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Exploring and Developing Measurements for the Dimension of Contract Governance in Malaysia's Public-Private Partnership Initiatives

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Abstract: Since 1983, Malaysia has been implementing public-private partnership (PPP) initiatives to acquire public infrastructure and services. These partnerships have been successful in improving public services and reducing public expenditure. Many researches have been conducted on the factors influencing the performance of PPP, including contract governance. However, due to the long duration and contractual obligations of PPP initiatives, there is still a lack of understanding about the influence of contract governance on the performance of these partnerships, highlighting a scarcity of study on contract governance in PPP contexts. Based on mono-method quantitative design, this study aims to develop a survey instrument to measure contract governance in PPP initiatives through Exploratory Factor Analysis (EFA). A pilot study has been conducted with 115 respondents and the data been analyzed using the Principal Component with the Rotation extraction technique. The results showed that all five components of contract governance in the study had a Cronbach's alpha greater than 0.70, indicating a high level of consistency and reliability. The results of this research provide significant knowledge on the measurement of contract governance on PPP project performance to the body of literature on partnership performance and contract governance, therefore assisting concessionaires and policymakers. Managers overseeing PPP projects should possess the ability to improve the performance of their projects by comprehending the impact of contract governance on project performance.

Keywords: Contract governance; dimensions of contract governance; EFA procedure; exploratory factor analysis; Malaysian public-private partnership initiatives

1. Introduction

Public and private sectors have used partnership or cooperation to cope with resource shortage in organisational operations (Chakkol et al., 2018; Downey et al., 2013) in order to maintain organisational competitiveness. A successful cooperation improves governance and industrial competitiveness (Stadtler, 2015; Liu et al., 2014). As early as the 1980s, public concern about the government's ability to provide public services effectively and efficiently led to the development of public-private partnership initiatives as an alternative to public procurement (Pessoa, 2010). In addition, the majority of governments in the world were facing the problem of budget allocation while pursuing public infrastructure and services (Liu et. al., 2018; Zangoueinezhad & Azar, 2014).

Many nations have launched public-private partnership or PPP or 3P efforts to acquire public infrastructures and services (Mohamad et al., 2018). Since 1983, public-private partnership initiatives in Malaysia have garnered good

comments from many stakeholders for improving public infrastructure and services via private parties and reducing public expenditure (Mohamad et al., 2018). The initiatives continues until the recent development where public-private partnership initiatives help governments address health challenges, including attempts to prevent the spread of COVID-19 using temporary hospitals and 5G technology in China (Abbas et al., 2021) and via an industrial immunisation programme in Malaysia (Ministry of International Trade and Industry, 2021).

However, due to the complexity of public-private partnership relationships and such initiatives are often scrutinised by the public, contractual instruments (Chakkol et al., 2018) are often utilised to govern the contracting parties in order to accomplish desired partnership goals. Therefore, there is a need for effective contracts governance to take place in a partnership to ensure that the partnership is fulfilling its goals (EPEC, 2014). A significant amount of study has been discovered about the relationship between the critical success factors of a partnership and the partnership's performance from past literatures. Jinarat & Quang (2003) conducted a previous study in which researchers sought to assess good governance by examining four specific dimensions: accountability, transparency, participation, and the rule of law. Nevertheless, it is increasingly important to include the aspect of equity and equality when measuring governance, as advocated by Dieleman et al. (2011), in order to foster justice, equality, and inclusivity for all key parties involved in PPP contracting. Therefore, the objective of this study is to investigate the dimension of contract governance that can measure items for contract governance in its relation to Malaysian public-private partnership initiatives.

In order to attain validity, reliability, and really practical items measuring instruments, the researchers undergo the Exploratory Factor Analysis (EFA) procedures to achieve this objectives (Awang et al., 2018; Hoque et al., 2018). This study also described the procedures for determining the validity and reliability of questionnaire by using EFA for contract governance construct assessment.

2. Literature Review

2.1 Public Private Partnerships

The importance of public-private partnerships in providing public infrastructure and services is to boost public procurement agendas, especially in development segments. According to Mohamad et al. (2018a), private sectors in developing countries have invested approximately US$95 billion annually in public-private projects in 2018. With enough infrastructure, the country can maintain a "high level of life" and "facilitate economic operations" (Zangoueinezhad & Azar, 2014). Public-private partnerships can balance the demand for public infrastructure with limited resources. By collaborating strategically, public and private sectors may overcome resource shortages and project complexity (Alam et al., 2014).

However, since most of public-private partnership projects involve long concession period, there are rooms for contracting parties to become opportunistic throughout the implementation of such projects (citation). Mechanisms to restrict opportunistic behaviour and the existence of the rule of law in terms of contract that binds relevant parties to such contracts were the common components of governance highlighted by earlier studies. Therefore, regulating such contracts was crucial. The use of a contract mechanism as a governance tool may improve the performance of an organisation or a project. Contract arrangements, according to Wang & Zhao (2018), are written agreements between the public and private sectors that specify the parties' responsibilities, the roles they will play, how they will be monitored, and how they will handle emergencies. As a result, the institutional framework for contract-related rulemaking, or the governance of contract law, will be strengthened (Cherednychenko, 2015). The written agreements between contracting parties in a public-private partnership project regarding responsibilities, penalties, roles, monitoring, and backup plans are referred to as contract governance for the purposes of this research.

2.2 Concept of Contract Governance

The concept of contract governance pertains to the manner in which a recently formed partnership is structured, typically manifesting as a formal arrangement of contracts (Chakkol et al., 2018). The significance of contract governance within the realm of corporate governance has been acknowledged, but with relatively limited focus in previous studies (Möslein & Riesenhuber, 2009). In their study, Chakkol et al. (2018) observed that the presence of contracts exerted a notable influence on the effectiveness of collaborative efforts. Furthermore, it has been observed that the implementation of such contracts can effectively mitigate the occurrence of miscommunication among partners, as they establish clear expectations for key milestones and offer commercial incentives (You et al., 2018b). According to Möslein & Riesenhuber (2009), the concept of contract governance remains ambiguous, leading to the categorization of studies on the topic into four distinct areas namely the governance of contract law, the governance of contract, the governance through contract law, and the governance through contract.

According to the World Bank (2018), contract governance constitutes one of the three fundamental phases in the life cycle of a public-private partnership, alongside planning and procurement. Effective contract governance plays a crucial role in enhancing the financial sustainability and stability of a project, hence facilitating the recruitment of more competent partners for public-private partnership initiatives (Al-Saadi & Abdou, 2016). Al-Saadi & Abdou (2016)

assert that the implementation of regulatory frameworks for public-private partnerships serves the purpose of enabling governments to effectively monitor the performance of project partners while also protecting the interests of the private sector. According to their analysis, the presence of a strong governance framework is identified as a critical determinant of success for infrastructure projects involving public-private partnerships.

The new public management movement advocated for changes in the hierarchical governance structure of government management, resulting in the adoption of contract governance (She & Tang, 2017). The conventional hierarchical form of governance was juxtaposed with the contemporary approach of contract governance. She & Tang (2017) argue that contract governance places emphasis on principles such as equality, consultation, teamwork, and mutual gain. Based on empirical evidence, the implementation of measures such as prioritising safety and risk management, improving government efficiency, and pursuing an acceptable return on investment has proven to be beneficial in boosting contract governance within public-private partnership projects. The implementation of contract governance in public-private partnership projects offers several advantages, including improved efficiency in government management, economic gains, and the possibility for social benefits.

The study conducted by Lu et al. (2019) examined the relationship between contract governance and trust within the governance dimension. The analysis conducted unveiled a significant association between the management of contracts and the overall performance of inter-organisational projects. Research has demonstrated that the implementation of contract governance significantly amplifies the impact of quality management systems inside inter-organisational projects. According to Bernstein (2015), the author notes that contract governance plays a significant role in controlling procurement contracts, which aligns with the present perspective. According to Bernstein, the implementation of relationship-based contracting might potentially serve as a means of regulating contracts, independent of the legal system, while also maintaining performance standards.

Contract governance has been a subject of policy research in both China (Li, 2017) and Germany (Körs, 2019). Li (2017) undertook an analysis to look into the effects of China's farmland transfer law with a focus on contract governance. According to the author, the newly proposed procedural standards offer enhanced protection to farmers in comparison to the existing legislation, which grants excessive authority to the government and threatens the rights of private property ownership. Contract governance is a system that integrates government control with the sovereignty of private parties. In a subsequent study, Körs (2019) conducted an examination of Germany's policy instrument aimed at regulating state-religious ties. This research investigated the contractual agreements between the city of Hamburg and the Muslim and Alevi communities in 2012. The religious variety guaranteed by the German constitution, sometimes known as the "Basic Law," is influenced by the state-church paradigm in Germany. The study revealed that the use of contracts played a crucial role in advancing legal parity, but with a lesser impact when compared to other secular aspects of modern society. The primary focus of these two studies was on public policy, with a particular emphasis on the manner in which contract governance regulates the relationships between government entities and non-governmental organisations (NGOs). Contract governance encompasses the examination of both governmental authority and private rights. The significance of contract governance in the regulation of public-private partnerships stems from the inherent complexity involved in such arrangements.

Contract governance establishes explicit criteria for ensuring consistency among all parties involved. The implementation of contractual control has the potential to mitigate the likelihood of participants avoiding their obligations by constraining their unpredictable actions (Lu et al., 2019). Contract governance, from their perspective, fosters cooperation through the establishment of defined standards and procedures. Contract administration is responsible for overseeing collaborative efforts.

2.3 Importance of Contract Governance

Contract governance is widely accepted as a best practice for the management of public-private infrastructure projects. According to the World Bank (2018), contract management is considered one of the assessment criteria for the execution of public-private partnerships. The report delineated eleven optimal approaches to the management of public-private partnership contracts. These encompass the establishment of robust systems to oversee the execution of contracts over the entire duration of the partnership, the facilitation of repatriation of project income for foreign entities, and the explicit acknowledgment of particular circumstances throughout the concession period. Although the findings presented in this study focus on the data pertaining to contract management in public-private partnership projects, they offer valuable insights into the governance structure of such projects. This is because the concept of "management" is inherently intertwined with that of "governance," as defined by the United Nations Economic Commission for Europe. This definition highlights the interconnectedness between management and governance, as demonstrated by the relationship elucidated in a report by the World Bank (2017).

Bai et al. (2016) pointed out the significance of contract governance in effectively managing exchange risks within inter-organisational collaborations, including issues such as opportunistic behaviour and conflicts. The governance of contracts, specifically in terms of output or behaviour, is in which the former approach utilises a system of rewards and punishments based on the performance of partners, whereas the later approach capitalises on the utilisation of partner processes and procedures (Bai et al., 2016). According to Möslein & Riesenhuber (2009), the study of contract

governance plays a significant role in advancing a viewpoint on law-making that focuses on the outcomes and impacts of legal regulations.

Kan & Le (2014) assert that the primary obstacles in contract governance encompass the identification of an appropriate delivery mechanism and contract form, the establishment of contractor selection criteria, and the mitigation of unfavourable contract terms. The authors examined the distinctions between traditional contracting and relational contracting with the aim of improving project performance. The importance of establishing unambiguous contractual provisions in order to mitigate the risks of misinterpretation and opportunistic behaviour was underscored. Furthermore, the authors emphasised the research carried out by the Construction Industry Institute throughout the 1980s. This research revealed nine specific clauses that have a substantial influence on project performance and are prone to causing problems. The concept has the potential to be applied to public-private partnerships as well.

In a separate study, Kumar (2018) examined the potential impact of heightened incentives and administrative constraints on the efficacy of initiatives in terms of productivity. From 2001 to 2014, the researcher conducted an analysis of over 150 road projects in India that involved public-private partnerships. These projects comprised both toll-type and annuity-type contracts. Both contracts provide distinct governance features. The objective of conducting a comparative analysis of these two contracts was to examine the implications of employing distinct contractual arrangements, specifically public-private partnership road projects. Based on empirical evidence, there is a close correspondence between contract features and actual outcomes. Furthermore, the studies conducted have demonstrated that the implementation of administrative controls has a significant impact on the level of flexibility within the contract, leading to varied outcomes.

A previous study suggests that there is a mixed or negative relationship between contract governance and performance. According to the findings of Klijn & Koppenjan (2016), the characteristics of contracts do not have a significant impact on partnership performance. However, these contract aspects do facilitate the process of renegotiation. This statement implies that the governance of contracts has an impact on the performance of partnerships. The proponents contended that contracts are essential, albeit not infallible, assurances of success. The analysis revealed that contract governance was identified as a mitigating element rather than a performance predictor. According to the study conducted by Kataike & Gellynck (2018), it was observed that contract governance had a negative impact on performance, with the exception of the spot market. The scope of this discovery was restricted to spot-market transactions, excluding other marketplaces.

In a more recent study, Jia et al. (2020) explored the strategies employed by Chinese export firms to mitigate opportunistic behavior among foreign distributors while dealing with cultural disparities using the mechanism of contract governance. The study revealed that cultural variation could amplify opportunistic tendencies by hindering the effective implementation of contracts. Hence, contract governance can be used to reduce such behavior. Therefore, this study also shows how contract governance may be a suitable mechanism for combating opportunism without leaving behind the interest of all related parties.

Within the Malaysian context, challenges pertaining to contract governance have emerged as significant hurdles for public-private partnership projects. Yee Ling & Mohd Noor (2020) conducted a study revealing that issues related to contract design and risk allocation pose crucial challenges in the successful execution of public-private partnership projects in Malaysia. The authors highlighted the recurring necessity for greater clarity and uniformity in the design and structure of public-private partnership contracts. The lack of precision in these aspects often results in misunderstandings and disputes between public and private partners.

2.4 Dimensions of Contract Governance

This study aims to analyse contract governance from a governance perspective, emphasising the integration of the concept of good governance into contract governance. The primary objective of both good governance and contract governance is to mitigate transactional risks and opportunistic behaviour (Wang et al., 2019). As a result, the criteria that regulate effective governance will also be employed to assess the governance of contracts.

Earlier researchers highlighted the importance of governance mechanisms to curb opportunistic behavior and emphasized the rule of law in contractual relationships. The effective regulation of contracts played a crucial role in this context. Wang & Zhao (2018) characterized contract arrangements as formal agreements between public and private sectors, outlining duties, role allocation, monitoring, and contingency plans. They argued that such contracts enhance the institutional framework for governing contract-related rules, as suggested by Cherednychenko (2015). In the context of this research, contract governance is defined as the formal arrangements between parties involved in a public-private partnership project, encompassing duties, sanctions, roles, monitoring, and contingency plans.

The existing body of literature pertaining to contract governance seems to be constrained and might benefit from further augmentation, particularly within the realm of public-private partnerships. Previous research on contract governance has mostly focused on the setting of inter-firm supply chains (Awan et al., 2018). However, there is a scarcity of research about the correlation between contract governance and public-private partnerships. Awan et al. (2018) proposed that there is a need for more study on the influence of governance on partnership since the current body of literature in this domain is fairly constrained. Furthermore, the management of partnerships might pose

significant difficulties for intricate projects. Consequently, further research is required to have a comprehensive understanding of the impact of governance on the performance of partnerships (Chakkol et al., 2018; You et al., 2018).

In their study, Jinarat & Quang (2003) conducted an assessment of governance quality, focusing on four key criteria: accountability, transparency, participation, and the rule of law. Furthermore, Dieleman et al. (2011) included performance, equity and equality, collaboration and involvement, and supervision as indicators to assess governance. According to UNESCAP (2009), good governance may be defined as a concept encompassing eight key characteristics. These characteristics include being participatory, consensus-oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive, and adhering to the rule of law. This study employs a framework of contract governance consisting of four aspects as proposed by Jinarat & Quang (2003), supplemented by an additional component of "equity and equality" derived from the findings of Dieleman et al. (2011). This study aims to assess the notion of contract governance through the examination of 23 specific items which have been adapted from previous studies as shown in Table 1.

Table 1 - Sources of previous studies in forming items for dimension of contract governance

Dimensions	Items	Sources
Accountability	• Partners' compliance is monitored periodically • There is special committee that review project compliance and performance • Review on partner's compliance is regularly reported to all stakeholders • Provisions in the concession agreement can be carried out effectively • Provisions in the concession agreement can be carried out at reasonable costs	Jinarat & Quang (2003); Dieleman, Shaw, & Zwanikken, (2011); Higgins & Huque (2015); Spoann et al. (2019)
Transparency	• Information related to the concession agreement is accessible to signing parties • There are appropriate systems that contain such information • The contents of the concession agreement are easy to understand • The execution of concession agreement is transparent to all parties	Jinarat & Quang (2003); Dieleman, Shaw & Zwanikken, (2011)
Participation	• Stakeholders' opinions are sought before decision being made • Stakeholders are involved in solving problems • Ideas from stakeholders are sought in solving problems • The Concession Agreement provides for stakeholders' engagement	Jinarat & Quang (2003); Dieleman, Shaw, & Zwanikken, (2011)
Rule of law	• Concession agreement clearly provides responsibilities and rights of all parties • Project implementation are carried out in accordance with concession agreement • Terms in the concession agreement are fair and appropriate • All decisions made are evaluated as in compliance with concession agreement • The Concession Agreement provides flexibility to carry out responsibilities	Jinarat & Quang (2003); Dieleman, Shaw, & Zwanikken, (2011)
Equity & Equality	• Concession agreement provides considerations to all type of stakeholders • Concession agreement provides for equity and equality among partners	She & Tang (2017); Dieleman, Shaw, & Zwanikken, (2011)

- The execution of concession agreement/s are fair to all parties
- The bureaucracy involved is appropriate and facilitate
- The concession period is appropriate

Jinarat & Quang (2003) compiled a comprehensive list of items that assess the governance dimension in different Asian contexts. This list has been used by other studies, including in the studies of Mukhtar & Ali (2011), Munir (2020) and Fadhillah et al. (2023), who also examined the application of governance across various disciplines in the Asian context. Hence, it is preferable to include the aspects identified in the study conducted by Jinarat & Quang (2003) in this research, given the similarities in the focus on governance and geographical setting.

3. Methodology

The chosen research design for this study was a mono-method quantitative approach, aligning with the specific aims of the study. The selection of this study's approach was based on many factors. The researcher plans to collect data through the use of a singular methodology, namely a questionnaire, and thereafter evaluate the acquired data using quantitative techniques. The approach used in this study is based on the research philosophy of positivism, which is characterized by the use of logical reasoning, a well-structured methodology, a representative sample, rigorous measuring techniques, and quantitative analysis (Saunders et al., 2016). Although there may be some setbacks in gathering data, quantitative research analysis is often more efficient compared to other research methodologies.

The hypothetico-deductive method, which applies general theory to a specific situation was used to measure the dimension of contract governance of public-private partnerships in Malaysia. This method is best done with quantitative research methods, as it is generally connected with a deductive approach. Besides, quantitative research results may also be generalized to the target population, as little previous research on public-private partnership performance has been conducted using quantitative research methods. The researcher intends to employ a survey as a research approach, as surveys are widely used in business and management research to answer questions like "what," "who," "where," "how much," and "how many".

3.1 Pre-Test and Pilot Study

The execution of a pre-test prior to a pilot test is a common procedure within the realm of research methodology. A pre-test is often conducted as a preliminary evaluation of a research instrument or technique in order to detect and rectify any possible concerns prior to the primary study or pilot test. This procedure facilitates the enhancement and optimization of methodologies used by researchers. There are many rationales for the implementation of a pre-test. A preliminary assessment enables researchers to assess the clarity, relevance, and efficacy of their research tools, such as surveys or questionnaires. The process aids in the identification of any ambiguities, perplexing inquiries, or other concerns that may have an impact on the quality of the data. Pre-testing is a valuable method for assessing the level of comprehension that participants have about the topics or activities at hand. Researchers have the ability to detect possible causes of misunderstanding and make modifications to the instrument in order to improve clarity. Researchers may face unanticipated logistical problems or procedural concerns while conducting a pre-test. These considerations may be considered prior to the commencement of the primary investigation in order to facilitate seamless data collection.

The pre-test is required for research that uses a survey questionnaire as a data collecting tool to examine any concerns with the questionnaire, such as bothersome thoughts or improper phrasing (Al-Khamaiseh et al., 2020). Therefore, academicians and practitioners familiar with public-private partnership and/or contract governance pretested the survey questions of this study for its face validity as proposed by (Zikmund et al., 2013). This ensured that all measurement components were clear and the language was appropriate for Malaysia setting. Corrections to spelling and question wording were made. Before the pilot study, all questionnaire changes were made.

Pilot studies determine the validity and reliability of research questions. Preliminary study of pilot test data ensures respondents can answer question in the questionnaire (Saunders et al., 2016). Although questionnaires are a great research tool, they pose certain risks such as low response rate, poor quality, and question misinterpretation. Creswell (2014) says preliminary research may prevent these problems from occur.

The survey was pilot tested with 115 public and private contract managers in Malaysia who worked on the public-private partnership projects supervised by the Public-Private Partnership Unit, Prime Minister's Department. This helps determine how well surveys connect with respondents and acquire data. The measuring items were adjusted based on 115 pilot survey responses. Cronbach's Alpha and Exploratory Factor Analysis were used to assess the instruments' internal consistency and reliability before the actual research to be embarked on. The final enhanced instrument was used to gather research data.

3.2 Validity

Validity measures how well a scale or combination of assessments portrays enthusiasm (Hair et al., 2013). It showed how we can quantify necessary to measure exactly, or how the study findings are significant and reasonable to have the research succeed in completing what it is designed to assess (Sekaran & Bougie, 2010). This study uses face, content, and construct validity (Saunders et al., 2016). Face validity demonstrates how well the tool analyses important test areas. Content validity refers to how well data from a certain instrument matches the ideal substance to be measured, while construct validity is how well practical variable identification mirrors the theory. The researcher checked the survey's face and content validity with the scholars and experts in public-private partnership. All instrument components were conceptually based on Malaysian public-private partnership context as it identifies the researched concerns.

3.3 Factor Analysis

The researcher used a cross-sectional approach to survey 115 contract managers from both public and private organisations dealing with public-private partnership projects in Malaysia. The researcher used Exploratory Factor Analysis (EFA) to analyze the items' dimensionality in assessing the concept (Awang et al., 2018). Construct validity was created via factor analysis. This method verifies practical components. It shows the optimal components for each part. The researcher utilized Bartlett's test to predict factor analysis stability and KMO to establish sample size. The construct validity and appropriateness of the instrument were then assessed.

4. Findings

4.1 EFA Procedure

Exploratory Factor Analysis or EFA plays a vital role in this study to examine the interrelationships among the items contract governance construct, which are used to compress a group of items into a smaller set of combination factors with a minimum loss of information and laid the foundation of structural equation modelling (Hair et al., 2014). For this study, the contract governance construct was evaluated using 23 items from Table 2. Each item was rated on a 5-point Likert scale, with 1 indicating "strongly disagree" and 5 indicating "strongly agree". Table 2 presents the mean of the responses, standard deviation, and item statement for each item, as well as the mean score and standard deviation for each item. The standard deviation for each item tested for contract governance is found to be <1.5, illustrating the consistency of the score distribution.

The item statement "Project implementation is carried out in accordance with the concession agreement" had the highest mean value of 4.60 with a standard deviation of 0.632, while the item statement "Stakeholders are involved in problem solving" had the lowest mean value of 3.87 with a standard deviation of 0.903. This shows that the contract managers agreed to the fact that concession agreement, being the main contract in each public-private partnership projects plays an important governance role that steer the implementation of such projects. However, they were dissenting in acknowledging the involvement of all stakeholders in projects' implementation.

Table 2 - Descriptive analysis for items measuring contract governance

Descriptive Statistics			
	Items Statements	Mean	SD
TCPY1	Information related to the concession agreement is accessible to signing parties	4.55	.652
TCPY2	There are appropriate systems that contain such information	4.15	.581
TCPY3	The contents of the concession agreement are easy to understand	4.30	.662
TCPY4	The execution of concession agreement is transparent to all parties	4.27	.667
ATBT1	Partners' compliance is monitored periodically	4.17	.634
ATBT2	There is special committee that review project compliance and performance	4.11	.618
ATBT3	Review on partner's compliance is regularly reported to all stakeholders	4.18	.643
ATBT4	Provisions in the concession agreement can be carried out effectively	4.20	.638
ATBT5	Provisions in the concession agreement can be carried out at reasonable costs	4.17	.625

ROL1	Concession agreement clearly provides responsibilities and rights of all parties	4.45	.610
ROL2	Project implementations are carried out in accordance with concession agreement	4.60	.632
ROL3	Terms in the concession agreement are fair and appropriate	4.49	.626
ROL4	All decisions made are evaluated as in compliance with concession agreement	4.59	.605
ROL5	The Concession Agreement provides flexibility to carry out responsibilities	4.33	.617
PTCN1	Stakeholders' opinions are sought before decision being made	3.96	.902
PTCN2	Stakeholders are involved in solving problems	3.87	.903
PTCN3	Ideas from stakeholders are sought in solving problems	3.89	.896
PTCN4	The Concession Agreement provides for stakeholders' engagement	3.88	.890
EQLT1	Concession agreement provides considerations to all type of stakeholders	4.01	.707
EQLT2	Concession agreement provides for equity and equality among partners	4.00	.737
EQLT3	The execution of concession agreement/s are fair to all parties	4.03	.737
EQLT4	The bureaucracy involved is appropriate and facilitate	3.99	.695
EQLT5	The concession period is appropriate	4.00	.713

This study altered prior researchers' instruments and modified several statements to fit the current research. According to Awang et al. (2018), if a researcher updates previously specified instruments and statements, they must undertake EFA. The present area of study or research population may be different from earlier studies in terms of socioeconomic, racial, and cultural status. Therefore, certain elements may be obsolete for current study. Researchers must recalibrate the instrument's Cronbach Alpha value (Hoque et al., 2018).

4.2 KMO Value and Bartlett's Test

In this research, Kiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity were used to evaluate sample adequacy for the case-to-variable ratio analysis. According to Hair et al. (2013), for factor analysis to be valid, Bartlett's sphericity test must be significant (P<0.05). KMO varies from 0 to 1, although 0.6 is acceptable (Awang et al., 2018). Total variance explained was also used to extract items for further investigation. Items with eigenvalues over 1.0 are separated (Awang et al., 2018). Only items with a factor loading over 0.6 were kept for further research (Awang et al., 2018). In exploratory factor analysis, only items with a Cronbach's Alpha of 0.7 or above were included. According to Hair et al. (2014) and Awang et al. (2018), a Cronbach's Alpha of 0.60 or higher is a trustworthy indicator of internal consistency, while a value of 0.70 or above indicates excellent reliability.

Using the Principal Component with Varimax (Variation Maximization) Rotation extraction technique, the researcher carried out the EFA approach on construct elements. Table 2 highlights the significance of the Bartletts' Test of Sphericity (sig. 000). In addition, Kaiser-Meyer-Olkin sampling adequacy (KMO = .928) is outstanding and exceeds the minimum value of 0.6 (Awang et al., 2018). These two findings show that the data is sufficient to continue with the EFA data reduction procedures.

Table 3 - Bartlett's test and KMO value for contract governance

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.928
Bartlett's Test of Sphericity	Approx. Chi-Square	3824.207
	df	253
	Sig.	.000

Figure 1 demonstrates that EFA procedure created 5 incompatible components for this construct. Exploratory Factor Analysis revealed each component's specifics. EFA groups 23 items into five components, each containing four or five items. The rotating component matrix shows each element's precise component.
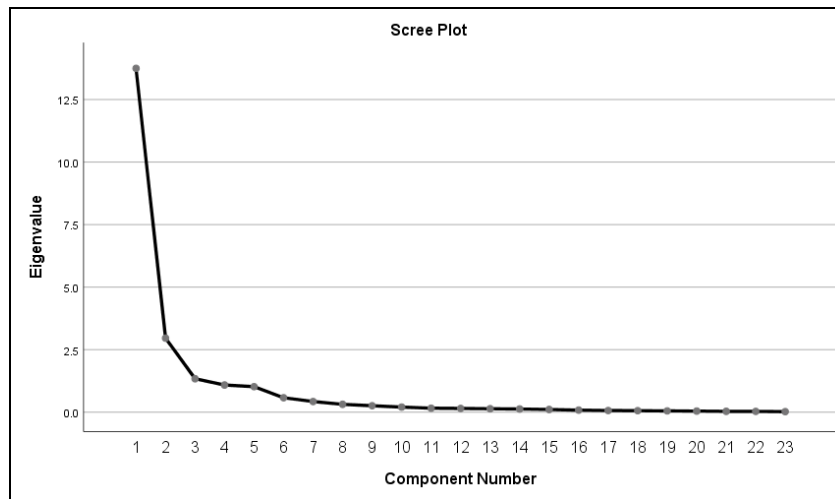

Fig. 1 - Five components extraction from contract governance construct

The 5 components of contract governance generated from EFA techniques based on the estimated Eigenvalue are shown in Table 4. The eigenvalues varied between 3.336 and 4.671. The total variance explained for this construct is 87.609 percent (whereas component 1 contributes 59.767 perc ent, component 2 contributes 12.869 percent, component 3 contributes 5.815 percent, component 4 contributes 4.722 percent, and component 5 contribute 4.436 percent). This shows that based on EFA procedures, about 87 percent of construct governance dimension can be explained by 5 components generated by EFA in this study. The entire variance explained is acceptable because it exceeds the minimum value of 60 percent (Bahkia et al., 2019; and Jian et al., 2020).

Table 4 - The total variance explained for contract governance construct

total variance explained

Com pone nt	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	13.746	59.767	59.767	13.746	59.767	59.767	4.671	20.308	20.308
2	2.960	12.869	72.636	2.960	12.869	72.636	4.428	19.253	39.562
3	1.337	5.815	78.450	1.337	5.815	78.450	3.904	16.972	56.534
4	1.086	4.722	83.172	1.086	4.722	83.172	3.811	16.571	73.104
5	1.020	4.436	87.609	1.020	4.436	87.609	3.336	14.504	87.609

Extraction Method: Principal Component Analysis.

Table 5 indicates that all items correspond to each component by displaying the components and dimensions of each item. To guarantee retention, Awang et al. (2018) and Ehido et al. (2020) state that the minimum acceptable value of the factor loading for each items should be >0.6. Therefore, all items pertaining to this construct will remain in the final questionnaire.

Table 5 - Factor loading for each item and their components for contract governance construct rotated component matrix[a]

	Component				
	1	2	3	4	5
TPCY1					.675
TPCY2					.778
TPCY3					.830
TPCY4					.789
ATBT1		.795			
ATBT2		.731			
ATBT3		.839			
ATBT4		.816			
ATBT5		.824			
ROL1				.708	
ROL2				.785	
ROL3				.707	
ROL4				.762	
ROL5				.759	
PTCN1			.834		
PTCN2			.863		
PTCN3			.852		
PTCN4			.823		
EQLT1	.812				
EQLT2	.812				
EQLT3	.846				
EQLT4	.848				
EQLT5	.858				

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 8 iterations.

4.3 Internal Reliability

The final stage of EFA procedures is to calculate the internal reliability of the construct. Due to the fact that this construct is measured using 5 components, the Cronbach's Alpha for each component must be determined in order to investigate the internal reliability of a particular component in the measurement of the construct. Table 6 shows the Cronbach's Alpha for all 23 items which bear a value of 0.968, which is more than 0.7, demonstrating the dependability of the components therefore possess good level of internal reliability (Hoque et al., 2018).

Table 6 - The internal reliability value for each component for contract governance construct reliability statistics

Components	Numbers of Items	Cronbach's Alpha
1	5	.987
2	5	.974
3	4	.979
4	5	.925
5	4	.902
All items	23	.968

5. Discussions

The main objective of this research is to examine the dimension of contract governance that can quantify the elements of contract governance in relation to Malaysian public-private partnership efforts. The contract governance construct was assessed by testing five dimensions, as indicated by the literature studies. According to the findings of this study, the PPP contract managers considered the Rule of Law to have a greater degree of significance in determining the contract governance construct compared to other dimensions. Two indicators in the Rule of Law dimension have higher average values. These indicators are 'Project implementation is carried in accordance with the concession agreement' (Mean: 4.60) and 'All decisions made are evaluated as in compliance with concession agreement' (Mean: 4.59). PPP managers in Malaysia observe contract governance as a crucial element in the execution

of PPP projects. By adhering to the parameters outlined in the concession agreement, the implementation of a PPP project may effectively mitigate any opportunistic conduct that may occur during the concession period, as proposed by (Lu et al., 2019).

The research furthermore discovered that the dimension of 'equity and equality' serves as an appropriate component for assessing contract governance, along with four other dimensions: accountability, transparency, participation, and rule of law. The high result of the KMO-Bartlett test at .928 indicates that the variables are strongly correlated, allowing for the identification of important factors for contract governance, as advocated by Hair et al. (2014) and Awang et al. (2018). The managers of PPP projects recognize that good contract governance requires fair contract terms and conditions that ensure fairness among all parties involved. It is crucial that these terms give equal opportunities and distribute risks evenly among the parties, as highlighted by Mohamad et al. (2018). In contrast, it is widely posited by scholars that the concepts of equity and equality hold considerable importance in the context of contract governance and governance at large. This is mostly due to the imperative of ensuring fairness to all stakeholders in contract governance, which may necessitate periodic modifications. This study incorporates the evaluation of contract governance by considering the concepts of equity and equality. The results indicate a substantial impact of equity and equality on the measurement of contract governance.

An additional noteworthy aspect to emphasize from this pilot study is the exceptional reliability of all dimensions examined in assessing contract governance. This is evidenced by the Cronbach Alpha value exceeding .9, indicating a very high level of internal consistency among the items in the scale, as stated by Hoque et al. (2018). Consequently, the items in this study's measurement instrument exhibit a strong correlation and consistently examine the same underlying concept. This finding is crucial for establishing the dependability of the contract governance component, anticipating a more dependable outcome when the subsequent survey is undertaken.

6. Implications and Contributions

The implications of the study's findings hold potential significance for practitioners and policymakers involved with projects and initiatives pertaining to public-private partnerships. This study provides fresh perspectives for policymakers and practitioners regarding factors that influence contract governance in public-private partnership projects. By cultivating an understanding of this concept, personnel can direct their attention towards the essential aspects that require emphasis during the formulation of the concession agreement. Furthermore, they can include elements of effective contract governance in such an agreement.

This research contributed to the existing body of knowledge on contract governance in Malaysian public-private partnership initiatives. Prior research, particularly in the context of public-private partnerships in Malaysia, has paid little attention to issues relating to contract governance. This research provided insights into the many aspects of contract governance that contribute to enhancing the performance of Public-Private Partnership (PPP) projects. This study examines equity and equality as key criteria in contract governance. Prior research has identified four key components for evaluating governance constructs: accountability, transparency, participation, and the rule of law. Researchers argue that equity and equality play a crucial role in deciding contract governance and governance in general. This is because contract governance must provide fairness for all stakeholders and be adaptable when necessary. Therefore, this study incorporates the evaluation of contract governance with regards to equity and equality. The results indicate that equity and equality have a substantial impact on the measurement of contract governance. This research demonstrates that the concepts of equity and equality have a substantial impact on assessing the contract governance component as a tool to prevent opportunistic behaviors in Malaysia's Public-Private Partnerships (PPPs). This result aligns with the conclusions of Geyskens et al. (2006) and Wacker et al. (2016), which suggest that seeing the contract as a means to deter opportunistic behavior will improve the project's performance.

A comprehensive comprehension of contract governance among managers has the potential to enhance project bankability and stability, while also attracting superior partners to public-private partnership projects, as posited by Al-Saadi & Abdou (2016). Additionally, contract governance can serve as a mechanism for regulating procurement contracts, allowing for contract control without dependence on the legal system or compromising performance.

7. Limitations and Future Work

The study's limitations may have impacted its findings and generalisability. First, the scope and sector of the research were limited to the public-private partnership initiatives that under the purview of the Malaysian Public-Private Partnership Unit, limiting the applicability of the findings to the other type of public-private partnership initiatives which are not monitored by the Unit. Secondly, the privacy standards of the targeted projects limited access to certain information, and the dissemination of the instruments was conducted through their internal email network. Thirdly, the quantitative and cross-sectional methodology is a restriction; consequently, it is advised that future research use the mixing technique or longitudinal approach to acquire more meaningful findings. Interviews or focus groups might be useful for analyzing the sample data since they can delve deeper into people's thoughts.

The dimension of contract governance tested in this study may be further used in future study as to its relationship to the performance of public-private partnership initiatives. The relationship of this dimension can be measured as to its direct and moderating effect to the public-private partnership performance as well.

8. Conclusion

This study makes a valuable contribution to the assessment of the contract governance construct, particularly within the framework of public-private partnership initiatives in Malaysia. The empirical findings of the present study have yielded a framework that identifies and delineates five dimensions of contract governance. The present study has identified openness, accountability, rule of law, participation, as well as equity and equality as the key elements of contract governance. The dimensions under consideration can be assessed using a set of 23 items that were specifically created for this research. The reliability measures for all five dimensions or components of the contract governance construct have consistently shown high Cronbach's Alpha values. Additionally, the Bartlett Test results indicate statistical significance, the Kaiser-Meyer-Olkin (KMO) measure exceeds the recommended threshold of 0.6, and the factor loadings surpass the minimum threshold of 0.6. This statement suggests that items that were not set aside hold significance in relation to the inquiry at hand (Awang et al., 2018). The present work employed rigorous procedures for scale construction and validation, which confirmed that the newly created contract governance instrument exhibits internal consistency and stability across different samples.

Author Contributions

Abdul Latif, A.S: Writing – original draft, Conceptualization, Formal analysis, Methodology. **Ali, N.A:** Supervision, Writing – review and editing, Validation. **Jaharuddin, N.S:** Supervision, Conceptualization, Methodology. **Ishan, Z.:** Supervision, Data curation, Methodology, Visualization.

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