



(RESEARCH ARTICLE)



Study on adjudication challenges in Singapore's construction industry: An in-depth analysis of payment disputes and judicial review

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Abstract

Adjudication under the Building and Construction Industry Security of Payment Act (SOP Act) is crucial for resolving payment disputes in Singapore's construction sector. Despite its effectiveness, parties often resort to litigation to challenge adjudication decisions. This study presents a comprehensive analysis of adjudication challenges in Singapore's construction industry, based on recent court cases from 2014 to 2024. The research identifies seven main causes of challenges, including payment disputes, contractual matters, and procedural issues. Analysis shows that only 26% of applications to set aside adjudication decisions were granted by the court, highlighting the need for procedural clarity and consistency. Results emphasize the importance of procedural adherence by all parties, with instances of prematurely lodged Adjudication Applications indicating potential shortcomings. The study recommends ongoing evaluation and refinements to the adjudication framework to improve its effectiveness in addressing payment disputes. Additionally, the introduction of a mathematical model offers a structured framework for stakeholders to quantitatively assess adjudication challenges in Singapore's construction industry. These insights are valuable for industry practitioners, policymakers, and researchers involved in dispute management within the construction sector.

Keywords: Adjudication; SOP Act; ADR; Alternative Dispute Resolution; Construction Disputes

1. Introduction

Payment issues are one of the common causes of disputes in construction projects. Payment issues can occur due to non-payment, under payment or delayed payment (Lim, 2021). Such issues in progress payment can lead the project to face cash flow issues and rise of disputes (Haron & Arazmi, 2020). Once there are payment disputes occur in construction projects, typically between contractors and clients, or between main contractor and sub-contractors, these disagreements often lead to issues such as delays. Key factors contributing to payment disputes include ambiguous contract terms, differing interpretations, and financial constraints. Resolving these disputes is crucial for maintaining project momentum and fostering a healthy industry environment (Thomas & Wright, 2020). Adjudication, a common dispute resolution method, becomes paramount in addressing the complexities of payment disputes, ensuring fair compensation, and sustaining the integrity of construction contracts (Mbaye, 2023).

Payment disputes in construction projects can have profound effects on project outcomes. Delays in payments can disrupt cash flow, that can even impact negatively on the timely procurement of materials and subcontractor payments (Abbasi et al., 2020). This can lead to strained contractor relationships, reduced productivity, and potential project slowdowns (Gamage & Kumar, 2024). Additionally, the uncertainty caused by disputes may result in a loss of trust among project stakeholders, impacting future collaborations (Haron & Arazmi, 2020). The financial strain on contractors can compromise the quality of work, worsening project risks (Gamage, 2023). Timely resolution of payment disputes is essential to mitigate these effects, ensuring project continuity, maintaining industry credibility, and fostering positive professional relationships.

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In Singapore, payment issues significantly contribute to construction project disputes, emphasizing the critical need for efficient resolution mechanisms. Adjudication has emerged as an expedient method for addressing payment disputes within the industry.

In Singapore, the Security of Payments (SOP) Act provides a robust framework to address payment disputes in the construction sector (Yongpanich, 2020). This legislation ensures timely payments to contractors and subcontractors, promoting fair and efficient resolution. Adjudication, a key component of the SOP Act, offers a swift and cost-effective mechanism for settling disputes. With a focus on maintaining cash flow and fostering contractual compliance, the SOP Act and adjudication together play a crucial role in enhancing transparency, minimizing conflicts, and sustaining the integrity of construction projects in Singapore (Yongpanich, 2020).

Adjudication, endorsed by the SOP Act, stands as an effective alternative dispute resolution technique, safeguarding contractors from payment issues (Building and Construction Authority, n.d.). However, despite this mechanism, instances persist where dissatisfied parties resort to litigation. Notably, numerous cases reach the Singapore courts as parties seek to set aside adjudicators' decisions, highlighting the complexity and argumentative nature of payment disputes. The coexistence of the SOP Act and persistent litigation challenges necessitates a thorough examination to grasp the dynamics and improve dispute resolution in Singapore's construction sector (Attorney-General's Chambers of Singapore, n.d.). This dual framework emphasizes the need for ongoing evaluation and potential refinements to ensure the effectiveness of mechanisms addressing payment disputes in the industry.

This study examines adjudication challenges, providing a thorough analysis of payment disputes within Singapore's construction projects. The objective is to contribute meaningful insights to enhance dispute resolution practices in the industry. By analyzing the details of adjudication issues, the author plans to offer valuable perspectives that can inform and improve existing mechanisms, fostering a more robust and efficient framework for addressing payment disputes in the Singapore's construction sector.

1.1. Purpose

The primary purpose of this research is to identify and analyze the adjudication challenges prevalent in construction disputes within Singapore. Leveraging data from existing court cases specifically related to payment disputes and adjudication, the study aims to identify the challenges unique to the construction industry in Singapore. By identifying these challenges, the research strives to provide practical insights that can significantly enhance the resolution of payment disputes.

The objectives of this study are threefold. Firstly, it seeks to identify the major causes contributing to payment disputes in construction projects across Singapore. Secondly, it aims to uncover the reasons prompting parties to seek the set aside of adjudication decisions related to payment disputes in the same context. Lastly, the study aims to identify the challenges faced by adjudicators in Singapore concerning their decisions of adjudication for payment disputes. The ultimate goal is to furnish valuable information that can inform decision-making and strategy development for industry practitioners, policymakers, and researchers involved in dispute management within the construction sector.

1.2. Research Hypothesis

Below are the hypotheses to be tested through this study.

- Are challenges present in the adjudication process and the decisions made by adjudicators concerning construction project disputes in Singapore?
- Are there no Singapore-specific causes contributing to payment disputes in construction projects?
- Is adjudication a highly effective alternative dispute resolution technique in the context of dispute resolution?

2. Literature Review

2.1. Payment Disputes in Singapore Construction Projects

Payment disputes present significant challenges in Singapore's construction projects, ranging from non-payment to delays and incomplete payments aligned with the progress of work. Non-payment emerges as a frequent source of disputes, leading contractors to consider termination as a response to prolonged payment refusals from upstream parties. These payment issues hold substantial consequences, affecting the cash flow of contractors and delaying work progress. The ripple effect extends to disputes arising from delays such as liquidated damages, further claims and even

termination. The Building and Construction Industry Security of Payment (SOP) Act, enacted on April 1, 2005, addresses these challenges by empowering parties to request progress payments for completed work, aiming to enhance cash flow within the built environment sector (Building and Construction Authority, n.d.).

2.2. The Building and Construction Industry Security of Payment (SOP) Act

The Building and Construction Industry Security of Payment (SOP) Act, operational since April 1, 2005, is a vital legislation shaping the construction landscape in Singapore. The Act is geared towards enhancing cash flow in the built environment sector by granting parties the right to seek progress payments for completed work. It introduces a swift and cost-effective adjudication mechanism aimed at resolving payment disputes efficiently (Building and Construction Authority, n.d.).

The SOP Act offers a multitude of benefits to various stakeholders in the construction industry, including main contractors, subcontractors, suppliers, consultants, developers, and homeowners. It ensures the right to payment for all parties involved, prohibits clauses like "pay when paid" and "pay if paid," and establishes default payment periods in the absence of contractual provisions (Building and Construction Authority, n.d.).

For claimants, adherence to contractual terms and Act provisions is crucial when serving a payment claim. Respondents, upon receiving a payment claim, must issue a payment response within the stipulated contractual or statutory timelines. In case of dispute, the Act encourages the resolution of conflicts within the Dispute Settlement Period, fostering a fair and efficient payment process in Singapore's construction projects (Building and Construction Authority, n.d.).

Upon receiving a payment claim, the respondent (e.g., developer, homeowner, contractor, subcontractor) must promptly provide a payment response, whether disputing the claim or not. If undisputed, issue a response within contractual or statutory timelines and make payment before the deadline. In case of dispute, issue a payment response stating reasons, adhering to contractual or statutory timelines, and seek resolution within the 7-day Dispute Settlement Period following the response deadline (Building and Construction Authority, n.d.). This process ensures adherence to the requirements outlined in the Building and Construction Industry Security of Payment (SOP) Act in Singapore.

2.3. Adjudication for Payment Disputes

In Singapore, the adjudication process for payment disputes under the SOP Act offers a swift and cost-effective resolution. A claimant can apply through the Singapore Mediation Centre (SMC) if the response amount is disputed or if payment is not received within stipulated timelines. To initiate adjudication, the claimant awaits the respondent's payment response (Attorney-General's Chambers of Singapore, n.d.). After the 7-day Dispute Settlement Period, if the other party issues no payment response or confirms the claim but fails to pay by the deadline, the claimant can submit the application to the SMC within 7 days. This ensures the timely resolution of payment disputes, fostering efficiency in the construction industry. The independent adjudicator's determination is binding, unless resolved through court proceedings, arbitration, or mutual agreement. A main contractor, subcontractor, consultant or supplier has the authority to initiate adjudication under the SOP Act (Attorney-General's Chambers of Singapore, n.d.).

Upon commencement of adjudication, the adjudication determination must be issued within a maximum of 14 days. Subsequently, the Adjudicated amount is due within 7 days after the adjudication determination, as per the contractual or statutory timelines (Attorney-General's Chambers of Singapore, n.d.). This stipulated timeline ensures a timely and structured resolution process for payment disputes, contributing to the efficiency and fairness promoted by the SOP Act in Singapore's construction industry. Adjudication, facilitated by the SOP Act, empowers construction stakeholders to efficiently address payment disputes, sustaining cash flow and project momentum.

2.4. Adjudication Challenges

Adjudication of construction disputes faces several challenges. One primary challenge is the potential disagreement over the adjudicator's decision. Parties involved may not always agree with the outcome, leading to further disputes and potentially extending the resolution process (Hassan et al., 2019). Another challenge lies in the timely execution of the adjudication process. Delays can occur due to various reasons, impacting the efficiency of this dispute resolution mechanism. Moreover, going through complex legalities and ensuring fair assessments poses a challenge (Charrett, 2009). Interpreting construction contracts and dealing with the intricate details of construction projects make adjudication complex due to its subjective nature.

Understanding and addressing these challenges is crucial for enhancing the effectiveness of adjudication in resolving payment disputes within Singapore's construction industry. Given the intricacies of construction projects and

contractual obligations, this research aims to investigate the challenges inherent in the adjudication process within Singapore's Construction Industry

3. Methodology

The methodology employed in this study involved a thorough analysis of secondary data, primarily focusing on Singapore legal cases. The specific emphasis was on cases that proceeded to litigation following the adjudication process, serving as a crucial aspect of resolving payment disputes within the construction industry.

Ahmad et al. (2019) assert that legal research is often perceived as unpopular in the construction industry due to its unfamiliarity within the technically oriented field. However, recognizing the significance of legal research in this sector is crucial, as it plays a prominent role in enhancing comprehension of the contract-centric environment (Ahmad et al., 2019). As mentioned by Tomaszewski et al. (2020), case study analysis is instrumental in extracting unique data tailored to specific scenarios. This approach offers a better understanding of the situation within a given context, allowing for detailed examination and comprehensive insights.

This research employs a legal research methodology, recognizing law cases as a valuable resource for identifying the challenges in adjudication when addressing payment disputes within the specific context of Singapore's construction industry.

The research methodology employed in this study is a deductive approach. This method commences with a broad hypothesis or theory, subsequently subjecting it to study through specific observations or experiments to derive a coherent conclusion (Zalaghi & Khazaei, 2016). Characterized by its top-down nature, the deductive approach initiates with an overarching hypothesis, progressively refining its focus to meticulously examine and verify this hypothesis through specific observations or experiments. It is a systematic and methodical research approach, strategically designed to either validate or challenge the initial theoretical framework, ensuring a comprehensive and logical exploration of the research objectives. Figure 1 is an illustration of the deductive research approach.

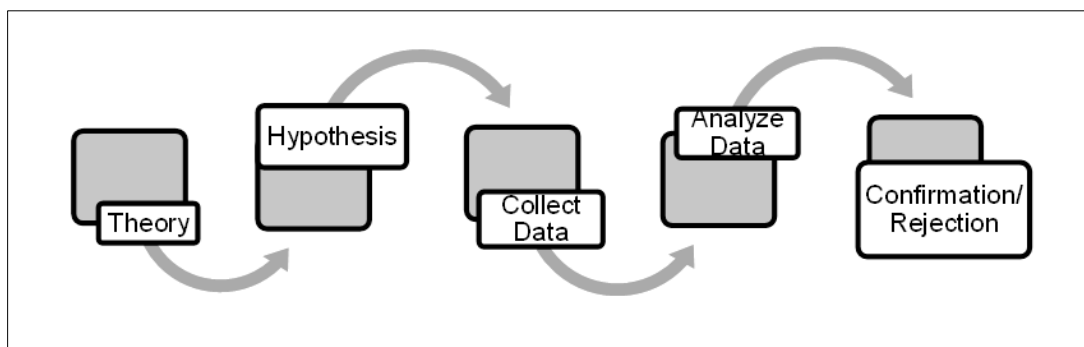


Figure 1 Deductive Research Approach

3.1. Law Cases Selection Criteria and Data Sampling

The data collection for this research employed a hybrid approach, utilizing both convenience and purposive sampling techniques. Convenience sampling, identified as a non-probability method by Stratton (2021), was initially utilized. This approach involved the selection of cases based on their accessibility and convenience, allowing for a pragmatic and expedient gathering of relevant data. Subsequently, purposive sampling was incorporated to ensure a targeted selection of cases aligning with the specific criteria relevant to the research objectives. This combination of sampling techniques aimed to achieve a comprehensive and well-rounded dataset for the study.

The primary data source for this research was the SG Courts website, a government platform featuring judgments from the Supreme Court of Singapore (Singapore Courts, n.d.). Specifically, the website served as a repository for written decisions pertaining to cases associated with construction disputes in Singapore. The initial search, using the keyword 'Adjudication,' yielded a total of 656 cases. However, it was observed that this dataset comprised a blend of construction disputes and disputes from other industries such as insurance.

To refine the research focus, the keyword 'construction disputes' was employed, yielding a more targeted dataset of 4587 cases. Subsequently, the cases were sorted based on the decision date, prioritizing those from 2024. The

catchword 'Building and Construction Industry Security of Payment Act' was then utilized to further narrow down the selection, resulting in 656 cases. To enhance the sample's relevance, purposive sampling techniques were subsequently employed. This involved the selection of cases based on specific criteria aligned with the research question (Andrade, 2021). The aim was to focus on particular types of cases that directly corresponded to the study objectives.

A comprehensive review of the shortlisted cases was conducted to refine the dataset for this research. This secondary screening process aimed to further narrow down the selection and gather relevant data. Subsequently, a total of 43 law cases, spanning from 2014 to 2024, were identified where a judge's decision had been rendered. This ensures that the data utilized in this study encompasses law cases from the most recent decade.

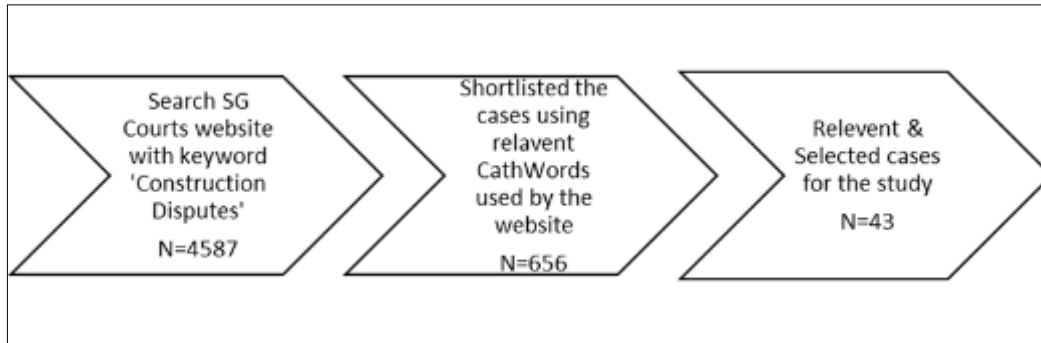


Figure 2 Case Selection Process

In instances where a case undergoes appeal, this study considers the original cause of dispute only once. Subsequently, the appeal case is analyzed to ascertain the final outcome of the dispute. This approach ensures that each case is treated as a singular entity, with the focus on understanding the resolution of the dispute through the appellate process. By examining the appeal case, the study aims to capture the conclusive decision reached following the appeal, providing a comprehensive understanding of the overall dispute resolution process through adjudication. Figure 2 illustrates the research framework for this study to collect data.

3.2. Data Sampling and Data Analysis

The cases selected for this study encompassed data from the years 2014 to 2024. Within this timeframe, the adjudication-related cases specifically spanned from 2015 to 2024.

Following the collection of data from legal cases related to adjudication and the SOP Act, a variety of analytical techniques were employed to analyze the gathered data and address the research questions. The objective of the analysis was to identify the challenges associated with adjudication in disputes within Singapore's construction projects. These analytical techniques included descriptive analysis and quantitative analysis using the collected data. By applying these methods, the study aimed to gain insights into the complexities of adjudication processes in the construction industry and their implications for dispute resolution.

Figure 3 shows the distribution of the 43 selected law cases for this study based on their respective decision award years. The data reveals that the majority of cases eligible for inclusion in this study received a Judge's decision in 2017. Following closely behind, the second-highest number of cases was recorded in 2018. Interestingly, no cases relevant to adjudication-related payment disputes were found in the year 2014. This highlights the variability in case distribution across different years and emphasizes the importance of examining trends over time in the context of the research objectives.

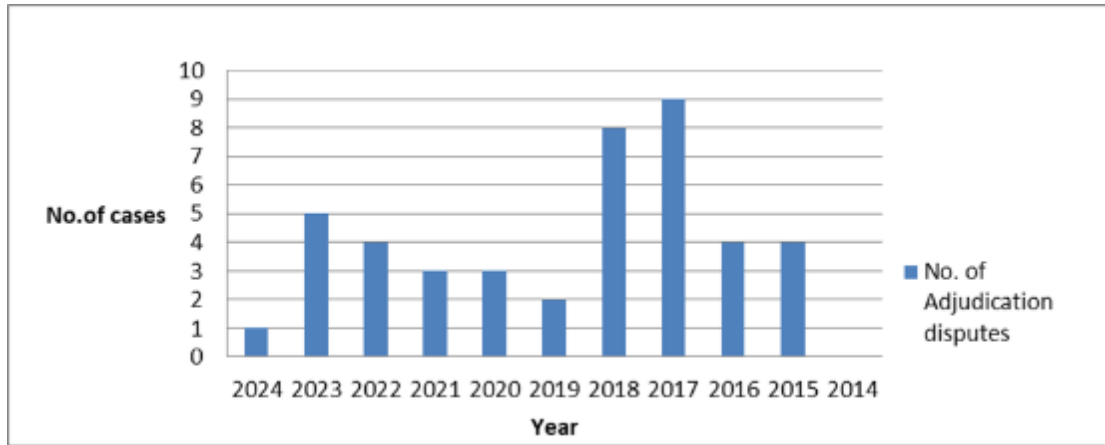


Figure 3 No. of Adjudication Disputes each year

Out of the 43 cases where requests were made to set aside an adjudication determination, the judge granted permission to set aside 11 cases. In 31 cases, the applications for setting aside were either denied or dismissed. Furthermore, in one case, the judge directed the defendant to withdraw their adjudication application due to the submission of invalid claims, stating that the adjudicator lacked jurisdiction to adjudicate them. This highlights the importance of adhering to procedural requirements in adjudication processes. The distribution of case decisions for adjudication-related cases over the last decade is shown in Figure 4.

Seven broad categories were identified based on the reasons for challenging adjudication determinations across the 43 cases examined in this study. These categories encompass Procedural Issues, Jurisdictional Challenges, Natural Justice and Fairness, Fraud and Corruption, Payment Disputes, Contractual Matters and Technical and Quality Issues. Table 1 represents these main categories of causes for challenging adjudication decisions, providing a comprehensive overview of the diverse range of issues encountered within the adjudication process in the Singapore construction industry. The frequency of occurrence is calculated using the below formulas.

The formula for percentage (%) = $(f / N) \times 100$

Where:

N: is the total number of law cases in data sample, (N=72).

f: is frequency of each cause of dispute.

Figure 5 illustrates the distribution of causes for challenging adjudication determinations based on their frequency of occurrence.

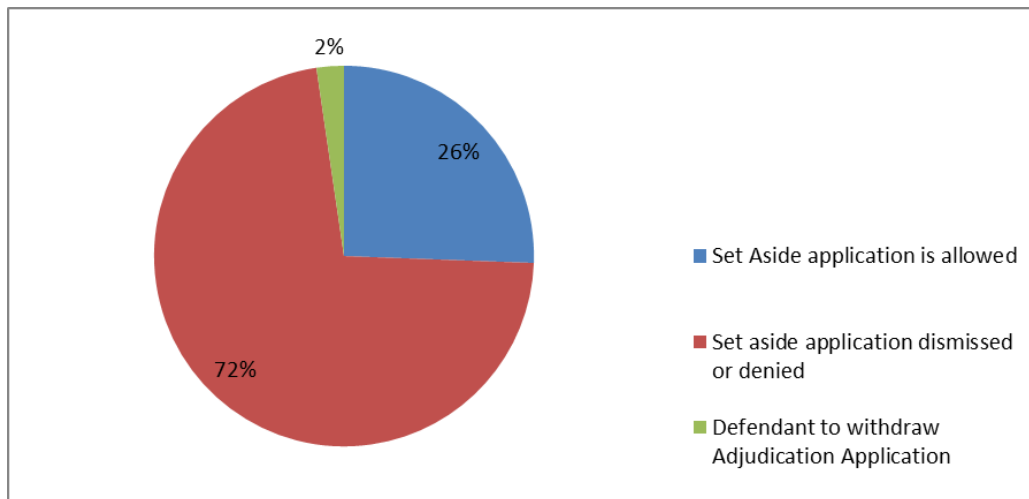


Figure 4 Distribution of Case Decisions for Adjudication-Related Cases

Table 1 Causes for Challenging Adjudication Determinations

S/N	Cause Category	Frequency of Occurrence	Percentage from total cases
1	Procedural Issues: (Invalid payment response, Failure to recognize patent errors, Premature adjudication application, Non-compliance with SOPA provisions)	9	12%
2	Jurisdictional Challenges: (Adjudicator acting beyond jurisdiction, Contract falling outside SOPA ambit, Lack of jurisdiction to determine certain claims)	2	3%
3	Natural Justice and Fairness: (Breach of natural justice by adjudicator, Lack of fair hearing rule compliance)	4	6%
4	Fraud and Corruption: (Allegations of bribery, kickbacks, or secret profits, Adjudication determinations tainted by fraud)	4	6%
5	Payment Disputes: (Non-payment or non-issuance of valid payment response, Dispute regarding payment claims or amounts, Issues with progress payments or retention sums)	39	54%
6	Contractual Matters: (Interpretation of contract terms, Contractual breaches such as termination or slow progress)	13	18%
7	Technical and Quality Issues: (Disputes related to defective materials or workmanship)	1	1%

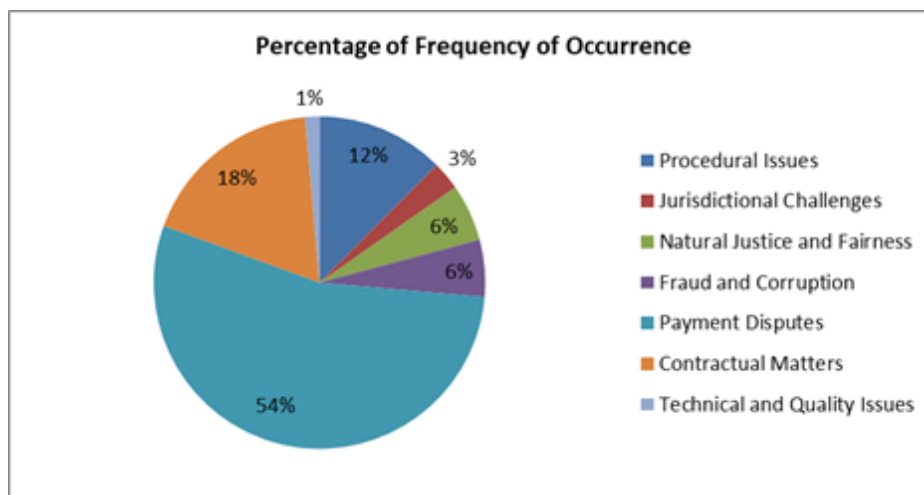


Figure 5 Frequency of Occurrence of Causes for Challenging Adjudication Determinations

4. Results and discussion

The Building and Construction Industry Security of Payment Act 2004 (SOP Act) provides a framework for resolving payment disputes in a timely and cost-effective manner through adjudication (Attorney-General's Chambers of Singapore, n.d.). Despite the binding nature of adjudication determinations, a considerable number of disputes result in litigation, particularly with one party seeking to challenge the adjudicator's decision. These legal cases predominantly

involve applications for setting aside adjudication determinations. This section examines the outcomes of such litigation and discusses the challenges and implications arising from the adjudication process under the SOP Act.

This comprehensive analysis provides details on the dynamics of payment dispute resolution within Singapore's construction industry. The findings emphasize the prevalence of challenges encountered in the adjudication process, revealing a multitude of factors contributing to dissatisfaction with adjudication determinations. Despite the SOP Act's intent to streamline dispute resolution, the observed frequency of litigation and the subsequent outcomes highlight the complexity of payment disputes.

In this study, seven main causes of challenges for adjudication determinations were identified. Among these causes, payment disputes, contractual matters, and procedural issues in applying for adjudication under the SOP Act emerged as the leading reasons for one party's dissatisfaction with the adjudication determination. Additionally, fraud, natural justice and fairness concerns, and jurisdictional challenges were identified as other significant factors for challenging an adjudication determination.

However, out of the 43 cases challenging adjudicator decisions and seeking setting aside, only 26% of the applications were granted by the judge. The remaining 72% of setting aside applications were either dismissed or denied. In 2% of cases, the judge ordered the defendant to withdraw the adjudication application.

The relatively low success rate of applications for setting aside adjudication determinations suggests a need for greater clarity and consistency in adjudication procedures. These results prompt further reflection on the efficacy of the current adjudication framework and raise pertinent questions regarding its adequacy in addressing the diverse array of challenges faced by stakeholders in the construction industry.

The findings emphasize the key role of payment disputes and dissatisfaction with adjudication determinations as primary causes of challenges within the construction industry. However, beyond these issues, the results also emphasize the critical importance of adherence to procedural rules outlined in the SOP Act by all involved parties, including claimants, respondents, and adjudicators. Notably, instances of prematurely lodged Adjudication Applications were observed, indicating potential shortcomings in procedural compliance. This highlights the necessity for robust procedural adherence to ensure the integrity and effectiveness of the adjudication process in resolving payment disputes.

While most challenging cause is related to payment disputes and dissatisfaction of adjudication determinations, the results also highlight the importance of following the procedural rules of SOP Act by all parties including claimant, respondent and also the adjudicator. In some case, Adjudication Application was lodged prematurely.

Moreover, within the domain of contractual matters, where payment disputes intertwine with additional claims, liquidated damages, and other contractual matters, it becomes imperative for adjudicators to possess a comprehensive understanding of contracts and their associated responsibilities and limitations when rendering adjudication determinations. This highlights the importance of adjudicators being well-versed in contract law and related contractual provisions to ensure informed and judicious decision-making in the adjudication process.

Further, a significant number of cases brought forth alleged breaches of the rules of natural justice, particularly concerning the fair hearing rule. Despite the relatively low percentage of approved setting-aside applications compared to the total cases analyzed, this highlights the paramount importance of ensuring a fair hearing for both claimants and respondents alike. It poses an additional challenge for adjudicators, emphasizing the need for meticulous adherence to principles of natural justice to safeguard the integrity of the adjudication process.

Jurisdictional challenges arise when adjudicators breach the rules of natural justice, such as instances where they lack jurisdiction to determine matters like liquidated damages. Litigation is often sought in such cases due to adjudicators exceeding their jurisdiction and violating the fair hearing rule. These examples emphasize the importance of comprehending the jurisdictional challenges and constraints faced by adjudicators. While the proportion of cases filed under Fraud and Corruption is relatively small, it remains a crucial factor to consider during the adjudication process to uphold integrity.

According to the SOP Act, the adjudicator's decision is legally binding and must be adhered to by both parties involved (Attorney-General's Chambers of Singapore, n.d.). Failure to comply with the adjudication decision could lead the claimant to seek enforcement through court intervention, a process typically expedited to maintain the efficacy of adjudication (Michael Por Law Corporation, 2023). The case *SH Design & Build Pte Ltd And BD Cranetech Pte Ltd*, is a

notable case for construction adjudication where the judge emphasized that while adjudication offers a form of interim resolution, it does not signify a permanent conclusion to the dispute (eLitigation, 2018).

To address the challenges encountered in adjudication, implementing comprehensive training and educational programs for construction professionals and stakeholders is essential to enhance the understanding of the adjudication process and dispute resolution mechanisms outlined in the SOP Act. By providing clarity on the SOP Act's procedural requirements and jurisdictional limits, adjudicators can make more informed decisions, thereby reducing the likelihood of disputes being escalated to court for setting aside. This proactive approach will not only enhance the efficacy of adjudication determinations but also reinforce their binding nature, consequently saving time and costs associated with resolving payment disputes, in alignment with the objectives of the SOP Act.

Figure 6 presents a proposed framework for enhancing the adjudication process to resolve payment disputes in construction projects in Singapore. Additionally, it is crucial to identify the key stakeholders and define their roles in the dispute resolution process.

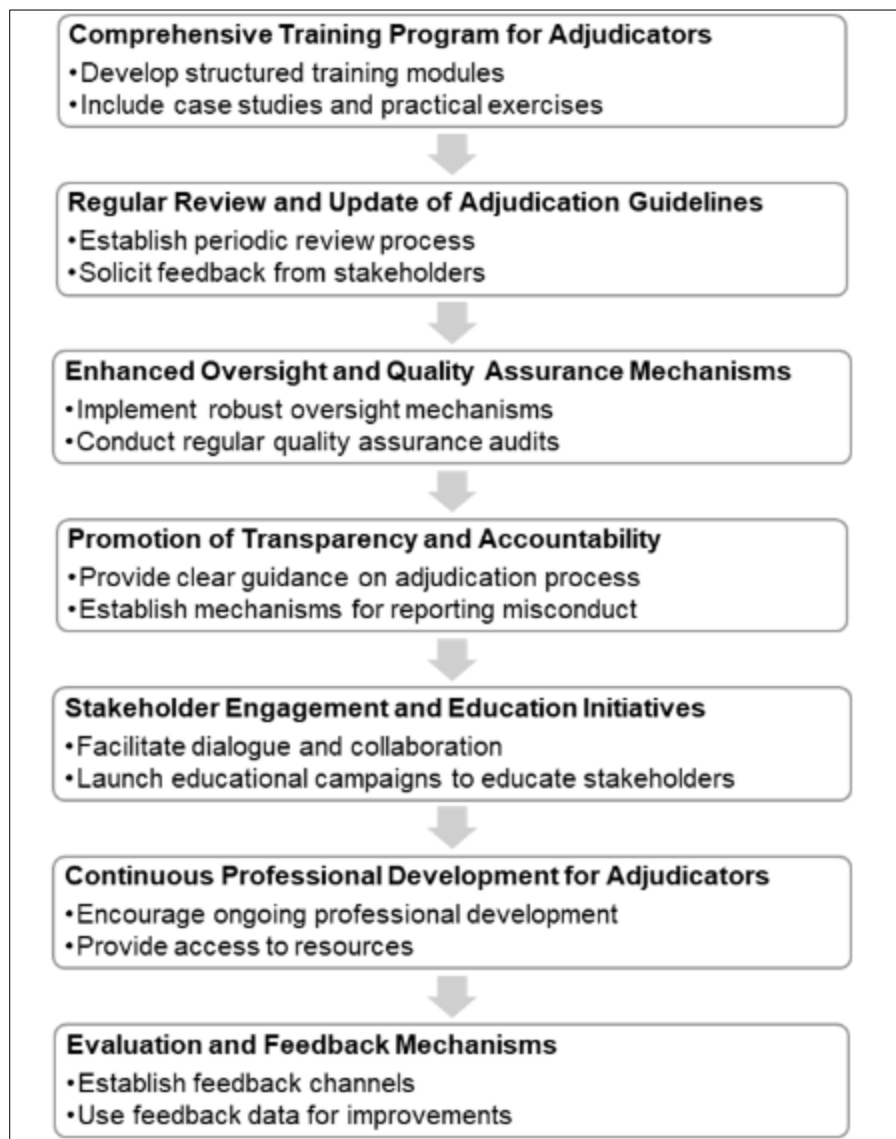


Figure 6 Suggested Framework for Incorporating improving Adjudication Process to Resolve Payment Disputes in Singapore Construction Projects

To test the research hypotheses outlined in this study, three key questions were addressed. Firstly, the study aimed to determine the presence of challenges within the adjudication process and the decisions rendered by adjudicators regarding construction project disputes in Singapore. The findings revealed several challenges categorized under

Procedural Issues, Jurisdictional Challenges, Natural Justice and Fairness, Fraud and Corruption, Payment Disputes, Contractual Matters, and Technical and Quality Issues. Secondly, the investigation sought to ascertain whether there are Singapore-specific causes contributing to payment disputes in construction projects.

Analysis of cases indicated that payment disputes predominantly arise from non-payment, delayed payment, or lack of response within the SOP Act's stipulated timeframe, emphasizing the relevance of Singapore-specific factors. Lastly, the study aimed to evaluate the effectiveness of adjudication as an alternative dispute resolution (ADR) technique. The effectiveness was dependent upon the binding nature of adjudication, and the substantial number of cases referred to litigation seeking to set aside adjudication decisions suggests inherent limitations within this ADR mechanism. Through rigorous analysis and examination, this study provides valuable insights into the complexities and efficacy of adjudication in the context of dispute resolution within the Singapore construction industry.

Further, based on the results and findings of this research, a mathematical model is proposed to understand the nature of Adjudication Challenges in Singapore's Construction Industry. The model is represented as follows.

$$Y=f(X_1, X_2) +e$$

Where,

Y represents the Success Rate of Setting Aside Applications, indicating whether the setting aside application was granted or denied.

X_1 denotes the Nature of Adjudication Challenges, a categorical variable with levels such as Procedural Issues, Jurisdictional Challenges, Natural Justice and Fairness, Fraud and Corruption, Payment Disputes, Contractual Matters, and Technical and Quality Issues.

X_2 represents the Factors Influencing Adjudication Decisions, a continuous variable including factors like the complexity of the dispute, experience of the adjudicator, adherence to procedural rules, etc.

e allows for the error term, accounting for unexplained variability.

However, it is essential to conduct a model validation exercise to ensure its reliability. Techniques such as cross-validation and model diagnostics should be employed to assess the goodness-of-fit, predictive accuracy, and robustness of the model. By applying this mathematical model, stakeholders can quantitatively analyze the relationships between different variables and gain valuable insights into the dynamics of adjudication challenges in Singapore's construction industry.

In conclusion, this study highlights the challenges inherent in the adjudication process under the SOP Act within Singapore's construction industry. Payment disputes, contractual complexities, procedural lapses, jurisdictional issues, and concerns regarding natural justice and fairness emerge as prominent factors influencing the dissatisfaction with adjudication determinations. While the majority of cases sought litigation for setting aside adjudication determinations, only a fraction of applications were granted by the courts, emphasizing the need for greater adherence to procedural rules and fairness principles. Moreover, the findings emphasize the importance of equipping adjudicators with a thorough understanding of contracts, jurisdictional boundaries, and natural justice to ensure integrity and fairness in the adjudication process. Addressing these challenges is paramount for enhancing the efficacy and credibility of adjudication as a dispute resolution mechanism in Singapore's construction sector.

Limitations and Research Gap

The findings of this research indicate several research gaps and limitations pertaining to the Adjudication Challenges in Singapore's Construction Industry. One notable limitation is the lack of recent studies dedicated specifically to investigating the challenges of adjudication within the Singapore context. This scarcity of up-to-date research hinders a comprehensive understanding of the current challenges in adjudication within the construction sector.

Moreover, the reliance on a single source, the SG Courts website, for accessing legal cases introduces a limitation. The website utilizes various catchwords for construction adjudication cases, which may result in the omission of pertinent cases related to payment disputes not captured by the selected catchwords. Consequently, the dataset may not fully represent the spectrum of payment disputes and adjudication challenges prevalent in the Singapore construction sector.

Furthermore, it is crucial to acknowledge that the data utilized in this study comprises only cases that sought litigation assistance, thereby overlooking cases where disputes were successfully resolved through adjudication. This limitation hinders a comprehensive assessment of the success rate of adjudication as an Alternative Dispute Resolution (ADR) mechanism in resolving payment disputes. Future studies focusing on adjudication's success rate in Singapore payment disputes are recommended to provide a more detailed understanding of the efficacy of adjudication in practice.

In summary, while this research provides valuable insights into adjudication challenges in Singapore's construction industry, the identified limitations highlight the need for further research to address these gaps and enhance our understanding of adjudication dynamics and its effectiveness as a dispute resolution mechanism in the construction sector.

5. Conclusion

In conclusion, the study on adjudication challenges in Singapore's construction industry provides valuable insights into the dynamics of payment disputes and judicial review within the sector. Despite the existence of the SOP Act and its endorsement of adjudication as an effective alternative dispute resolution mechanism, litigation challenges persist, indicating the need for on-going evaluation and potential refinements in the dispute resolution framework. The coexistence of the SOP Act and persistent litigation challenges highlights the complexity of payment disputes and emphasizes the importance of continuous improvement in addressing such issues within the construction sector.

Through a thorough analysis of payment disputes and adjudication challenges, this study aims to contribute meaningful insights to enhance dispute resolution practices in the construction industry. By identifying major causes contributing to payment disputes, reasons prompting parties to seek the set aside of adjudication decisions, and challenges faced by adjudicators, the research strives to inform decision-making and strategy development for industry practitioners, policymakers, and researchers involved in dispute management within the construction sector.

The study identifies seven main causes of challenges for adjudication determinations, with payment disputes, contractual matters, and procedural issues emerging as primary reasons for dissatisfaction with adjudication outcomes. Additionally, concerns related to fraud, natural justice, fairness, and jurisdictional challenges were identified as significant factors prompting challenges to adjudication determinations.

While the study reveals a relatively low success rate for applications seeking to set aside adjudication determinations, it emphasizes the importance of greater clarity and consistency in adjudication procedures. The findings emphasize the critical role of procedural adherence by all parties involved in the adjudication process to ensure its integrity and effectiveness in resolving payment disputes within the construction industry.

In addition to outlining the primary causes of adjudication challenges, the research introduces a mathematical model to comprehensively understand and analyze these issues. By incorporating factors such as payment disputes, contractual matters, and procedural issues, along with considerations of fraud, natural justice, fairness, and jurisdictional challenges, the model provides a structured framework for stakeholders to quantitatively assess the dynamics of adjudication challenges in Singapore's construction industry.

Moving forward, there is a need for on-going efforts to enhance the adjudication framework, address procedural shortcomings, and promote transparency and fairness in the dispute resolution process. By addressing these challenges, stakeholders can work towards fostering a more robust and efficient mechanism for resolving payment disputes and promoting overall industry sustainability and growth.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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