporal aspect.

The subjective nature of project value requires the consideration of the entire group of project stakeholders. It is pivotal for the project manager to address multiple perceptions of stakeholders in a precise and inclusive way. Unfortunately, some opposing situations were observed in empirical cases. Taking Case Epsilon as an example to illustrate how this happens, two findings regarding the lack of subjective

consideration were identified. The first one is that both parties' value perception is not well documented in the meeting records. Case Epsilon undertook a long period of negotiating on the contract terms and many meetings were organised for both of the parties to reach an alignment. A review of seven meeting records showed there were only vague notes of both parties' value appeals. For example, the second record states: "The government requires high quality of the hospital service". This is very vague for the private party to understand. Second, the project consultant from the third party revealed that the government party did not take full account of the private party's interest and insisted on asking for a large amount of security deposit. "This was unnecessary, and I wouldn't suggest the government do so now," said the project consultant, "however, back then, we were not very confident about the private party's financial capability. This agreement took a long time to be reached and I need to admit that the private party sacrificed a lot. Most importantly, this almost caused the failure of the second negotiation." The above evidence highlights the importance of documenting and considering the diverse value perceptions of project stakeholders to ensure successful project outcomes. It also underscores the potential negative consequences when such considerations are lacking.

For a temporal aspect, data suggests that long-term value has not been fully considered as a need. The operation manager from Case Alpha stated: "Previously the sewage treatment plant was operated in the form of BOT, and later on we expanded the plant and constructed the ancillary pipe network in the form of a PPP. However, I didn't feel much difference between the two modes. I need to admit I still put a strong focus on short-term benefits in terms of time schedule and cost saving." The government officer in Case Alpha also felt that they did not put enough emphasis on the long-term value and he explained:

"The newly constructed pipe network did not have sufficient coverage area, which limited the scale of local investment that could

be attracted. As a result, we had to initiate a new project to expand the pipe network. Fortunately, we were better prepared this time around, and the two networks were able to be seamlessly connected.”

It is worth noting that there were stakeholder challenges to the value of interaction experience (which is the potential value of mid-term value outcomes) in the interviews. For example, a project manager from Case Alpha said: “we did have lots of interactions with the public party and the experience was good. However, compared with the interaction experience, I preferred they can offer us more payment.” The same viewpoint was found in the interview with the government officer from Case Delta:

“Compared to our previous relationship with contractors in EPC projects, we’ve put ourselves in a lower position within the PPP relationship. We’ve provided the private party with all possible conveniences to support their process, but I don’t think these reciprocal interactions will be appreciated as much as a tax reduction. In other words, they’re still more focused on cost than on the attitude and support we provide.”

On the contrary, there were interviewees who acknowledged the importance of potential value. The project manager from Case Beta attached much importance to interaction experience with the government. And because he received the benefits from good interaction with the government, he would like to maintain such close and efficient interaction. Such evidence shows that there is not a consensus on the importance of the interaction experience.

Despite the neglect of systematic value thinking observed in the cases, key VCC practices were also identified from the data showing that all the five cases are relatively successful in terms of VCC. This is also supported by the fact that all the interviewees are satisfied with the project (progress). There are six key VCC practices identified from the data, discussed further in the next chapter.

4.3 Chapter Summary

This chapter described the findings reported in the data regarding value outcomes in a PPP project. It answered the first research question “what does value mean to different stakeholders involved in a PPP project?” by revealing the dynamic and subjective nature of value in the PPP project. The dynamic nature of value in a PPP project is largely because it can change over time and be influenced by various factors such as changes in political priorities, economic conditions, social expectations and environmental concerns. As a result, stakeholders may have different views and expectations of what constitutes value, and these views may evolve throughout the project’s lifecycle. Moreover, the subjective nature of value in a PPP project implies that different stakeholders may assign different weights or importance to different aspects of value. For instance, while the private sector may prioritise financial returns and profitability, the public sector may prioritise service quality, affordability and accessibility. Therefore, the identification and assessment of value in a PPP project requires a comprehensive and inclusive approach that considers the perspectives and priorities of all stakeholders. Understanding the dynamic and subjective nature of value in a PPP project is crucial for achieving project success and maximising the benefits for all stakeholders involved.

Two additional research questions emerged from the analysis: “what is the relationship between different value outcomes?” and “how to assess the value of a PPP project?” By demonstrating the three types of relationship between mid-term value outcomes and long-term value outcomes, corresponding strategies to transform mid-term value outcomes to long-term ones are introduced. Replication strategy refers to that process where stakeholders are encouraged to duplicate what has been done right when the mid-term value outcomes comply with long-term value outcomes. Compromise strategy refers to the contrasting situation when the mid-term value outcomes conflict with long-term value outcomes. In this situation, it is important to make a trade-off

between the two and find the balance that can facilitate the feasibility of the project while sustaining long-term benefits in the future. Facilitation strategy refers to most situations when mid-term value outcomes would lead to long-term value outcomes. In this situation the stakeholders are encouraged to conduct in-depth analysis and adopt proper VCC practices.

Based on the detailed discussion of project value and its constituting elements, considering the benefits as well as the cost, this research proposed a value assessment approach for PPP projects that has important theoretical and practical implications. Although the data reported a general neglect of value thinking among PPP project stakeholders, plenty of VCC activities were identified in the cases that can reveal how different stakeholders co-create value with and for each other.

Chapter 5 Findings and Discussion – Value Co-creation Process and Contextual Antecedents

This chapter addresses two key research questions:

1. How is project value co-created during the project lifecycle?
2. What contextual factors enable and facilitate project VCC activities and how?

Drawing on the data analysed, several VCC activities are identified and grouped into two aggregated dimensions: resource management practices and relationship management practices. Each of these dimensions comprises three different approaches (referred to as second-order themes) that encompass various relevant VCC activities (referred to as first-order codes). This chapter also examines the contextual factors that enable and facilitate project VCC activities. Two second-order themes of contextual antecedents are identified: institutional motivators and organisational enablers. Institutional motivators consist of three first-order codes that motivate stakeholders to participate in VCC practices and engage in collaborative and interactive processes: regulative, normative, and cognitive factors. Organisational enablers, on the other hand, consist of three first-order codes that provide the support and initial momentum necessary for the application of VCC practices: relationship foundation, complementary capabilities, and transparent and fair environment. Overall, this chapter provides valuable insights into the practices and contextual factors that facilitate successful project VCC in PPP projects.

Section 5.1 presents the VCC practices observed in the study, categorised into first-order codes, second-order codes, and aggregated dimensions, supported by ample evidence. The first-order codes represent specific VCC activities observed in the cases and contextual factors impacting them. Second-order codes, referred to as approaches, aggregate similar activities and factors. The aggregated dimensions of VCC practice are summarised as resource management practices and relationship management

practices, which are consistent with the literature review. The aggregated dimensions of contextual factors are institutional motivators and organisational enablers, with the former identified through the literature review and the latter emerging from the data analysis. Section 5.2 discusses the results of the cross-case analysis. Section 5.2.1 illustrates the interplay between second-order codes and explains how the two practices influence each other throughout the VCC process. Sections 5.2.2 and 5.2.3 take a further step to discuss the implications of the VCC process on mid-term and long-term value outcomes, respectively. Section 5.2.4 discusses the implications of contextual factors on VCC practices. Finally, Section 5.3 provides a comprehensive summary of the chapter's findings.

5.1 Findings – Value Co-creation Process and Contextual Antecedents

5.1.1 Resource Management Practices

Following the analysis of empirical data on resource management practices in VCC, three second-order codes have emerged: the dialogue approach, the development approach, and the deployment approach. These codes are comprised of several first-order codes, which represent the observed activities of VCC in resource management across the five cases studied (see Figure 5-1).

5.1.1.1 Dialogue approach

This approach pertains to the ways in which resources are distributed among various stakeholders who acquire and assimilate them as sources of project value creation. The dialogue approach implies a sense of interaction in which all involved stakeholders have the willingness and ability to collaborate (Prahalad & Ramaswamy, 2004). From the analysed data, four first-order codes were identified: value framing, information sharing, invited visits, and proactive negotiations.

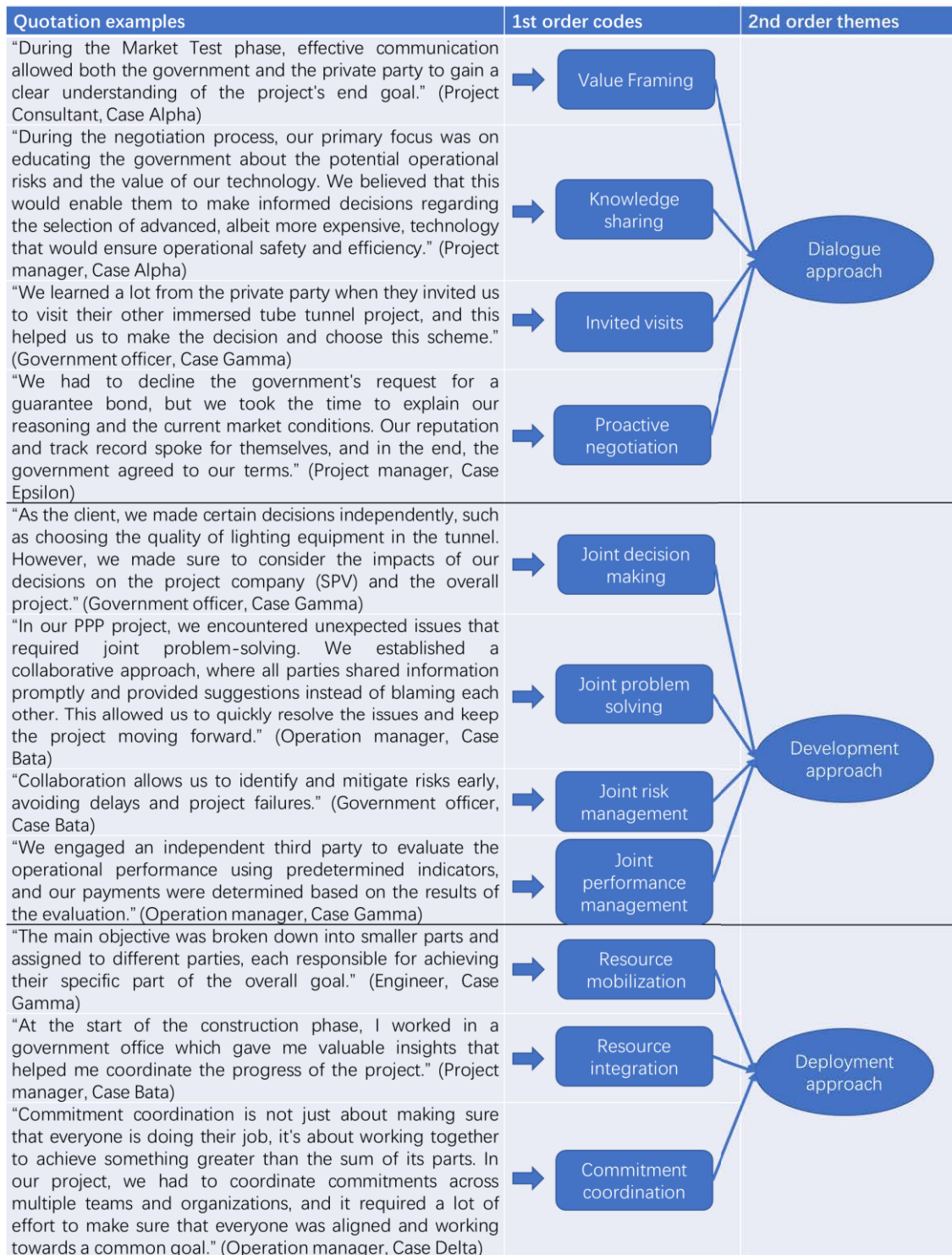


Figure 5-1 Data structure of resource management practices

Value framing. This relates to the activity that stakeholders explicate their value perceptions and concerns to others while trying to understand those of others. This activity happens mostly at the front-end which is a very important phase of PPP

projects (Burger et al., 2019; Zerjav et al., 2021). For example, a government officer from Case Epsilon stated:

“During the market testing phase, we made sure to communicate our expectations clearly. This not only helped us weed out potential private parties that weren’t a good fit, but also allowed us to reflect on whether our requirements were realistic and feasible.”

Another statement from the operation manager from Case Beta also reflects what value framing is:

“We benefited from no preconceived assumptions – plenty of communication was then initiated no matter how unnecessary it seemed to be. This resulted in a comprehensive understanding between the government and us in terms of what were the objectives and requirements and what were the most important ones.”

It should be noted that the value framing process evolves over the lifecycle of the PPP project, particularly during changes and renegotiations, and is initiated every new round of negotiation.

Knowledge sharing. This relates to the activity where stakeholders communicate with each other regarding professional knowledge, implicit information and so on. A project manager from Case Alpha explained:

“During the negotiation process, our primary focus was on educating the government about the potential operational risks and the value of our technology. We believed that this would enable them to make informed decisions regarding the selection of advanced, albeit more expensive, technology that would ensure operational safety and efficiency.”

Passive implicit information sharing also plays an important role in facilitating value creation, as demonstrated by the example of the project manager from Case Beta. This approach involves stakeholders sharing knowledge and information without being prompted or explicitly requested to do so. The project manager in Case Beta stated:

“I was working closely with the government on this project, spending three days a week in their office. One day, I overheard a conversation about an electricity arrangement in our project area, and I realised that we could reschedule our construction stage accordingly to avoid any negative impact. It turned out that the government didn’t realise the importance of this information to us, and we wouldn’t have known about it if I hadn’t been present in their office.”

In the realm of PPP project settings, the practice of knowledge sharing takes on significant importance (Eriksson et al., 2017). Stakeholders actively engage in the exchange of professional knowledge and implicit information. This sharing of insights, as demonstrated by project managers in Cases Alpha and Beta, is instrumental in facilitating value creation and exemplifies the dynamic learning environment nurtured by co-creation within such project settings.

Invited visits. This relates to private parties inviting public partners to visit their previous project cases to demonstrate their capabilities. While this activity was only observed in Case Gamma, it represents a good practice. In this case, the government planned to construct an undersea tunnel but was struggling to determine which technology to use due to high costs and immature technology. During the market test phase, one of the potential private party bidders invited the public party to visit their successful undersea project in south China, where they explained how the technology of an immersed tube would be the best choice. This visit helped the public party decide the construction scheme, as expressed by a government representative:

“Visiting the private party’s previous project site, an immersed tube tunnel, was a valuable learning experience for us. It greatly assisted us in making an informed decision and ultimately selecting this approach for our project.”

It is important to note that while this activity was observed in only one case, it highlights the potential benefits of knowledge sharing through site visits in the PPP context.

Proactive negotiation. This involves actively seeking mutually beneficial agreements and compromises with stakeholders to enhance the value creation process. This activity signifies a project environment characterised by equality, wherein each party involved holds an equal and equitable position during negotiations. Proactive negotiation was observed in all cases and encouraged by the governments. The government officer from Case Epsilon explained that proactive negotiation was necessary as it created innovative solutions, stating:

“We had a tough negotiation with the private party, and conflicts happened, but their attitude showed that they really wanted to make the project a success. If they didn’t care about the details and agreed with all the terms, it would be worrying. How can we expect them to be responsible for us if they are not responsible for themselves?”

In another example from Case Epsilon, the private party wanted franchise rights for both the hospital and the elder care home, but conferring franchise rights on the hospital was prohibited by local regulations. The government managed to use another regulation and transferred a reasonable portion of the hospital’s profit to the private party, leading to an innovative solution.

5.1.1.2 Development approach

This section discusses the bundling of resources as a means to develop capabilities among stakeholders for reciprocal value creation, which is central to the service-dominant logic perspective. As emphasised in service-dominant logic, resources can be divided into operant resources and operand resources (Vargo & Lusch, 2018). Operand resources could produce an effect when an operation or an act is performed on them, while operant resources are the ones that can perform the operation or act on operand resources (Constantin & Lusch, 1994). In other words, operand resources require an operation or act to produce value, while operant resources can produce value directly (Ballantyne & Varey, 2016). This demonstrates the idea emphasised by Vargo and Lusch (2018, p. 2) regarding operant resources and operand resources: resources *are* not, they *become*. Thus, operant resources can also produce value through producing other resources, highlighting the importance of bundling resources for value creation. This approach is reflected in activities such as joint decision making, joint problem solving, joint risk management and joint performance management, which facilitate the bundling of resources and the development of capabilities among stakeholders. The development approach emphasises the collaborative nature of value creation, where resources are bundled together to create reciprocal value.

Joint decision making. This refers to the activity where the main stakeholders are engaged in making important decisions related to the project. Decisions are the result of the conscious and irrevocable process of resource allocation aiming at achieving a particular goal (Skinner, 1999) where information is a crucial input (Eweje et al., 2012). Project stakeholders influence the project through their decisions, first in the front-end by determining the strategic value of the target infrastructure (Williams & Samset, 2010), and second in the operational routines by determining the efficiency and effectiveness. Joint decision making on important topics enables various stakeholders to contribute their information and knowledge in the decision process. More

importantly, their value appeals are the most essential resources that are required in this process, as they determine the goal. The project manager in Case Epsilon said “we were involved in the decision-making process along the entire lifecycle from the project front-end to the operation stage. We highly value the government's trust and appreciate their recognition of our contributions to good decision-making” which highlights both parties’ contributions to the joint decision-making process.

The joint decision-making process leads to the improvement of decision quality under conditions of resource scarcity, such as time pressure and information asymmetry. For instance, a government officer from Case Beta stated that their confidence in decision making was boosted due to the involvement of the private party and the consultant company. Although important decisions still had to be discussed in the government meeting, the time period for decision making was reduced. Similarly, the project manager from Case Delta reported that their decision quality was greatly improved with the government’s support.

Joint problem solving. This refers to the activity that involves main stakeholders collaborating to resolve conflicts or challenges in a reciprocal manner (Mohr & Spekman, 1994). The data reflects a sense of close working relationships among stakeholders, including sharing information promptly when unexpected situations arise, providing suggestions instead of blaming or punishing when expectations are not met, and sharing information about problems and issues instead of hiding them. Case Gamma specifically adopted an approach of a panel of experts to assist with joint problem solving. Both parties hired a panel of 38 experts from the fields of technology, management, policy, finance and law. Every time a problem arose, both parties would organise a meeting with the panel and listen to their suggestions. The operation manager in Case Gamma said “The government sometimes didn’t trust us, but they trusted the experts. So, this approach worked well in our project”. It should be noted that this activity not only requires all stakeholders’ reciprocal interaction and resource

integration but also requires a clear and proper identification of the problems (Aarikka-Stenroos & Jaakkola, 2012). Otherwise, it may result in a waste of time and human resources if every problem is solved jointly, as noted by the project manager in Case Alpha who said “We were facing tons of issues every day back then”.

The joint problem-solving activity enhances the development of various capabilities, such as the ability to empathise, understand different perspectives, and reconcile differences. The government officer in Case Beta acknowledged the importance of understanding the concerns, challenges and requirements of the private party, which allowed them to collaborate as co-solvers rather than gatekeepers. Additionally, joint problem solving enhances the capacity of stakeholders to confront uncertainty and manage rapid changes effectively. Moreover, the performance manager from the consultant company in Case Delta highlighted an instance where both parties were required to respond to a sudden request from the Ministry of Finance. In this case, both parties collaborated and worked swiftly to provide the necessary information, resulting in a successful outcome. This example illustrates how collaboration enabled quick responses to unexpected requests, leading to successful outcomes.

Joint risk management. This refers to the collaborative efforts of the main stakeholders in dealing with unforeseen and unquantifiable risks (Rahman & Kumaraswamy, 2004). This activity involves sharing risk-related contractual arrangements, particularly when there is uncertainty about the risks (Lo et al., 2006). It also involves adopting relational contracting strategies to mitigate risks, as highlighted by Rahman and Kumaraswamy (2002). For example, a project consultant in Case Gamma said:

“Both parties showed enough team spirit to reach a reasonable contractual risk allocation despite the identification of many risks in the beginning. As a result, when the change of use right of the sea area occurred, the private party received compensation for redesigning the implementation scheme from the government

conveniently, since the political risk was allocated to the government.”

Relational contracting was also used in Case Delta, where the government officer noted that they practised joint risk management with the private party instead of transferring all risks to them. This approach benefited both parties, as the private party was willing to raise concerns and difficulties, thus avoiding many potential problems. "They had confidence that we would support them rather than leaving them to tackle issues on their own," the government officer explained.

As such, the capabilities developed from joint risk management encompass a wide range of skills. This collaborative approach encourages stakeholders to adopt a holistic perspective when assessing risks, going beyond the traditional project-related risks identified in risk registers to project delivery to extend to factors such as political and environmental elements. This capability enables them to gain a more comprehensive understanding of the potential challenges they may face and how to effectively address them.

Moreover, joint risk management instills a proactive approach to risk monitoring and response. Stakeholders become adept at continuously monitoring risks and adjusting their strategies promptly to minimise potential negative impacts. This proactive stance not only ensures that risks are managed effectively but also reduces the likelihood of costly disruptions or project failures. In essence, joint risk management equips stakeholders with a set of valuable skills that contribute to successful project outcomes and long-term collaboration.

Joint performance management. This refers to the activity in which the main stakeholders engage in performance assessment, which serves as the basis for payment from the public to the private party. This process involves joint performance criteria determination and joint performance appraisal. For example, in Case Epsilon, the government and private party jointly consulted external professionals for the

determination of performance criteria. Additionally, the private party hired a consultant to compile indicators for performance assessment. The performance evaluation process in Case Epsilon involved an impartial third party that invited both parties to the site for inspection and evaluation, within six main categories. The third party acted as the main evaluator, while the public party shared their suggestions and opinions, and the private party explained the challenges they faced and the efforts they invested. This joint performance appraisal provided an opportunity for both parties to understand each other's expectations and difficulties and improve the quality of their relationship. Importantly, all parties agreed on the evaluation results.

Joint performance management can help develop a range of capabilities for both public and private parties involved in infrastructure projects. First, it can improve communication and collaboration skills, as both parties work together to establish performance criteria and appraise each other's performance. Through this process, they gain a better understanding of each other's expectations and goals, which can help them align their efforts towards achieving project success. Second, it enhances negotiation and conflict resolution skills through collaborative performance assessment and criteria determination, which often require negotiations between public and private parties. This process not only refines their negotiation abilities but also equips them with the capacity to effectively resolve conflicts, thereby promoting improved cooperation and collaboration. Finally, joint performance management can also help develop leadership and decision-making skills. The process involves making informed decisions based on performance data, which requires both parties to analyse information, consider various options, and make decisions in a timely and effective manner. This can help build confidence and improve decision-making capabilities for both parties, which can be valuable in future projects.

Joint working activities within the development approach represent a collaborative effort among primary stakeholders with aligned goals. This collaboration fosters

teamwork, mutual support and a willingness to contribute resources, including finances, human resources and technical expertise, to achieve desired project outcomes.

The development of capabilities from these joint working activities can be viewed from two perspectives: the resources themselves and the relevant capabilities that are derived from the activities. The joint working activities help to develop the resources themselves by combining the public and private parties' resources to create a more significant pool of resources. This pool of resources is then leveraged to develop new capabilities, such as new technology adoption, expertise or knowledge, that can be used to improve the project's outcomes. These joint working activities also develop relevant capabilities that are essential for successful project implementation. For example, joint problem-solving activities can develop capabilities such as the ability to stand in others' shoes, make sense of other perspectives, and reconcile differences. Joint risk management activities can develop capabilities such as the ability to confront uncertainty and handle rapid changes. Joint performance management activities can develop capabilities such as the ability to assess performance criteria objectively and improve relationship quality between the public and private parties.

5.1.1.3 Deployment approach

This relates to the configurations of shared resources and developed capabilities to achieve efficient and effective exchange and utilisation of service. As stated before, in service-dominant logic literature, the term service (singular) is conceptualised as applied resources and capabilities which is the foundation of exchange for value creation (Vargo & Lusch, 2007a). In a PPP context, there are plenty of service exchanges between the public party and the private party during the VCC process. The service exchanges between the public and private parties are not limited to a specific service being exchanged for another specific service. Rather, the services are provided through a service pool, which is available to both parties and other secondary

stakeholders. Thus, the deployment of these resources and capabilities is pivotal to the value creation of the entire project lifecycle. The deployment of these resources and capabilities involves three first-order codes identified in the data: resource mobilisation, resource integration, and commitment coordination. These activities demonstrate how the deployment of resources and capabilities can create value in PPP projects.

Resource mobilisation. In the context of PPPs, resource mobilisation involves the process of gathering and leveraging resources from various stakeholders to enhance the value creation process. The process of resource mobilisation requires collaboration and communication among the primary stakeholders to understand the current situation and the resources required to achieve the project objectives. For instance, in Case Beta, when upgrading the water quality criteria was required to comply with the new environmental regulations, the public and private parties, along with the consultant company, organised a meeting to discuss the necessary resources and contributions from each party. This resource mobilisation process facilitated a shared understanding of the situation and provided a common platform for resource integration and commitment coordination. Resource mobilisation can lead to the identification of new resources and capabilities that can enhance the project's value creation and lead to better outcomes.

Another example of resource mobilisation in PPP projects is the identification of necessary funding sources. In Case Delta, the public party identified that they did not have enough funding to complete the project within the desired timeframe. The private party, who had experience in securing financing, assisted in identifying potential funding sources and helped negotiate favourable terms with lenders. This resource mobilisation activity helped ensure that the project was completed on time and within budget. Resource mobilisation is a key activity in the deployment approach that helps identify, acquire and allocate the resources required to achieve the project objectives. By involving all the primary stakeholders in the process of resource mobilisation, the

PPP project can leverage the collective knowledge, expertise and resources of all stakeholders, leading to improved outcomes and value creation.

Resource integration. This activity involves combining resources and capabilities to achieve collaborative value creation. The management literature emphasises the importance of resource integration as resources are scarce and a source of competitive advantage in a dynamic environment (Laud et al., 2015). In the VCC process of PPP projects, integration becomes necessary as no single party can accomplish the huge infrastructure project alone. First, resource matching is essential to ensure that the resources from all stakeholders are compatible and complementary. In cases where the resources are too different or the same, they become difficult or unnecessary to integrate. For example, in Case Alpha, the design company and the construction company had conflicting opinions that made integration challenging. It is important to note that when all stakeholders have the same resources, resource integration may not be necessary. However, this highlights the importance of the resource mobilisation activity, which aims to identify the required resources and prevent duplication of efforts. Thus, while resource integration is crucial in achieving collaborative value creation, it is equally important to have a clear understanding of the required resources and prevent duplication through effective resource mobilisation.

Second, it is important to integrate resources so they can complement each other and generate synergistic effects. The ultimate goal is to create a synergistic effect, where the combination of resources generates a value greater than the sum of its parts. This is commonly referred to as the “the whole is more than the sum of its parts” result. For instance, in Case Gamma, the private party and the local government combined their resources to resolve the significant delay on land expropriation. Both parties contributed their resources to achieve the objective, and this resulted in successful resource integration. The project consultant introduced the situation:

“We faced significant delays due to land expropriation issues in two

areas. In one area, the stakeholders demanded more compensation, which our private party decided to pay in full. In the other area, the land was owned by the army and not under the authority of the local government. However, the local government leadership actively communicated with the army leadership to secure the land use right.”

Overall, effective resource integration requires proper resource matching and a collaborative effort by all stakeholders to leverage their resources and capabilities to achieve project objectives. However, it is important to note that not all resources need to be integrated. In situations where resources from all stakeholders are similar integration may not be necessary. In such cases, the focus should be on resource mobilisation to ensure that all necessary resources are identified and made available for the project. Through successful resource integration, PPP projects can realise mutual benefits and achieve more significant value creation.

Commitment coordination. This relates to the activity involving aligning commitments and efforts of different stakeholders to achieve synergetic value creation. This activity has a significant emphasis on timing, as it requires timely coordination to boost efficiency and reduce redundancy during the VCC process. Effective commitment coordination can lead to successful outcomes, as evidenced in Case Gamma, where stakeholders worked together to fight against COVID-19. The contract manager noted that “COVID-19 influenced the world in a significant way, and our construction progress was hugely threatened. However, we managed to coordinate very well by every stakeholder trying to do what they can.” This coordination resulted in no COVID infections among the over 3,000 workers on the construction site.

Another example from Case Gamma demonstrates long-term commitment coordination. The project initiated an operation team at the beginning of the project, which participated in the construction design by providing operational requirements. The operation manager stated:

“We wanted to make sure that we were fully prepared for the operational phase, so we took the initiative to visit three undersea tunnels and many successful municipal roads. By doing so, we were able to learn from their experiences and incorporate operational needs into the construction process in an organic way.”

The team then integrated operational needs organically into the construction, ensuring long-term commitment coordination. Overall, commitment coordination is a critical activity that involves aligning the efforts and commitments of various stakeholders to achieve synergistic value creation. This process places significant emphasis on timing to enhance efficiency and reduce redundancy during value co-creation..

To sum up Section 5.1, a proposition is developed:

Proposition 6. Resource management practices, such as the resource dialogue approach, resource development approach and resource deployment approach, are crucial to the success of the VCC process in PPP projects. The dialogue approach involves fostering a shared understanding among stakeholders to identify resources. The development approach centres on bundling and procuring resources, while the deployment approach emphasises the transfer of knowledge into capabilities and the coordination of these capabilities. Together, these approaches form a critical foundation for effective resource management and collaboration among stakeholders in PPP projects.

The findings echo previous studies that suggested the timing (Zahra & George, 2002) and the manner (Sirmon et al., 2007) of resource deployment play important roles in value creation. In summary, the deployment of these resources and capabilities involves three first-order codes identified in the data: resource mobilisation, resource

integration, and commitment coordination. Resource mobilisation refers to the process of identifying and acquiring necessary resources from both parties and secondary stakeholders. Resource integration involves combining the resources and capabilities of both parties and secondary stakeholders to create value in the project. Finally, commitment coordination involves aligning the commitments and goals of all stakeholders to ensure a successful outcome. These activities demonstrate how the deployment of resources and capabilities can create value in PPP projects.

5.1.2 Relationship Management Practices

In project management research, it is widely acknowledged that establishing good stakeholder relationships is crucial for the successful delivery of projects (Chang et al., 2013). In PPP projects, the involvement of heterogeneous stakeholders requires even more effective relationship management to ensure the success of the PPP process (Zou et al., 2014). Smyth and Edkins (2007) define relationship management as an analysis of relationships, an investment in relationships, and a clear understanding of the value that can be derived from those relationships. Similarly, Zou et al. (2014, p. 266) suggest that in the context of PPPs, relationship management refers to “a set of comprehensive strategies and processes of partnering” that aim to maximise project value for stakeholders by developing strong relationships. Effective relationship management practices can help build trust among stakeholders, encourage information sharing, and foster collaboration. These practices can also help mitigate potential conflicts and promote the achievement of shared goals.

To effectively manage stakeholder relationships in PPP projects, it is essential to have a nuanced understanding of these relationships at the individual level (Osborne et al., 2015). Relational capital literature has emphasised the importance of relational behaviours that establish and enhance both social and emotional links among individual actors (Grönroos, 2000; Karpen et al., 2015). The participants in the PPP

projects reported various relational management practices that focused on collective leadership, partnership commitment, and goal alignment (see Figure 5-2 for the data structure). These practices are essential in developing good relationships among stakeholders, which can maximise project value. In the following discussion, the three approaches are further explained, and their corresponding dimensions of relational capital are presented to draw parallels among them.

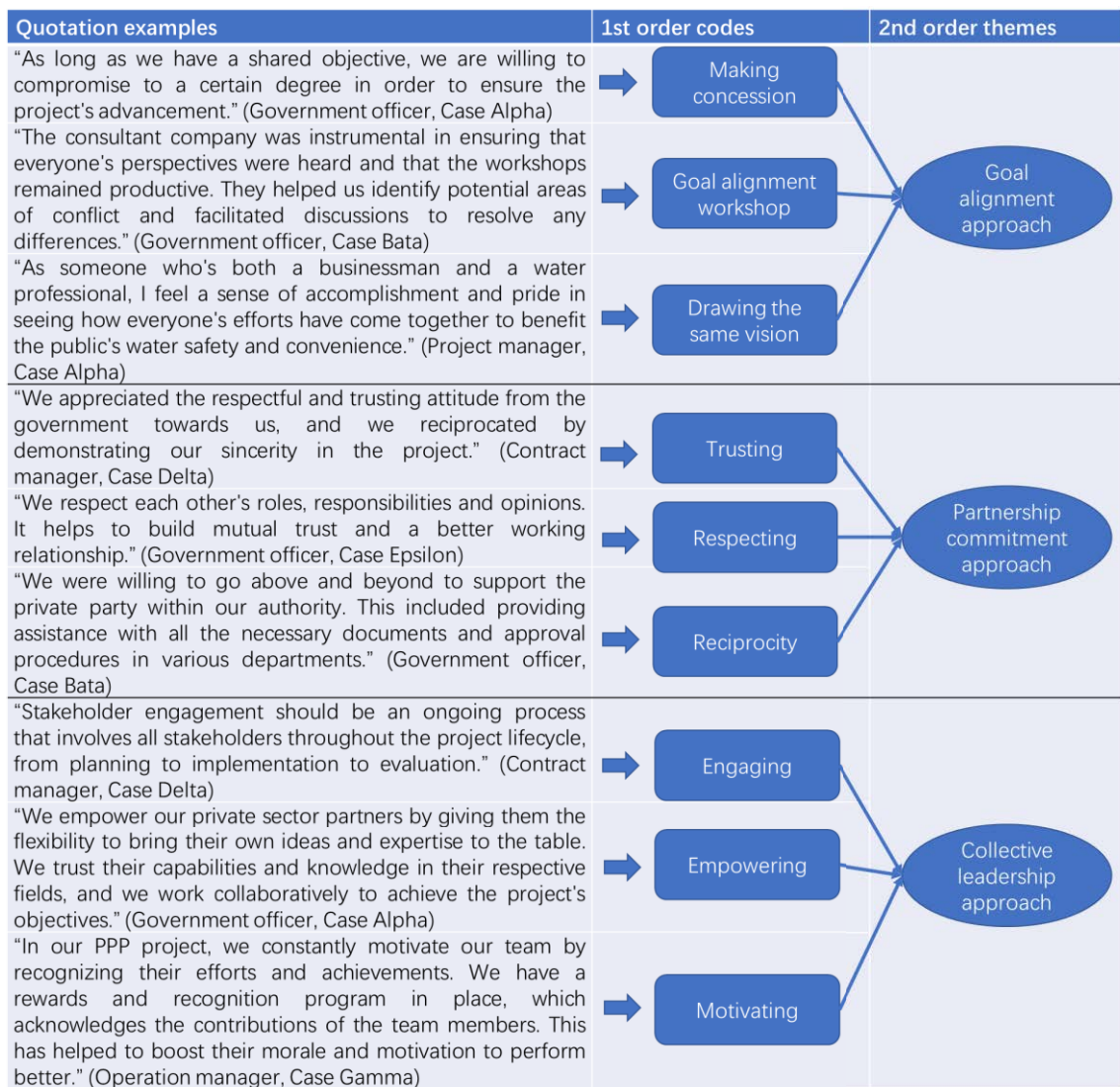


Figure 5-2 Data structure of relationship management practices

5.1.2.1 Goal alignment approach

This approach focuses on activities that align the goals and objectives of different stakeholders to ensure a shared purpose and direction in the value creation process in a PPP project (Mom et al., 2015). These activities could involve *making concessions*, *organising goal alignment workshops*, and *developing a shared vision*. The goal alignment approach corresponds to the cognitive dimension of relational capital, which emphasises the importance of a shared cognitive framework among stakeholder networks. Through the goal alignment process, stakeholders develop a shared understanding of project goals, objectives and priorities, which can help to reduce misunderstandings, conflicts and other obstacles to successful collaboration. In the context of PPP projects, where multiple stakeholders with diverse interests and objectives are involved, the goal alignment approach can be a critical tool for building trust, promoting cooperation, and enhancing project performance.

Making concession. This activity refers to being flexible and willing to compromise in order to reach mutually beneficial agreements with stakeholders. It was observed in all the cases studied, and appears to be essential for achieving mutually agreed-upon project goals. For instance, in Case Delta, the government officer acknowledged the importance of striking a balance between achieving the public interest and ensuring reasonable profit for the private party. Similarly, the project manager in the same case emphasised the need to make concessions in response to changes in regulations, even if it meant facing adverse effects.

As another example, in Case Beta, the public sector partner initially insisted on including certain sustainability requirements in the project contract, such as the use of renewable energy sources. However, the private sector partner argued that these requirements would be too costly and ultimately harm the project's financial viability. After some negotiation, the public sector partner agreed to modify the sustainability requirements to be more flexible, allowing the private sector partner to choose the most

cost-effective options that still met the project's overall goals. This concession helped ensure that the project was both sustainable and financially feasible. The ability to make concessions requires a willingness to compromise and prioritise the overall success of the project over individual interests. This willingness can foster trust and facilitate cooperation among stakeholders. The ability to navigate complex stakeholder relationships in this way can also contribute to the development of relational capital and the success of the PPP project.

Goal alignment workshop. This activity was observed in all the cases and seems to be necessary for goal alignment. The workshops can take various forms and involve different participants, bringing together stakeholders to collaboratively define and align their goals, objectives and strategies, depending on the project's specific context and requirements. In Case Gamma, for example, expert panels were invited to participate in goal alignment workshops to provide impartial and professional opinions, while in other cases, consultant companies were involved as impartial third parties to facilitate the alignment process.

Goal alignment workshops are essential for establishing a shared cognitive framework among stakeholder networks, as they allow participants to explore their perspectives and negotiate their interests. Through such workshops, stakeholders can identify areas of potential conflict and work together to resolve any differences, ultimately creating a shared understanding of project objectives and expected outcomes. Additionally, goal alignment workshops can help build trust among stakeholders, which is critical for the success of PPP projects. When stakeholders understand each other's objectives and trust one another, they are more likely to work collaboratively and effectively towards project success.

Establishing a shared vision. In PPP projects, this activity aims to create a shared understanding and commitment to a compelling vision that inspires and motivates all stakeholders to work together toward a shared goal (Jansen et al., 2009). It is important

for each party to contribute meaningfully to their respective roles and incentivise collaborative efforts (Eriksson et al., 2017). The development of a shared cognitive framework is crucial to successful VCC, as it creates a clear goal for everyone and instills a sense of mission that motivates stakeholders.

For example, in Case Alpha, the public and private parties agreed on a shared vision of providing clean, safe and affordable water and sanitation services to all members of the community. This vision also included specific goals such as reducing waterborne illnesses, increasing access to water and sanitation infrastructure, and promoting sustainable water management practices. The project manager from Case Alpha said: “As someone who’s both a businessman and a water professional, I feel a sense of accomplishment and pride in seeing how everyone’s efforts have come together to benefit the public’s water safety and convenience.” Similarly, in Case Epsilon, both the public and private parties were able to establish a shared vision that aimed to improve access to high quality healthcare services for all members of the community, as well as providing high quality nursing services to the elderly. This vision encompassed specific goals, such as reducing wait times for appointments, increasing the availability of specialised services, and promoting preventative care measures. By agreeing on a common goal, both parties were able to work collaboratively towards achieving the shared vision, which ultimately resulted in a successful PPP project outcome. Establishing a shared vision serves as a cornerstone for this process, articulating a clear and inspiring goal that guides the collaborative effort. Through this activity, the primary parties can work towards mutual benefits and incentives that are essential to effective VCC.

The activities involved in the goal alignment approach play a crucial role in developing a shared cognitive framework that enables the exchange of information and promotes integration among stakeholders (García-Granero et al., 2018). This shared cognitive framework comprises the expectations of the public and private parties regarding the

project outcomes and how these outcomes should be achieved. It is worth noting that having diverse cognitive frames may lead to a paradoxical cognitive process that facilitates balanced decision making (Smith & Tushman, 2005). However, such diversity may also give rise to conflicts, disagreements and inadequate sharing of information, especially in the context of PPPs.

In this regard, it is essential to recognise that building a shared cognitive framework is not a one-time event but rather an ongoing process that requires constant attention and effort. Stakeholders must be willing to engage in open communication and actively seek common ground to ensure that the shared cognitive framework remains relevant and up-to-date. In addition, stakeholders should embrace diverse perspectives and be willing to engage in constructive debate to identify potential pitfalls and develop innovative solutions that benefit all parties involved. By doing so, stakeholders can avoid cognitive traps and leverage diverse perspectives to achieve shared goals and objectives.

5.1.2.2 Partnership commitment approach

This approach concerns the emotional and behavioural investments of stakeholders in the PPP project. The first-order codes under this approach are *trusting*, *respecting* and *reciprocity*. These activities are aligned with the affective dimension of relational capital, which emphasises the importance of motivation, expectations and norms among related parties (Kang et al., 2007). Thus, the activities involved in this approach not only reflect the affective attachments among stakeholders but also instill relational norms that guide their behaviours.

Trusting. This activity reflects the stakeholders' confidence in each other's reliability, intentions, capabilities, and favourable future actions (Mom et al., 2015). Trust is built through cognitive transformation, and it requires mutual respect and understanding. For example, in Case Gamma, the engineer emphasised the importance of respect and

trust in the cooperative relationship between the public and private parties. The government's respectful attitude towards the private party's expertise and social responsibilities helped establish trust between the parties.

Another essential factor that contributes to trust building is cautious evaluations of each other's capabilities. The private party mainly considers the government's credit, while the public party pays attention to the private party's financial capability as well as the capability to deliver the project successfully. Evaluating each other's strengths and weaknesses can help build mutual trust.

Moreover, trust is also built on previous experiences. In Case Beta, the project manager mentioned that the previous cooperation between the public and private parties helped establish trust in the current project. Thus, experience plays a vital role in building trust among the stakeholders. Trust is a critical component of building affective relational capital in PPP projects. It requires mutual respect, understanding and cautious evaluation of each other's capabilities. By establishing trust, stakeholders can collaborate more effectively and achieve better outcomes.

Respecting. This activity refers to the stakeholders demonstrating a courteous and respectful attitude towards each other during the PPP project. Although this behaviour may seem obvious, it is critical in establishing a positive working relationship among stakeholders. Respectful behaviour is an essential component of relational commitment in VCC processes and can contribute to trust building between parties. The public party in Case Epsilon emphasised the importance of respect in their collaboration with the private party, stating that "We respect each other's roles, responsibilities and opinions. It helps to build mutual trust and a better working relationship." This activity of respecting is not limited to the relationship between the public and private party, but it is equally important among the private consortium members as well, which includes the design company, construction company and operation company, among others. In fact, the level of respect and cooperation among the private consortium members can

greatly impact the overall success of the PPP project.

Respectful behaviour promotes a positive working environment and helps avoid conflicts that can impede project progress. As the project manager in Case Delta noted, “Respect is the foundation of our cooperation with the private sector. We are aware that their expertise is critical to achieving project success, and we show them the respect they deserve.” Respectful behaviour involves acknowledging the value that each stakeholder brings to the project and being open to diverse perspectives. In Case Alpha, for example, the private party was able to offer insights and innovative solutions to the project, which were not previously considered by the public party. The public party recognised the private party’s value and expertise and respected their input, leading to a successful outcome. As the project manager stated, “We respected the private party’s expertise and listened to their suggestions. This helped us develop a better project plan that met the needs of all stakeholders.”

Respectful behaviour also involves clear communication and a willingness to listen to and understand others’ viewpoints. In Case Beta, the public party listened to the private party’s concerns regarding project risks and took proactive measures to address these concerns. The private party appreciated the public party’s respectful attitude and willingness to work collaboratively, which helped establish a positive working relationship.

Reciprocity. This activity refers to a situation where parties are committed to returning favours when they receive benefits from their cooperation with the other party. This activity establishes a sense of fairness and mutual obligation among stakeholders (Baba et al., 2021) which is crucial for ongoing supportive exchanges (Wasko & Faraj, 2005). Moreover, reciprocity fosters communication among stakeholders and helps to obtain their value perceptions and concerns. Scholars in service-dominant logic emphasise the importance of reciprocal value propositions based on the notion of complementary objectives among stakeholders (Truong et al., 2012). In the context of

PPP, this activity boosts the role flexibility as each of the parties may initiate a value proposition. For instance, the project manager in Case Epsilon emphasised the importance of reciprocal value propositions by mentioning how they often assisted the government in applying for policy-based funding. Although these tasks were outside their responsibility, they offered to help since they were better at filling out the documents and were familiar with the process. This behaviour demonstrated their willingness to reciprocate and their commitment to the success of the project.

5.1.2.3 Collective leadership approach

This approach emphasises the importance of collective leadership in PPP projects, where primary stakeholders are responsible for and involved in the tasks of project leadership (Love et al., 2020). These activities involve distributing leadership roles and responsibilities among multiple stakeholders, fostering collaboration, and leveraging diverse perspectives and expertise. *Engaging*, *empowering*, and *motivating* are first-order codes of this approach. The structural dimension of relational capital, which represents the connection patterns among stakeholders, is relevant to this approach. These patterns demonstrating the configurations of the network are depicted in the ways of actor connectedness, participant hierarchy and centrality, and the strength of ties (Kang et al., 2007; Matinheikki et al., 2016).

The collective leadership approach emphasises the importance of collaboration among stakeholders towards achieving shared goals in PPP projects. The primary stakeholders are responsible for establishing a leadership structure that enables effective communication, decision making, and problem solving among all parties involved. This approach encourages stakeholders to work together towards a shared vision, which can lead to more successful PPP projects. Effective engagement of stakeholders in the VCC process, empowering competent stakeholders, and motivating everyone's involvement are key activities that help establish and maintain the appropriate structure

for collective leadership. By adopting this approach, PPP projects can ensure that all stakeholders are actively involved in the decision-making process and that their voices are heard. This can result in more effective stakeholder interaction, leading to better project outcomes.

Engaging. This activity refers to the activities and structures used by an organisation to involve all relevant stakeholders in the project's operations and decision making. Engaging stakeholders involves actively involving them in the co-creation process, soliciting their input, and fostering a sense of ownership. This can include a range of approaches, such as consultations, forums and feedback mechanisms. Engaging stakeholders also involves various techniques and technologies to foster connectedness among stakeholders. This approach enhances communication and collaboration among stakeholders, promoting a more cohesive network. In PPP projects, technology plays a significant role in engaging stakeholders, and many tools are used for this purpose. For instance, the WeChat group is commonly used as a communication channel for sharing information and coordinating tasks. In addition, proximity and close working relationships are essential for effective engagement. In some PPP projects, stakeholders work closely together, such as in Case Gamma, where the special purpose vehicle (SPV), design company and construction site were located in close proximity. Furthermore, in Case Beta, the project manager worked closely with the government office, even having a working desk in the government office to ensure both parties were well-engaged.

The aim of this approach is to ensure that all stakeholders have a voice in the project, and that their views, concerns and needs are taken into account. Effective stakeholder engagement is essential for building trust, creating a sense of ownership, and promoting sustainable outcomes. Effective community engagement strategies help stakeholders understand the needs, expectations and concerns of each other and build trust and long-term relationships with each other. It requires clear communication,

mutual respect, and a willingness to work collaboratively with all stakeholders.

Empowering. The activity of empowering stakeholders in PPP projects involves providing stakeholders with the resources, knowledge and authority to actively contribute and make decisions (Alexiev et al., 2019), particularly primary stakeholders (i.e., the public and private parties). This approach aims to strike a balance between centralisation and delegation, and expand decision boundaries, ultimately leading to greater stakeholder engagement. For example, in Case Epsilon, the project manager noted that they were empowered to provide suggestions and request design changes based on their construction situation. This level of empowerment was not possible in traditional procurement approaches, where the government played a more active role in project management. By shifting to a PPP model, the government can adopt a more passive role as a governor, while private parties are empowered to manage the project. This approach to empowerment helps to promote collaboration and establish a sense of ownership among stakeholders, which can enhance the likelihood of project success.

The concept of stakeholder empowerment has been linked to an increased sense of self-worth and belonging to a group, which can enhance the overall interaction experience. In the context of service interactions, empowering refers to collaborative efforts aimed at negotiating the power dynamics between both parties to influence the outcome of the interaction (Neghina et al., 2014). During co-creation, empowering involves taking responsibility for the outcome of the interaction and intervening when necessary for the benefit of the overall goal. This sense of ownership and agency can create value for all actors involved. By empowering stakeholders to work together towards a shared goal, co-creation efforts can lead to more positive outcomes for everyone involved.

In addition, empowering stakeholders in PPP projects may involve providing them with access to relevant information, training and development opportunities, decision-making authority, and resources to carry out their tasks effectively. For instance, in

Case Epsilon, the private party empowered the local community by providing them with training on how to use the new information system of the hospital. This not only helped improve the hospital's operational efficiency by ensuring that the system was being used effectively but also built trust and goodwill among the community members, which is crucial for the long-term success of any PPP project.

Motivating. This refers to activity involving creating an environment that encourages stakeholders' active participation and fosters a sense of purpose and fulfilment such as setting clear goals and incentives to encourage stakeholder participation in the VCC process. This activity is essential for mobilising passive stakeholders and fostering their engagement. While public parties or SPVs often employ this strategy, it can also benefit private parties and their sub-contractors, who may not be accustomed to making autonomous decisions and taking on corresponding responsibilities. In Case Delta, for instance, the SPV incentivised the sub-contractor of the green belt company to speed up and actively engage in the main road construction project. Similarly, in Case Alpha, the government encouraged end-users and the local community to express their expectations and foster satisfaction by demonstrating the project blueprint and design drawing. By motivating stakeholders through clear goals and incentives, VCC projects can create a sense of ownership and responsibility among stakeholders, leading to more successful outcomes.

Motivating includes motivating the team and the stakeholders. Motivating the team is crucial for achieving success in PPP projects. This involves recognising and rewarding team members' efforts, involving them in decision making, creating a positive work environment, setting clear goals and expectations, providing necessary resources and support, and offering training and development opportunities. Similarly, in the VCC process, the motivating activity is an essential strategy for encouraging stakeholders to actively participate in the project. Setting goals and incentives that align with the stakeholders' interests and priorities is an effective way to motivate passive

stakeholders to contribute their expertise, resources and knowledge to ensure project success. This approach ensures that all stakeholders invest in the project's success which leads to better outcomes for all involved. By actively engaging stakeholders through motivation, PPP projects and the VCC process can achieve their goals and objectives.

To sum up Section 5.2, the proposition is developed:

Proposition 7. Relationship management practices play a crucial role in complementing resource management practices in VCC practices by facilitating the accumulation of relational capital. The goal alignment approach pertains to the cognitive dimension of relational capital, emphasising the importance of a common cognitive framework. The partnership commitment approach pertains to the affective dimension, promoting relational norms among stakeholders. The collective leadership approach pertains to the structural dimension, facilitating a denser and closer network among stakeholders. Together, these relationship management practices support effective collaboration and contribute to the accumulation of relational capital, which can enhance the VCC outcomes of PPP projects.

To sum up, two main practices were identified from the data collected in the five cases to provide a comprehensive understanding of the VCC process in PPP projects. These practices were observed to include three approaches each, consisting of various activities that contribute to how value is co-created among different stakeholders. While the classifications are based on the data and the conceptual framework from the literature, they do not represent the only reality of the VCC process. There may be other activities and approaches that contribute to the process but were not observed in the data. Additionally, the classifications are not mutually exclusive but may overlap to

some extent. For example, the jointly working activities in the development approach of resource management practice may overlap with the collective leadership approach of relationship management practice. However, the distinction lies in their primary emphasis: the former involves operational activities that are carried out collaboratively with the pooling and development of resources, while the latter focuses on activities that facilitate collective relational norms among stakeholders. Overall, these classifications provide a useful framework for understanding the various approaches and activities involved in the VCC process in PPP projects, but they should not be considered definitive or exhaustive.

5.1.3 Contextual Factors

PPP projects involve multiple stakeholders, including public sector entities, private companies, and the general public. In order to achieve successful VCC in PPP projects, it is important to examine contextual factors that can impact the project environment.

Upon examining the empirical data, the analysis reveals two second-order themes (as shown in Figure 5-3): institutional motivators and organisational enablers. Institutional factors refer to formal and informal rules, norms and beliefs that govern the behaviour of actors in a specific setting, while organisational factors refer to the structures, processes and practices that shape the behaviour of actors within an organisation. The stakeholders are incentivised to engage in the PPP model with a shared desire to co-create value with other stakeholders, driven by institutional motivations that align with the three pillars of institutional theory: regulative, normative, and cultural-cognitive (Scott, 2014). Moreover, the success of the VCC process is contingent upon several organisational enablers, including a strong relationship foundation among stakeholders, a transparent environment, and complementary capabilities. These enablers serve as key drivers that facilitate the smooth progress of the VCC process.

Overall, the findings suggest that both institutional motivators and organisational

enablers are crucial factors for effective implementation of PPP models to facilitate VCC among stakeholders. These findings provide valuable insights for practitioners and policymakers who are seeking to establish PPP models and foster collaborative value creation among stakeholders.

Quotation examples	1st order codes	2nd order themes
<p>"We have to make sure that every aspect of the project is compliant with the regulations. Failure to do so could result in hefty fines and legal repercussions." (Project Consultant, Case Epsilon)</p> <p>"We are dedicated to being a good corporate citizen and making a meaningful difference in the lives of those we serve." (Operation manager, Case Bata)</p> <p>"We're taking a long-term perspective on this project, which means prioritizing sustainable solutions that will have a lasting positive impact on both us and our stakeholders." (Project manager, Case Alpha)</p>	<p>→ Regulative</p> <p>→ Normative</p> <p>→ Cultural-cognitive</p>	<p>Institutional motivators</p>
<p>"The public party didn't view us as profit-driven opportunists, but instead respected our knowledge and trusted our commitment to social responsibility throughout our cooperation." (Engineer, Case Gamma)</p> <p>"The public party has a greater depth of experience in city planning, legal procedures, and the local market, owing to their prior involvement as developers prior to the widespread adoption of PPPs. The government's accumulated knowledge of urban construction projects further strengthens their expertise in this domain." (Engineer, Case Gamma)</p> <p>"We encourage open communication and collaboration between the government and private party throughout the project lifecycle. This helps us to identify and mitigate risks in a timely manner, ensuring that the project is delivered on time and within budget." (Project consultant, Case Alpha)</p>	<p>→ Relationship foundation</p> <p>→ Complementary capabilities</p> <p>→ Transparent and fair environment</p>	<p>Organisational enablers</p>

Figure 5-3 Data structure of contextual factors

5.1.3.1 Institutional motivators

Institutional motivators can be categorised into regulative, normative, and cultural-cognitive motivators, each of which plays a crucial role in encouraging stakeholders to engage in VCC practices.

Regulative motivators refer to the incentives that emerge from regulatory constraints, such as laws, policies and regulations. Regulations serve as a powerful tool to align stakeholder behaviour and encourage them to engage in VCC practices. The presence of regulatory constraints incentivises stakeholders to think more strategically and

innovatively in their approach to VCC. For instance, when a regulatory constraint stipulates that private parties operating PPP projects cannot receive promised profits from the government, stakeholders may need to adopt a more proactive approach to ensure that the project is financially viable in the long term, leading to more effective VCC practices. As stated by the operation manager in Case Alpha:

“We were aware of the regulations and compliance requirements, and we understood that violating them would have serious consequences, such as being excluded from the national PPP database. It was crucial for us to follow the rules to ensure the success of the project, and we knew that asking for more compensation was not an option.”

In addition to encouraging stakeholders to adopt innovative strategies, regulatory constraints also help to standardise behaviour across stakeholders, resulting in more effective collaboration and VCC. This is because regulations provide a shared understanding of expectations and boundaries, which can help to reduce conflicts and misunderstandings between stakeholders. For example, regulations can help to clarify the roles and responsibilities of different stakeholders in a PPP project, which can promote better collaboration and information sharing.

Moreover, regulatory motivators can also incentivise stakeholders to engage in sustainable practices. For instance, regulations may stipulate environmental standards that must be met during the construction and operation of PPP projects. In Case Gamma, these regulations could motivate the private party and the design company to adopt sustainable practices and innovative technologies that can help reduce the environmental impact of the project.

Normative motivators play an important role in promoting VCC practices in PPP projects, as they are based on the norms and values that are established and upheld by the society in which these projects operate. Normative pressures can come from a

range of sources, including industry standards, professional practices and social expectations. These pressures may not necessarily be legally binding, but they have significant influence on the behaviour of stakeholders involved in PPP projects.

One of the most important normative pressures in PPP projects is related to sustainability. In recent years, there has been growing recognition of the need to promote sustainable development in infrastructure projects, which has led to the establishment of a range of normative standards and guidelines. In China, for example, the government has introduced a number of policies and regulations that require PPP projects to meet certain environmental and social standards. For example, the private party in Case Gamma and Case Epsilon were motivated to engage in VCC practices that align with these standards, in order to avoid reputational damage and potential penalties that may arise from non-compliance.

In addition to sustainability, normative pressures may also arise from other aspects, such as safety, quality and social responsibility. For example, in PPP projects involving the construction of highways or bridges, safety is a top priority, and stakeholders are motivated to engage in VCC practices that ensure the safety of both workers and users of the infrastructure. Similarly, in projects involving the provision of public services, such as healthcare or education, stakeholders are motivated to engage in VCC practices that ensure the quality and accessibility of these services.

Cultural-cognitive motivators refer to the incentives that emerge from cultural and cognitive transformation. This involves a shift in people's beliefs and values towards the importance of long-term over short-term goals. As stakeholders become increasingly aware of the benefits of VCC practices, they may be motivated to engage in them to achieve more sustainable and long-term outcomes. This cultural shift can be observed in the empirical data, where stakeholders are shown to prioritise long-term value creation over short-term gains. This shift includes the public's view of their own role in the project. For example, the government officer in Case Gamma said:

“As a government entity, we have shifted away from a client mindset and instead see ourselves as a collaborator in the project. This means actively engaging in the project by expressing our needs, sharing our experience, and discussing proposals.”

On the other hand, this also includes the private party’s consideration on the best trade-off as noted by the contract manager in Case Gamma:

“We faced a challenge when the owner of the factory demanded more compensation for the demolition than we had approved funds for. This caused a stalemate as the owner refused to relocate without the additional compensation. We ultimately decided to pay the extra compensation to ensure the demolition could proceed as planned, despite the limitations imposed by the regulatory framework. We knew that any further delays would have significant financial consequences, including increased loan interests and deferred payments from the government.”

Overall, institutional motivators are critical in driving stakeholders to engage in VCC practices. By understanding and leveraging these motivators, policymakers and practitioners can design and implement effective PPP models that encourage collaborative value creation among stakeholders.

5.1.3.2 Organisational enablers

Organisational enablers are factors derived from the parent organisations that can facilitate the implementation and effectiveness of VCC practices among stakeholders in a PPP project. In the context of the thesis study, the enablers for VCC practices were not predetermined in the literature review but were derived from the analysis of the empirical data. Previous research has identified organisational and institutional factors

as important for facilitating VCC practices. However, in this study, these enablers were divided into two second-order themes. The first reason for this was to summarise institutional factors according to the framework proposed by Scott (2014), which identifies regulative, normative, and cultural-cognitive pillars. While these pillars provide a useful way of categorising institutional factors, the organisational factors identified in this study could not be easily merged into any one of them. The second reason for distinguishing organisational factors from institutional factors was that organisational factors served more as a support system for VCC practices, while institutional factors were seen more as motivators for stakeholders to engage in such practices. For example, while institutional factors such as regulations and norms may encourage stakeholders to participate in VCC practices, it is the organisational factors such as relationship foundation, complementary competences, and transparent environment that enable these practices to be implemented effectively.

The data analysis showed that the implementation of VCC practices in PPP projects requires support from the parent organisation of all stakeholders involved. This support, which is summarised as three organisational enablers, namely relationship foundation, complementary competence, and transparent and fair environment, can significantly impact the effectiveness of VCC practices and their outcomes. The three organisational factors are derived based on the theoretical perspective of the resource-based view (RBV) of the organisation.

The resource-based view emphasises the role of organisational resources and capabilities in achieving competitive advantage (Barney, 1991). According to this perspective, organisations possess unique resources, both tangible and intangible, that can contribute to their ability to create value and outperform competitors. These resources can include physical assets, human capital, knowledge, relationships, and organisational structures.

In the context of VCC practices in PPP projects, the resource-based view can be

applied to understand how organisational resources and capabilities facilitate or hinder the successful implementation of VCC. The three organisational enablers identified in the data analysis (relationship foundation, complementary competence, and transparent and fair environment) can be seen as critical resources and capabilities that influence the effectiveness of VCC efforts.

For example, a strong relationship foundation, characterised by trust, collaboration, and effective communication among stakeholders, can be considered an organisational resource that enhances the coordination and cooperation necessary for successful VCC. Complementary competence, such as specialised knowledge, skills and expertise possessed by different stakeholders, can also be seen as an organisational resource that contributes to VCC outcomes. Lastly, a transparent and fair environment, supported by organisational processes, structures and governance mechanisms, can be viewed as an organisational capability that fosters equitable participation, decision making, and resource allocation in VCC activities.

By drawing on the resource-based view, the study analyses how these organisational factors (relationship foundation, complementary competence, and transparent and fair environment) serve as valuable resources and capabilities that influence the implementation and outcomes of VCC practices in PPP projects. Therefore, the resource-based view provides a theoretical lens to understand how organisations strategically leverage their resources and capabilities to facilitate effective VCC and gain a competitive advantage in the PPP context.

Relationship foundation refers to the existing bonds among stakeholders involved in PPP projects. The analysis of the data revealed that only in Case Beta did previous relational foundations exist before the project. This finding is significant because it shows that the quality of the procurement procedure and contract negotiation in Case Beta was more effective than in other cases. As the project manager in Case Beta has explained, a private company had assisted the government in operating a BOT sewage

treatment plant. The successful cooperation between the two parties resulted in a high level of trust in the company's capability and expertise. Furthermore, the private company gained valuable insights into the government's working style and feasibility capabilities, which facilitated a smooth negotiation regarding the project value framing and subsequent implementation. Notably, the company has introduced innovative raw materials for sewage treatment, which has optimised the process. Additionally, there has been a seamless exchange of information between both sides, allowing necessary information to be acquired. This finding suggests that having a relational foundation among stakeholders could lead to better project outcomes via effective VCC practices.

Relationship foundation also lies in the reciprocal attitude among all stakeholders. This refers to the willingness of all parties to collaborate with each other, without taking advantage of the other parties, with the aim of completing the project to a high standard. In contrast, failed PPP projects often result from a lack of such reciprocal attitudes, where the public party seeks to transfer risks to the private party without considering their capabilities.

In the five cases examined in this study, a reciprocal attitude is well manifested, as articulated by the government officer from Case Beta: "We can feel each other's reciprocal attitude and, to some extent, believe that the other party is willing to collaborate instead of taking advantage using information asymmetry." This quote highlights the importance of mutual trust and respect in fostering a positive relationship between public and private parties. In addition, the ability to balance risks and rewards, as well as open communication and transparency, are crucial components in building a strong foundation for a successful PPP project. By promoting a reciprocal attitude among all stakeholders, PPP projects can benefit from enhanced cooperation, greater trust, and ultimately, better outcomes.

Complementary competence is another important enabler that ensures all stakeholders involved cooperate with each other effectively. This enabler refers to the combination

of diverse skills, knowledge and resources across different stakeholders involved in VCC. Each participant brings unique expertise and capabilities to the co-creation process, which, when integrated, can lead to innovative and value-added outcomes. Organisations that recognise and leverage complementary competence can harness the collective intelligence and expertise of stakeholders. By actively seeking input and collaboration from diverse perspectives, they can generate new ideas, develop comprehensive solutions, and create differentiated value offerings. This collaborative approach enhances the effectiveness of VCC practices and allows organisations to address complex challenges more effectively. When stakeholders possess complementary competence, they can leverage each other's strengths and mitigate their weaknesses, which can lead to more effective project outcomes. This can be shown by both parties in Case Gamma in the following quotes:

“The public party has a greater depth of experience in city planning, legal procedures, and the local market, owing to their prior involvement as developers prior to the widespread adoption of PPPs. The government's accumulated knowledge of urban construction projects further strengthens their expertise in this domain.”

(Private party engineer, Case Gamma)

“The private party was selected due to their exceptional professionalism and extensive experience in the construction of immersed tube tunnels, which is demonstrated by their previous successful projects. Additionally, their reliable financial capacity makes them a suitable investor for such a major undertaking.”

(Government officer, Case Gamma)

A transparent and fair environment is an enabler that serves as the foundation of communication, interaction and value exchange among stakeholders. Transparency

ensures that information is shared openly, enabling all stakeholders to have a clear understanding of the co-creation process, goals and outcomes. Fairness ensures that stakeholders are treated equitably, with their contributions acknowledged and rewarded appropriately. In a transparent and fair environment, stakeholders feel confident in actively participating in VCC activities. They are more willing to share their knowledge, ideas and resources, as they trust that their contributions will be recognised and valued. This leads to increased engagement, collaboration and commitment, which positively impacts the outcomes of VCC practices. However, the analysis suggests that creating such an environment is not easy, as it depends on the culture of the parent organisation. Therefore, creating a culture of transparency and fairness is crucial to ensure effective communication and collaboration among stakeholders.

Ensuring equity for all private parties and promoting public interest is critical in any PPP project. To this end, several measures are implemented to achieve transparency and fairness. For instance, in Case Delta, performance bonds were replaced with performance guarantees to create a more equitable solution, enabling qualified private enterprises to compete on a level playing field with state-owned enterprises. As affirmed by the performance manager in Case Delta, this approach has significantly reduced the burden on private enterprises.

In addition, the government takes several steps to foster a fair and transparent procurement process. As articulated by a government officer in Case Beta, a comprehensive list of project risks is compiled based on prior experience and communicated to potential bidders during the pre-tender meeting. This method ensures that the most suitable and qualified partner is selected, rather than simply opting for the most optimistic one. These measures promote competition, mitigate risks, and foster transparency, leading to a successful PPP project.

In summary, the three enablers identified in this study can facilitate the implementation and effectiveness of VCC practices in PPP projects. These enablers are interconnected

and interdependent. The findings suggest that investing in building relational foundations, ensuring complementary competence, and creating a transparent and fair environment could lead to more effective project outcomes in PPP projects. Moreover, understanding both the institutional and organisational factors that influence VCC practices is critical for promoting their success. The institutional factors provide the broader context for VCC practices and help create a culture that supports them, while the organisational factors provide the necessary resources and infrastructure to implement these practices effectively. By considering both types of factors, organisations can create a supportive environment that encourages stakeholders to engage in VCC practices and facilitates their effective implementation. Hence, the proposition is developed:

Proposition 8. The VCC practices in PPP projects are influenced by contextual antecedents, which can be categorised into institutional motivators and organisational enablers. Institutional motivators consist of regulative, normative, and cognitive factors that motivate stakeholders to participate in VCC practices and engage in collaborative and interactive processes. Organisational enablers, on the other hand, provide support and the initial momentum necessary for the application of VCC practices. Together, these factors facilitate the implementation of VCC practices in PPP projects, contributing to the success of VCC efforts.

5.2 Discussion – Value Co-creation Process and Contextual Antecedents

5.2.1 Interplay of VCC Practices

The previous section reported on the two aggregated practices identified in VCC

process which are resource management practices and relationship management practices. The interplay of these VCC practices is discussed in this section.

The comprehensive analysis of the five cases highlights two preliminary findings about the characteristics of the VCC process. First, resource management and relationship management practices that characterise the VCC process are mostly applied throughout the entire project lifecycle although there may be an uneven emphasis on their respective approaches. Second, a good combination of resource management practices and relationship management practices is the key factor to maximise value creation for project stakeholders as they facilitate each other well in continuous improvement.

5.1.3.1 Theoretical relations among each practice

To better illustrate theoretical relationships among different approaches, the focus of this section begins with those within each practice. As previously mentioned, each practice includes three approaches that contribute to effective resource and relationship management. These approaches assume distinct roles while also exhibiting some degree of overlap.

Relations among resource management practices. As shown in Figure 5-4, dark blue rectangles represent the dialogue, development and deployment approaches. Notably, the dialogue approach plays a pivotal role in enhancing the effectiveness of the other two approaches. This fundamental role of dialogue is not only revealed in academic literature, but also observed in practice. Scholars in both marketing and project management interested in VCC all put dialogue as a basic element that underpins VCC. For example, in the DART model constituting co-creating value experience practices developed by Prahalad and Ramaswamy (2004), dialogue is the first element. Similarly, Martinsuo, Vuorinen, et al. (2019) also emphasised the significance of dialogue in shaping the value perspective at the project's outset and throughout its entire lifecycle. Dialogue implies an interactivity between stakeholders. It can be a set of conversations

(Prahalad & Ramaswamy, 2004), but more about an interactive learning process among stakeholders (Ballantyne, 2004). The previous chapter defined dialogue in this research as “the ways resources flow among various stakeholders who acquire and assimilate such resources as the source of project value creation”. The resources here mainly refer to the operant resources comprised of knowledge and information. This flow of knowledge and information among stakeholders with the consequence of interactive learning provides the foundation of resource development and resource deployment as shown in Figure 5-4. This process of learning together generates common meaning for all stakeholders who could then move from interaction to the participation that facilitates deeper resource management.

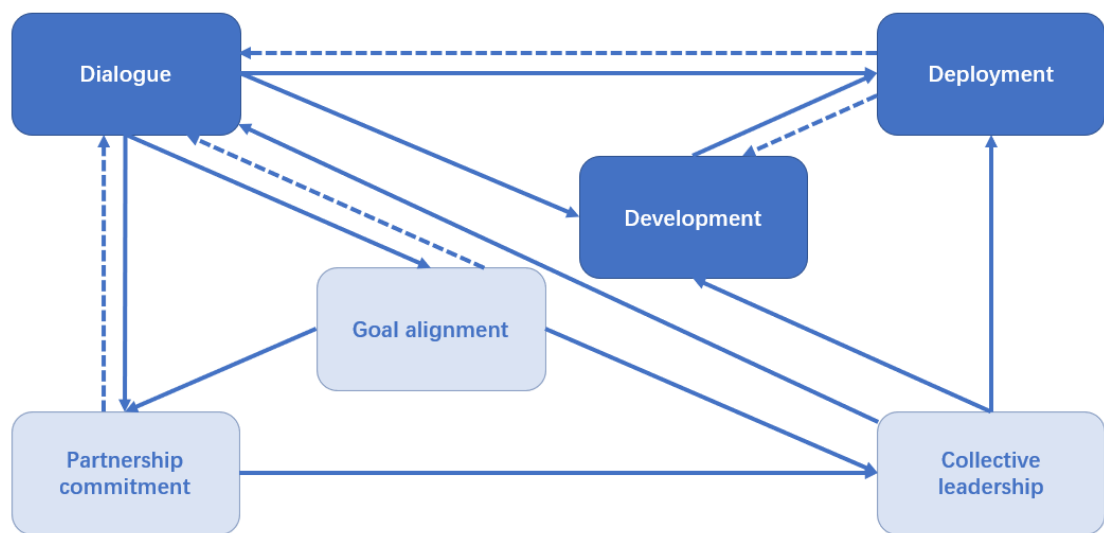


Figure 5-4 Interplay among approaches

The resources development approach refers to the bundling of resources to develop capabilities among stakeholders for reciprocal value creation. Through combining and using pertinent information and knowledge, this approach enables different stakeholders as well as the SPV to develop relevant skills and capabilities. In practice, such resources development is accomplished through joint working among stakeholders such as joint decision making, joint problem solving, joint risk management, joint performance management and so on. It is the shared understanding

or collective knowledge base every stakeholder accessed through continuous dialogue that allows the possibility for such form of joint working and corresponding favourable consequences. Resource deployment is a further step to value creation among stakeholders, involving the utilisation of configurations of knowledge and skills.. An appropriate configuration of operant resources relies on a comprehensive resources pool that complements each party's resources on one hand, and on a shared understanding of and expectation on the objectives of the configuration on the other hand. In other words, the quality of the dialogue approach and the development approach would determine the quality of the deployment. However, resource deployment, in turn, shapes resource development. It configures knowledge and skills effectively, thereby influencing the development of capabilities.

As the VCC process goes on, this mutual influence becomes apparent. To be specific, both the public and private parties would initiate a more focused dialogue on main disputes and develop the most imperative capabilities on the hardest difficulties. That is to say, as the shared understanding is reached and primary capabilities are developed, the deployment approach in turn provides the direction and objectives to the other approaches. This reverse influence is indicated in the dotted line in Figure 5-4.

All together, these three approaches deal with resources, especially the operant resources, in an evolving cycle from resource identification to resource development and finally to resource utilisation. They complement and facilitate each other as a whole practice that operates organically in the VCC process.

Relations among relationship management practices. The light blue rectangles in Figure 5-4 represent the three approaches: goal alignment, partnership commitment, and collective leadership, identified within the domain of relationship management practices. Among others, goal alignment is the fundamental prerequisite condition that underpins a good relationship among stakeholders. Empirical evidence shows that stakeholders in PPP projects put a lot of effort into aligning with each other such as

adopting goal alignment workshops with an impartial and professional third party in the front-end of the project. This demonstrates that practitioners recognise the importance of alignment and need this alignment to push the progress. As a positive consequence of the alignment, partnership commitment occurs and accumulates in the VCC process. This approach includes relation norms that have been developed spontaneously in a bottom-up way guiding everyone's behaviour.

The collective leadership approach thus becomes possible and effective based on the function of the other two approaches. Collective leadership addresses relationships among stakeholders from the structure perspective, that is, building a closer and denser relationship network that fosters service exchange. This objective could be achieved through engaging and empowering stakeholders as well as motivating their creativities based on the empirical evidence.

This section has established connections between the three approaches within relationship management practices and the three dimensions of relational capital. Scholars suggest that there is an interplay among these three dimensions: cognitive, reflective, and structural (Inkpen & Tsang, 2005; Tsai & Ghoshal, 1998). This implies that changes in one dimension can affect the others, and they mutually influence each other. However, in the PPP context that was observed in the cases, the implications of the cognitive and reflective dimensions on the structural dimension were more obvious. For example, the project manager in Case Alpha said:

“We hadn't been fully empowered for autonomous decisions on technology issues until the late procurement phase when we had demonstrated our ability to the government and their consultant. We were empowered when the public party finally trusted us.”

Similar evidence from the government officer in Case Epsilon shows that:

“We shared the project information to the local community through

the network and bulletin boards. We also collect people's opinions regarding this project preliminarily before we launched a hearing. This was because I need to make sure the secondary stakeholders were well informed and reached a certain shared understanding with the government before formally engaging them in the decision process. Otherwise, it would just be a waste of time."

5.1.3.2 Theoretical relations between two practices

As shown in Figure 5-4, the VCC process begins with the dialogue approach and progresses towards the deployment approach, with resource management practices serving as both its foundation and ultimate objective.

The dialogue approach not only serves as the foundation for resource development and deployment, but also supports goal alignment and partnership commitment. In particular, behaviours like information exchange hold significant potential for enhancing the quality of project relationships (Zheng et al., 2018). To delve deeper, the value framing activities within the dialogue approach create a platform for dialogical conversations, allowing stakeholders to clarify their value perceptions and eliminate misunderstandings. These value framing discussions frequently occur during goal alignment workshops, and the effectiveness of these workshops hinges on the quality of value framing. Furthermore, partnership commitment could be accumulated through dialogue forming the base of trust. It is important to note that dialogue differs from discussions or communications that often revolve around debates and persuasion (Ballantyne, 2004). Rather, it prioritises mutual understanding. Stakeholders engaged in dialogue are less concerned with being right or wrong and are more focused on whether their choices will benefit the project positively. They recognise that criteria for right and wrong are akin to subjective and evolving value perceptions. Thus, this dialogical interaction contributes to the development of relational norms such as

reciprocity.

On the other hand, the goal alignment approach and partnership commitment approach also have an impact on the dialogue approach. Similar to the mutual influence discussed in the development approach and the deployment approach, the dialogue approach gets feedback on effective goal alignment and partnership commitment as the VCC process goes on. This feedback loop is based in the iterative characteristic of the VCC process. Given the subjectivity and dynamism of stakeholders' value perceptions, coupled with contingent changes that arise during the project lifecycle, disputes can emerge, requiring a resolution. It is at this juncture that the dialogue approach comes into play. Normally, based on the trust accumulated and the relation norms developed, as well as a shared cognitive understanding, more effective dialogue could be envisioned. This is also supported by the project consultant in Case Beta: "In the late construction period, the environmental protection agency suddenly issued a new regulation which enforced stricter reclaimed water criteria. This led the private party to re-construct some of the plant. This was a huge re-negotiation. However, it was smooth without wasting too much time, mostly because both parties were in a very good relationship and had the sense of team spirit."

The collective leadership approach serves as another interface between two practices. Unlike the other two approaches within relationship management practices, collective leadership provides feedback to the dialogue approach, and demonstrates its influence on the development and deployment approaches, despite representing a higher level within the relationship management practices hierarchy. By fostering a closer and denser relationship network, the collective leadership approach creates favourable conditions for stakeholder dialogues. For example, proximity among stakeholders, especially working in the same location, ensures exchanging the information in a timely manner. In addition, by empowering subordinate parties and placing everyone on an equal position, the collective leadership approach encourages dialogue, as

highlighted by (Prahalad & Ramaswamy, 2004). Furthermore, active dialogue is one of the objectives motivating stakeholders in the collective leadership approach.

Collective leadership also has a direct implication on resource development. To clarify the relationship between these two approaches, it is important to distinguish between them. Although they may initially appear to overlap, as discussed in Section 5.1.2.3, they have distinct foci. Collective leadership centres on the operational activities that are conducted jointly with resource bundling and development, while the latter one emphasises the activities that facilitate a collective relational norm among stakeholders.

The rationale for their connection becomes evident when considering that the development of collective relational norms, a consequence of the collective leadership approach (Manz & Sims, 1993), enhances the efficiency and effectiveness of joint working activities. Scholars have raised doubts about the effectiveness of vertical leadership in harnessing operant resources especially project teams' expertise and creativity to ensure positive outcomes (Müller et al., 2018; Wu et al., 2018). Collective leadership, when used in conjunction with other forms of leadership, offers a better solution to the problem through letting project team members collectively exert leadership influence.

This mutual influence is crucial, given the PPP project team members come from different organisations, each representing different institutional logics. Through this mutual influence among stakeholders, one party can mobilise or integrate the other party's resources to either develop value propositions together or to transform value propositions into their own value creation. At the same time, this mutual influence resulting from the effective collective leadership approach would also enhance every stakeholder's willingness to commit and promotes greater coordination. In this way, the collective leadership approach influences the resource deployment approach.

As previously explained, these artificial classifications of VCC practices are by no means the only perspective to understand the process of VCC in PPP projects. While

efforts were made to ensure the six approaches are conceptually distinct from each other, there are inevitably some conceptual overlaps. This is mostly because the two practice dimensions, resource management and relationship management, are inextricably linked (Dyer & Singh, 1998). This interconnection can be clearly observed in Figure 5-4 and the discussion in this section illustrates the possible logic in the PPP context.

To sum up Section 5.3, the proposition is developed:

Proposition 9. There are six approaches that constitute the PPP VCC process: dialogue, development, deployment, goal alignment, partnership commitment, and collective leadership. These approaches overlap with each other to some extent and closely interact with each other as well. The VCC process reflects an iterative and interactive configuration of these practices.

5.2.2 Implications of VCC Practices on Value Outcomes

5.2.2.1 VCC practices and mid-term value outcomes

After discussing the theoretical relations among the six approaches in the VCC process, this section delves into how these approaches would influence the value creation of PPP projects. To begin, it enables a focus on the mid-term value outcomes. As previously outlined in Chapter 4, mid-term value outcomes include visible value and potential value including first-order codes such as effective procedure, risk mitigation, innovated solution, team solidarity, trust improvement, mutual commitment, and so on. Because of the dynamism of value and the extended lifespan of PPP projects, the value outcomes can generally be categorised as mid-term unless they prove to be sustainable over time. Thus, the VCC process generates mid-term value outcomes first before they

become the long-term ones.

Visible value outcomes represent the ultimate goals of PPP projects and the stakeholders involved. These kind of value outcomes are mostly obtained from successful resource management practices. For instance, consider the value outcome of risk mitigation, which is one of the primary objectives of PPPs that can be significantly realised through resource management skills. Given the large scale, lengthy duration, and complex stakeholder involvement in PPP projects, they often face various risks. The dialogue approach helps mitigate certain risks related to misalignment and uncertainties during the initial stages of the project. By engaging in active and transparent communication, stakeholders gain a better understanding of the project's requirements and agreements. Most of the government officers highlighted the significance of the marketing test phase as it allows both parties to get familiar with each other's requirements and capabilities helping the public party to select the right partner. Operational risks such as late design changes, finance availability and land acquisition can also be minimised when stakeholders share information effectively and integrate resources seamlessly.

Resource management practices also contribute to the establishment of effective procedures. Dialogical interactions between the two parties take a leading role in ensuring a streamlined procurement process. Once the contract is signed, additional efforts are needed for resource motivation, mobilisation, integration and coordination, all of which are essential for a smooth construction procedure. The public partner plays an important role in preparing various permits and making the site available for the private party. These tasks underscore the importance of resource management practices in the overall project success.

Potential value outcomes are closely tied to the quality of the relationships among stakeholders and primarily stem from effective relationship management practices. These outcomes encompass elements like heightened trust, solidarity, and a sense of

belonging, which significantly contribute to a positive working environment, even if they may not always be explicitly acknowledged by stakeholders. It was clear that potential value outcomes are challenging to precisely measure, but they are the accumulated relational capitals that would foster the VCC process. Through close contacts and deep engagement with each other, stakeholders with different institutional logics could gain mutual ex-post trust (Yan & Zhang, 2020) both in terms of affectivity, integrity and competence (Pinto et al., 2009). Similarly, the goal alignment approach fosters a shared cognitive framework among stakeholders, encouraging greater commitment to the project. Likewise, the collective leadership approach establishes an interaction platform for all stakeholders that enhances solidarity and a sense of teamwork.

The service-dominant logic places a strong emphasis on the role of interaction in the VCC process. This emphasis is rooted in the inherently subjective and dynamic nature of value. Thus, the quality of interaction experience becomes a vital aspect of project value within the scope of this research. Equivalently, visible value, the experience of function of exchanged service, reflecting different stakeholders' perceptions also seeks attention.

5.2.2.2 VCC practices and long-term value outcomes

While mid-term value outcomes arise from the positive consequences of different VCC practices, achieving long-term value outcomes requires a more deliberate and intentional approach. In other words, long-term value outcomes can only be achieved when the project team actively aims to achieve them. This is because long-term value outcomes require two key factors. First, they must be sustainable over an extended period, which demands ongoing commitment and strategic resource allocation from the project team. Second, long-term value outcomes must take into account the diverse expectations and experiences of project value held by different stakeholders. From this

perspective, long-term value outcomes serve as guiding objectives that steer VCC practices throughout the entire project lifecycle.

As depicted in Figure 5-5, practical observations reveal two paths by which mid-term value outcomes evolve into long-term ones. These paths vary in their focus on the application of VCC practices. The transformation of mid-term value outcomes into long-term ones is influenced by the nature of the value. Visible value typically requires a replication or compromise procedure, which places a greater reliance on relationship management practices. On the other hand, potential value requires a facilitation procedure, which leans more heavily on resource management practices. Both visible value and potential value are the source of economic and social value achieved through the co-creation process among stakeholders.

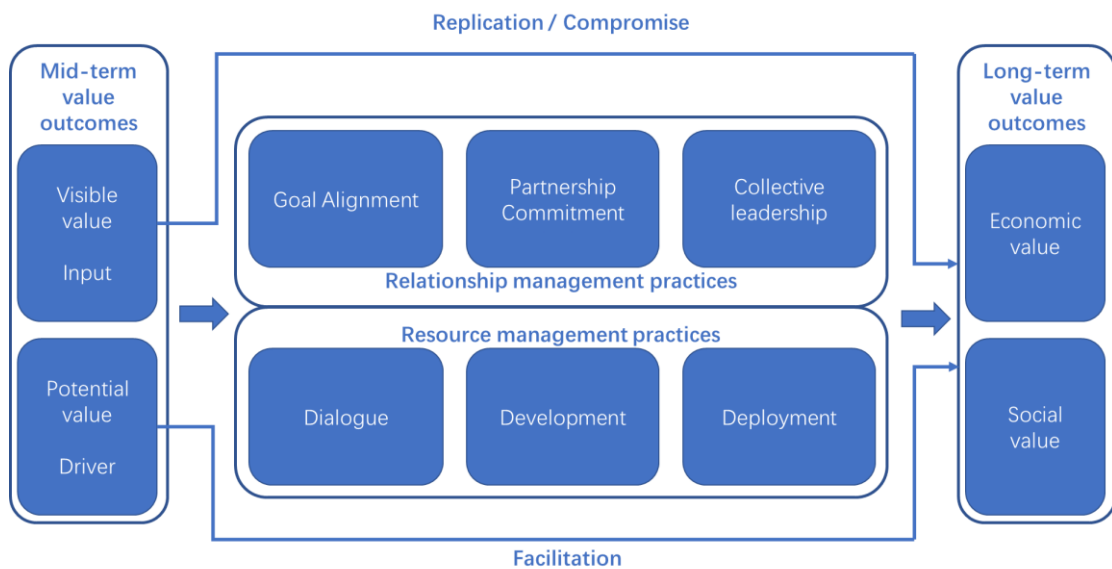


Figure 5-5 Implications of VCC practices on long-term value outcomes

In Figure 5-5 the first path begins with visible value which, as identified by this research, is value that is apparent to everyone involved. This visibility has two characteristics: first, visible value can be clearly experienced and measured by all stakeholders; and second, it aligns with the mainstream values pursued by most stakeholders. Evidence from the cases reveals that improper utilisation of these two characteristics can lead to tensions among stakeholders and lead to negative

consequences. On one hand, the use of measurable indicators for visible value introduces a rigorous assessment system. On the other hand, the clearly measured value, co-created by all stakeholders, inevitably faces the capture dilemma – where everyone desires a larger share of the benefits. This explicit value becomes enticing to all stakeholders, potentially triggering greed and competition for a larger portion of the rewards. Such dynamics can have a detrimental impact on stakeholder relationships, especially when every party believes they deserve a larger share and seeks ways to capture more value.

The pursuit of visible value, such as cost effectiveness, high value for money and effective procedures, should not be viewed negatively. Instead, this research advocates for the sustainable pursuit of visible value by achieving value outcomes replication through relationship management. Through relationship management practices, stakeholders involved in the PPP project can gain a shared perception and aspiration of project success. This shifts stakeholders' focus from the created visible value to the envisioned project blueprint allowing each participating party to get more visible value by expanding the overall benefits. As discussed in the last section, these visible value outcomes mainly derive from successful resource management practices. However, effective resource sharing, practical development and full integration among stakeholders can only occur when relationships among stakeholders are strong. In contrast, relational norms such as reciprocity in the partnership commitment approach would facilitate an effective resource management practice. Additionally, as discussed earlier, the collective leadership approach has a positive impact on resource management practices. For example, the project managers in private parties shared their previous experience about how their innovative solutions were turned down due to a lack of trust and the absence of explicit contractual incentives as the public partners did not see any benefits for themselves from the solution. In summary, relationship management practices play a crucial role in realising the replication of mid-term value outcomes by positively influencing resource management practices.

Resource management practices are the primary drivers underlying the formation of mid-term value outcomes.

The second path addresses potential value, which often does not receive as much recognition as visible value in PPP projects. Despite the extended lifespan and prolonged lifecycle of PPP projects, values such as maintaining good relationships among stakeholders are sometimes not taken as seriously. In this research, potential value is defined as the value of good relationships among stakeholders. It reflects the positive experiences that one party has when interacting with others. It is referred to as “potential” value because it is not the ultimate goal of stakeholders although it plays a valuable role in achieving ultimate goals. For example, the project manager in Case Alpha said that a “good relationship is preferred, but we are more in favour of more substantial benefits as we need to keep the business running”. Thus, the transformation path from potential value to long-term value requires more effective resource management practices. These practices can turn potential value into a tangible asset in achieving the project’s and stakeholders’ ultimate goals. In addition, the potential value in this path serves as a driving force, unlike visible value, which serves as an input to the process.

Potential value primarily results from the effective application of relationship management practices. These practices create a shared cognitive framework for all stakeholders, encourage reciprocal relation norms and thus formulate the network structure that is in favour of effective resources management. Competence development is one of the most common forms of potential value observed in the cases. Both the private and public parties in the five cases acknowledged their organisation’s competence improved through the PPP project. For example, the government officer in Case Beta said: “We have been facing difficulties in terms of local finance for a long period, and we are very glad to see this PPP project energised our local finance to some degree”. As a functional department of public service provision, the officer in the

Bureau of Municipal Construction in Case Gamma said: “collaborating with the private party on this PPP project helped us on function transformation, and now we have mastered the governance capability as well as an enhanced service capability.” This transformation reflects the changing role of the public partner in PPP projects in China. Instead of simply being a client that hires a construction company, they now have a dual role as both a governing body and a service provider. It is important to note that good relationships not only nurture well-performed resource management practices but also create a positive feedback loop. As more visible value outcomes, often referred to as “substantial benefits”, are created and replicated for different stakeholders, relationships improve, leading to increased trust, solidarity and a sense of belonging among stakeholders. In summary, the impact of VCC practices on value outcomes follows a two-step process. Mid-term value outcomes are achieved first, followed by the realisation of long-term value outcomes. These long-term outcomes can be achieved through two distinct paths, each emphasising either resource management or relationship management practices. Thus, the proposition is developed:

Proposition 10. The VCC process should be designed based on the integrated application of resource management and relationship management practices that facilitate both mid-term value outcomes and long-term value outcomes.

5.2.3 Implications of Contextual Factors on VCC Practices

The PPP model was introduced to China from Western countries like the UK to provide infrastructure. However, the development of the PPP model in China has evolved significantly due to institutional and organisational factors. These factors became increasingly important as the PPP model matured. In the early stages, there was a lack of relevant legislation and regulations, and both the government and private entities lacked a comprehensive system to govern PPP projects. As the PPP model in

China matured, corresponding institutional and organisational factors gradually developed and became recognised by stakeholders. The impact of these factors on VCC practices in PPP projects was evident in the five cases studied. These factors played an important role in shaping the VCC practices employed in PPP projects. Therefore, understanding the institutional and organisational factors that influence the development of PPP projects in China is crucial for the effective implementation and success of these projects. Implications of contextual factors on VCC practices are summarised in Figure 5-6 and then discussed in detail.

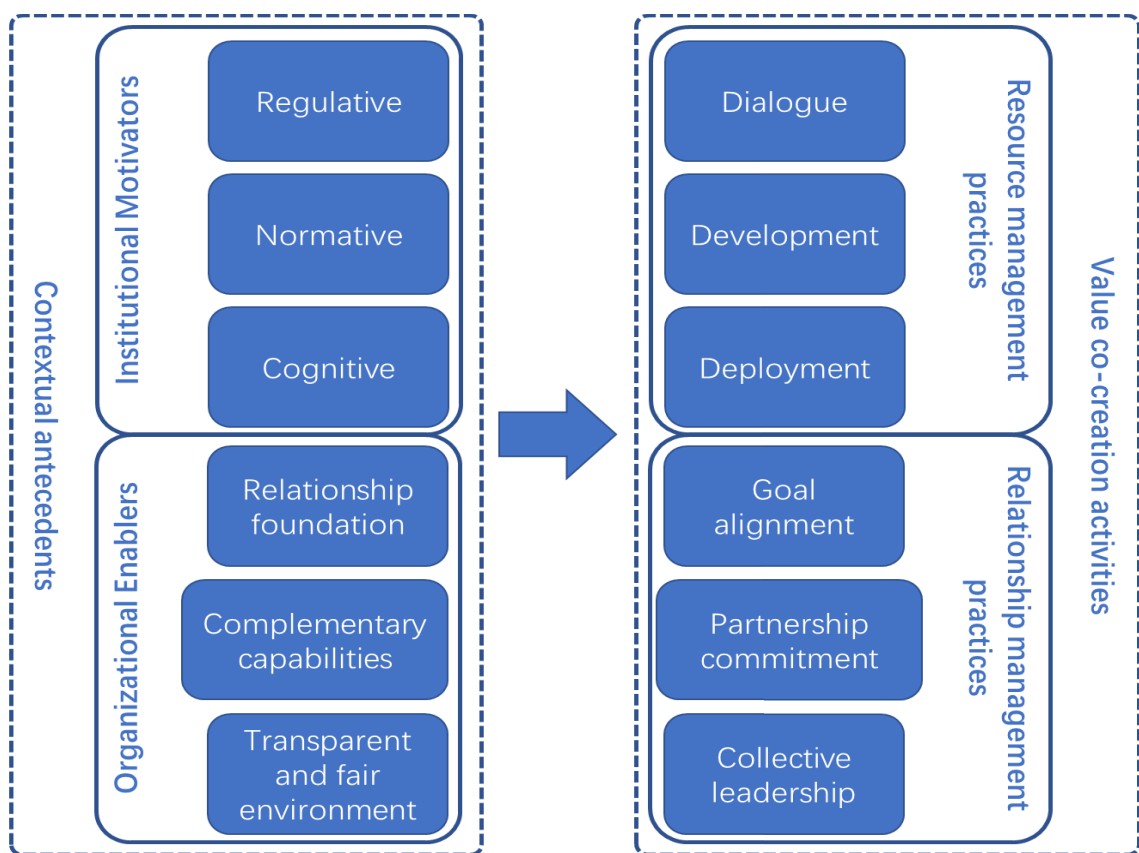


Figure 5-6 Implications of contextual factors on VCC practices

5.2.3.1 Institutional motivators and VCC practices

Regulative factors have a significant impact on stakeholders' behaviour in PPP projects in China. While they may appear as constraints, they also serve as incentives for

stakeholders to innovate within established boundaries. The regulative factors have evolved in tandem with the growth and maturity of the PPP model in China. For instance, the Ministry of Finance introduced the Implementation Opinions in March 2019 to promote the standardised development of public–private capital cooperation. This policy specified six standard conditions and three requirements for PPP projects, clarified the positive and negative lists, and encouraged the participation of private and foreign investment, among other elements. These measures have set the parameters for governing PPP projects thus strengthening the management of PPP projects, and enhancing information disclosure. As a result, they have standardised the behaviour of various stakeholders when collaborating on PPP projects. These reinforced regulatory constraints establish a legal foundation for the future development of PPP projects, fostering a more transparent and standardised PPP industry.

The regulatory framework surrounding PPP projects in China has grown progressively stringent, as seen in the cases examined. Paradoxically, this regulatory complexity has led participants to become more engaged in resource management. Specifically, due to the complexity of rules and regulations, partners must frequently meet to clarify their own information and concerns, which enhances the *dialogue approach*. This process often involves a large number of third-party consulting firms, necessitating closer cooperation in terms of both time and space, ultimately boosting the *development approach* through joint working. In this process, the capabilities of all parties are further improved, ultimately increasing the synergy of all parties involved in configuring accessible resources in a way that maximises the value of the project which is referred to as the *deployment approach*.

The increased regulatory constraints in Chinese PPP projects have had both positive and negative impacts. On the positive side, they have standardised the behaviour of stakeholders, potentially leading to more efficient project outcomes. However, these regulations have also imposed some limitations on project schedules and selections, which could constrain the project's potential value. Striking a balance between these

constraints and the potential for VCC through resource management practices is essential.

Normative motivators are an important factor in promoting VCC practices in PPP projects. Normative motivators, such as sustainability and social responsibility, have become increasingly important in recent years in promoting VCC practices in PPP projects. Sustainability, in particular, has gained significant attention from stakeholders due to the growing concern about the negative impact of economic activities on the environment. Therefore, private parties involved in PPP projects are expected to integrate environmental considerations into their operations, such as reducing carbon emissions and promoting renewable energy use.

Moreover, stakeholders are also motivated by social responsibility, which emphasises the importance of contributing to the social wellbeing of the communities in which they operate. In the examined cases, it is evident that normative motivators play a crucial role in driving stakeholders to engage in resource management practices to co-create value. This is similar to the role played by regulative motivators, which also incentivise stakeholders to innovate and consider the entire lifecycle cost upfront. However, normative motivators are distinct in that they focus on adhering to established norms and values rather than mere compliance with regulations. These pressures often arise from societal expectations for sustainable and socially responsible business practices, which can incentivise private parties to align their goals with those of the broader community.

In addition to resource management practices, normative motivators also facilitate the goal alignment approach in relationship management practices. This is because the norms and values inherent in PPP projects require both parties to compromise and work together to achieve common goals. For example, in social responsibility, private sector entities may need to make concessions to support community development, while the government may need to provide support and incentives to encourage private

sector investment. When stakeholders align their goals with established norms and values, they can enhance their cooperation and collaboration within PPP projects, ultimately fostering more effective VCC practices.

Cultural-cognitive motivators are distinct from the previous two motivators because they focus on cognitive transformation rather than constraints. These motivators encourage stakeholders to engage in VCC practices by shifting their cognitive perspectives. With the increasing implementation of PPP projects, both parties are becoming increasingly convinced that collaboration is essential for achieving better project benefits. They understand that adopting a long-term perspective benefits all parties involved. This shift in cognitive perspective is also evident in the evolving relationship dynamics between public and private entities in PPP projects.

There are two noteworthy developments stemming from this cognitive shift. First, the government is undergoing a functional transformation, transitioning from being a mere customer in PPP projects to an active participant. In this new role, the government actively supports and collaborates with private parties to enhance project outcomes. This change has fostered a more open and cooperative approach to PPP projects. Second, private companies are becoming increasingly transparent, which has led to greater trust from government entities. This shift in cognition and the evolving relationships between the public and private sectors are contributing to more effective resource management practices. Indeed, these cultural-cognitive motivators, driven by shifts in stakeholders' thinking, have a positive impact on relationship management practices in PPP projects. A key element in successful PPP ventures is the alignment of goals between both parties involved. This alignment closely ties to the cognitive dimension of relational capital. As stakeholders undergo cognitive transformations, they become increasingly aware of the advantages of collaboration and are more inclined to work together toward shared objectives. This, in turn, enhances goal alignment practices, contributing to more successful PPP projects.

The concept of partnership commitment is considered vital in PPP projects, particularly in the realm of affective relational capital. Private parties must invest in and ensure the success of the project. Cultural-cognitive motivators play a significant role in influencing stakeholders to invest more in the project and commit to achieving common goals. This heightened commitment fosters a sense of ownership and accountability, ultimately leading to more effective partnership commitment. By fostering a shared understanding of the project's objectives, cultural-cognitive motivators can strengthen the relationship between the parties involved and promote a long-term perspective that prioritises the project's success. This can lead to a more sustainable and mutually beneficial partnership that benefits all stakeholders involved in the PPP project.

5.2.3.2 Organisational enablers and VCC practices

Organisational enablers play a critical role in promoting VCC practices in PPP projects. These enablers include relationship foundation, complementary capabilities, and a transparent and fair environment. Leadership roles within PPP projects are often filled by individuals from diverse government departments and private sector organisations. Prior to the initiation of a PPP project, the government collaborates with the private partners to form a SPV to co-lead the project. While the SPV operates as an organisation for the duration of the project, which is typically less than 20 years, it is short-lived. Therefore, the behaviour of project team members is significantly influenced by the constraints of their respective parent companies, as they continue to represent and act on behalf of their organisations within the project team.

Relationship foundation refers to the pre-existing relationship bonds among stakeholders involved in PPP projects. The relationship foundation also lies in the reciprocal attitude among all stakeholders. This involves mutual willingness to collaborate with each other without exploiting the other party, with the common goal

of completing the project to a high standard. According to interviewees, an emotional connection plays a significant role in the cooperation between the two sides in PPP projects. This emotional bond does not necessarily have to exist before the project begins, as it can also develop during the initial interactions between the parties. The first impression and initial feelings towards each other can set the tone for the entire collaboration, highlighting the importance of building a positive relationship foundation from the beginning.

Relationship foundation is a critical factor that impacts VCC in PPP projects through *relationship management practices* among stakeholders. A good relationship foundation promotes *goal alignment* activities and facilitates active *partnership commitment* as trust, respect and reciprocity are more easily cultivated. This can lead to increased accountability and a sense of ownership, which can ultimately result in more effective collaboration. Furthermore, it fosters *collective leadership* in a PPP project, as it is easier for stakeholders to engage and for the public party to empower the private party, as well as the main private party to empower other partners in the consortium. This can lead to a more engaged and empowered public party, which can then empower the private party and other partners in the consortium. This collective leadership approach can lead to better decision making and more effective resource management practices, ultimately resulting in better project outcomes. Thus, a solid relationship foundation can have a significant impact on the success of VCC practices in PPP projects.

In addition, a strong relationship foundation is a significant enabler in facilitating effective dialogue among stakeholders in resource management practices. When the relationship foundation is robust, stakeholders are more willing to communicate and interact with one another without hesitation, which results in the effectiveness of the dialogue. Such a foundation can help to build trust and respect among stakeholders, promoting a more open and transparent dialogue. As a result, the stakeholders can

understand each other's perspectives and interests more clearly, leading to better decision making and more effective resource management practices. Additionally, effective dialogue aids in early detection and proactive resolution of potential conflicts, thereby minimising the risk of disruptions to the project's progress.

Complementary capabilities refers to the ability of stakeholders to complement each other's skills, knowledge and experience, and leverage each other's strengths to achieve project success. This factor is critical to the success of PPP projects, as it can greatly influence the effectiveness of VCC practices through resource allocation and utilisation. Complementary capabilities are determined at the procurement stage, where stakeholders are selected based on their ability to complement each other's capabilities. However, it is still an organisational factor, as the ability of each party is influenced by its organisational structure and resources. This factor can have a significant impact on the resource allocation arrangements of the two parties, which include the bundling and configuration of resources.

Bundling resources, also referred to as the *development approach* in resource management practice (see Section 5.1.1), involves combining the resources of both parties to create a more comprehensive and effective solution. This can include combining financial resources, technical expertise and operational resources to achieve project success. On the other hand, resource configuration, also termed the *deployment approach* in resource management practices (see Section 5.1.1), involves allocating shared resources and developed capabilities to achieve efficient and effective exchange and utilisation of service. This can result in an optimal resource arrangement to be aligned with the project's objectives. By leveraging each other's strengths and expertise, stakeholders can create more effective and efficient solutions, and ensure that project goals are met. Therefore, it is important for PPP project teams to consider complementary capabilities when selecting stakeholders, and to foster an environment that encourages collaboration and knowledge sharing.

A transparent and fair environment is a crucial enabler that forms the foundation of communication, interaction and value exchange among stakeholders in a PPP project. This factor ensures that all stakeholders have access to the same information and resources and are treated equitably, thereby promoting a more successful project outcome. While prior PPP research has recognised the importance of this factor, it has not been categorised as an organisational factor, underscoring its distinctiveness and indicating how the parent organisations can influence this aspect.

Transparency and fairness are two crucial components of this factor. Transparency involves ensuring that all necessary information is readily available and easily understood, while fairness focuses on how the involved stakeholders perceive their treatment. Both of these dimensions derive from the parent organisation and have a crucial role in relationship management and maintenance among stakeholders. While prior studies have primarily concentrated on transparency in the tendering process (Simon et al., 2020), it is important to note that transparency should extend throughout the entire lifecycle of the PPP project. This requires ongoing and open communication among parties and external stakeholders. Additionally, both the public and private sectors should be transparent and open to external stakeholders or users, making project-related information and reports accessible to the public. Addressing any doubts or rumours within the public domain concerning the delivery of PPP projects is also important, as negative public perception could affect successful project implementation.

In addition to transparency, fairness is a pivotal aspect of a successful PPP project. Perceived fairness refers to the idea that stakeholders believe they are being treated equitably and justly in the project. This encompasses fair sharing of benefits and costs, impartial decision-making procedures, and equitable treatment of all involved parties. When stakeholders perceive the project as fair, it can mitigate potential conflicts and disputes while bolstering the legitimacy of organisational procedures.

Moreover, perceived fairness has demonstrated that perceived fairness positively

impacts employees' cooperative behaviours and a firm's operational efficiency. When employees believe they are being treated fairly, they are more inclined to collaborate with other stakeholders and strive towards achieving the project's objectives. This heightened cooperation can facilitate improved *dialogue*, resulting in a more efficient project delivery. Furthermore, when stakeholders trust each other and perceive the project as fair, joint-contract functions, such as risk sharing and performance monitoring, are more likely to lead to improved project outcomes.

5.2.4 A Holistic Framework of VCC in PPP Projects

After a thorough examination of the previous discussion and analysis, a holistic framework of VCC in PPP projects is proposed in Figure 5-7. This framework includes all the essential components required for the VCC mechanism in PPP projects. The ultimate purpose and value of a project depend on its long-term value, which encompasses economic and social value. It is crucial to change the mindset of stakeholders and create a fundamental ideological guarantee for them to work together towards delivering value. Stakeholders must clearly understand the importance of long-term value and be conscious of its implications. They should not only clarify their own value propositions but also understand the value propositions of the other parties involved.

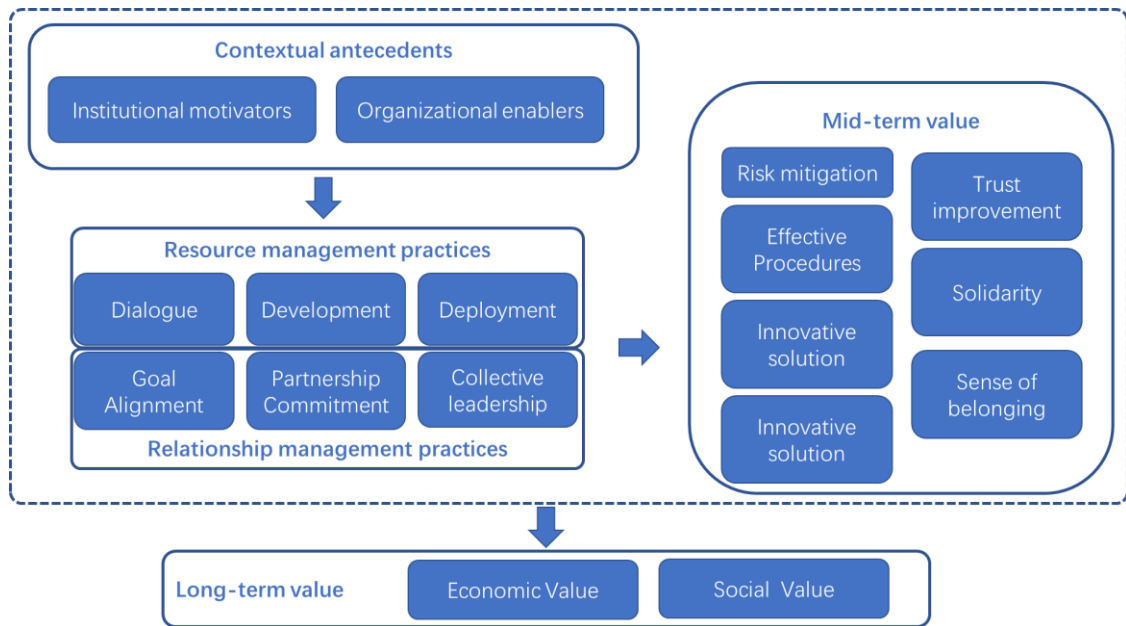


Figure 5-7 A holistic framework of VCC in PPP projects

The co-creation section of the framework consists of three main components. Drawing from the conceptual model generated by the previous literature review, interaction stands out as the central concept of VCC. The three components of this section emphasise the interaction environment, interaction practices, and interaction performance.

It is important to note that both the theoretical model and the final model proposed in the study have similar connotations and underlying logic. They both emphasise that value creation is a gradual process and that value is accumulated over time in the medium term. This point is further supported by the findings from the interview process, as several respondents highlighted the importance of mid-term values in achieving long-term goals.

In the initial framework proposed in Section 2.7, interaction performance was considered as a component that created value in the short term. However, on examining the data from the PPP projects, it was clear that the value created by interaction performance extended beyond the short term and into the medium term. Specifically, the interactions between the public and private partners in the PPP project

not only generated immediate benefits but also laid the foundation for further value creation. For instance, effective communication between the partners led to a better understanding of each other's needs, which facilitated the identification of new opportunities for value creation in the medium term. Furthermore, it was observed that the benefits of interaction performance were not limited to the immediate partners involved in the PPP project. Rather, the positive outcomes of these interactions had a ripple effect on other stakeholders and sectors, resulting in wider economic and social benefits.

In light of these findings, interaction performance was relabelled as “mid-term value” in the final framework. This adjustment better captures the broader, longer-term benefits generated by effective interactions between public and private partners in a PPP project and emphasises the importance of considering beyond short-term gains when evaluating the overall success of such projects.

The reconceptualisation of interaction performance as mid-term value in the final model reflects a deeper understanding of the value that interactions can generate. The earlier concept of interaction performance only focused on the outcomes that interactions could produce, without delving deeper into their underlying value. On the other hand, the concept of mid-term value highlights that the outcomes of interactions themselves have inherent value, and can generate further long-term value. Moreover, mid-term value is also linked to interaction practices and the interaction environment, creating a feedback loop that contributes to ongoing value creation.

The study identified two key aggregated dimensions of VCC practices in PPP projects: resource management and relationship management. While these dimensions are not new in management literature, they are still relevant and applicable in the context of VCC in PPP projects. The components of these dimensions were derived from a combination of the characteristics of PPP projects and VCC.

The resource management dimension encompasses three sub-dimensions: the dialogue approach, the development approach, and the deployment approach. The dialogue approach refers to the distribution of resources among various stakeholders, who acquire and assimilate them as sources of project value creation. This approach emphasises the importance of collaboration and interaction among stakeholders, as identified through first-order codes such as value framing, information sharing, invited visits, and proactive negotiations. The development approach refers to the bundling of resources to develop capabilities among stakeholders for reciprocal value creation, as emphasised by the service-dominant logic perspective. Joint-working activities are crucial for developing capabilities from the resources themselves and creating a more significant pool of resources that can be leveraged to improve project outcomes. The development approach highlights the collaborative nature of VCC, where resources are bundled together to create reciprocal value. The deployment approach focuses on the configurations of shared resources and developed capabilities to achieve efficient and effective exchange and utilisation of services. Three first-order codes identified in the data relate to resource mobilisation, resource integration, and commitment coordination.

It is widely recognised in project management research that establishing positive stakeholder relationships is essential for project success. Relationship management practices, including collective leadership, partnership commitment, and goal alignment, are vital for achieving this.

The goal alignment approach focuses on activities that enhance alignment among stakeholders in PPP projects. These activities may include making concessions, holding goal alignment workshops, and creating a shared project vision. This approach corresponds to the cognitive dimension of relational capital, emphasising the importance of a shared cognitive framework among stakeholder networks that can be developed through the goal alignment process.

The partnership commitment approach involves the emotional and behavioural investment of stakeholders in PPP projects, with trusting, respecting and reciprocity being the first-order codes under this approach. These activities reflect the affective dimension of relational capital, which highlights the importance of motivation, expectations and norms among related parties. These activities not only show the emotional bonds among stakeholders but also establish norms that guide their actions. Collective leadership emphasises the significance of shared leadership in PPP projects, where primary stakeholders are responsible for and involved in the tasks of project leadership. Engaging, empowering and motivating are first-order codes of this approach. The structural dimension of relational capital, which represents the connection patterns among stakeholders, is relevant to this approach. These patterns demonstrate the configurations of the network depicted in ways of actor connectedness, participant hierarchy and centrality, and the strength of ties.

As previously discussed, the relationships and interplay among the various approaches and practices involved in the PPP VCC process are complex. The three resource-related approaches involve an evolving cycle of resource identification, development, and utilisation, with a focus on operant resources. They complement and facilitate each other, operating organically to support the overall VCC process. The three relationship-related approaches also support each other, emphasising effective communication, collaboration and partnership commitment as crucial factors in achieving successful project outcomes. The six approaches, namely dialogue, development, deployment, goal alignment, partnership commitment, and collective leadership, form the core of the PPP VCC process. While these approaches overlap to some extent, they also closely interact with one another, reflecting an iterative and interactive configuration of practices in the VCC process.

Successful VCC in PPP projects hinges on contextual factors. These factors fall into two categories: institutional motivators and organisational enablers. Institutional motivators can be further divided into regulative, normative, and cultural-cognitive

motivators, each of which plays a pivotal role in encouraging stakeholders to engage in VCC practices. Therefore, policymakers and practitioners need to understand and capitalise on these motivators when designing and implementing PPP models that foster collaborative value creation among stakeholders. On the other hand, the successful implementation of VCC practices in PPP projects is heavily reliant on the parent organisation's support for all stakeholders involved. This support can be characterised by three organisational enablers: relationship foundation, complementary competence, and transparent and fair environment. The presence of these enablers can significantly impact the effectiveness of VCC practices and their outcomes.

Balancing regulative, normative and cultural-cognitive factors in PPP projects in China is crucial. These factors have both positive and negative impacts, as it is essential to strike a balance between them to ensure the successful implementation of PPP projects. Building and maintaining trust between the public and private parties involved is crucial to the success of PPP projects, and regulative, normative, and cultural-cognitive factors all play a role in achieving this goal. On the other hand, one key point to consider is that the success of PPP projects often depends on the effectiveness of collaboration and communication between the different stakeholders involved. This is where organisational enablers such as relationship foundation, complementary capabilities, and a transparent and fair environment come into play. Organisational enablers play a critical role in promoting VCC practices in PPP projects, and it is important for project teams to prioritise building and maintaining positive relationships among stakeholders, considering complementary capabilities when selecting stakeholders, and fostering a transparent and fair environment for effective communication and collaboration.

5.3 Chapter Summary

The primary focus of this chapter was on the two main practices that define the PPP VCC process: resource management and relationship management practices. The chapter also discussed in detail how these practices are enabled or motivated by various contextual factors. The approaches that enable effective resource management and relationship building among stakeholders were discussed in great detail, with an emphasis on how these practices contribute to the co-creation of value for the project and all parties involved.

The chapter also provided an overview of the first-order codes, second-order themes, and aggregated dimensions for each VCC approach and contextual factors. It also presented a conceptual framework for VCC in PPP projects that includes clearly defined constructs. The interplay between these VCC practices was also discussed, including the relationships between different approaches within each practice and between the two practices themselves.

Furthermore, the chapter explored the implications of these VCC practices on value outcomes, drawing on the findings from the previous chapter to develop a set of propositions. Finally, the chapter provided a comprehensive understanding of the contextual antecedents, i.e., institutional factors and organisational enablers, of the VCC process, contributing to the final framework of the PPP VCC mechanism. By providing an in-depth discussion of these practices and contextual factors, this chapter serves as a valuable guide for researchers and practitioners interested in improving the success of PPP projects through VCC.

The following chapter concludes with several key aspects, including a review of research questions, an exploration of theoretical contributions, an analysis of practical implications, and a discussion on limitations and recommendations for future research.

Chapter 6 Conclusion, Limitations and Recommendations

6.1 Review of Research Questions

This chapter outlines the significant contributions of this research to both theory and practice. The study addressed three research questions:

RQ 1: What is the meaning of value to different stakeholders involved in a PPP project throughout its entire lifecycle?

RQ 2: How is value co-created in a PPP project during its lifecycle, and what are the mechanisms of VCC in PPP projects?

RQ 3: Which contextual factors enable and facilitate project VCC activities in PPP projects, and how do they influence VCC practice?

This study has investigated several critical research issues regarding the creation of value in PPP projects (see Table 6-1). The first one is to boost value creation for all stakeholders involved in a PPP project. However, due to the intricate nature of projects and project-based businesses, several challenges and unresolved issues remain. Thus, there is a need for further research to address these challenges and issues, and to gain a deeper understanding of value in project-based contexts. Additionally, the value creation process is often conflated with the value creation content, which hinders analytical discussion. Many existing studies do not make a clear distinction between the two, leading to a general discussion of value creation. The second issue is to explore how value can be managed and co-created during the process. While VCC and VM approaches have been increasingly applied in various business contexts, their application in the PPP project context has been limited. The VCC and VM approaches aim to create value for all stakeholders, including those in the marketing and engineering areas. However, there is a need for a deeper understanding of how to effectively apply these approaches in PPP projects where multiple stakeholders with

diverse interests and objectives are involved. The third research issue is to investigate the influence of institutional and organisational antecedents on VCC practice in the PPP project context. Despite the acknowledged importance of institutional and organisational antecedents in shaping the practices of VCC in PPP projects, little research has been conducted on this aspect. The existing studies have mainly focused on the role of institutions in the formation of PPP projects, with less emphasis on how institutional and organisational factors influence the VCC practices of PPP projects. Moreover, the existing studies have tended to focus on the incomplete institutional frameworks that only contain legal and regulatory frameworks, rather than on a holistic approach that contains norms and beliefs, that shape the behaviour of actors in the PPP project context. As a result, little is known about how informal institutions interact with formal institutions and how they shape the behaviour of actors in PPP projects. There is also a lack of research on how organisational factors, such as the governance environment, culture and capability of the public and private partners, influence the practices of VCC in PPP projects.

Table 6-1 Critical research issues and research status

Number	Key research issues	Status of research issue in extant literature
1	Boosting value creation for all stakeholders involved in a PPP project	There is a lack of consensus on PPP project value in the extant literature, which has hindered the development of a comprehensive understanding of how value can be created.
2	Exploring how value can be managed and co-created during the process	The VCC and VM approach to value creation in PPP projects has not been thoroughly explored, as this approach has not been fully integrated into the PPP context.
3	Investigating the influence of institutional and organisational antecedents on VCC practice in the PPP project context	The influence of institutional and organisational antecedents on VCC practice in the PPP project context has been under-investigated

6.2 Theoretical Contributions

The findings presented in Chapters 4 and 5 provide a comprehensive theoretical understanding of project value in the context of PPPs. This research makes a significant contribution to the growing body of knowledge on VCC in PPP projects. The findings reveal the subjective and dynamic nature of value when evaluating the value of PPP projects. Furthermore, specific VCC activities are identified from the cases and summarised into two dimensions derived from the literature. The contextual factors are outlined to illustrate how these VCC practices can be fully used to maximise project value. Based on the findings and the above discussion, this study makes four specific contributions to the research on VCC in projects and PPP project VM, summarised in Tables 6-2, 6-3 and 6-4.

6.2.1 Comprehensive Understanding of Value in PPP Projects

This study makes a significant contribution to the literature by providing a comprehensive understanding of project value in PPP projects. Analysis of the five case studies identified that value in PPP projects is subjective and dynamic, and its assessment requires a multifaceted approach that considers both tangible and intangible aspects. The contributions are summarised in Table 6-2 based on RQ 1 and the detailed analysis is shown below.

Table 6-2 Contribution 1: Boosting value creation for all stakeholders

Related to the research issues	#1 Boosting value creation for all stakeholders involved in a PPP project
Related to the research questions	#1 What is the meaning of value to different stakeholders involved in a PPP project throughout its entire lifecycle?
Key contributions	Proposition 1. PPP project value shows its dynamic nature by being comprised of mid-term and long-term value outcomes.
	Proposition 2. Project value is a subjective feature given by various stakeholders involved in the project. Long-term value outcomes include economic value and social value which require coordination in management and realisation.
	Proposition 3. Mid-term value outcomes include visible value and potential value according to how the beneficiaries experience the function of the service and the interaction when the service is exchanged.
	Proposition 4. The mid-term value outcomes could eventually transform into the long-term value outcomes in the form of replication, compromise and facilitation through different VCC practices.
	Proposition 5. Project value should be assessed from the relationship between the satisfaction of stakeholders' expectation in terms of mid-term and long-term value outcomes and the resources invested for the outcomes.

Intricate classifications and precise understanding

The identification of refined value elements that occur during the entire lifecycle enhance our understanding of value in the PPP context. From within-case analysis, this research identified two categories of project value from the dynamism perspective which are the mid-term value outcomes and long-term value outcomes. Further, long-term value outcomes are classified into economic value and social value according to the subjectivity perspective. From the process view of value creation in PPP projects, mid-term value outcomes are classified into visible value and potential value based on how stakeholders experience the function of the service and the interaction of service

provision. These refined classifications not only bring the two defining natures (dynamism and subjectivity) of value to the fore, but also delineate a concrete map of how these two features are manifested in a PPP project.

The whole series of value classifications proposed in this research contribute to literature by providing a holistic perspective on evaluating a PPP project. Prior studies that have noted the complexity of value (Laursen & Svejvig, 2016; Normann & Ramírez, 1993; Zeithaml et al., 2020) and scholars have made efforts to interpret value from different perspectives and in a more detailed way. For example, Petrick (2002) developed a scale for measuring the perceived value of service based on service experience. Harrison and Wicks (2015) argued value has been overly simplified and suggested an assessing framework including and extending beyond the economic value. Kristensen and Remmen (2019) proposed a framework for sustainable value propositions including economic, social and environment dimensions by recognising a broader group of stakeholders.

Environmental value is an important dimension in project value assessment studies (Kayaga & Zhe, 2007; Koppenjan & Enserink, 2009) especially regarding sustainability topics. However, in this research, little evidence suggests stakeholders prioritize environmental value compared to other social values. This could be due to the limited environmental impact of the cases studied, such as road and building construction projects or sewage treatment plants with advanced technology. Environmental value often gets merged into social value, alongside factors like organizational reputation and regional development. Vuorinen and Martinsuo (2019) also combined environmental value into social ones. Previous studies also paid attention to the dynamism of value. For example, Liu, Love, Davis, et al. (2015) proposed a conceptual performance measurement framework of PPP projects considering all stages in the entire lifecycle. However, few studies managed to combine both features of value in the PPP context to provide a holistic perspective on PPP project evaluation.

The transformation paths of mid-term value to the long-term ones

VCC in PPP projects represents an attempt to set value-in-use instead of value-in-exchange as the rationale of value creation and a way to encourage stakeholders' interaction for the sake of value maximisation. These emphasise the two aspects of value, that are the experience of function and the experience of interaction. Mid-term value outcomes are divided accordingly into visible value and potential value. These mid-term value outcomes would eventually transform into the long-term ones.

One finding from the cross-tabulation of cases reveals that the value dynamism indicates that project value evolves over the entire PPP lifecycle guided by the long-term value goals, and eventually realises the long-term value outcomes through the replication, actualisation and comprises mid-term value outcomes. The originality of this claim supplements the extant research on the value transformation path and provides a concrete foundation for further investigation of transformation mechanisms.

By proposing the three transformation paths of mid-term value outcomes to the long-term ones, this chapter focuses on the black box of the VCC mechanism in PPP projects. To be specific, to treat mid-term value outcomes when they contradict with the long-term ones implies a trade-off guided by the project strategy. In addition, the replication of visible value and the actualisation of potential value implies the iterative procedure of VCC which manifests the dynamics of value and the learning process among all stakeholders.

An assessment framework of PPP project value

Another finding from cross-case analysis shows that project value assessment should take account of all stakeholders' expectations in terms of mid-term and long-term value outcomes, as well as the resources invested for the outcomes. This finding put emphasis on both the category and the amount of value when assessing a project. As to the category dimension of value assessment, scholars in the field advise the inclusive

consideration of multiple stakeholders which is also supported by the findings of this research (for detailed discussion, see Section 4.2.1). This section discusses the amount of value which derives from the main research stream of VM (Thiry, 2013).

What differentiates value from similar concepts such as performance and benefits is that value is embedded within considerations of cost. Although performance indicators also consider “cost performance” (Yuan et al., 2009), that does not convey the integrated message as value does. This is important because when cost performance is set as an indicator, there is a tendency to put the objective of “save money” as more important neglecting truly important objectives such as end-use satisfaction. In other words, value thinking does not put cost as an objective but considers it as a way to improve efficiency and thus improve experience. This is actually in line with the soft paradigm of project management (Pollack, 2007; Yeo, 1991). The traditional assessment of a project always sets prescribed “time, cost and quality” criteria which has been widely criticised (Cruz Villazón et al., 2020; Kivilä et al., 2017). However, the value thinking promoted in this research encourages the project manager to think in a strategic way – that is, all the stakeholders’ value orientations are the first consideration, followed by an efficient way to realise them. Just like in the VM procedure, function analysis comes before searching for the solution (Thiry, 2013).

6.2.2 VCC Practices in PPP Projects

This contribution relates to the second research issues and questions as summarised in Table 6-3. Detailed discussion follows.

Table 6-3 Contribution 2: Exploring how value can be managed and co-created

Related to the research issues	#2 Exploring how value can be managed and co-created during the process
Related to the research	#2 How is value co-created in a PPP project during its lifecycle, and what are the mechanisms of VCC in PPP projects?

questions	
Key contributions	Proposition 6. Resource management practices, such as the resource dialogue approach, resource development approach and resource deployment approach, are crucial to the success of the VCC process in PPP projects. The dialogue approach involves fostering a shared understanding among stakeholders to identify resources. The development approach centres on bundling and procuring resources, while the deployment approach emphasises the transfer of knowledge into capabilities and the coordination of these capabilities. Together, these approaches form a critical foundation for effective resource management and collaboration among stakeholders in PPP projects.
	Proposition 7. Relationship management practices play a crucial role in complementing resource management practices in VCC practices by facilitating the accumulation of relational capital. The goal alignment approach pertains to the cognitive dimension of relational capital, emphasising the importance of a common cognitive framework. The partnership commitment approach pertains to the affective dimension, promoting relational norms among stakeholders. The collective leadership approach pertains to the structural dimension, facilitating a denser and closer network among stakeholders. Together, these relationship management practices support effective collaboration and contribute to the accumulation of relational capital, which can enhance the VCC outcomes of PPP projects.
	Proposition 9. There are six approaches that constitute the PPP VCC process: dialogue, development, deployment, goal alignment, partnership commitment, and collective leadership. These approaches overlap with each other to some extent and closely interact with each other as well. The VCC process reflects an iterative and interactive configuration of these practices.
	Proposition 10. The VCC process should be designed based on the integrated application of resource management and relationship management practices that facilitate both mid-term value outcomes and long-term value outcomes.

The identification and grouping of VCC activities into two aggregated dimensions of resource management practices and relationship management practices provides a theoretical contribution to the existing knowledge on PPP projects.

The identified resource management practices contribute to the theoretical understanding of VCC in PPP projects by providing a framework for effective resource

management. The resource dialogue approach contributes to the cognitive dimension of VCC, emphasising the importance of a shared understanding among stakeholders. The resource development approach contributes to the structural dimension, highlighting the importance of bundling and procuring resources to maximise their value. Finally, the resource deployment approach contributes to the behavioural dimension, emphasising the importance of transferring knowledge into capabilities and coordinating these capabilities. Together, these approaches provide a comprehensive framework for effective resource management in PPP projects.

The identified relationship management practices contribute to the theoretical understanding of VCC in PPP projects by providing a framework for effective collaboration among stakeholders. The goal alignment approach contributes to the cognitive dimension of VCC, emphasising the importance of aligning stakeholders' goals towards a common objective. The partnership commitment approach contributes to the affective dimension, emphasising the importance of building relational norms among stakeholders. Finally, the collective leadership approach contributes to the structural dimension, emphasising the importance of creating a denser and closer network among stakeholders. Together, these relationship management practices provide a comprehensive framework for effective collaboration among stakeholders in PPP projects.

Overall, the identified VCC activities and their categorisation into resource management and relationship management practices provide a comprehensive and theoretical understanding of VCC in PPP projects. This theoretical contribution can guide future research on PPP projects, enhancing the knowledge and understanding of VCC in this context. The findings also have practical implications for project managers, helping them to design and implement effective VCC practices to maximise the value of their PPP projects.

6.2.3 The Implication of Contextual Factors on VCC Practices

This contribution relates to the second research issues and questions as summarised in Table 6-4. Detailed discussion follows.

Table 6-4 Contribution 3: Investigating the influence of antecedents

Related to the research issues	#3 Investigating the influence of institutional and organisational antecedents on VCC practice in the PPP project context
Related to the research questions	#3 Which contextual factors enable and facilitate project VCC activities in PPP projects, and how do they influence VCC practice?
Key contributions	Proposition 8. The VCC practices in PPP projects are influenced by contextual antecedents, which can be categorised into institutional motivators and organisational enablers. Institutional motivators consist of regulative, normative, and cognitive factors that motivate stakeholders to participate in VCC practices and engage in collaborative and interactive processes. Organisational enablers, on the other hand, provide support and the initial momentum necessary for the application of VCC practices. Together, these factors facilitate the implementation of VCC practices in PPP projects, contributing to the success of VCC efforts.

The identification of institutional motivators and organisational enablers as contextual antecedents of VCC practices in PPP projects contributes to the theoretical understanding of VCC in the context of PPP. By examining these contextual factors, this study expands the existing knowledge on the contextual factors that influence VCC in PPP projects. The identification of institutional motivators, such as regulative, normative and cognitive factors, contributes to the institutional theory by highlighting the role of institutional pressures in promoting collaboration and interactive processes among stakeholders. This study also contributes to the organisational enablers literature by providing insight into the initial momentum required for the application of VCC practices.

Moreover, the identification of these contextual factors expands the understanding of

how VCC practices can be effectively implemented in PPP projects. By understanding the influence of institutional motivators and organisational enablers, managers can design and implement VCC practices that take into account the contextual factors that influence VCC. This understanding can be translated into practical implications for managers, such as the need to create a collaborative culture and provide the necessary support for VCC practices.

6.2.4 The Holistic Framework of VCC Mechanism in PPP Projects

The holistic framework of VCC in PPP projects proposed in this study offers a comprehensive and systematic understanding of the key components and practices involved in the VCC process. The framework not only synthesises and integrates existing literature on VCC and PPP projects but also presents an original contribution to the field. The proposed framework provides a valuable tool for practitioners and researchers to understand and manage the complexities of PPP projects and the VCC process. One of the key theoretical contributions of this study is the reconceptualisation of interaction performance as mid-term value. This reconceptualisation offers a deeper understanding of the value that interactions can generate and highlights the importance of ongoing value creation. The identification of two key aggregated dimensions of VCC practices, namely resource management and relationship management, is another significant contribution of this study. These dimensions provide a framework for practitioners to understand the practices necessary for effective VCC in PPP projects. The study's identification of institutional motivators and organisational enablers as contextual factors that impact the project environment is also a significant contribution to the field. The proposed framework's iterative and interactive configuration of practices in the VCC process offers a more nuanced understanding of the VCC process, emphasising the importance of ongoing collaboration, communication and partnership commitment. Overall, this study offers

valuable insights into the complexities of VCC in PPP projects and provides a framework for practitioners and researchers to manage these complexities effectively.

6.3 Practical Implications

The practical implications of adopting a value-based approach to project management in the context of PPP projects extend beyond mere procedural changes; they encompass a fundamental shift in the way stakeholders engage, collaborate, and ultimately derive value from project endeavours. By embracing this approach, practitioners stand to unlock a myriad of benefits that integrates each stakeholder group involved in PPP projects.

For government entities, embracing a value-based approach to project management in PPP projects presents an opportunity to strategically allocate resources and maximise societal benefits in various ways. Firstly, the identified value outcomes in Chapter 4 serve as a basis for the public party to prioritise values that align with public interests and policy objectives, government stakeholders can ensure that PPP projects address pressing societal needs and contribute to long-term socio-economic development. For example, a government embarking on a PPP project for the construction of a new transportation infrastructure system may prioritise outcomes such as reduced traffic congestion, improved accessibility, and enhanced mobility for citizens, aligning with broader urban development goals.

Furthermore, adopting a value-based approach rooted in resource integration and relationship management allows government entities to leverage PPP projects as catalysts for infrastructure enhancement and service delivery improvement. For instance, a government partnering with private entities to develop a new healthcare facility through a PPP arrangement may prioritise outcomes such as increased access to quality healthcare services, improved health outcomes for citizens, and enhanced healthcare infrastructure resilience. By focusing on these value-driven outcomes,

government stakeholders can maximise the impact of PPP investments and address critical infrastructure gaps more effectively.

Moreover, rigorous stakeholder engagement and needs assessment play a pivotal role in fostering broader support and buy-in for PPP initiatives among various stakeholders, including citizens, community organisations, and other governmental agencies. This is a specific reflection of the interaction between resource management practices and relationship management practices. For instance, a government seeking to implement a PPP project for the redevelopment of a public park may conduct extensive consultations with local residents, environmental groups, and urban planners to identify key priorities and concerns. By incorporating stakeholder feedback into the project design and decision-making processes, government entities can enhance project legitimacy, build trust, and foster a sense of ownership and shared responsibility among stakeholders.

Additionally, by embracing a value-based approach, government stakeholders can enhance transparency, accountability, and governance mechanisms in PPP projects, thereby mitigating potential risks and ensuring the efficient and effective delivery of public services. For example, implementing robust monitoring and evaluation frameworks, establishing clear performance metrics, and engaging in regular stakeholder consultations can help government entities track project progress, identify potential challenges, and address emerging issues in a timely manner. This proactive approach to project management not only enhances project outcomes but also strengthens public trust and confidence in the efficacy of public-private collaboration as a means of achieving societal goals and priorities.

Private sector partners can also derive numerous benefits from the adoption of a value-based approach to project management in PPP projects, which extend beyond conventional project management practices. Firstly, by prioritising value creation that aligns with both public and private interests, private sector stakeholders can navigate

the inherent complexities and uncertainties associated with PPP projects more effectively. This transformation can only take place when the relationship management practices are well conducted in a PPP collaboration. As shown in Figure 5-4, VCC practices start from and are targeted for relationship management practices. For instance, in a PPP project involving the construction of a renewable energy infrastructure, private sector partners may prioritise outcomes such as environmental sustainability, cost-effectiveness, and energy efficiency to align with broader societal goals while simultaneously enhancing project viability and attractiveness to investors.

Moreover, embracing a value-based approach enables private sector partners to mitigate project risks and uncertainties proactively, thereby enhancing investor confidence and facilitating smoother project implementation. For example, in a PPP project for the development of a new urban transportation system, private sector partners may adopt innovative risk-sharing mechanisms, such as performance-based contracting or revenue-sharing arrangements, to align incentives and mitigate financial risks. By leveraging their expertise and resources to address project risks, private sector partners can attract investment, secure financing, and ensure project success.

Additionally, by aligning project objectives with broader societal goals, private sector partners can enhance their corporate reputation, brand equity, and social license to operate, thereby paving the way for sustained business growth and market differentiation. Again, the identified value outcomes, especially the two perspectives of viewing value would be helpful for practitioners to value smarter. For instance, in a PPP project focused on affordable housing development, private sector partners may prioritise outcomes such as community engagement, inclusivity, and social impact to demonstrate their commitment to corporate social responsibility and sustainable development. By delivering tangible benefits to local communities and stakeholders, private sector partners can build trust, foster goodwill, and enhance their reputation as responsible corporate citizens, thereby gaining a competitive advantage in the marketplace.

Furthermore, embracing a value-based approach allows private sector partners to capitalise on emerging market opportunities and drive innovation in PPP projects. For example, in a PPP project for the digitisation of public services, private sector partners may leverage advanced technologies, such as blockchain or artificial intelligence, to enhance service delivery, improve efficiency, and streamline operations. By embracing cutting-edge solutions and best practices, private sector partners can differentiate themselves from competitors, create new revenue streams, and position themselves as industry leaders in the rapidly evolving PPP landscape.

For the public, the adoption of a value-based approach in PPP projects holds the promise of tangible improvements in service delivery, quality of life, and overall public welfare. By prioritising outcomes that directly address pressing societal needs and challenges, PPP projects have the potential to significantly enhance public well-being and promote social inclusion.

One practical challenge faced by public stakeholders in PPP projects is ensuring equitable access to essential services and infrastructure. For instance, in a PPP project aimed at improving healthcare services in underserved communities, public stakeholders may face challenges related to affordability, accessibility, and quality of care. By prioritising value-based outcomes such as affordability, accessibility, and quality of care, public stakeholders can ensure that healthcare services are accessible to all citizens, regardless of their socio-economic status or geographic location. This may involve implementing innovative financing mechanisms, expanding healthcare facilities, and improving healthcare delivery systems to reach marginalised populations effectively.

Moreover, fostering transparency, accountability, and citizen engagement throughout the project lifecycle is essential for ensuring that PPP projects are responsive to community needs and preferences. For example, in a PPP project for the redevelopment of a public park, public stakeholders may face challenges related to

community engagement, environmental sustainability, and cultural preservation. By prioritising value-based outcomes such as community engagement, environmental sustainability, and cultural preservation, public stakeholders can ensure that the park redevelopment project reflects the aspirations and values of local residents. This may involve conducting public consultations, incorporating green design principles, and preserving historical landmarks to enhance the overall quality of the park and promote community well-being.

Furthermore, promoting social cohesion and democratic governance is essential for ensuring the success and sustainability of PPP projects. For instance, in a PPP project for the development of affordable housing, public stakeholders may face challenges related to social inequality, housing affordability, and urban regeneration. By prioritising value-based outcomes such as social inclusion, housing affordability, and urban revitalisation, public stakeholders can address these challenges and create inclusive communities that benefit all residents. This may involve implementing inclusive housing policies, revitalising blighted neighbourhoods, and promoting mixed-income housing developments to foster social cohesion and promote economic opportunity for all citizens.

At last, the adoption of a value-based approach in PPP projects has far-reaching implications for various stakeholders beyond government entities and private sector partners. These stakeholders include project financiers, regulatory bodies, civil society organisations, and local communities, each of whom plays a critical role in the success and sustainability of PPP initiatives.

For project financiers, embracing a value-based approach entails aligning investment decisions with outcomes that maximise value creation and long-term financial viability. However, a practical challenge often faced by project financiers is balancing financial returns with social and environmental considerations. For example, in a PPP project for renewable energy infrastructure development, project financiers may face challenges

related to assessing the financial risks and returns associated with green investments. By prioritising outcomes that promote environmental sustainability, energy efficiency, and social impact, project financiers can attract sustainable investment capital and contribute to the transition towards a low-carbon economy.

Regulatory bodies play a crucial role in ensuring compliance with laws, regulations, and standards governing PPP projects. However, a practical challenge faced by regulatory bodies is ensuring effective oversight and enforcement mechanisms to safeguard public interests and promote accountability. For example, in a PPP project for public infrastructure development, regulatory bodies may face challenges related to monitoring project performance, ensuring contract compliance, and addressing potential conflicts of interest. By prioritising outcomes that promote transparency, accountability, and good governance, regulatory bodies can strengthen regulatory frameworks, enhance oversight mechanisms, and mitigate risks associated with PPP projects.

Local communities are directly impacted by PPP projects and have a vested interest in their outcomes. However, a practical challenge faced by local communities is ensuring meaningful participation and representation in decision-making processes. For example, in a PPP project for urban redevelopment, local communities may face challenges related to access to information, language barriers, and power imbalances. By prioritising outcomes that promote community engagement, social inclusion, and participatory governance, local communities can assert their rights, voice their concerns, and influence project outcomes to better meet their needs and aspirations.

In conclusion, the practical implications of adopting a value-based approach to project management in PPP projects are multifaceted, offering tangible benefits for all stakeholders involved. By prioritising outcomes that maximise value creation, practitioners can foster stakeholder alignment, drive collaboration, and enhance project outcomes, ultimately contributing to the realisation of broader societal goals.

6.4 Limitations and Further Research Recommendations

6.4.1 Research Limitations

One limitation of this research is that it only proposes propositions without subjecting them to quantitative testing. While these propositions are grounded in extensive literature review, expert opinions, and the findings of my case analysis, their validity and reliability in broader contexts may benefit from empirical testing. Without quantitative validation, it is challenging to determine the extent to which these propositions hold true in the real world.

Another limitation is the use of cause-and-effect statements, which, although based on evidence from the five case studies, can sometimes be vague and challenging to validate. While the proposed propositions attempt to identify causal relationships between different variables, it's important to acknowledge that these statements may still require further research to empirically test and establish their validity.

Another limitation of this multiple-case study is related to the selection of the infrastructure type, cases and their context. While this study only focuses on transport, sewage treatment and healthcare infrastructure, the findings may have implications for other types of infrastructure projects. The study deliberately chose commonly identified but distinct infrastructure projects, and their specific conditions were described to contribute to their generalisability. Additionally, the study only analysed infrastructure projects in several provinces that are in poorer areas in China, which may limit the applicability of the results to areas with more extensive experience in infrastructure implementation.

6.4.2 Future Recommendations

The identification of contextual factors that facilitate VCC in PPP projects has important implications for both theory and practice. From a theoretical standpoint, this

research expands the understanding of VCC in the context of PPP projects by identifying institutional motivators and organisational enablers that are crucial to successful VCC outcomes. These findings have implications for future research as they suggest possible avenues for investigating the role of institutional pressures and organisational enablers in promoting VCC practices in PPP projects.

The identification of contextual factors in promoting VCC practices suggests several possible avenues for future research. One of the areas that future studies could explore is the role of institutional pressures in promoting VCC practices in PPP projects. As demonstrated in the current study, institutional pressures can be a significant driver of VCC practices in PPP projects. For instance, Sankaran et al. (2023) provide valuable insights into how institutional factors can drive innovation in projects within project-oriented organisations. However, there is a need for more research to understand how these pressures can be effectively managed to promote successful VCC outcomes.

Another area that could benefit from further research is the design and implementation of organisational enablers that facilitate the application of VCC practices in PPP projects. The study has identified several organisational enablers, such as effective communication, collaboration and trust, that can facilitate the application of VCC practices in PPP projects. Future research can examine how these enablers can be designed and implemented in different organisational contexts to promote VCC outcomes.

In addition to the dimensions previously mentioned, future research could explore the governance mechanisms involved in the VCC process within PPPs, particularly focusing on the role of leadership. Investigating how leadership approaches influence the governance of VCC in PPPs can provide valuable insights into the dynamics between public and private sector actors, and how they collaborate to achieve mutually beneficial outcomes. This line of research could examine different leadership styles and behaviours that contribute to effective VCC, considering factors such as vision

setting, relationship building, decision-making processes, and conflict resolution strategies. By exploring the role of leadership in guiding and aligning the interests of diverse stakeholders, researchers can shed light on the mechanisms that foster successful VCC within PPPs. Furthermore, comparative studies across various PPP projects and sectors can identify commonalities and differences in leadership approaches and their impact on VCC outcomes. Understanding the governance dimensions of VCC in PPPs from a leadership perspective can help policymakers, practitioners and stakeholders develop strategies and frameworks that enhance collaboration, trust and accountability, ultimately leading to more effective and sustainable PPP initiatives.

Future research can also investigate how the identified contextual factors, such as the type of infrastructure project and the geographical location, may impact the application of VCC practices in PPP projects. For instance, the study focused on transport, sewage treatment, and healthcare infrastructure projects in a specific region in China. Future research can explore how the findings may apply to other types of infrastructure projects, and in different geographical locations, to achieve a more comprehensive understanding of the phenomena under investigation.

Given this research has some limitations in using propositions without conducting quantitative tests that affect the extent to which the findings can be generalised, further empirical testing is needed to determine the validity and reliability of these propositions. Second, the use of cause-and-effect statements, while based on evidence from the case studies, can sometimes be vague and challenging to validate quantitatively. Future research should aim to identify quantitative evidence to support these causal relationships.

In addition, future research could explore additional dimensions of small, medium and large PPPs to examine potential variations across different timeframes and lifecycles in relation to the value they aim to co-create and the outcomes they expect to achieve.

This exploration could investigate how the characteristics and dynamics of PPPs evolve over time, considering factors such as project scale, complexity, stakeholder involvement, and resource allocation. By conducting longitudinal studies or comparative analyses, researchers could gain insights into the changing nature of PPPs and the potential impact of these variations on the value generated and outcomes achieved. Furthermore, examining the specific challenges and opportunities associated with each size category of PPPs could help identify best practices, inform policy making, and enhance the effectiveness of future PPP initiatives. By considering these additional dimensions and their temporal and lifecycle variations, this line of research can contribute to a more comprehensive understanding of PPPs and their potential for facilitating successful collaborations between the public and private sectors.

Appendices

Appendix 1 – The Case Study Protocol

Introduction

Research Title

Value Creation and Value Co-Creation in PPP Projects: A Multi-Case Study in China

Research Aim

Support PPP project practitioners on co-creating value for all stakeholders involved through implications learned from successful cases that improve their knowledge and understanding of VCC mechanism in PPP projects.

Research Objectives

The present research adapts the concept of VCC as a suitable approach to investigate how value can be co-created in PPP projects. A VCC framework of a PPP project is best understood as the established best practice consisting of favorable principles and behaviors that facilitate involved stakeholders especially the primary stakeholders (i.e., the public party and private party) to develop, deliver and manage a PPP project in an efficient, effective, accountable, and sustainable way with the aim of maximising value created for all stakeholders. The main objectives of the research are:

To identify key value practices (behaviors and principles) that contribute to co-created value outcomes for all stakeholders.

To explore different types of value pursued and perceived by different stakeholders.

To explore how contextual and institutional factors may influence VCC practices in PPP projects.

To develop a framework for better understanding and practice of VCC in PPP projects.

Research Questions

How do stakeholders co-create value in PPP projects?

What are the principles and practices of value co-creation?

How to evaluate the co-created value?

What are the different types of value that are pursued and delivered in a PPP project?

What are the contextual and institutional factors that may influence value co-creation in PPP projects?

Theoretical propositions (Conceptual framework)

According to the available literature, VCC can be achieved through three major mechanisms: integration, interaction, and learning. However, all mechanisms lack operationalised analysis in PPP project context illustrating what practices of stakeholders and how they contribute to value co-creation. In addition, PPP project's long lifecycle makes it imperative to take into consider different stages. Especially, scholars have put much emphasis on the importance of front-end plan.

Derived from marketing research, VCC is firstly proposed to firms as an alternative paradigm to mobilise customer to engage in co-creating value. Eventually, the value is determined by the customers who are not initiators of VCC process. However, in project context, especially PPP projects context which normally entails infrastructure projects with large investment requiring serious front-end plan, the sponsors of the projects play both roles – value co-creation initiators and value determiners. Such difference in shifted roles may lead to differing implications in PPP project VCC.

Data collection procedures

Data collection plan

Definition and boundaries of the case (PPP project)

Recorded in China PPP database

Conducted to implementation phase

Selection criteria for the case

Accessibility

Based on the theoretical propositions (Has been screened as a successful project in terms of value delivery, there are sufficient interactions within stakeholders, etc.)

Literal replication and theoretical replication (for predicting similar and contrast results)

Data collection

Longitude data are to be collected from different interviewees who have participated different stages of the project.

Type of evidence sought

Interviews: stakeholders' perception through their statements.

Direct and participant observation: join the project meeting of the researcher and asking about the participant's observation through the interviews.

Documentation: meeting records, contract, supplement contract, periodic performance report, VfM assessment report, financial affordability report, implementation plan, and etc.

Archive records: published news, information and messages that can be found on the internet.

Roles of people interviewed

Participants from both public and private sectors as well as the consultant company who are involved in different stages of the project lifecycle and constitute a team that covers the entire lifecycle.

Documents to be studied

PPP project contracts

PPP project tendering documents

Feasibility report

Project business case (implementation plan)

Preparation prior to visit

Review all the public information regarding the project, as well as both parties. Information source might be China PPP projects database, government website and company website.

Interview Questions (Approx. 75 – 95 mins)

1 Introduction (5 mins)

Obtain informed consent by introducing the aim of the study, the data protection principles and tentative case study report outline.

Ask for permission to record the interview.

Explain that the research aims to explore how public and private partners collaborate with each other to achieve value co-creation. The research adopts case study which requires to interview 4-5 people each project. You are the interviewee from Project **.

Explain that the concept of “value” in the study refers to a broadened view that more than just momentary measurement. It can refer to all the objectives of your organisation, and all the benefits the project may produce, such as financial performance achieved, social needs fulfilled, social problems solved, competitive advantage developed etc.

Explain to the interviewees that this interview aims to find out: how would you evaluate project value? What are the right things and good collaborations have been performed in order to maximise value creation? What guaranteed and facilitated the right things and good collaborations? How would you evaluate the collaboration with other parties? What behavioral adjustments and capability improvements have been

achieved during the collaboration to maximise value?

2 The Evaluation of Project Value (15 - 20 mins)

The following questions focus on: what is the project value?

Please describe your role in the project (such as involved stages, job in charge of and responsibilities).

What do you think is the value (highlights) of the project? Please share your opinion from broader aspects in both long and short terms.

2.2.1 What are the realised / have yet to be realised / emergent (unexpected) value;

2.2.2 Prompt below dimensions:

Economic value – profit, less payment, more efficiency, end-user satisfaction

Social value – social needs fulfilled, social problems solved

Collaboration value – the value can only be achieved by collaboration

Environmental value – environmental betterment, safety

Relational value – reputation, local market entry, relationship, future opportunity

Regional value – employment facilitation, business environment improvement

Synergetic value – facilitation to other projects of your organisation

Please rate realised project value in terms of importance and satisfaction from 1 to 5, where 1 represents not important / satisfied at all, and 5 represents very important / satisfied.

Is there anything more that you want to talk about on project value?

3 Interaction Practice (30 - 35 mins)

The following questions focus on: what are the interaction practice? And how was the performance?

Please recall the most important 2 – 3 contributions to value co-creation have been made by your party or in the collaboration as well as the direct performance. Please describe the activities according to different project stages.

Identification and preparation stage: what were the most important contributions to value co-creation have been made by your party or in the collaboration? And how was the direct performance (new idea, trust improvement, commitment improvement, and capability and efficiency improvement)?

Prompt: Identifying objectives, examining necessity and feasibility, strategic configuration, approach selection, risk assessment, listening to end-users' opinion and etc.

Procurement stage: what were the most important contributions to value co-creation have been made by your party or in the collaboration? And how was the direct performance (new idea, trust improvement, commitment improvement, and capability and efficiency improvement)?

Prompt: Transparency, competition, dialogue, reciprocity, conflict resolution, risk and benefit sharing and etc.

Implementation stage: what were the most important contributions to value co-creation have been made by your party or in the collaboration? And how was the direct performance (new idea, trust improvement, commitment improvement, and capability and efficiency improvement)?

Prompt: innovative solution, resource integration, relationship management, changing and updating cognition, co-designing experience and etc.

Were there any significant challenges during the project process (such as policy change, value conflict, financial problems and technology issues)? And how were they resolved?

Is there anything more that you want to talk about on project value?

4 Interaction Environment (15 - 20 mins)

The following questions focus on: how was the interaction environment?

What is the organisational structure of the project? What are the jobs of the top management in the SPV? (This questions are only applied to project manager)

Were there any political, organisational and institutional factors that impacted interaction practices a lot?

Prompt: To ensure the efficiency and effectiveness of communication; to ensure the equity of decision.

Were there any economic factors that impacted interaction practices a lot?

Prompt: the ability of locate value, the ability of resource investment, the ability of risk taking, professional ability, learning ability and the ability of contract fulfilment.

Were there any collaboration environment or principles that impacted interaction practices a lot?

Prompt: how did you feel the collaboration environment? What were the collaboration principles adopted? Such as: transparency, trust and reciprocity, ethics, put oneself in someone's shoes, enabling others' activity, and empowering others.

Were there any collaboration environment or principles that impacted interaction practices a lot?

Prompt: opinion collection website, duty diligence, facilities, etc.

5 Interaction Performance (10 - 15 mins)

The following questions focus on: how did stakeholders in the project learn and adjust accordingly to maximise value?

During the project process, what were the improvements of your party's capability? And why?

During the project process, what were the adjustments on your party's collaboration principles? What were the change of collaboration environment? And why?

During the project process, what were the adjustments of your party's interaction practices? And why?

Appendix 2 – The Pilot Case Study Protocol

Research Background

Public-Private Partnerships (usually abbreviated to PPPs) is a procurement method often used in the infrastructure sector. It refers to the long-term arrangements between public and private sector aiming at combining both parties' skills and sharing risks.

PPP's are considered to have superior performance over other procurement methods and possess the ability to address the contradiction between increasing demand of new infrastructure and the low fiscal ability of governments. Therefore, they are becoming the primary procurement method worldwide. However, despite their advantages and increased use, PPPs tend to suffer cost and time overruns, and have been challenged whether they offer value for money?

Research Objectives

The main objectives of this research are 1) to find out about what is perceived as value by different stakeholders along the entire project lifecycle of a PPP and 2) to explore the mechanism among all the stakeholders on how to reconcile these different value perceptions and co-create value for PPP projects used to build social infrastructure. This research identified nine sectors in the Chinese PPP database including: 1) environmental protection, 2) public housing, 3) health and sanitation, 4) education, 5) culture, 6) municipal works, 7) government infrastructure, 8) Elderly care and 9) social insurance.

Interview Objectives

1) To examine whether the different value perceptions of various stakeholders identified from literature review are applicable, inclusive or redundant from the practitioners' view. 2) To collect existing value conflicts and possible value reconciliation mechanism among various stakeholders in practice.

General Questions List

1. What are the parameters of the projects you are going to talk about? For example, the total investment, payment method, loan, intended objectives, etc.
2. What is your position/role in the projects? How much influence do you or did you have in the projects we are discussing?

Questions List for Public Partner

1. What are the aspects of the project that you care about? For example, the financial ability, Initiation and Planning, tender procedure, the performance of Operation and Maintenance, Positive effective on community economy, etc. Can you please rank them in terms of their importance to you?
2. What are the aspects the private partner and the community will care about in this project according to your previous experience?
3. What does the term “whole project value” means to you?
4. Do you think the “whole project value” conflicts with your own intended value from the project?
5. What are some compromises you and the private partner have made during the projects? Please provide some examples.
6. Under what conditions will you compromise on your benefits and to what extent will you compromise on your benefits? Please offer some examples.
7. Do you think the compromise helps to gain more value from the project as a whole?
8. Will you make similar compromises again in future projects?

Questions List for Private Partner

1. What are the aspects of the project that you care about? Can you please rank them in terms of their importance to you?
2. What are the aspects the public partner and the community will care about in this project according to your previous experience?

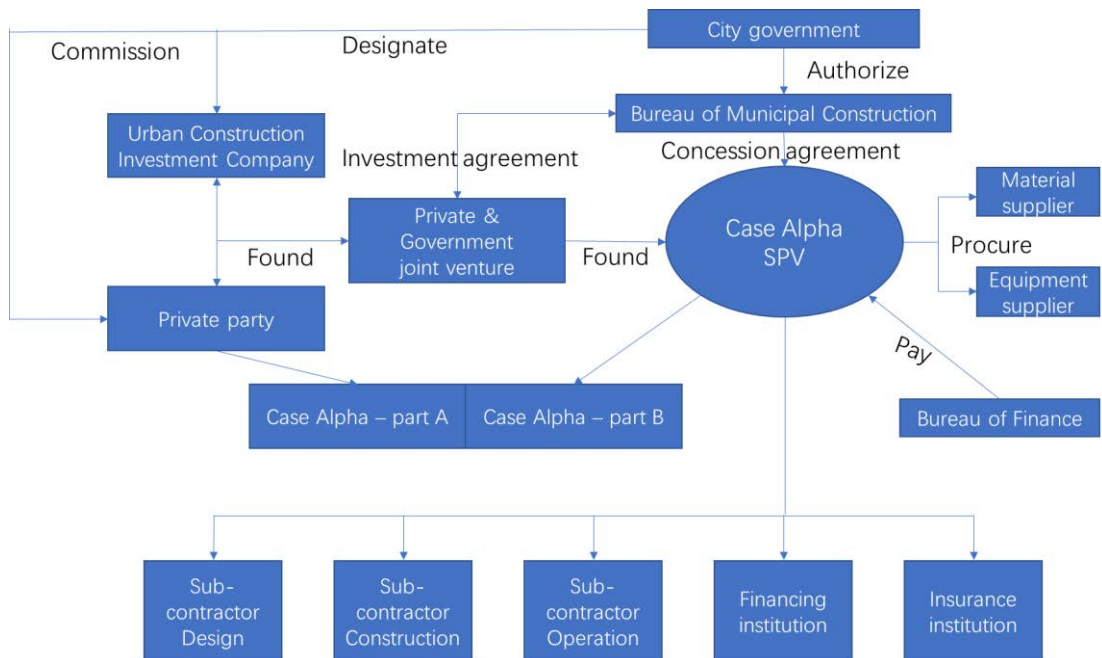
3. What does the term “whole project value” means to you?
4. Do you think the “whole project value” conflicts with your own intended benefit from the project?
5. What are some compromises you and the public partner have made during the projects? Please provide some examples.
6. Under what conditions will you compromise on your benefits and to what extent will you compromise on your benefits? Please offer some examples.
7. Do you think the compromise makes the project to gain more value in the whole?
8. Will you make similar compromises again in future projects?

Questions List for Academics

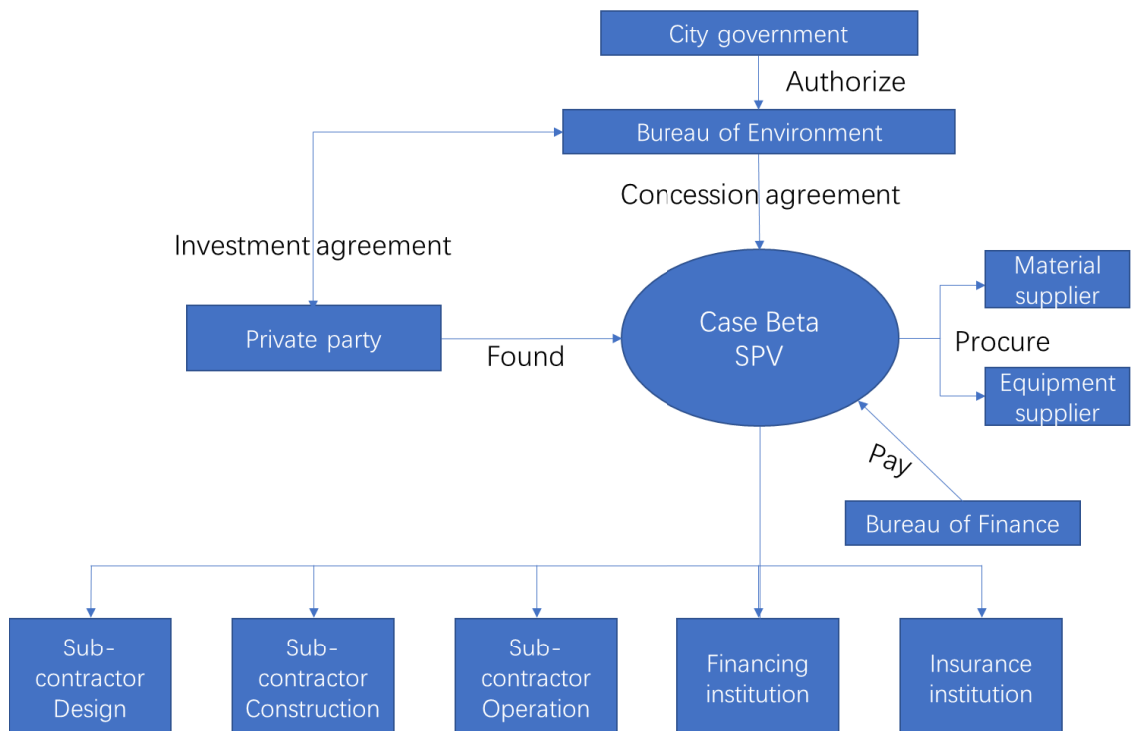
1. What are the aspects of the project that you think the community will care about? Can you please rank them in terms of their importance?
2. What are the aspects the public partner and the private partner will care about in this project according to your opinion?
3. What does the term “whole project value” means to you?
4. Do you think the “whole project value” conflicts with the public and private partners’ intended benefit from the project?
5. What are some compromises the public partner and private partner do you think should make during projects? Please provide some examples.

Appendix 3 – Organisation Structures for the Five Cases

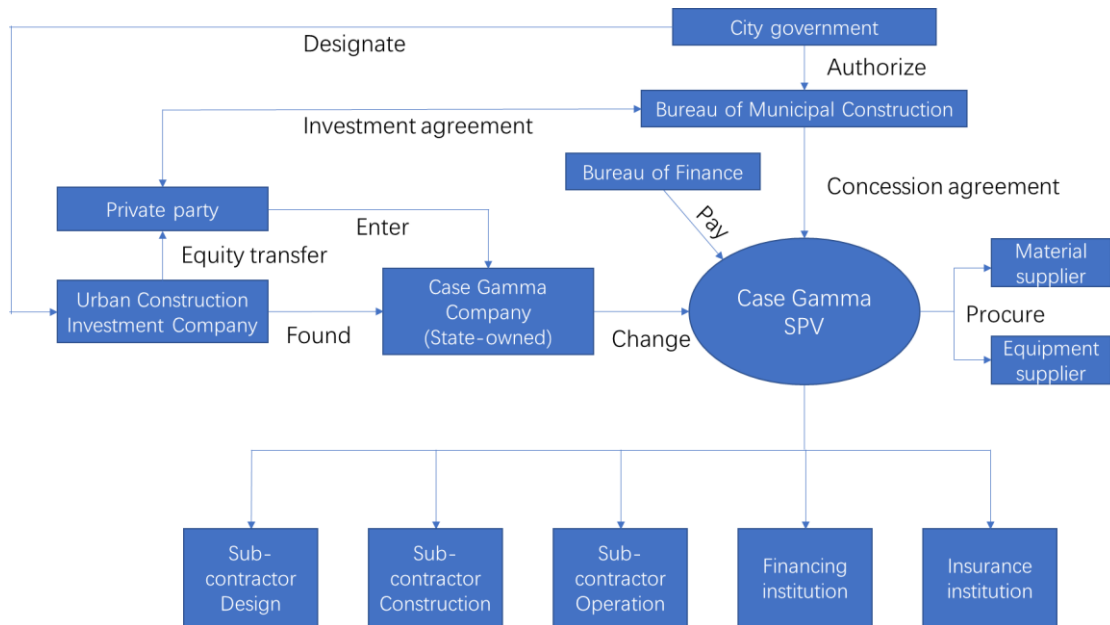
Case Alpha



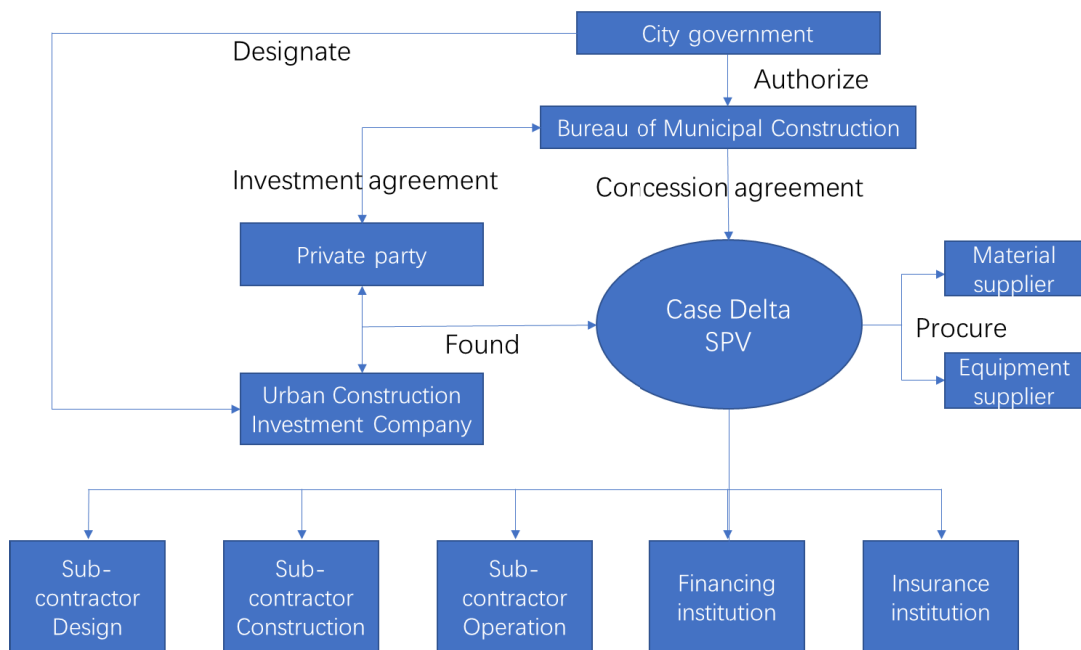
Case Beta



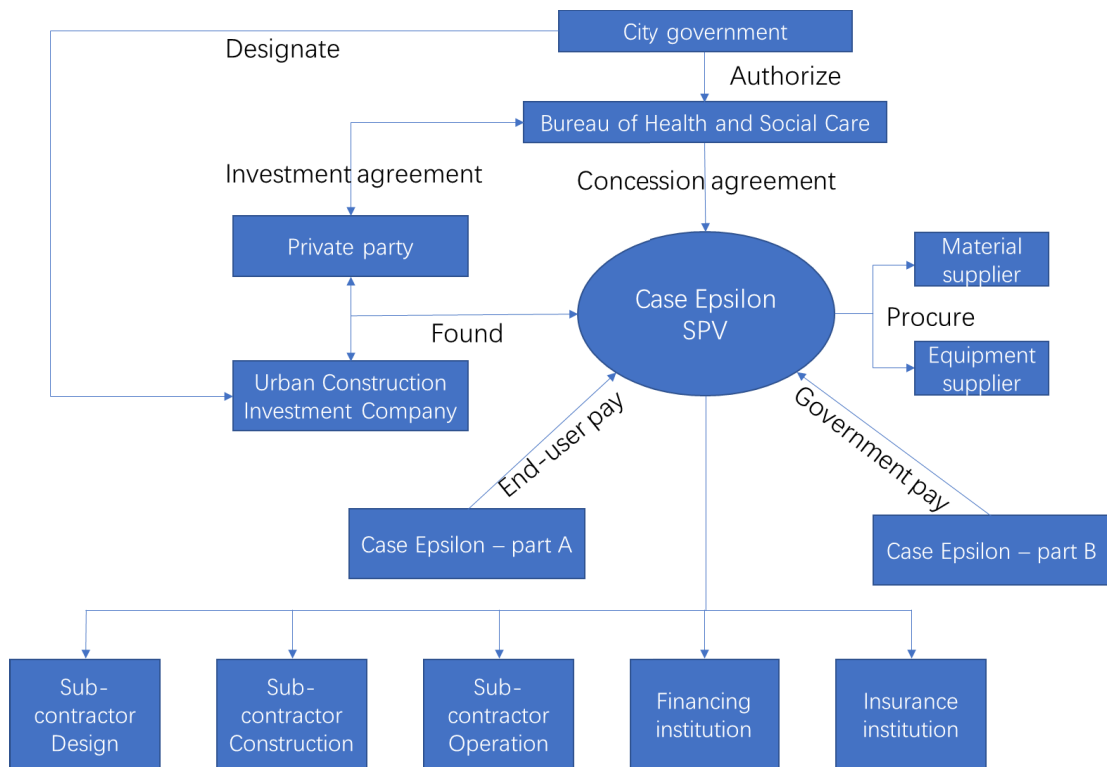
Case Gamma



Case Delta



Case Epsilon



Appendix 4 – Codes and Themes

Mid-term value

2 nd order themes	1 st order codes	Quotation examples
Visible value	Risk mitigation	“The conditions outlined in the tender were equitable and unambiguous, thereby facilitating a comprehensive understanding of the core demands of the government and enabling us to provide a transparent and low-risk proposal. As a result, we were able to obtain valuable insights and offer a candid quotation.” (Contract manager, Case Delta)
		“The construction contractor assessed the pandemic risk level, which indicated that the occurrence of a single infected worker could lead to indefinite project shutdown. Following a deliberation with stakeholders, we opted to increase our investment in pandemic prevention measures to ensure adherence to the project timeline.” (Government officer, Case Bata)
		“We acquired sufficient data and information pertaining to the site and project, allowing us to evaluate the associated risk level and incorporate it into our quotation.” (Operation manager, Case Alpha)
		“We allocated risks to the party with the greater capacity to manage them effectively, thus incentivising greater benefits for those who undertook more risks. This approach not only promoted fairness but also served to mitigate the risks involved.” (Project Consultant, Case Epsilon)
		“We conducted regular audits to assess compliance with contractual obligations and identify potential risks. This helped us address any issues before they escalated and resulted in larger problems.” (Project Consultant, Case Alpha)
		“The government's sharing of population and industry data is crucial in determining future market needs and evaluating future market competition. These data help to manage risks associated with project operations, particularly in the early stages.” (Contract manager, Case Epsilon)
	Effective procedures	“As we had the freedom to select our own design and construction plans, we were able to execute the project smoothly without having to constantly report back to the government. This flexibility gave us the independence we needed to deliver results

		efficiently.” (Project manager, Case Epsilon)
		“We were able to secure bank loans in a timely manner due to our project's adherence to all necessary requirements, which resulted in the bank assessing us as a low-risk borrower.” (Accountant, Case Alpha)
		“With the assistance of the government, we were able to synchronise the progress of land expropriation and road construction, resulting in a time-saving of at least six months. This collaboration played a critical role in the timely delivery of the project.” (Contract manager, Case Gamma)
		“Due to the presence of a nearby chemical plant, we were forced to excavate instead of using blasting techniques, which would have resulted in a significant delay of almost three months. However, thanks to early information from the government, we were able to coordinate this process with other time-consuming activities such as obtaining construction permits, ultimately resulting in the timely completion of the project.” (Engineer, Case Gamma)
	Innovative solutions	“The government officials in charge of overseeing infrastructure projects noticed a common feature amongst the city's elevated highways when he was visiting Shanghai: greenery situated under the bridges in areas where there were no roads. Recognising the potential benefits such green spaces could bring to the local community, the public party suggested the inclusion of a similar garden in our project. Fortunately, this idea was brought up at the right time, and we were able to incorporate the first green garden design in the city, which provided an innovative solution for utilising available space.” (Operation manager, Case Gamma)
		“PPP projects require innovative solutions to overcome challenges and deliver successful outcomes. By bringing together public and private sector expertise, we can develop new and creative approaches that maximise efficiency, enhance service quality, and benefit the wider community.” (Project Consultant, Case Epsilon)
		“Innovation is key to success in PPP projects. By adopting an open-minded and proactive approach, we can leverage the latest tools and techniques to address complex challenges and deliver high-quality infrastructure that meets the needs of today's society.” (Operation manager, Case Alpha)

		<p>“Effective PPP projects are those that embrace innovation and utilise best practices to ensure optimal outcomes. From exploring new technologies to implementing more sustainable designs, we must constantly strive for new and innovative ways to deliver better results for all stakeholders involved.” (Operation manager, Case Bata)</p>
	Competence Enhancement	<p>“We were able to successfully adjust to our new role in the project and improve our abilities to lead by setting objectives and governing through principles instead of participating in every detail.” (Government officer, Case Gamma)</p>
		<p>“Our team became more skilled at active listening and as a result, we were able to communicate more effectively with the private party. We learned to value their technical suggestions and not immediately assume they were motivated by financial gain.” (Government officer, Case Epsilon)</p>
		<p>“During the project, we developed innovative solutions that can be applied to future projects. Additionally, we were able to facilitate the accumulation of professional knowledge for both the design and construction companies involved.” (Operation manager, Case Gamma)</p>
		<p>“Throughout the project, I noticed a significant improvement in my professional skills, particularly in areas such as policy interpretation, conflict resolution, and providing valuable recommendations. Overall, this project provided me with valuable learning experiences.” (Project consultant, Case Delta)</p>
		<p>“Through negotiating land expropriation with various stakeholders and obtaining permits from multiple departments, we gained valuable experience. Despite the challenges we faced, we believe that the benefits of this experience far outweighed the costs.” (Project manager, Case Beta)</p>
Potential value		Trust improvement
	<p>“As our collaboration progressed, I noticed a growing sense of trust between us. This increased level of trust has allowed us to work together more cohesively and effectively, and we both value and aim to maintain it.” (Operation manager, Case Alpha)</p>	

		<p>“An unexpected positive outcome of this project is the development of a strong friendship between the public party and us, which has largely been facilitated by the increased level of trust we've built between us. This trust has contributed to a smoother project process overall.” (Operation manager, Case Gamma)</p>
		<p>“If we're able to establish a solid foundation of trust through a period of collaboration, we would be more than happy to increase our level of commitment to the project.” (Government officer, Case Delta)</p>
	Solidarity	<p>“As our collaboration has deepened, we have developed a greater sense of trust in the private party's commitment to construct and operate the aged care home. We're confident that our sincerity and dedication to the project have been conveyed to the private party.” (Government officer, Case Epsilon)</p>
		<p>“We feel like we're part of a team, and when we encounter challenges, we have each other's back.” (Government officer, Case Gamma)</p>
		<p>“The public party was supportive to some extent, and we often faced external challenges together rather than directing our efforts against each other. For instance, when the project underwent a governmental leadership audit, we went above and beyond our responsibilities to assist the public party in preparing the necessary materials.” (Engineer, Case Gamma)</p>
		<p>“We provided the necessary support to the private party within our authority, including assisting them in obtaining permits from various government departments and issuing documents that attest to the reliability and profitability of the project. However, there were certain documents, such as the bank's request for us to guarantee the loan, which were beyond our capability to provide.” (Government officer, Case Epsilon)</p>
		<p>“As I evaluate the project, the quality of our interaction with the government is of paramount importance. Reciprocal collaboration has not only created a positive working environment, but has also increased efficiency and effectiveness by ensuring that the project team is well-coordinated.” (Project manager, Case Beta)</p>
		<p>“While you may not be able to pinpoint exactly how increased trust between us has helped to overcome the most challenging issues such as design changes, compliance with regulations, and land expropriation progress, it's clear that the solidarity we've developed</p>

		within the team has made these problems easier to solve than anticipated.” (Contract manager, Case Gamma)
Sense of belonging	of	“This project is unlike any of my previous experiences, as it is a truly long-term one. My colleagues on the leadership team have all been transferred from the parent organisation and will be contributing to this project for at least a decade. Given the project's length, it's important for us to feel a sense of belonging and to settle into our roles.” (Contract manager, Case Gamma)
		“As many of my colleagues are newly hired, it's crucial to ensure that they feel a sense of belonging to the project in order to help them settle in.” (Project manager, Case Alpha)
		“When team members feel like they belong in a PPP project, they are more likely to be engaged and productive. They are also more likely to come up with innovative solutions to problems, as they feel empowered to take risks and think outside the box.” (Project Consultant, Case Bata)
		“In PPP projects, a sense of belonging is crucial for the success of the project. When both parties feel like they are part of a community working towards a common goal, they are more likely to stay committed to the project for the long term.” (External expert, Case Epsilon)
		“Having a sense of belonging in a PPP project is not just about feeling connected to your colleagues. It's also about feeling like you are part of something bigger than yourself, something that has the potential to create positive change in the world.” (Operation manager, Case Gamma)
		“In PPP projects, team members often come from different organisations with different cultures and ways of working. Creating a sense of belonging requires acknowledging and respecting these differences, while also finding common ground and building relationships based on trust and mutual respect.” (Government officer, Case Alpha)

Long-term value

2 nd order themes	1 st order codes	Quotation examples
Economic value	Financial feasibility	“While the government may incur higher costs compared to developing the project independently as before, the challenge is that we do not possess the financial capacity to make such a significant one-time payment. Therefore, from a feasibility standpoint, PPP mode represents the most appropriate and cost-effective means of implementing the project.” (Government officer, Case Delta)
		“Due to insufficient financial resources and the need for development, PPP was the only viable option available to us.” (Government officer, Case Beta)
		“The primary reason for considering PPP as a means of developing the project was its financial feasibility.” (Government officer, Case Epsilon)
		“This project was of a significant magnitude, with its total cost equivalent to the entire annual construction budget of the city government. Therefore, implementing the project using traditional methods would have depleted the entire budget for the year. However, PPP has the advantage of enabling the smoothing of expenditures, making it a more practical option for executing such large-scale projects.” (Government officer, Case Gamma)
	Lifecycle investment saving	“When considering the entire lifecycle of the project, it becomes evident that PPP represents a cost-effective option that saves money for the government.” (Government officer, Case Beta)
		“In the past, when constructing a sewage treatment plant, we used to issue two separate calls for bids - one for an EPC construction company and another for an operational company. Other governments may have their own public institutions responsible for the operation, but I am not convinced that the operation efficiency of public institutions is high. However, with this PPP project, we were able to achieve satisfactory operation efficiency.” (Government officer, Case Alpha)
		“We recognised that this project required ongoing maintenance and operation, unlike previous construction projects. As a result, we prioritised

		investing more in the initial stages, such as pre-buried pipelines and appropriate design, in order to reduce future operational costs.” (Contract manager, Case Gamma)
		“When taking a lifecycle perspective, we were able to balance our investment in the project.” (Project manager, Case Epsilon)
		“Our involvement in major decisions allowed us to implement cost-saving measures in line with our lifecycle investment plan.” (Project manager, Case Beta)
		“According to our calculation, PPP saves the investment in terms of the entire lifecycle.” (Project Consultant, Case Gamma)
	Profit	“The profits from construction are reasonable, and prior to the introduction of PPP projects, we had limited access to government projects, as they typically utilised their established network of contractors.” (Contract manager, Case Delta)
		“To be honest, our primary concern is profitability, even though we recognise our social responsibility as a state-owned enterprise. While we are committed to fulfilling our obligations to society, we must also generate revenue and ensure the sustainability of our business operations.” (Contract manager, Case Gamma)
		“PPP projects are typically significant ventures that necessitate substantial investments. These projects differ from regular corporate operations, as each of them must be profitable in order to be successful.” (Contract manager, Case Epsilon)
		“Currently, the situation is such that the government has limited financial resources, while private entities have greater flexibility in selecting the cities and projects in which they wish to invest and construct. Therefore, it is imperative for us to present attractive projects that offer high profitability.” (Government officer, Case Beta)
	Scale economy	“This project has the potential to facilitate scale economies for our company, which is particularly important in the sewage treatment industry where the size of the service area is a critical factor. Additionally, the franchise rights that we acquire as part of this project serve as a credible guarantee of financial support from lending institutions, which further enhances our credibility and financial stability.” (Project manager, Case Beta)

		“Companies that hold a greater number of franchise rights are generally perceived as more creditworthy by financial institutions.” (Project manager, Case Beta)
Social value	Environmental value	“We incorporated our patented technology into the construction of the sewage treatment plant, resulting in a higher quality of reclaimed water than what was required by the criteria.” (Operation manager, Case Alpha)
		“We placed a high degree of importance on environmental protection, recognising its critical significance for humanity.” (Government officer, Case Beta)
		“We acknowledge that the new regulation mandating us to enhance environmental protection standards is imperative.” (Government officer, Case Gamma)
		“It is crucial to prioritise environmental protection and obtain approval from the relevant environmental agencies.” (Contract manager, Case Gamma)
		“It is crucial to prioritise environmental protection and obtain approval from the relevant environmental agencies. The change in the assessment regulation was an unexpected risk, but fortunately, the government was understanding and covered the additional costs associated with the design change.” (Project Consultant, Case Gamma)
	People welfare	“In addition to seeking profit, we are also deeply committed to ensuring the success of the project in terms of its social impact. We have made significant efforts in this regard.” (Project consultant, Case Epsilon)
		“For me, the priority is not just saving money but also ensuring the timely completion of the road project. The sooner the road is completed, the sooner the public can benefit from it.” (Government officer, Case Delta)
		“The green gardens under the bridges will provide significant benefits to the local community, and we acknowledge our responsibility to maintain and preserve these benefits for the long term.” (Government officer, Case Gamma)
	Reputation	“Maintaining a good reputation is crucial for our company. Firstly, it helps us to secure more projects not only from the current government but also from neighboring ones. Secondly, it helps us to avoid

		<p>facing opposition and negative feedback from the local community.” (Operation manager, Case Alpha)</p> <p>“Maintaining a good reputation is crucial for promoting our business, and we must prioritise it accordingly.” (Operation manager, Case Beta)</p> <p>“We are putting a lot of effort into building our reputation because we want to expand our business into health and eldercare through this project.” (Operation manager, Case Epsilon)</p> <p>“Maintaining a good reputation for the government is crucial, as it ensures accountability and builds trust with the people.” (Government officer, Case Gamma)</p> <p>“Paying on time is not only important for our own financial health, but also crucial to maintain the government's reputation and credit. This in turn would attract more private capital to invest in our projects.” (Government officer, Case Beta)</p>
	Regional value	<p>“After the completion of the sewage treatment plant, we were able to attract more investment in the area by leveraging the plant's ability to handle sewage and provide quality reclaimed water to potential investors.” (Government officer, Case Beta)</p> <p>“The subsea tunnel is a crucial link connecting the G and Z districts of the city, which are separated by the sea. It enables the development of the G district by providing access to the resources and opportunities available in the Z district.” (Government officer, Case Gamma)</p> <p>“The hospital upgrade PPP project has a positive impact on the local economy as it addresses the health needs of the people, which in turn boosts economic development.” (Government officer, Case Epsilon)</p>

Contextual factors

2 nd order themes	1 st order codes	Quotation examples
Institutional motivators	Regulative	“We were aware of the regulations and compliance requirements, and we understood that violating them would have serious consequences, such as being excluded from the national PPP database. It was crucial for us to follow the rules to ensure the success of the project, and we knew that asking for more compensation was not an option.” (Operation manager, Case Alpha)
		“We have to make sure that every aspect of the project is compliant with the regulations. Failure to do so could result in hefty fines and legal repercussions.” (Project Consultant, Case Epsilon)
		“Our team is constantly monitoring the regulatory environment to ensure that we are meeting all the necessary requirements for this PPP project.” (Project Consultant, Case Alpha)
		“We understand that the regulatory process can be time-consuming and complex, but it's essential that we follow it to the letter in order to avoid any potential legal or financial issues.” (Project Consultant, Case Gamma)
		“The success of this PPP project relies heavily on our ability to navigate the regulatory landscape and stay in compliance with all applicable laws and regulations.” (Operation manager, Case Delta)
	Normative	“As a state-owned enterprise, we recognise the importance of giving back to the communities in which we operate. We have a responsibility to support and uplift those around us.” (Contract manager, Case Gamma)
		“Our commitment to social responsibility extends beyond our financial performance. We strive to make a positive impact on society and contribute to the greater good.” (Accountant, Case Alpha)
		“The area need development and we cannot actualise this. Anyone who has the capability would be welcome and respected – we would do everything we can to cooperate. Development is on the top list.” (Government officer, Case Delta)

		<p>“We believe that businesses have a duty to act ethically and responsibly. This includes being accountable for our actions and the impact they have on society and the environment.” (Contract manager, Case Epsilon)</p>
		<p>“We are dedicated to being a good corporate citizen and making a meaningful difference in the lives of those we serve.” (Operation manager, Case Bata)</p>
		<p>“Our social responsibility is not just a nice-to-have; it's a core part of our values and how we do business. We are committed to making a positive impact on the world around us.” (Contract manager, Case Delta)</p>
		<p>“We wanted to build a good reputation that Gamma’s government is easy to cooperate and Gamma’s business environment is vibrant about investment through this project as the government is more powerful in negotiating position, we are so powerless in negotiating opportunity, nevertheless.” (Government officer, Case Gamma)</p>
		<p>“Every project is important because when we bid a PPP project, we need to provide our past successful cases. The more valuable PPP experience we have, the more chances we can get our next project.” (Operation manager, Case Gamma)</p>
		<p>“Our goal is to create a virtuous cycle of success, where each successful PPP project builds on the last and helps us to secure future opportunities.” (Project manager, Case Epsilon)</p>
		<p>“We recognise that building a positive reputation takes time and effort, but it's essential if we want to be successful in the long term. We strive to be known as a reliable and trustworthy partner in all of our PPP projects.” (Operation manager, Case Delta)</p>
		<p>“Building a positive reputation is a collaborative effort that involves not just our team, but also our partners, stakeholders, and the broader community. We strive to be a good corporate citizen and make a positive impact on the world around us.” (Project Consultant, Case Alpha)</p>
	Cultural-cognitive	<p>“We are different than 20 years before. Short-term gains are not our priority. We're focused on creating lasting value and building a foundation</p>

		for sustainable growth.” (Government officer, Case Delta)
		“It’s no longer a one-time transaction; we need to take into account the operational phase that follows and prioritise 'cost now' over 'cost more'.” (Operation manager, Case Epsilon)
		“We’re not solely focused on the financial outcomes; we’re considering the broader implications of our decisions and their potential impact on the future.” (Project manager, Case Bata)
		“We’re taking a long-term perspective on this project, which means prioritising sustainable solutions that will have a lasting positive impact on both us and our stakeholders.” (Project manager, Case Alpha)
		“The better choice is quite obvious - either to put in more effort to speed up the progress or to stick to the allocated tasks and risk damaging the relationship and causing delays.” (Project Consultant, Case Gamma)
		“We faced a challenge when the owner of the factory demanded more compensation for the demolition than we had approved funds for. This caused a stalemate as the owner refused to relocate without the additional compensation. We ultimately decided to pay the extra compensation to ensure the demolition could proceed as planned, despite the limitations imposed by the regulatory framework. We knew that any further delays would have significant financial consequences, including increased loan interests and deferred payments from the government.” (Contract manager, Case Gamma)
		“As a government entity, we have shifted away from a client mindset and instead see ourselves as a collaborator in the project. This means actively engaging in the project by expressing our needs, sharing our experience, and discussing proposals.” (Government officer, Case Gamma)
		“It was a challenging situation, but we approached it with a positive mindset and saw it as an opportunity to develop new skills, gain valuable experience, and enhance our capabilities.” (Operation manager, Case Bata)
		“Our team underwent a transformation in our approach to PPP projects. Instead of just being a

		<p>client, we embraced a more collaborative mindset and worked hand in hand with our partners to achieve mutually beneficial goals.” (Government officer, Case Epsilon)</p> <p>“Cognitive transformation is not a one-time event but rather an ongoing journey that requires constant reflection, learning, and adaptation to new challenges and opportunities.” (Government officer, Case Alpha)</p>	
Organisational enablers	Relationship foundation	<p>“The public party didn’t view us as profit-driven opportunists, but instead respected our knowledge and trusted our commitment to social responsibility throughout our cooperation.” (Engineer, Case Gamma)</p> <p>“To me, it’s all about teamwork and achieving our common goal of successfully completing the project. As long as the effort I put in contributes to the project’s success, I am willing to invest more time and effort.” (Accountant, Case Alpha)</p> <p>“The private party is crucial to the success of our project. Without their financial and technical support, we wouldn’t be able to develop and grow. They are like our best friends, and we rely on their expertise to achieve our goals.” (Government officer, Case Delta)</p> <p>“We can feel each other’s reciprocal attitude and, to some extent, believe that the other party is willing to collaborate instead of taking advantage using information asymmetry.” (Government officer, Case Bata)</p>	
		Complementary capabilities	<p>“The public party has a greater depth of experience in city planning, legal procedures, and the local market, owing to their prior involvement as developers prior to the widespread adoption of PPPs. The government’s accumulated knowledge of urban construction projects further strengthens their expertise in this domain.” (Engineer, Case Gamma)</p> <p>“The private party was selected due to their exceptional professionalism and extensive experience in the construction of immersed tube tunnels, which is demonstrated by their previous successful projects. Additionally, their reliable financial capacity makes them a suitable investor for such a major undertaking.” (Government officer, Case Gamma)</p> <p>“In a construction PPP project, land acquisition is</p>

		<p>crucial and requires the government to demolish existing buildings and prepare the land prior to the private party commencing construction. However, this task can prove challenging, and in such cases, the private party's financial support can be instrumental in expediting the process.” (Government officer, Case Epsilon)</p>
	<p>Transparent and fair environment</p>	<p>“To ensure a fair and transparent procurement process, we compile a comprehensive list of project risks based on our prior experience and communicate them to potential bidders during the pre-tender meeting. This approach helps us to identify the most suitable and qualified partner, rather than simply selecting the most optimistic one.” (Government officer, Case Beta)</p> <p>“Replacing performance bonds with performance guarantees to a large extent has resulted in fairer access for private enterprises. Unlike state-owned enterprises, paying the bond can be more burdensome for us. Therefore, the use of performance guarantees has provided a more equitable solution, enabling qualified private enterprises to compete on a level playing field.” (Performance manager, Case Delta)</p> <p>“To ensure fairness, we have a clear dispute resolution mechanism in place that is agreed upon by both parties prior to the commencement of the project. This helps to minimise the likelihood of disputes arising and provides a fair and efficient way to resolve any issues that may arise.” (Project Consultant, Case Beta)</p> <p>“We prioritise the selection of qualified partners based on their expertise, experience, and track record, rather than on their connections or financial resources. This helps us to ensure that the most suitable partner is selected, leading to a successful outcome for all parties involved.” (Government officer, Case Epsilon)</p> <p>“We encourage open communication and collaboration between the government and private party throughout the project lifecycle. This helps us to identify and mitigate risks in a timely manner, ensuring that the project is delivered on time and within budget.” (Project consultant, Case Alpha)</p>

Resource management

2 nd order themes	1 st order codes	Quotation examples
Dialogue mechanism	Value Framing	<p>“We had a clear understanding of our project goals, but we needed to ensure that the private party shared our vision. We held several value framing workshops to ensure that both parties had a mutual understanding of each other's expectations, which increased our confidence in the partnership.” (Government officer, Case Delta)</p>
		<p>“During the market testing phase, we made sure to communicate our expectations clearly. This not only helped us weed out potential private parties that weren't a good fit, but also allowed us to reflect on whether our requirements were realistic and feasible.” (Government officer, Case Epsilon)</p>
		<p>“We strongly believe that infrastructure development should prioritise the needs and interests of the people who will be using it. As such, it is crucial for us to gain a comprehensive understanding of what the people want and require, and to ensure that their interests are represented throughout the project.” (Government officer, Case Bata)</p>
		<p>“The design company declined to provide the design scheme we requested, citing that it was outdated and would not be well received in the industry.” (Engineer, Case Gamma)</p>
		<p>“During the Market Test phase, effective communication allowed both the government and the private party to gain a clear understanding of the project's end goal.” (Project Consultant, Case Alpha)</p>
		<p>“We benefited from no preinstalled assumptions - plenty of communication was then initiated for no matter how unnecessary it seemed to be. This resulted in a comprehensive understanding between the government and us in terms of what were the objectives and requirements and what were the most important ones.” (Operation manager, Case Beta)</p>
		<p>“We were able to establish a common goal through recognising and addressing each other's needs and concerns.” (Government officer, Case Epsilon)</p>
	Knowledge sharing	<p>“Having monthly meetings was crucial in ensuring that all stakeholders had the opportunity to voice</p>

		<p>their needs and concerns, while also understanding each other's perspectives. This facilitated the development of optimal solutions that were aligned with the goal of maximising system value.” (Government officer, Case Delta)</p>
		<p>“In the PPP mode, as a contractor, we had more leverage in the conversation compared to the non-PPP mode. This allowed us to communicate effectively, optimise the scheme, and innovate, resulting in cost and time savings.” (Contract manager, Case Gamma)</p>
		<p>“I was working closely with the government on this project, spending three days a week in their office. One day, I overheard a conversation about an electricity arrangement in our project area, and I realised that we could reschedule our construction stage accordingly to avoid any negative impact. It turned out that the government didn't realise the importance of this information to us, and we wouldn't have known about it if I hadn't been present in their office.” (Project manager, Case Beta)</p>
		<p>“To ensure accountability, we communicated to the potential private party from the outset that they would be responsible for the project and expected them to include this responsibility in their quote.” (Government officer, Case Epsilon)</p>
		<p>“During the negotiation process, our primary focus was on educating the government about the potential operational risks and the value of our technology. We believed that this would enable them to make informed decisions regarding the selection of advanced, albeit more expensive, technology that would ensure operational safety and efficiency.” (Project manager, Case Alpha)</p>
	Invited visits	<p>“We learned a lot from the private party when they invited us to visit their other immersed tube tunnel project, and this helped us to make the decision and choose this scheme.” (Government officer, Case Gamma)</p>
		<p>“Before our negotiation with the public party, we invited them to visit our highly successful subsea tunnel project. We did this to showcase our expertise and the advantages of using this technology. This helped them make an informed decision about adopting the advanced technology. Through this visit, we provided them with firsthand</p>

		knowledge about the project and our capabilities. This played a crucial role in their decision-making process.” (Engineer, Case Gamma)
	Proactive negotiation	“We had to decline the government's request for a guarantee bond, but we took the time to explain our reasoning and the current market conditions. Our reputation and track record spoke for themselves, and in the end, the government agreed to our terms.” (Project manager, Case Epsilon)
		“During the negotiation process, we faced several challenges as we had to explain in great detail the complexities involved in the project to the government. Our primary focus was on ensuring that they understood our concerns and the potential obstacles we might encounter during the project. This was a time-consuming and energy-draining process, but it was necessary to ensure that both parties were on the same page.” (Project manager, Case Alpha)
		“We approach negotiations as a collaborative process where we aim to find mutually beneficial solutions rather than trying to win at any cost. Our goal is always to find common ground and work towards a positive outcome that benefits all parties involved. We believe in being proactive and open to discussion during negotiations to ensure that all concerns and perspectives are heard and taken into account.” (Government officer, Case Bata)
		“We firmly believe that being proactive in negotiations is key to the success of PPP projects. To achieve this, we prioritise understanding our partners' concerns and priorities, and then work collaboratively to find innovative solutions that meet everyone's needs. This approach allows us to build strong and productive partnerships, which ultimately lead to better outcomes for all involved.” (Contract manager, Case Gamma)
		“At our company, we view proactive negotiation as more than just a set of skills - it's a way of thinking. We believe it's important to be upfront and transparent in our communication, and to always keep the bigger picture in mind. By working collaboratively with our partners and prioritising the long-term goals of the project, we can find mutually beneficial solutions that benefit everyone involved.” (Contract manager, Case Delta)
		“We had a tough negotiation with the private party,

		and conflicts happened, but their attitude showed that they really wanted to make the project a success. If they didn't care about the details and agreed with all the terms, it would be worrying. How can we expect them to be responsible for us if they are not responsible for themselves?" (Government officer, Case Epsilon)
Development mechanism	Joint decision making	"During the project, we emphasised the importance of transparency from the private party. We encouraged them to communicate openly about any difficulties they encountered, rather than letting them escalate into larger problems. We were pleased with their transparency and their ability to address issues before they became major obstacles." (Government officer, Case Epsilon)
		"As the client, we made certain decisions independently, such as choosing the quality of lighting equipment in the tunnel. However, we made sure to consider the impacts of our decisions on the project company (SPV) and the overall project." (Government officer, Case Gamma)
		"We were involved in the decision-making process along the entire lifecycle from the project front-end to the operation stage. We were very appreciated about the government's trust, and the government also spoke highly of our contributions to the good decision quality" (Project manager, Case Epsilon)
		"Developing capabilities that enhance the quality of decisions is crucial in PPP projects, where resources are often limited. This includes being agile and adaptable, so that we can respond quickly to changing circumstances. It also includes having a clear understanding of the risks and opportunities associated with different options, and being able to make decisions based on that understanding." (Performance manager, Case Delta)
	Joint problem solving	"In PPP projects, resource scarcity is often a reality. To make the most of limited resources, it's important to develop capabilities that enhance the quality of decisions. This includes being transparent about challenges, considering the impacts of decisions on all stakeholders, and involving all parties in the decision-making process." (External expert, Case Epsilon)
		"We maintained regular communication with the government through weekly meetings to discuss and resolve any conflicts that arose. In addition, we

		<p>recognised the importance of seeking outside expertise when needed, so we collaborated with the government to hire a group of 37 experts from various industries and academia to provide valuable insights and suggestions for decision-making when we encountered complex issues.” (Contract manager, Case Gamma)</p>
		<p>“During an annual examination meeting with the Ministry of Finance, my team was suddenly required to submit a detailed performance report with relevant payment records within a limited time. As we were in another city and did not have the required material, we reached out to the government and private party for help. I was impressed by their quick response, and the SPV even sent their accounting team to the office in the late night to provide us with the data we needed. Thanks to their support, we were able to successfully pass the examination.” (Performance manager, Case Delta)</p>
		<p>“In our PPP project, we encountered unexpected issues that required joint problem-solving. We established a collaborative approach, where all parties shared information promptly and provided suggestions instead of blaming each other. This allowed us to quickly resolve the issues and keep the project moving forward.” (Operation manager, Case Bata)</p>
		<p>“In our PPP project, we faced a significant challenge related to the financing structure. We took a joint problem-solving approach, where both parties worked together to find a solution that met everyone's needs. By collaborating in this way, we were able to identify a financing structure that was mutually beneficial and enabled us to move forward with the project.” (Project Consultant, Case Alpha)</p>
		<p>“Joint problem-solving is essential in PPP projects, where there are often multiple stakeholders with different interests and priorities. In our project, we established a clear process for identifying and resolving issues, which involved bringing in experts from different fields to help us find solutions. This approach enabled us to maintain close working relationships with all parties involved and ensure the project's success.” (Operation manager, Case Bata)</p>

	Joint risk management	<p>“Collaboration allows us to identify and mitigate risks early, avoiding delays and project failures.” (Government officer, Case Bata)</p>
		<p>“Working together to manage project risks effectively means understanding the project and stakeholders deeply and being adaptable to changing circumstances. This collaborative approach creates more sustainable projects that benefit the community in the long run.” (External expert, Case Gamma)</p>
		<p>“Effective joint risk management is a critical component of successful PPP projects. It requires open and honest communication, a willingness to collaborate, and a shared commitment to achieving our goals.” (Project Consultant, Case Gamma)</p>
		<p>“We identified many risks in the early stages of the project, but with good teamwork and collaboration, we were able to come up with a fair and reasonable risk allocation agreement in our contract. When unexpected changes occurred, such as the government's change in use rights for the sea area, we were able to navigate the situation smoothly because the political risk had been allocated to the government, and we received compensation for re-designing the implementation scheme.” (Operation manager, Case Bata)</p>
		<p>“We practiced joint risk management with the private party instead of shifting all the risks to them. This approach proved to be beneficial for both parties. The private party was transparent with us about their challenges and concerns, which helped the project to avoid potential issues. They trusted us to address their concerns, which created a supportive and collaborative environment.” (Government officer, Case Delta)</p>
	Joint performance management	<p>“During the project, the government consulted us and the private party hired a consultant to determine the performance criteria. It was important to both parties to seek external professional knowledge to ensure the accuracy and fairness of the criteria, as it is a crucial aspect of the contract.” (Project consultant, Case Epsilon)</p>
		<p>“We engaged an independent third party to evaluate the operational performance using predetermined indicators, and our payments were determined based on the results of the evaluation.” (Operation manager, Case Gamma)</p>

		<p>“The government's expertise in quality assessment and their ability to conduct random inspections has greatly enhanced our project's overall sense of quality and safety.” (Project Consultant, Case Bata)</p> <p>“We possess the capacity and authority to oversee and evaluate the advancement and excellence of the project, even though we don't perform these activities regularly.” (Government officer, Case Delta)</p> <p>“We were incentivised to deliver high-quality and timely construction work, as the terms of the contract stipulated that full payment would only be received upon satisfactory completion. This motivated us to ensure our work met the required standards and deadlines.” (Operation manager, Case Epsilon)</p> <p>“To ensure the public interests, we have established stringent contractual terms outlining the amount and timing of payments.” (Government officer, Case Alpha)</p> <p>“We took a dual approach to performance management, adhering to the contractually agreed performance indicators while also providing recommendations based on the project's ongoing status and the evolving needs of both parties.” (Project Consultant, Case Delta)</p> <p>“As an impartial third party, we conduct joint performance evaluations with both parties on site in six main categories. We take the lead in evaluation while the public party provides suggestions and the private party explains their challenges and efforts. This process enhances our understanding of each other's expectations and difficulties and helps improve the relationship quality. The most important thing is that both parties agree on the evaluation results.” (Project Consultant, Case Epsilon)</p>
Deployment mechanism	Resource mobilisation	<p>“The Implementation Plan was used to communicate the project responsibilities to all relevant departments. It outlined the responsibilities of each individual involved in the project, and officers were required to sign it to indicate their understanding and agreement. If any officer had any doubts or concerns, they could use this opportunity to seek clarification and additional requirements.” (Government officer, Case Gamma)</p> <p>“The main objective was broken down into smaller</p>

		<p>parts and assigned to different parties, each responsible for achieving their specific part of the overall goal.” (Engineer, Case Gamma)</p> <p>“We needed specialised equipment to complete a critical task in the project, but it was difficult to identify a supplier who could meet our requirements. Luckily, the public party recognised the importance of this equipment and provided assistance in identifying potential suppliers and negotiating favorable terms. This resource acquisition activity enabled us to acquire the necessary equipment and complete the task, leading to increased value creation for the project.” (Operation manager, Case Alpha)</p> <p>“We faced a significant challenge when we realised that we didn't have enough funding to complete the project within the desired timeframe. Thankfully, the private party had experience in securing financing and helped us identify potential funding sources and negotiate favorable terms with lenders. This resource mobilisation activity helped ensure that the project was completed on time and within budget, leading to increased value creation.” (Government officer, Case Delta)</p>
	Resource integration	<p>“We formed a Government Lead Group consisting of representatives from each department involved in the project. This allowed for effective communication and collaboration among all parties, promoting a collective leadership approach based on the integration of information.” (Government officer, Case Epsilon)</p> <p>“At the start of the construction phase, I worked in a government office which gave me valuable insights that helped me coordinate the progress of the project.” (Project manager, Case Bata)</p> <p>“We believe that mobilising resources is the first step before leveraging and integrating them. Therefore, we made efforts to identify the resources available to the public party, such as their relationships with other departments, and utilised them to the best of our ability.” (Project manager, Case Epsilon)</p> <p>“We faced significant delays due to land expropriation issues in two areas. In one area, the stakeholders demanded more compensation, which our private party decided to pay in full. In the other area, the land was owned by the army and not</p>

		<p>under the authority of the local government. However, the local government leadership actively communicated with the army leadership to secure the land use right.” (Project Consultant, Case Gamma)</p>
	Commitment coordination	<p>“Despite the significant impact of COVID-19 on the construction progress, we were able to manage it effectively through cooperation from all stakeholders. For instance, the workers strictly followed the pandemic prevention policy, the government utilised their authority to manage the workers, and we provided compensation to them. As a result, out of more than 3000 workers, none were infected with COVID-19 in the past three years.” (Contract manager, Case Gamma)</p>
	<p>“We wanted to make sure that we were fully prepared for the operational phase, so we took the initiative to visit three undersea tunnels and many successful municipal roads. By doing so, we were able to learn from their experiences and incorporate operational needs into the construction process in an organic way.” (Operation manager, Case Gamma)</p>	
	<p>“When everyone is aligned and working together towards a common goal, the project can achieve great things. In our project, we saw the benefits of commitment coordination in the form of increased efficiency, reduced costs, and improved outcomes.” (Project Consultant, Case Bata)</p>	
	<p>“Commitment coordination is not just about making sure that everyone is doing their job, it's about working together to achieve something greater than the sum of its parts. In our project, we had to coordinate commitments across multiple teams and organisations, and it required a lot of effort to make sure that everyone was aligned and working towards a common goal.” (Operation manager, Case Delta)</p>	
	<p>“One of the biggest challenges in commitment coordination is timing. You have to make sure that commitments are made and met at the right time, or else the project can get off track. In our project, we had a lot of moving parts, and it was essential to keep everyone on schedule and aligned with the project timeline.” (Project manager, Case Alpha)</p>	

Relationship management

2 nd order themes	1 st order codes	Quotation examples
Goal alignment mechanism	Making concession	<p>“Concession-making is a necessary part of the process, and oftentimes, it falls on the government to make concessions. The private party typically has the advantage of possessing ample knowledge and evidence to support their claims, but we prioritise the long-term success of the project.” (Government officer, Case Epsilon)</p>
		<p>“As long as we have a shared objective, we are willing to compromise to a certain degree in order to ensure the project's advancement.” (Government officer, Case Alpha)</p>
		<p>“We wanted to achieve the maximum benefit for the public, but we were also aware that we couldn't put too much pressure on the private party to fulfill this moral obligation. They are also a part of the public and we had to ensure that they could make a reasonable profit.” (Government officer, Case Delta)</p>
		<p>“During the performance evaluation, the public party had to change the agreed performance indicators due to a new regulation in our province. This change had a negative impact on us, but we decided to make a concession and go along with it, as we believed it would ultimately benefit the project.” (Performance manager, Case Delta)</p>
	Goal alignment workshop	<p>“The consultant company was instrumental in ensuring that everyone's perspectives were heard and that the workshops remained productive. They helped us identify potential areas of conflict and facilitated discussions to resolve any differences.” (Government officer, Case Bata)</p>
		<p>“Without clear objectives and expected outcomes, goal alignment workshops can become time-consuming and unproductive. It's important to have a clear agenda and goals for each workshop to ensure that everyone stays focused and on track.” (External expert, Case Gamma)</p>
		<p>“The goal alignment workshop should involve all stakeholders, including end-users and other parties that may be affected by the project. By including all parties, we can ensure that everyone's perspectives and interests are considered, and we can work towards a shared understanding of project</p>

		objectives.” (External expert, Case Epsilon)
		“Through the workshops, we were able to identify areas where we had different assumptions about the project, which could have caused conflicts later on. By addressing these issues early on, we were able to ensure that everyone was on the same page and working towards the same goals” (Government officer, Case Gamma)
	Establishing a shared vision	“As someone who's both a businessman and a water professional, I feel a sense of accomplishment and pride in seeing how everyone's efforts have come together to benefit the public's water safety and convenience.” (Project manager, Case Alpha)
		“We established a joint vision statement that outlined our shared objectives and aspirations for the project. This statement was developed collaboratively and helped us align our efforts towards a common goal.” (Project manager, Case Bata)
		“One of the challenges in PPP projects is ensuring that both parties are working towards the same vision. To address this, we held regular meetings with our private partner to review progress and ensure that our goals were aligned. By establishing a shared vision and working collaboratively towards shared objectives, we were able to achieve a successful outcome” (Engineer, Case Gamma)
		“Establishing a shared vision is not just about setting goals and objectives; it's also about creating a shared understanding of the project's purpose and value. In our case, we used a value proposition canvas to explore our shared understanding of the project's value proposition. This helped us to align our efforts and create a common vision that reflected the project's purpose and potential impact.” (Operation manager, Case Epsilon)
Partnership commitment mechanism	Trusting	“We appreciated the respectful and trusting attitude from the government towards us, and we reciprocated by demonstrating our sincerity in the project.” (Contract manager, Case Delta)
		“I had previous collaborations with the public party, which helped establish a foundation of trust. However, through this project, I felt that our trust between each other has significantly improved.” (Operation manager, Case Bata)
		“Transparency is critical in building stakeholders' confidence in each other's intentions and future

		actions. By being transparent about their decision-making processes and actions, stakeholders can demonstrate their commitment to the project's success and build trust with other parties” (External expert, Case Gamma)
		“By openly sharing information, stakeholders can better understand each other's capabilities and intentions, which can help establish trust among stakeholders in terms of their ability to fulfill their commitments” (Project Consultant, Case Epsilon)
		“Trust is also built through transparent and fair decision-making processes. When stakeholders are involved in decision-making and their interests are taken into account, they are more likely to trust the outcome of the process.” (Operation manager, Case Gamma)
		“In PPP projects, trust is critical for mitigating risks and uncertainties. When stakeholders trust each other, they are more willing to share information and resources, which can help prevent potential problems and ensure project success.” (Operation manager, Case Bata)
		“Establishing trust requires mutual understanding of each other's objectives and expectations. When stakeholders have a clear understanding of each other's goals, they can work together more effectively towards achieving shared outcomes.” (Contract manager, Case Delta)
		“Building trust is a gradual process that requires continuous effort from all parties involved. In PPP projects, trust is essential for effective collaboration, and it starts with open and honest communication among stakeholders.” (Project Consultant, Case Alpha)
	Respecting	“We respect each other's roles, responsibilities and opinions. It helps to build mutual trust and a better working relationship.” (Government officer, Case Epsilon)
		“Respect is the foundation of our cooperation with the private sector. We are aware that their expertise is critical to achieving project success, and we show them the respect they deserve.” (Government officer, Case Epsilon)
		“Respect is the foundation of our cooperation with the private sector. We are aware that their expertise is critical to achieving project success, and we show them the respect they deserve.” (Project manager,

		Case Delta) “We believe that respecting each other's opinions is essential in PPP projects. We always listen to the private party's suggestions and ideas, and we provide constructive feedback to ensure that we achieve the best possible outcome” (Government officer, Case Gamma) “Respect is not only about acknowledging each other's expertise but also about recognising each other's constraints. In our PPP project, we understood that the government had budget limitations, and we worked together to find cost-effective solutions that met everyone's needs.” (Project manager, Case Epsilon) “We prioritise respect in our PPP partnerships because we understand that it creates a positive working environment. By treating each other with respect, we build a foundation for effective communication, collaboration, and problem-solving.” (Project Consultant, Case Bata)
	Reciprocity	“We offered our help to the government in applying for policy-based funding even though it was not our responsibility. We have expertise in document filling and the process, so we wanted to help and save the government's time for more critical tasks like decision-making or proposal approval.” (Project manager, Case Epsilon) “We were willing to go above and beyond to support the private party within our authority. This included providing assistance with all the necessary documents and approval procedures in various departments.” (Government officer, Case Bata) “Reciprocity can take many forms in PPP projects. For example, in Case Gamma, the private party agreed to take on some additional risks in exchange for more control over the construction process.” (External expert, Case Gamma) “Reciprocity is not just about making concessions. It's also about recognising the value that each party brings to the table and finding ways to leverage those strengths.” (Government officer, Case Alpha) “In our PPP project, we emphasised the importance of reciprocity in the negotiation process. We recognised that both parties had strengths and weaknesses and worked together to find mutually beneficial solutions.” (Project manager, Case Delta) “Reciprocity is a key aspect of building trust and

		cooperation between public and private parties in PPP projects. When both parties are willing to give and take, they can achieve better outcomes together.” (Project Consultant, Case Alpha)
Collective leadership mechanism	Engaging	“Effective stakeholder engagement is essential for building trust, creating a sense of ownership, and promoting sustainable outcomes. It requires clear communication, mutual respect, and a willingness to work collaboratively with all stakeholders” (External expert, Case Gamma)
		“Effective stakeholder engagement requires early and frequent communication with all parties involved, including local communities and the private sector.” (Government officer, Case Bata)
		“Effective stakeholder engagement requires clear communication, proactive engagement, and a willingness to listen and respond to feedback.” (Operation manager, Case Alpha)
		“Stakeholder engagement is critical in building trust, managing expectations, and ensuring that project outcomes align with stakeholder needs.” (Project Consultant, Case Bata)
		“Stakeholder engagement should be an ongoing process that involves all stakeholders throughout the project lifecycle, from planning to implementation to evaluation.” (Contract manager, Case Delta)
		“Engaging stakeholders is a strategic imperative for PPP projects, as it enables project sponsors to understand and respond to stakeholder concerns and interests, creating a more sustainable and successful project.” (Performance manager, Case Delta)
		Empowering
	“In our PPP project, we encourage our private sector partner to take ownership of the project's success. We involve them in decision-making processes and give them the autonomy to make certain decisions based on their expertise. This helps build their confidence and sense of ownership in the project.” (Government officer, Case Beta)	
	“Empowering our private sector partner is essential for achieving the best outcomes. We provide them	

		<p>with the resources and tools they need to succeed, and we work closely with them to ensure they have the support they need. This collaborative approach creates a win-win situation for all stakeholders involved.” (Government officer, Case Delta)</p>
		<p>“We empower our private sector partner by valuing their opinions and ideas. We listen to their feedback and incorporate their suggestions into our decision-making processes. This approach promotes a sense of mutual respect and trust, which is crucial for achieving successful outcomes.” (Government officer, Case Epsilon)</p>
	<p>Motivating</p>	<p>“In our PPP project, we constantly motivate our team by recognising their efforts and achievements. We have a rewards and recognition program in place, which acknowledges the contributions of the team members. This has helped to boost their morale and motivation to perform better.” (Operation manager, Case Gamma)</p>
		<p>“We motivate our team by involving them in decision-making and giving them ownership of the project. This makes them feel valued and invested in the project's success, leading to higher levels of motivation and commitment.” (Project manager, Case Epsilon)</p>
		<p>“Motivation is also about creating a positive work environment. In our PPP project, we focus on maintaining a healthy work-life balance for our team members. This includes flexible work arrangements, wellness programs, and team-building activities, which help to foster a positive and supportive workplace culture.” (Project Consultant, Case Bata)</p>
		<p>“As a project manager, I motivate my team by setting clear goals and expectations and providing them with the necessary resources and support to achieve these goals. This gives them a sense of purpose and direction, which is essential for maintaining their motivation.” (Project manager, Case Alpha)</p>
		<p>“We also motivate our team by providing them with training and development opportunities. This helps to enhance their skills and knowledge, which not only benefits the project but also their career growth and personal development.” (Operation manager, Case Delta)</p>

Appendix 5 – Organisation Letter Final



Organisation Letter

Value Creation and Value Co-Creation in Public Private Partnership (PPP) Projects: A Multi-Case Study in China (UTS HREC Approval number ETH18-2820)

To who it may concern:

My name is Juanwen LIU (Juanwen.Liu@student.uts.edu.au; +61 [redacted]), and I am a PhD student at UTS.

I am conducting research into social infrastructure projects using Public Private Partnerships (PPPs) to discover what is perceived as value by stakeholders along the lifecycle of a project and explore the mechanism by which these different value perceptions are reconciled and would welcome your assistance. This research involves undertaking interviews with key stakeholders of such projects, and should take no more than 90 minutes of participants' time.

I am writing to ask whether you might be willing to share information relating to this research with any employees that have experience and/or are knowledgeable about social infrastructure projects using PPPs.

If you are interested in taking part in this research, or have any questions, I would be glad if you could contact me, or my supervisors, Prof Shankar Sankaran (Shankar.Sankaran@uts.edu.au) and Dr Yongjian Ke (Yongjian.Ke@uts.edu.au) by email.

You are under no obligation to participate in this research.

Thank you for your consideration of this request.

Best regards,
Juanwen

NOTE:

This study has been approved by the University of Technology Sydney Human Research Ethics Committee [UTS HREC]. If you have any concerns or complaints about any aspect of the conduct of this research, please contact the Ethics Secretariat on ph.: +61 2 9514 2478 or email: Research.Ethics@uts.edu.au, and quote the UTS HREC reference number. Any matter raised will be treated confidentially, investigated and you will be informed of the outcome.

组织邀请函

中国基础设施建设 PPP 项目的价值衡量与共同创造：一个多案例研究
(悉尼科技大学人文研究伦理委员会批准编号 ETH18-2820)

尊敬的相关领导，您好！

我叫刘隽文，悉尼科技大学在读博士生，(Juanwen.Liu@student.uts.edu.au; +61 [redacted])。

我的博士课题是探索社会性基础设施建设 PPP 项目中，各利益相关者在整个项目周期的不同阶段的价值感知以及协调不同价值感知的机制。期待您的参与。本课题将邀请相关项目的主要利益相关者进行访谈，时间不超过 90 分钟。

能否烦请您转发这封邮件给贵公司有社会性基础设施建设 PPP 项目经验或知识储备的员工？

如果您感兴趣或者有任何问题，请联系我或我的导师 Shankar Sankaran 教授 (Shankar.Sankaran@uts.edu.au) 以及柯永建博士 (Yongjian.Ke@uts.edu.au)。

是否参加本课题完全自愿。

感谢您的支持。

此致。

敬礼

刘隽文

注：该研究已经悉尼科技大学人文研究伦理委员会[UTS HREC]批准。若您对该研究有任何疑问请联系委员会，电话+61 2 9514 2478，邮箱 Research.Ethics@uts.edu.au，并告知 UTS HREC 号。任何问题都会被保密调查，并告知您结果。

Appendix 6 – Participant Information Sheet and Consent Form



PARTICIPANT INFORMATION SHEET

Value Creation and Value Co-Creation in Public Private Partnership (PPP) Projects: A Multi-Case Study in China (UTS HREC Approval number ETH18-2820)

WHO IS DOING THE RESEARCH?

My name is Juanwen LIU (Juanwen.Liu@student.uts.edu.au; +61 [redacted]), and I am a PhD student at UTS. My supervisors are Prof. Shankar Sankaran (Shankar.Sankaran@uts.edu.au) and A/Prof Yongjian Ke (Yongjian.Ke@uts.edu.au).

WHAT IS THIS RESEARCH ABOUT?

Research Background:

Public-Private Partnerships (usually abbreviated to PPPs) is a procurement method generally used in the infrastructure sector. It refers to the long-term arrangements between public and private sector aiming at combining both parties' skills and sharing risks.

They are considered to have superior performance over other procurement methods and possess the ability to address the contradiction between increasing demand for new infrastructure and the low fiscal ability of the government. Therefore, they are becoming the primary procurement method being used worldwide.

However, despite of the advantages and popularity, PPPs tend to suffer cost and time overruns, and have been challenged whether they provide value for money.

Research Objectives:

The main objectives of this research are 1) to find out about what is perceived as value by different stakeholders along the whole project lifecycle of a PPP and 2) to explore the mechanism among all the stakeholders on how to reconcile these different value perceptions and co-create value for infrastructure PPP projects in China.

Interview Objectives:

To examine whether the different value perceptions of various stakeholders identified from the literature review are applicable, inclusive or redundant from the practitioners' view.

To collect existing value conflicts and possible value reconciliation mechanism among various stakeholders in practice.

FUNDING

Funding for this project has been received from the University of Technology Sydney and the China Scholarship Council.

WHY HAVE I BEEN ASKED?

You have been invited to participate in this study because you are identified as key stakeholder(s) (public sector, private sector, creditor, end users, professional employees of facility and service provision as well as community and general public) of a social infrastructure PPP project meeting the requirements for this study. In addition, you are experienced and qualified in terms of the role you perform in the project. Your opinion is valuable for carrying out this research.

IF I SAY YES, WHAT WILL IT INVOLVE?

If you decide to participate, I will invite you to participate in a 60-90 minutes semi-structured interview which will be audio recorded and transcribed afterwards. Interviews will be conducted in the meeting room of participants' working place. No interviews are collected from homes. The data will be de-identified and will be published only if you agreed.

ARE THERE ANY RISKS/INCONVENIENCE?

Yes, there is some inconvenience for the interview will occupy 60-90 minutes of you.

DO I HAVE TO SAY YES?

Participation in this study is voluntary. It is completely up to you whether or not you decide to take part.

WHAT WILL HAPPEN IF I SAY NO?

If you decide not to participate, it will not affect your relationship with the researchers. If you wish to withdraw from the study once it has started, you can do so at any time without having to give a reason, by contacting Juanwen LIU (Juanwen.Liu@student.uts.edu.au; +61 [redacted]).

If you withdraw from the study, the data you have provided will be destroyed (including the audio record and the transcript). However, it may not be possible to withdraw your data from the study results if these have already been analysed and your identifying details have been removed.

CONFIDENTIALITY

By signing the consent form you consent to the research team collecting and using personal information about you for the research project. All this information will be treated confidentially. All participants will be given an ID code and the code for which will only be known to the researchers. The data collected will be protected and unmodified. All the interviews will be coded and abbreviated to de-identify participants for analysis. The coding system will be saved on the UTS networked secured personal computer, and another backup copy will be stored on the USB stick/ UTS cloud store. Both will be password protected and encrypted. The data will not be published in any identifiable way. The data that will be used in publications will be anonymous to ensure privacy and confidentiality. This includes not revealing the project name, location, and participants' names. Though the identities of the interviewees will be deidentified and kept confidential, there may be a small possibility that the publishing of the research findings could reveal participants' identity if the case is extremely typical and widely recognized. To avoid this risk, all the participants will be reminded about this risk, and the information they provided won't be published without their consent. Your information will only be used for the purpose of this research project and it will only be disclosed with your permission, except as required by law.

We plan to publish the results in the form of journal articles, conference articles, and thesis. In any publication, information will be provided in such a way that you cannot be identified. We will give you an option to review the publication material before we finalise it.

WHAT IF I HAVE CONCERNS OR A COMPLAINT?

If you have concerns about the research that you think my supervisor or I can help you with, please feel free to contact us on Juanwen LIU (Juanwen.Liu@student.uts.edu.au; +61 [redacted]); Prof. Shankar Sankaran (Shankar.Sankaran@uts.edu.au) and Dr Yongjian Ke (Yongjian.Ke@uts.edu.au).

You will be given a copy of this form to keep.

NOTE:

This study has been approved by the University of Technology Sydney Human Research Ethics Committee [UTS HREC]. If you have any concerns or complaints about any aspect of the conduct of this research, please contact the Ethics Secretariat on ph.: +61 2 9514 2478 or email: Research.Ethics@uts.edu.au, and quote the UTS HREC reference number. Any matter raised will be treated confidentially, investigated and you will be informed of the outcome.

CONSENT FORM
Value Creation and Value Co-Creation in Public Private Partnership (PPP) Projects: A Multi-Case Study in China (UTS HREC Approval number ETH18-2820)

I _____ [participant's name] agree to participate in the research project *Value Capture and Co-creation for Social Infrastructure Public-Private Partnership Projects in China: A Holistic Perspective (UTS HREC Approval number ETH18-2820)* being conducted by Juanwen LIU (Juanwen.Liu@student.uts.edu.au, +61 _____), the PhD Student of University of Technology Sydney, who is supervised by Prof. Shankar Sankaran (Shankar.Sankaran@uts.edu.au). I understand that funding for this research has been provided by the University of Technology Sydney and the China Scholarship Council.

I have read the Participant Information Sheet or someone has read it to me in a language that I understand.

I understand the purposes, procedures and risks of the research as described in the Participant Information Sheet.

I have had an opportunity to ask questions and I am satisfied with the answers I have received.

I freely agree to participate in this research project as described and understand that I am free to withdraw at any time without affecting my relationship with the researchers or the University of Technology Sydney.

I understand that I will be given a signed copy of this document to keep.

I agree to be:

Audio recorded

I agree that the research data gathered from this project may be published in a form that:

Does not identify me in any way

I am aware that I can contact Juanwen LIU or her Supervisor Prof. Shankar Sankaran if I have any concerns about the research.

Name and Signature [participant]

____/____/____
Date

Name and Signature [researcher or delegate]

____/____/____
Date

Appendix 7 – Ethics Report



Human Ethics Application

Application ID :	ETH18-2820
Application Title :	Value Capture and Co-creation for Social Infrastructure Public-Private Partnership Projects in China: A Holistic Perspective
Date of Submission :	22/08/2018
Primary Investigator :	Prof Shankar Sankaran; Chief Investigator
Other Personnel :	Miss Juanwen Liu; SRResearch Student Dr Yongjian Ke; Co-Supervisor

Section 1: Ethics Portal

Select your application type

What type of application are you looking for?

Please do not change your application type without first consulting with the Ethics Secretariat (9514 9772).*

- New application (including scope-checking for nil/negligible risk research)
- Ratification of existing approval
- Transfer of existing approval
- Evaluation of teaching and learning activities
- Amendment to existing approval
- Program approval

You have selected "new application (including scope checking for nil/negligible risk research)". This option allows you to create a new form. The system will check if your application can be approved by the Faculty or whether it requires full ethics approval by the HREC. Please click "save" before continuing.

What should I know before I start?

Would you like more information on:

- This system
- The ethics process
- Purpose of the ethics review process

This system

The purpose of this online system is to streamline the ethics application process.

Mandatory questions in the application form are marked with a red asterisk (*) and must be answered before submitting this form. If a question is left unanswered on a page the form menu will show a red exclamation mark (!) on the left side of the page name.

The **"Form" tab** (located on the left-hand side) shows a navigation menu which allows you to view all section names and page names of the application, and also keeps track of what pages have been visited and/or completed and what sections are incomplete.

The **"Action" tab** (found on next to the "Form" tab) shows the actions that the person viewing the form can make, and will differ between each role, e.g. student, supervisor, staff member, faculty member, HREC member, Research Ethics Officer, etc.

The menu toolbar

Green Arrows: Enables you to move to the previous page or next page. Each time you click on the green arrow your application is saved automatically.

Save: This button allows you to save the page before moving to other pages.

Form/page comments: This allows you to make comments on the application.

Reports: Allows you to print/PDF the form.

Section 1A: Risk evaluation

Risk A

Determining the level of risk

You can save your application at any time by clicking on the save button on the left hand side in the toolbar. For further information and help in completing your application go to [Staff Connect](#).

Please answer each question carefully and consecutively.

If you need to contact the [Research Ethics Officer](#) you can call (02) 9514 9772

Does your research involve:

Projects involving covert observation, active concealment, or planned deception of participants

e.g. covert observation of the hand-washing behaviour of hospital employees, undisclosed role-playing by a researcher, etc. Does NOT include observation in a public place WITHOUT the use of photographs, images, video or audio footage ([Chapter 2.3, page 19](#))

*

- Yes
 No

Targeted recruitment or analysis of data from any of the vulnerable groups listed below (or where any of these vulnerable groups are likely to be significantly over-represented in the group being studied)

- Women who are pregnant and the human fetus ([Chapter 4.1, page 46](#))
- Children and young people (under 18 years) ([Chapter 4.2, page 50](#))
- People in dependent or unequal relationships (e.g. lecturer/student [except T&L], doctor/patient, employer/employee) ([Chapter 4.3, page 53](#))
- People highly dependent on medical care who may be unable to give consent ([Chapter 4.4, page 55](#))
- People with a cognitive impairment, an intellectual disability, or a mental illness (may include the disadvantaged/homeless) ([Chapter 4.5, page 58](#))
- People who may be involved in illegal activities (including those affected e.g. victims of domestic violence) ([Chapter 4.6, page 60](#))
- Aboriginal and Torres Strait Islander Peoples ([Chapter 4.7, page 62](#))

- *
 Yes
 No

People in / from countries that are politically unstable; where human rights are restricted; and/or where the research involves economically disadvantaged, exploited or marginalised participants from such countries e.g. Includes countries that score <50 on the Transparency Index

- *
 Yes
 No

Collection, use or disclosure of personal information WITHOUT consent of the participant

- Name, address and other details about the participant (e.g. date of birth, financial information etc.)
- Photographs, images, video or audio footage
- Fingerprints

- *
 Yes
 No

Collection, use or disclosure of health information

- Personal information collected to provide, or in providing, a health service (e.g. admission to hospital, GP visit, pathology, pharmacy etc.)
- Information or an opinion about:
 - (i) the health or a disability (at any time) of an individual; or
 - (ii) an individual's expressed wishes about the future provision of health services to him; or
 - (iii) a health service provided, or to be provided, to an individual
- Personal information about organ donation;
- Genetic information about an individual or the individual's relatives

N.B Includes information collected through physiological testing or assessment. Examples include but are not limited to EEG, EMG, BMI, blood pressure, DEXA, etc.

- *
 Yes
 No

Collection, use or disclosure of sensitive information

Racial, ethnic information, political, religious and philosophical beliefs, sexual activity or identity, and trade union membership

- *
 Yes
 No

Activity that potentially infringes the privacy or professional reputation of participants, providers or organisations

e.g. observation in the workplace, collection of commercially confidential information, etc.

Commercially confidential information = Any information which is not in the public domain or publicly available, and where disclosure may undermine the economic interest or competitive position of the owner of the information (TGA adopted definition from European Medicines Agency (EMA)). N.B. If canvassing opinion via expert-to-expert modes of data collection(?) with full disclosure, consent, and information regarding identification and use in the public domain, answer "No" here

- *
 Yes
 No

Establishment of a register, database, or databank of identifiable information for possible use in future research projects

*

- Yes
 No

Collection, transfer and/or banking of human biospecimens.
e.g. tissue, blood, urine, sputum etc.

- *
 Yes
 No

Any significant alteration to routine care or service provided to participants
e.g. deviation from standard care or usual practice

- *
 Yes
 No

Prospective assignment of human participants or groups of humans to one or more health-related interventions to evaluate the effects on health outcomes

[WHO definition of a Clinical Trial](#)

- *
 Yes
 No

Potential for participants to experience harm

e.g. physical, psychological, social, economic and/or legal ([Chapter 2.1, page 13](#))

- *
 Yes
 No

High Risk

Section 2: Project information

Project title

You can save your application at any time by clicking on the save button on the left hand side in the toolbar.
For further information and help in completing your application go to [Staff Connect](#)

Application ID (automatically generated):

ETH18-2820

Application Title:*

Value Capture and Co-creation for Social Infrastructure Public-Private Partnership Projects in China: A Holistic Perspective

Please note that the HREC is now granting a standard approval period for the research proposals.
The approval period for your project will be specified in your approval letter.
Please also note that research should not commence until ethics approval has been granted. The Committee cannot grant retrospective approval for data that has already been collected.

Ethics category code (automatically selected):*

Human

Is this a resubmission of a previous application?*

- Yes
 No

Is this a pilot study? *

- Yes
- No

Has a pilot study been conducted as part of this project? *

- Yes
- No

Please save and continue to the next page

Consultation

You can save your application at any time by clicking on the save button on the left hand side in the toolbar. For further information and help in completing your application go to [Staff Connect](#)

Have you undertaken any consultation in preparing this application?*

- Yes
- No

Please describe (1500 character limit) *

Consultations have been done with Research Ethics Officer, supervisors and other peers.

Please save and continue to the next page

Section 3: Personnel

Investigators

You can save your application at any time by clicking on the save button on the left hand side in the toolbar. For further information and help in completing your application go to [Staff Connect](#)

Are there external investigators or personnel listed on this protocol?*

- Yes
- No

Is this application for a student project?*

- Yes
- No

Students - Please note that once you submit your application is submitted it will go directly to your supervisor and not to the Committee. Once your supervisor endorses your application it will come to the Research Ethics Officer for review. Please hold off on printing your hardcopy until you have received feedback from the Research Ethics Officer. Your electronic application must be submitted by the closing date.

Personnel Table

Position type	In the personnel table use the following positions from the drop-down list
Chief Investigator	1Chief Investigator
Co Investigator	3Assoc. Investigator
Supervisor	1Chief Investigator
Co Supervisor	Co-Supervisor
Research Student	5Research Student

Further options are available for Research/Project Managers and Administrators. The main contact should be marked as 'primary' and should be a UTS staff member. Please click on 'More Criteria' located on the top right hand side of the table to find personnel.

If any details are incorrect or missing please contact the Ethics Secretariat on (02) 9514 9772 or by [email](#).

Instructions on how to add a person to the personnel table:

1. Click on 'More criteria' which is located on the top right hand corner of the table below
2. Enter the surname (and given name if the surname is common) in the fields marked 'Surname' and 'Given name' and click 'Search'
- If the system cannot find the person you are looking for you have the option of adding them in - just click "Ok" when the pop-up window shows.
3. Click on the name of the person you wish to add
4. If they are the primary contact (e.g. Chief Investigator/Supervisor), tick "Yes" under 'Primary contact'
5. Select the position from the drop-down list (e.g. Chief Investigator/Research Student)
6. Click on the green tick

Students must add their supervisors to their application and must mark their primary supervisor as a Chief Investigator and as a primary contact. Students should be listed as "SResearch student"

Internal personnel listed on this ethics protocol:

1	Primary	No
	ID	<input type="text"/>
	Surname	Liu
	Given Name	Juanwen
	Name	Miss Juanwen Liu
	Position	SResearch Student
	Type	Internal
	AOU	DAB.School of Built Environment
	Managing Unit	Design, Architecture and Building
	Email Address	Juanwen.Liu@uts.edu.au
	Contact Phone	
2	Primary	Yes
	ID	<input type="text"/>
	Surname	Sankaran
	Given Name	Shankar
	Name	Prof Shankar Sankaran
	Position	Chief Investigator
	Type	Internal
	AOU	DAB.School of Built Environment
	Managing Unit	Design, Architecture and Building
	Email Address	Shankar.Sankaran@uts.edu.au
	Contact Phone	8882
3	Primary	No
	ID	<input type="text"/>
	Surname	Ke
	Given Name	Yongjian
	Name	Dr Yongjian Ke
	Position	Co-Supervisor
	Type	Internal
	AOU	DAB.School of Built Environment
	Managing Unit	Design, Architecture and Building
	Email Address	Yongjian.Ke@uts.edu.au
	Contact Phone	8727

If you cannot find a person through the personnel table(s) above, please enter their details here (title, name, organisation, department, phone number, address, email address and their position on this protocol). (2000 character limit)

This question is not answered.

Please provide additional (or preferred) contact details of any of the people listed on the project if necessary (2000 character limit)

This question is not answered.

Please provide details of any formal qualifications (REF NS 1.1(e)) of each person listed on the project (2000 character limit)*

1 - Dr. Shankar Sankaran PhD, MEng, BSC is the Professor of Organisational Project Management at the School of the Built Environment at the University of Technology Sydney.
2 - Juanwen LIU is the PhD candidate of project management at the University of Technology Sydney.
3 - Dr. Yongjian Ke PhD, BEng is a Senior Lecturer in Project Management in the School of Built Environment at the University of Technology Sydney.

Please outline the experience of each person listed on this project relevant to this application (2000 character limit)*

1 - Professor Shankar Sankaran is a Core Member of the Built Environment Informatics and Innovation Research Centre where he is setting up a research cluster focusing on research in PPP projects. He has successfully supervised more than 33 doctoral student to completion. Several of his students have researched various aspects of project management.
2 - Juanwen LIU's areas of Interest include project governance, construction projects, and value capture and co-creation.
3 - Dr. Yongjian ke completed his PhD in Project Management from Tsinghua University. He worked as a Lecturer at University of Newcastle from June 2013 to August 2016 and a Research Fellow at National University of Singapore from July 2010 to May 2013. He is currently a Senior Lecturer in Project Management in UTS and part of the PPP research cluster at the Built Environment Informatics and Innovation Research Centre at the School of the Built Environment at UTS.

Primary AOU*

DAB.School of Built Environment

Managing Unit

Design, Architecture and Building

Please save and continue to the next page

Student details

You can save your application at any time by clicking on the save button on the left hand side in the toolbar. For further information and help in completing your application go to [Staff Connect](#)

Degree being undertaken (500 character limit)*

Doctor of Philosophy, Built Environment. This commenced in July 2017.

Have you been successful in your doctoral/masters assessment? *

- Yes
 No

Please make sure you attach a copy of your DA/Stage one confirmation in the attachments section.

Students, please read carefully: Your application should be reviewed by the Ethics Secretariat prior to submitting to the Committee. Once you have completed this application and followed the submission instructions, your application will go to your supervisor for review. Once your supervisor has endorsed the application it will come to the Ethics Secretariat for a pre-review. This pre-review process is necessary to ensure that your application is complete, has all necessary attachments, and that the quality of responses to the questions meets the Committee's expectations. Your application should therefore be submitted at least one week prior to the closing date. If you do not submit your application in time, it may be delayed and held off until the next closing date.

Section 4: Funding

Funding details

You can save your application at any time by clicking on the save button on the left hand side in the toolbar. For further information and help in completing your application go to [Staff Connect](#)

Have you received funding in relation to this research?*

- Yes
 No

Do you intend to apply for funding in the future?*

- Yes
 No

Please save and continue to the next page

Section 5: Methodology

Description

You can save your application at any time by clicking on the save button on the left hand side in the toolbar. For further information and help in completing your application go to [Staff Connect](#)

The purpose of this section is to place your research in context for the HREC and demonstrate your ability to conduct the research. The HREC may only approve research which is methodologically sound. Remember to use simple language that can be understood by people from a variety of backgrounds. Avoid jargon and acronyms.

What are the hypotheses/goals/aims/objectives of your research? Please include a brief description using plain English explaining your research aims (approximately 100 words) (1500 character limit)*

PPP projects usually involve multiple stakeholders who may have different perception on a project's value. Scholars point out that it will enhance PPP project success to measure PPP projects from "the whole project value" view which is an integration of the different value perspectives.

Therefore, the FIRST OBJECTIVE of this research is to develop an inclusive value capture Index which can integrate different value perceptions of different stakeholders in order to measure the whole project value.

Based on the inclusive measurement of whole project value, the SECOND OBJECTIVE of this research is to explore on the mechanism of value co-creation among different stakeholders through reconciling the various value perceptions to achieve higher whole project value.

Note: Clinical Trials, Recruitment of Participants and Data Collection are dealt with later so you will not need to describe them in detail below

Please provide a brief description of the research design including research questions and proposed methods for conducting the research (approximately 250 words) (1500 character limit)*

Research questions are:

- 1) What is perceived as valuable among different stakeholders along the whole project lifecycle in social infrastructure PPP projects? and
- 2) How is value co-created through different stakeholders along the whole project?

Proposed method is Mixed Methods approach consisting of case study collecting qualitative data followed by web-based anonymous questionnaire survey collecting quantitative data. Qualitative data will be collected through face-to-face interviews, and secondary data in forms of documentation such as call for bids, meeting record, demonstration of financial affordability, etc. A pilot test will be carried out before sending out the questionnaire.

Units of analysis are three groups of stakeholders identified from previous literature including 1) public sector, 2) private sector, 3) community and public assessed by academics.

Description of the six stakeholder groups in a PPP project.

Public sector: The government who wants to procure social infrastructure projects.

Private sector: The company who is chosen by the government to implement the project.

Community and public: The perception of the project by community and public which will be assessed by academics in this research.

What do you hope the outcome(s) of this research will be? (1500 character limit)*

- 1) An inclusive value capture index which contains various the stakeholders' value perceptions to measure the whole PPP project value.
- 2) The knowledge on how various stakeholders can co-create value in a PPP project through reconciling their various value perceptions.

Who do you think will benefit from this research? (1500 character limit)*

The practitioners in private sectors and governments will benefit from the value capture Index to evaluate a PPP project and compare different PPP projects on an equal basis in terms of value.
The academics will benefit from the inclusive value capture scale and the knowledge on the value co-creation mechanism as they unfold.

Please provide a brief description of the significance of your research (approximately 100 words) (1500 character limit)*

Given the value capture index, the abstract construct of value can be discussed in concrete and practical terms, which is essential to the exploration of how value can be co-created by and for all the stakeholders. This is pivotal because, the index will contribute not only to evaluate a PPP project practically and inclusively, but also aid in comparing different PPP projects on an equal basis in terms of value.

PPP projects often have different stakeholders who may have different or even conflicting value perceptions, it is important to explore a mechanism on how these perceptions can be reconciled to enhance the value cocreation among all the stakeholders for the project for mutual benefit?

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Literature review & references

You can save your application at any time by clicking on the save button on the left hand side in the toolbar. For further information and help in completing your application go to [Staff Connect](#)

Please give a brief literature review (no more than 500 words). The aim is to explain how your research fits into the context of other research in the area ([REF NS 1.1\(c\)](#)) (1500 character limit)
Please note that you cannot paste links into the online form

Despite the demonstration of fiscal and economic rationales of PPPs, the "performance paradox" of PPPs (Van Marrewijk et al., 2008) leads us to question the real value of a PPP project. The ultimate goal of PPP practitioners is to help PPP projects succeed, which could mean different things to different stakeholders (Osei-Kyei and Chan, 2017a). In essence, this results from the variance in value priorities from stakeholder to stakeholder. Previous studies have paid fair attention to the evaluation of PPPs from various perspectives to form a broadened connotation of value (e.g., Yuan et al. (2012); Yeung et al. (2009); Liu et al. (2017); Love et al. (2015)). While previous research is abundant, nonetheless, it is fragmented; particularly, an integrated and organic discussion on PPP projects evaluation within social infrastructure context from multi-stakeholder and whole lifecycle perspective appears inadequate.

On the other hand, value co-creation, whose central proposition is to engage customers as co-creators of value based on the service dominant (SD) logic in marketing (Payne et al., 2008), provides an appropriate theoretical lens if expanded from customer engagement to stakeholder engagement (SE). Many scholars (e.g. Winter and Szczepanek (2008); Torvinen and Ulkuniemi (2016); Keays and Huemann (2017)) embrace this fresh perspective to rethink value and value creation. From the view of value co-creation, it is possible to evaluate S1PPP projects holistically and explore what the mechanisms underlying value co-creation are in S1PPP projects.

Please list the references only used in the literature review and cited in your application
NOTE: Do not include references you have not used in this application (1500 character limit)

Keays, L.A., Huemann, M., 2017. Project benefits co-creation: Shaping sustainable development benefits. *International Journal of Project Management*. 35, 6, 1196-1212.

Liu, J., Love, P.E.D., Sing, M.C.P., Smith, J., Matthews, J., 2017. PPP social infrastructure procurement: Examining the feasibility of a lifecycle performance measurement framework. *Journal of Infrastructure Systems*. 23, 3.

Love, P.E.D., Liu, J., Matthews, J., Sing, C.P., Smith, J., 2015. Future proofing PPPs: Life-cycle performance measurement and building information modelling. *Automation In Construction*. 56, 26-35.

Osei-Kyei, R., Chan, A.P.C., 2017. Developing a project success index for public-private partnership projects in developing countries. *Journal of Infrastructure Systems*. 23, 4.

Payne, A.F., Storbacka, K., Frow, P., 2008. Managing the co-creation of value. *Journal of the Academy of Marketing Science*. 36, 1, 83-96.

Torvinen, H., Ulkuniemi, P., 2016. End-user engagement within innovative public procurement practices: A case study on public-private partnership procurement. *Industrial Marketing Management*. 58, 58-68.

Van Marrewijk, A., Clegg, S.R., Pitsis, T.S., Veenswijk, M., 2008. Managing public-private megaprojects: Paradoxes, complexity, and project design. *International Journal of Project Management*. 26, 6, 591-600.

Winter, M., Szczepanek, T., 2008. Projects and programmes as value creation processes: A new perspective and some practical implications. *International Journal of Project Management*. 26, 1, 95-103.

Yeung, J.F.Y., Chan, A.P.C., Chan, D.W.M., 2009. Developing a performance index for relationship-based construction projects in Australia: Delphi study. *Journal of Management in Engineering*. 25, 2, 59-68.

Yuan, J., Wang, C., Skibniewski, M.J., Li, Q., 2012. Developing key performance indicators for public-private partnership projects: Questionnaire survey and analysis. *Journal of Management in Engineering*. 28, 3, 252-264.

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Methods and methodologies

You can save your application at any time by clicking on the save button on the left hand side in the toolbar.
 For further information and help in completing your application go to [Staff Connect](#).

In order to consider your research, the HREC will need to know what it will involve for your participants [\(REF NS 3.1\)](#)

What kinds of methods and methodologies will you use in your research? (More than one box may be checked)*

- Quantitative
- Qualitative

Please save and continue to the next page

Quantitative

You can save your application at any time by clicking on the save button on the left hand side in the toolbar.
 For further information and help in completing your application go to [Staff Connect](#).

Section 1: Quantitative Methodologies*

- Experimental
- Quasi-experimental
- Correlational research
- Survey Design
- Meta analysis
- Other *(Please describe below)

Section 2: Quantitative methods*

- Written survey
- Online survey/research
- Other* (please describe below)
- Pre-post/testing
- Telephone survey
- Questionnaires
- Access to records
- Clinical trial
- Statistical analysis
- Content analysis
- Physiological testing/assessment

What quantitative methodology and methods will you be using in this research? More than one box may be checked.

Please save and continue to the next page

Qualitative

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What qualitative methodology and methods will be using in this research?

Section 1: Qualitative methodology*

- Auto-ethnography
- Historical research
- Other *(Please describe below)
- Action research
- Narrative enquiry
- Biographical research
- Case study
- Phenomenology
- Indigenous research paradigm
- Discourse analysis
- Grounded theory

Section 2: Qualitative methods*

- Participants observation
- Covert observation
- Life story or oral history
- Focus groups
- Structured interviews
- Semi-structured interviews
- Unstructured interviews
- Other * (Please describe below)
- On-line research
- Psychological testing/assessment
- Verbal protocol
- Journaling
- Artifact analysis
- Document/Policy analysis
- Access to records
- Audio/video recording

Please describe how interviews will be conducted, including how many participants will be involved (from each participant group if there is more than one group/cohort), the amount of time required of participants for this, whether it will be recorded, and any other information applicable*

This research will initially conduct 6 case studies. There are six groups of stakeholders identified from the literature review which are 1) public sector, 2) private sector, 3) community and public. One to three informants will be invited within each group, therefore there will be 18-54 interviews in total. Every interview will last 60-90 minutes with content audio recorded on the spot and transcribed afterwards.

Please describe how audio/video recording will be used in the research, including how many participants will be involved (from each participant group if there is more than one group/cohort), the amount of time required of participants for this, whether it will be recorded, and any other information applicable (1500 character limit)*

Audio recording will be conducted using two instruments simultaneously (eg., Iphone and recording pen) with the interviewees' consent.

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Section 6: Research participants/subjects part 1

Recruitment of participants

You can save your application at any time by clicking on the save button on the left hand side in the toolbar. For further information and help in completing your application go to [Staff Connect](#)

In line with the National Statement, the definition of participants includes not only those humans who are the primary focus of the research but also those who will be affected by the research. The HREC regards the principle of respect for persons as of paramount importance. ([REF NS 1.1 \(d\), 1.6-1.9, 1.10, 2.1](#)).

How will you initially select and contact your participants? More than one box may be checked, if appropriate*

- Advertisement/flyer
- E-mail
- Telephone
- Internet
- Organisation
- Personal contact
- Letter
- Other contact method to be used

Outline how you will obtain participants' contact details and what your recruitment process will be (1500 character limit)*

There is a PPP projects database managed by the Ministry of Finance of the People's Republic of China with all the projects having their information and contacts accessible to the public. Also, my supervisors have the contacts related to PPP projects in China. These contacts are my supervisors previous co-workers who are experienced and relevant to this research. I will start with these contacts and reach a larger population with the snowball approach to achieve theoretical saturation.

Please describe your recruitment plan/strategy

Qualitative phase:
For the projects with contacts' information published in the online PPP database, I will telephone or email them for the data collection. For my supervisors' existing contacts, I will let my supervisors send my contact information to the potential informants and leave themselves to decide whether to participate in this research.

Quantitative phase:
Send online survey through the interviewees in the qualitative phase and to get in touch with more respondents through them. Also, I will forward the survey link through the social media such as Wechat, Weibo to get more stakeholders like end users and the general public involved. In addition, to forward the survey link through Wechat and Weibo is permitted in China without any restraints.

How many participants do you intend to recruit? (If you are intending to recruit different groups of participants, please answer all relevant questions for each group, e.g. control group, test group, etc) (1500 character limit)*

Qualitative phase:
18-54 interviewees

Quantitative phase:
Considering about the general response rate 10% -15%, I will send about 800 online questionnaires to get around 80 qualified answers which is deemed sufficient for analysis using Partial Least Squared Structural Equation Modelling.

Explain how and why you have chosen this number (If the research is quantitative, explain the power calculations; if the research is qualitative, explain why the proposed number is likely to result in adequate data) (1500 character limit)*

Qualitative phase:
This research will temporarily conduct 6 case studies. There are six groups of stakeholders identified from the literature review. One to three informants will be invited within each group, and therefore there will be 18-54 interviews in total. If four cases are not sufficient to achieve theoretical saturation, more case studies will be done until theoretical saturation is achieved.

Quantitative phase:
This research will follow the often cited 10-times rule (Tompson et al., 1995) to decide the scale which means 10 times the largest number of formative indicators (which is temporarily 6 in this research) used to measure single construct. Thus 60 is enough and 80 qualified responses can ensure the data analysis. The sample scale will be adjusted in the same logic according to any change of the largest number of formative indicators.

Reference:
Tompson, R., Barclay, D., & Higgins, C. (1995). The partial least squares approach to causal modeling: Personal computer adoption and uses as an illustration. *Technology Studies: Special Issue on Research Methodology*, 2(2), 284-324.

Describe your inclusion and exclusion criteria for participants (1500 character limit)*

Qualitative phase:
Interviewees will be selected according to:
1) Related working experience (more than 5 years)
2) Sectors involved (social infrastructure*) and
3) Coverage of all the six stakeholder groups identified.

Quantitative phase:
Respondents will be selected according to
1) Sectors involved (social infrastructure*) and
3) Coverage of all the six stakeholder groups identified.

*This research identified nine sectors in the Chinese PPP database including : 1) environmental protection, 2) public housing, 3) health and sanitation, 4) education, 5) culture, 6) municipal works, 7) government infrastructure, 8) Elderly care and 9) social insurance.

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Participant involvement

You can save your application at any time by clicking on the save button on the left hand side in the toolbar.
For further information and help in completing your application go to [Staff Connect](#)

What time commitment will the research involve for your participants?
NOTE: This information must be included in any information to participants (1500 character limit)*

Qualitative phase: each interview will be around 60-90 minutes.
Quantitative phase: each questionnaire will be finished in about 20 minutes.

In what location will the research/data collection take place?
NOTE: This information must be included in any information to participants (1500 character limit)*

Qualitative phase: All interviews will take place at public place where the participants are comfortable with. (For example the office of the participant).
Quantitative phase: Online survey

What travel, if any, does the research involve for your participants?
NOTE: This information must be included in any information to participants (1500 character limit)*

None

Please include any additional information relating to participants that you think relevant
NOTE: This information must be included in any information to participants (1500 character limit)*

None

Describe and justify any benefit, payment or compensation the participants will receive. For research being conducted with Aboriginal and Torres Strait Islander People, the described benefits from research should have been discussed with and agreed to by the Aboriginal or Torres Strait Islander research stakeholders. (REF NS 2.1) and 4.7.8 & 4.7.9)
(1500 character limit)*

To be able to express their value perceptions and gain an opportunity to benefit from better social infrastructure developed through PPPs.

Please save and continue to the next page

Consent

You can save your application at any time by clicking on the save button on the left hand side in the toolbar.
For further information and help in completing your application go to [Staff Connect](#)

Will you be obtaining written consent?*

- Yes
 No

Please explain why and describe how you will obtain and record consent (1500 character limit)*

Considering the local culture in China, we will conduct verbal consent instead of written consent. Answers of the participants of the consent will be recorded. This will ensure and prove that all the participants are involved voluntarily.

Do you believe there will be any special issues relating to consent in your research? (REF NS 1.13, 2.2, 2.3, Chapter 4)*

- Yes
 No

Are the participants able to consent fully? (REF NS Chapter 2, 4.4, 4.5)*

- Yes
 No

Please save and continue to the next page

Limited disclosure

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For further information and help in completing your application go to [Staff Connect](#)

Does this research involve limited disclosure to participants? (REF NS 2.3)*

- Yes
 No

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Vulnerable populations

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For further information and help in completing your application go to [Staff Connect](#)

Indicate if your research will involve the following vulnerable populations (as per the National Statement) other than as incidental participants (i.e. they are not included in the design of the project but may be participants) (REF NS Chapter 4)

- Women who are pregnant and the human foetus
 Children and young people
 People in dependent or unequal relationships
 People highly dependent upon medical care who may be unable to give consent
 People with a cognitive impairment, an intellectual disability or a mental illness
 People who may be involved in illegal activities
 People who are incarcerated
 Aboriginal and Torres Strait Islander Peoples
 People in other countries
 None of the above

Describe how you will respect the ethical considerations specific to your participants, in accordance with [Chapter 4](#) of the National Statement (1500 character limit)*

The research will be conducted according to the request in this application. For example, the research will collect data with participants' informed consent, without any concealment, and protecting participants' privacy, etc. Plus, local cultural values will be acknowledged in the interview question design and during the interviews. The interview questions will be designed together with experienced researchers from China and my supervisors (one of whom is a Chinese). This will ensure that the participants be fully respected and protected.

If your research is being conducted in Australia, does it involve Culturally and Linguistically Diverse (CALD) People?*

- Yes
 No

Do you intend to recruit any members of the Australian Defence Force?*

- Yes
 No

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Section 7: Research participants/subjects part 2

Risk/harm

You can save your application at any time by clicking on the save button on the left hand side in the toolbar.
For further information and help in completing your application go to [Staff Connect](#)

Risk or harm could be described as damage or hurt to the wellbeing, interests or welfare of an individual, institution or group. Harm could range from physical hurt or damage such as illness or injury, to psychological or emotional hurt or damage, such as embarrassment or distress. Please note that as a researcher, you are not necessarily immune from risk yourself and should give careful consideration to this question ([REF NS 2.1](#)). For help in addressing the risk/harm section please click [here](#).

NOTE:

It is really important that you carefully consider all potential risks that could occur, even if they seem negligible. Please do not provide one-word answers to any of the questions below. Please refer to the guidelines to address risk and harm located on the UTS HREC website titled: [help for how to address the risk/harm section](#). Describe, as best as you can, any possible risks to research participants, subjects and related groups
NOTE: This information must be included in any information to participants (2000 character limit)*

The participants will not go through any physical harm or risk. The interviews will be held in a safe and comfortable location chosen by the interviewees, mostly their offices. However, there is a possibility that some of the participants may feel inconvenient or uncomfortable being interviewed, also when conducting interviews, participants may not feel secure to express their opinion because of the job security reasons. The participants would be told that they can stop the interview whenever they want. Though the identities of the interviewees will be de-identified and kept confidential, there may be a small possibility that the publishing of the research findings could reveal participants' identity if the case is extremely typical and widely recognized. To avoid this risk, all the participants will be reminded about this risk, and the information they provided won't be published without their consent.

How would you categorise the magnitude of potential risk? (e.g. inconvenience, discomfort, harmful, painful)
Explain why you believe this is so (1500 character limit)*

The potential risk is inconvenience at most. Because the interview questions will be designed and the interviews will be conducted carefully. But the interviews will take 60 - 90 mins and the surveys will take 30 mins which maybe cause the inconvenience to the participants. However, this can be avoided by letting the participants choose the time and venue of the interviews. And the survey is not compulsory.

How would you categorise the likelihood of risk? (i.e. slight, possible, likely, probable, unavoidable)
Explain why you believe this is so (1500 characters)*

The potential risk is less than slight because all the participants can stop whenever they want and avoid whatever questions they don't want to answer. That is to say, the participation of the interviewees and the information they offered are all by their own will. In addition, quantitative data collection will be anonymous and de-identified.

What strategies will you use to minimise and/or manage the risks? (1500 character limit)*

The researcher will retain confidentiality in all possible ways. Discuss the risk issues with the interviewees. Ensure that the interviewees have provided consent to be involved in the research. With regards to questionnaires, all participants will be anonymous. The questionnaire is not required to be identifiable for follow-on questions.

Discuss likely or possible risk to researchers (including yourself), and your strategies for minimising such risks (1500 character limit)*

All interviews will be conducted in a safe environment, most likely the participants' office. Risk is minimal. There is a possibility that adequate information was not provided by interviewees selected. In this case I will look for additional respondents. There is another risk that I will not get sufficient responses from the survey. I will access possible participants through government agencies involved in PPP's and PPP associations to ensure that I have the right population to send the survey to.

Please save and continue to the next page

Pre-existing relationships

You can save your application at any time by clicking on the save button on the left hand side in the toolbar. For further information and help in completing your application go to [Staff Connect](#).

Are there likely to be any pre-existing relationships with research participants? (e.g. employer/employee, colleague, friend, relation, student/teacher, etc)*

- Yes
 No

Please describe (1500 character limit)*

The data collection will partly depend on my supervisors' networking which means some of the participants may be previous colleagues of my supervisors. This is necessary because this fits the purposeful sampling strategy in this research and can ensure the empirical data collection start smoothly. However, whether these kind of participants will be involved depends on the criteria provided in Recruitment of Participants section.

How might these relationships influence their decision to participate, be affected by the proposed research or create potential ethical conflict? Please describe strategy for dealing with this (1500 character limit)*

The preexisting relationships could be with my supervisors instead of myself. I will let my supervisors give my contact information to the potential informants and leave them to decide whether to participate this research or not. Also, a statement of voluntary participation in the research will be noted through the emails, oral communication and ahead of each individual interview. Thus, the preexisting relationships will not be expected to create ethical conflict.

Describe how you will ensure that student assessment, employee security, etc., will not be adversely affected by participation in this research (1500 character limit)*

The pre-existing relationships are just networking and there is no hierarchical level. No students will be involved. And the research will be designed as anonymous. Thus there is no such risks to influence the student assessment or employee security.

Will you be recruiting UTS staff and/or students as research participants?*

- Yes
 No

Please save and continue to the next page

Aboriginal & Torres Strait Islanders/people overseas/culturally & linguistically diverse people

You can save your application at any time by clicking on the save button on the left hand side in the toolbar.
For further information and help in completing your application go to [Staff Connect](#)

You have indicated on the Vulnerable Populations page that your research involves this particular population.
If your research does not involve this population, you will need to change your answer on the Vulnerable Populations page.

Research involving people from identifiable language and cultural groups, including your own, may require special sensitivity. If the research is being carried out in another country, you must comply with UTS as well as local standards, laws and guidelines. Values and Ethics in Aboriginal and Torres Strait Islander Health Research, 2003 guidelines provide guidance to researchers in the conception, design and conduct of research. There are six values at the heart of these guidelines: reciprocity, respect, equality, responsibility, survival and protection, spirit and integrity. The questions regarding reciprocity have been addressed under 'Participant Involvement' and 'External organisations'. Respectful research relationships acknowledge and affirm the right of people to have different values, norms and aspirations. Those involved in research processes should not be blind to difference. Also essential to a respectful research relationship is the recognition of the contribution of others and the consequences of research.

Is the research being conducted in English?*

- Yes
 No

What language is the research being conducted in? (500 character limit)*

Most of the research will be conducted in English. Only the interviews and surveys will be conducted in Chinese for data collection. The data collected will be translated into English for the need of analysis.

What is your level of competence in this language?

1=None, 2=Some, 3=Conversational, 4=Fluent (spoken), 5=Fluent (written), 6=Fluent (spoken & written)

*
6

Please tick which of the following will be used (More than one box may be checked if required):*

- I will be translating
 Interpreter
 Translator
 I will be interpreting

Please save and continue to the next page

Aboriginal & Torres Strait Islanders/people overseas/culturally & linguistically diverse continued

You can save your application at any time by clicking on the save button on the left hand side in the toolbar.
For further information and help in completing your application go to [Staff Connect](#)

Has the participant information been translated from English into the relevant language(s)?*

- Yes
 No

Please provide copies of all material, clearly labelled, in English and other relevant languages

The Committee requests that you arrange for a local independent contact person, to make it easier for your participants should they wish to confirm your identity or express any concerns. Please provide details (name and contact details) (NS Chapter 4.7 and Chapter 4.8):
(4000 character limit)*

Xingrui Associate Professor of Dalian University of Technology
xingrui@dlut.edu.cn +86

How have you incorporated consideration for local prudential rules and customs in your research design? (1500 character limit)*

The research design has been checked by experienced researchers and practitioners from China in project field and by my supervisors. To guarantee the quality of the data, the questionnaire will be completely anonymous and the record of the interviews will be eliminated once been transcribed. Also considering of the culture, a sign on the consent form might be too much burden to the interviewees, so we will adopt verbal consent.

Please save and continue to the next page

People overseas/culturally and linguistically diverse people

You can save your application at any time by clicking on the save button on the left hand side in the toolbar. For further information and help in completing your application go to [Staff Connect](#)

You have indicated on the Vulnerable Populations page that your research involves this particular population. If your research does not involve this population, you will need to change your answer on the Vulnerable Populations page.

Do you require any special approval arrangements (e.g. visa)? *

- Yes
 No

Please explain why you do not require any special approval arrangements (e.g. visa)? (2000 character limit)*

As a Citizen of China I do not need any special approval arrangements.

Have you read the [Vice-Chancellor's Travel Directive](#)? *

- Yes
 No

Please save and continue to the next page

External organisations

You can save your application at any time by clicking on the save button on the left hand side in the toolbar. For further information and help in completing your application go to [Staff Connect](#)

Indicate if your research will involve any of the following:*

- Institution
 Organisation
 Community Group
 None of the above

Please save and continue to the next page

Section 8: Data

Data collection

You can save your application at any time by clicking on the save button on the left hand side in the toolbar. For further information and help in completing your application go to [Staff Connect](#)

The collection, storage and use of data involve important considerations of privacy. When collecting data, researchers should show due sensitivity and respect for persons. It is also important that data be reliable, authentic, and where appropriate, replicable. This section will provide the HREC with information as to how you intend to deal with these issues.
[\(REF NS 2.2.6\(f\), 3.2\) \(Section 2, The Code\)](#)

Who will collect the data? (More than one box may be checked) [\(Section 2, The Code\)](#)*

- External contract researcher
- External associate researcher
- External student
- Internal (UTS) academic researcher
- Internal (UTS) research assistant
- Internal (UTS) student
- Research Assistant
- Volunteers
- Other

Will you be attaching a sample of your data recording/measurement instrument(s) to this application (e.g. survey, interview format, etc?)*

- Yes
- No

Please save and continue to the next page

Information database or personal records

You can save your application at any time by clicking on the save button on the left hand side in the toolbar. For further information and help in completing your application go to [Staff Connect](#)

Do your data collection or recruitment methods include access to an information database or personal records? ([Section 95 and 95A, Privacy Act](#)) (REF NS 3.2)

- Yes
- No

Please save and continue to the next page

Data type

You can save your application at any time by clicking on the save button on the left hand side in the toolbar. For further information and help in completing your application go to [Staff Connect](#)

The HREC is required to report on privacy to the Federal and NSW Privacy Commissioners

Indicate the category of data you will be obtaining at the point of data collection (More than one box may be checked):*

- Individually identifiable data
- Re-identifiable data
- Non-identifiable data

Are you obtaining consent for individually identifiable or re-identifiable information?*

- Yes
- No

Please select how you will be obtaining consent from the list below*

Other

Please describe what other method you will use to obtain consent (1500 character limit)*

Considering the local culture, we will be attaining verbal consent instead of written consent. Answers of the participants of the consent will be recorded. The format of the consent will be read to the participants before every individual interview, and the the interview can move on only if the participants allowed.

Why do you need to have access to individually identifiable and/or re-identifiable data? (1500 character limit)*

The intention of the researcher is only to identify the participants in terms of their professional role (such as project manager or team member) and not by name. Knowing their name is of no specific interest to the research. If individual participants agree and offer consent, some of his/her quotes may be used within the thesis and publications together with the interviewee identified by his professional role, and but not revealing their personal identification.

Will you be seeking identifiable information from a Commonwealth agency, without the consent from the individuals to which the data refer?*

- Yes
 No

How will you ensure that data will be non-identifiable? (1500 character limit)*

Data that has had the identifiers permanently will be removed to ensure no specific individual can be identified.

Please save and continue to the next page

Data storage

You can save your application at any time by clicking on the save button on the left hand side in the toolbar.
For further information and help in completing your application go to [Staff Connect](#)

Data must be stored and secured for a minimum of 5 years after publication (Some data are required for longer periods of time and the storage will need to take this into account). For further details on retention requirements, refer to the UTS Records Management Policy <http://www.records.uts.edu.au/policies/index.html>
The data should be stored so as to ensure maximum privacy for participants, reliability and retrievability of data.

Indicate the format(s) the data will be stored in (Choose as many categories as applicable)

NOTE: This information must be included in any information to participants

*

- Electronic/digital recording
 Handwritten notes
 Microfilm
 Non-identifiable(anonymous)data
 On-line data storage
 Paper questionnaires/Surveys
 Transcripts of tapes/recordingd
 Video tapes
 Other

Who will have access to the raw data? (Choose as many categories as applicable)

NOTE: This information must be included in any information to participants

*

- UTS academic researcher(s)
 UTS student(s) and supervisors
 External researcher(s)
 Research assistant(s)
 Funding body/organisation
 Partner organisation(s)
 Other

Please save and continue to the next page

Use & publication of data

You can save your application at any time by clicking on the save button on the left hand side in the toolbar.
For further information and help in completing your application go to [Staff Connect](#)

How do you intend to use and/or publish the data? (Choose as many categories as applicable)

NOTE: This information must be included in any information to participants

*

- Book
 Client Report
 Conference paper
 Electronic publication
 Media
 Report
 Thesis
 Journal articles
 Other

Do you envisage any additional use of data in future research projects?*

- Yes
 No

Please save and continue to the next page

Privacy principles

You can save your application at any time by clicking on the save button on the left hand side in the toolbar.
For further information and help in completing your application go to [Staff Connect](#)

As a general principle, privacy and confidentiality should be respected at all stages of the research (raw data, analysis, published or archived), and by all those involved in the research (including the researcher, research assistants, administrative assistants, students, interpreters, translators, data processors, members of focus groups, etc.)

Note: Privacy and confidentiality is complicated in NSW because it is governed by a number of separate Acts. From 12 March 2014, the new Australian Privacy Principles (APPs) were introduced to regulate the handling of personal information by Australian government agencies and some private sector organisations.

The privacy fact sheet providing the text of the 13 APP can be accessed [here](#).

The 13 APP apply to all research conducted by staff and students of this University.

Will this research be undertaken in conformity to ALL the Privacy Principles?*

- Yes
 No

Please save and continue to the next page

Privacy & confidentiality

You can save your application at any time by clicking on the save button on the left hand side in the toolbar.
For further information and help in completing your application go to [Staff Connect](#)

How will you ensure the security of the data? (1500 character limit)*

All this data will be treated confidentially. All participants will be given an ID code and the code for which will only be known to the researchers. The data collected will be protected and unmodified. All the interviews will be coded and abbreviated to de-identify participants for analysis reasons. The coding system will be saved on the UTS networked secured personal computer, and another backup copy will be stored on the USB stick/ UTS cloud store, both are password protected and encrypted. The data will not be published in any identifiable way. The data that will be used in publications will be anonymous to ensure privacy and confidentiality. This includes not revealing the project name, location, and participants' names. The case studies will be also be coded as case A, B. Participants' information will only be used for the purpose of this research project it will only be disclosed with participants' permission, except as required by law.

How will you protect the confidentiality/privacy of your participants? (1500 character limit)*

All participants will be given an ID code and the code. The voice record files for the interviews will be protected and unmodified and the records will be deleted once been transcribed.

To what extent will you or anyone else be able to identify the research participants from the published or unpublished data? Please describe: (1500 character limit)*

The data used in publications will be anonymous and de-identified to ensure privacy and confidentiality.

Please save and continue to the next page

Interpretation/analysis/disposal

You can save your application at any time by clicking on the save button on the left hand side in the toolbar.
For further information and help in completing your application go to [Staff Connect](#)

Regardless of whether data collected is qualitative or quantitative, how do you plan to analyse these data into material that is valid and reliable? (Include a brief summary of your Analysis Plan) (1500 character limit)*

Validity will be pursued by deriving the interview questions from existing and published constructs for value capture and co-creation, identifying the best informants for the questions, and collecting continuation of data until clear patterns emerged. Reliability will be ensured by cross-validating the interview statements, and later the final results, across the entire set of interviews, as well as by using constant-comparison approaches during data analysis. Also, questions will be tested with experts in PPP research (including my supervisors) and a pilot test with purposefully selected stakeholders will be conducted to ensure reliability. The quantitative data will be analyzed using Smart PLS Software. Reliability and validity will be tested through statistical indicators.

Will the data be archived or destroyed? *

- Archived
 Destroyed

Please give a destruction date*

31/07/2020

Please save and continue to the next page

Section 9: Additional information

Other ethical issues

You can save your application at any time by clicking on the save button on the left hand side in the toolbar. For further information and help in completing your application go to [Staff Connect](#)

If there are any additional ethical issues which you do not believe have been covered by this form, please explain them for the HREC: (1500 character limit)*

All issues have been explained clearly.

Please save and continue to the next page

Section 10: Attachments

Attachments

You can save your application at any time by clicking on the save button on the left hand side in the toolbar. For further information and help in completing your application go to [Staff Connect](#)

I have attached the following supporting documents

Doctoral or Masters assessment*

- Yes
 N/A

Participant Information Sheet(s) *

- Yes
 No

Survey(s)/questionnaire(s)/outline of question(s)*

- Yes
 N/A

Translation of forms/information letter(s)/instruments*

- Yes
 N/A

Explanations of any technical terms used*

- Yes
 N/A

Standard Operating Procedures (May include a distress or disclosure protocol; procedures for participant screening; physiological, psychological, or biological sampling and/or laboratory or safety procedures where relevant.)*

- Yes
 No

Please explain why any of the above items have not been attached (either softcopy/hardcopy) and when they will be provided (1500 character limit)*

All the technical terms have been explained in the application form and there is no standard operating procedures needed for this research.

NOTE: If you are only attaching a hardcopy of any attachments relating to this application, you must still click on 'Add New Document' on the right hand side of the table.

If possible, please consolidate all attachments into one PDF

How to attach

1. Click on "New Document"
2. Enter a title in the "Document description" field
3. Click on the OK button
4. Click on SOFT COPY icon
5. Follow the instructions in the upload dialog box

To add a reference to a hard copy document:

1. Click on "Add New Document"
2. Enter a title in the "Document Description" field
3. Tick check box for "Hard Copy"
4. Enter details in the "Reference (Document Title)" field
5. Click on the OK button

Please use the following HREC templates when creating an information sheet and consent form: [HREC templates](#)

Documents attached to this application:*

Description	Reference	Soft copy	Hard copy
20181004 Added email template to recruit survey participants	20181004 Added email template to recruit survey participants.pdf	✓	
20181004 Added Organisation Letter	20181004 Added Organisation Letter.pdf	✓	
Participant information sheet & Consent form - Juanwen LIU_Chinese Version	Participant information sheet & Consent form - Juanwen LIU_Chinese Version.pdf	✓	
Response to HREC outcome and comments	Response - ETH18-2820 – SANKARAN (for LIU) - HREC outcome and comments.pdf	✓	
Revised Interview Questions List and Survey Questionnaire - Juanwen LIU	Revised Interview Questions List and Survey Questionnaire - Juanwen LIU.pdf	✓	
Revised Participant information sheet Consent form - Juanwen LIU	Revised Participant information sheet Consent form - Juanwen LIU.pdf	✓	
20181004 Response - ETH18-2820 – SANKARAN (for LIU) - HREC outcome and comments	20181004 Response - ETH18-2820 – SANKARAN (for LIU) - HREC outcome and comments.pdf	✓	
20181004 Revised Participant information sheet Consent form - Juanwen LIU	20181004 Revised Participant information sheet Consent form - Juanwen LIU.pdf	✓	
Added Organisation Letter	Added Organisation Letter.pdf	✓	
DA Stage 1 Confirmation - Juanwen LIU	DA Stage 1 Confirmation - Juanwen LIU.pdf	✓	
HREC outcome and comments	ETH18-2820 – SANKARAN (for LIU) - HREC outcome and comments.docx	✓	
Interview Questions List and Survey Questionnaire - Juanwen LIU	Interview Questions List and Survey Questionnaire - Juanwen LIU.pdf	✓	
Interview Questions List and Survey Questionnaire - Juanwen LIU_Chinese Version	Interview Questions List and Survey Questionnaire - Juanwen LIU_Chinese Version.pdf	✓	
Participant information sheet & Consent form - Juanwen LIU	Participant information sheet Consent form - Juanwen LIU.pdf	✓	

Please read the submission instructions carefully at the end of this application form.
Please save and continue to the next page

Declaration

Declaration

I declare that the information I have given above is true and that this research does not contravene the National Statement on Ethical Conduct in Human Research, the Australian Code for the Responsible Conduct of Research, and relevant UTS policy and guidelines relating to the safe and ethical conduct of research.

I also declare that I will respect the personality, rights, wishes, beliefs, consent and freedom of the individual participant in the conduct of my research and that I will notify the UTS Human Research Ethics Committee of any ethically relevant variation in this research.

In signing this declaration, I guarantee that this form has been distributed to each member of the research team, and they have agreed to abide by the principles and processes of the research as outlined in this application.

To signoff the ethics application click on your name below and accept.

Declaration Signoff*

1	Full Name	Miss Juanwen Liu
	Position	SRresearch Student
	Declaration signed?	Yes
	Signoff Date	23/07/2018
2	Full Name	Prof Shankar Sankaran
	Position	Chief Investigator
	Declaration signed?	No
	Signoff Date	

You can save your application at any time by clicking on the save button on the left hand side in the toolbar. Further examples and information to help you successfully complete your application can be found [here](#).

Confirmation

Confirmation by Local Research Office High Risk

Application type*

Research (student project)

Internal personnel listed on this ethics protocol*

1	Primary	No
	ID	
	Surname	Liu
	Given Name	Juanwen
	Name	Miss Juanwen Liu
	Position	5Research Student
	Type	Internal
	AOU	DAB.School of Built Environment
	Managing Unit	Design, Architecture and Building
	Email Address	Juanwen.Liu@uts.edu.au
	Contact Phone	
2	Primary	Yes
	ID	
	Surname	Sankaran
	Given Name	Shankar
	Name	Prof Shankar Sankaran
	Position	Chief Investigator
	Type	Internal
	AOU	DAB.School of Built Environment
	Managing Unit	Design, Architecture and Building
	Email Address	Shankar.Sankaran@uts.edu.au
	Contact Phone	8882
3	Primary	No
	ID	
	Surname	Ke
	Given Name	Yongjian
	Name	Dr Yongjian Ke
	Position	Co-Supervisor
	Type	Internal
	AOU	DAB.School of Built Environment
	Managing Unit	Design, Architecture and Building
	Email Address	Yongjian.Ke@uts.edu.au
	Contact Phone	8727

Checked by: *

Bronwyn Clark-Cooles

Date of review: *

22/08/2018

The Research Office has confirmed that: All information in this application and supporting documentation is correct and as complete as possible *

Yes

No

Confirmation by ADR

Application type

Human

Internal personnel listed on this ethics protocol

1	Primary	No
	ID	
	Surname	Liu
	Given Name	Juanwen
	Name	Miss Juanwen Liu
	Position	SRResearch Student
	Type	Internal
	AOU	DAB.School of Built Environment
	Managing Unit	Design, Architecture and Building
	Email Address	Juanwen.Liu@uts.edu.au
	Contact Phone	
2	Primary	Yes
	ID	
	Surname	Sankaran
	Given Name	Shankar
	Name	Prof Shankar Sankaran
	Position	Chief Investigator
	Type	Internal
	AOU	DAB.School of Built Environment
	Managing Unit	Design, Architecture and Building
	Email Address	Shankar.Sankaran@uts.edu.au
	Contact Phone	8882
3	Primary	No
	ID	
	Surname	Ke
	Given Name	Yongjian
	Name	Dr Yongjian Ke
	Position	Co-Supervisor
	Type	Internal
	AOU	DAB.School of Built Environment
	Managing Unit	Design, Architecture and Building
	Email Address	Yongjian.Ke@uts.edu.au
	Contact Phone	8727

Date of LRO review

24/08/2018

Declaration:

- I am aware that this research is being conducted within this Faculty/School/Centre.
- I am satisfied that the researchers have met all Faculty/School/Centre requirements in relation to this research
- This research will be undertaken in compliance with the UTS Research Ethics and Integrity Policy or any replacement or amendment thereof
- This research will be undertaken in compliance with the Australian Code for the Responsible Conduct of Research and National Statement on Ethical Conduct in Human Research

*

- Yes
 No

Comments

This question is not answered.

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