UNIVERSITI PUTRA MALAYSIA

PAYMENT ISSUES AND ITS EFFECTS ON CONTRACTORS IN MALAYSIAN CONSTRUCTION INDUSTRY

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ABSTRACT

Construction industry give significant effect on gross domestic product in Malaysia and it is rely heavily on payment. Any interruption related to payment can paralyze the development of the economy. Payment issue can be categorized into three which are late, under and non-payment. This issue is not a new situation in the industry even it is a serious matter to be dealt with thus, identifying the root causes of payment issue can provide solution to the problems. The purpose of the study is to identifying and rank the causes of payment issue and the extent of its impact and strategy taken by contractors to deal with it. The target group of respondents in this study is taken from CIDB directory in which only Grade G4 contractors with specialization in building construction. The findings indicate that payment culture in the industry is the most significant cause on the payment issue in which the attitude of the local people like to postpone things. Then, relationship between implications and strategies to mitigate payment issue are recognized to be selected into framework development. Only variables that have correlation coefficient value of 0.2 and above are selected into a framework. According to the framework, the most significant impacts of payment issue is creating a negative chain effect on other parties such as sub-contractors and supplier while, appealed to employer repeatedly and slow down works are the most significant strategies taken by contractors to mitigate payment issue. Proposed framework is constructed based on triangle view of time, cost and quality where causes, impacts and strategy are also related to each other.

Keywords: Payment Issue; Late Payment; Contractor's Perspective;

ABSTRAK

Industri pembinaan memberi kesan yang besar ke atas keluaran kasar dalam negara di Malaysia dan ia bergantung sepenuhnya kepada pembayaran. Sebarang masalah yang berkaitan dengan pembayaran boleh melumpuhkan ekonomi. Masalah pembayaran boleh dikategorikan kepada tiga iaitu lewat, kurang dan tiada bayaran. Masalah ini merupakan suatu perkara yang serius jadi dengan mengenal pasti punca-punca masalah pembayaran, ia boleh memberikan dikurangkan. Tujuan kajian ini adalah untuk mengenal pasti punca-punca masalah pembayaran dan sejauh mana kesan dan strategi yang diambil oleh kontraktor untuk menanganinya. Kumpulan sasaran responden untuk kajian ini hanyalah kontraktor Gred G4 dengan pengkhususan dalam pembinaan bangunan. Dapatan kajian menunjukkan bahawa budaya pembayaran didalam industri adalah punca yang paling ketara di mana sikap rakyat tempatan suka menangguhkan sesuatu kerja. Kemudian, hanya implikasi dan strategi yang mempunyai hubungkait dipilih untuk dimasukkan ke dalam rangka kerja. Hanya pembolehubah yang mempunyai nilai korelasi 0.2 dan ke atas dipilih ke dalam rangka kerja. Menurut rangka kerja ini, kesan yang paling ketara dalam masalah pembayaran adalah mewujudkan kesan berangkai yang negatif kepada pihak lain seperti sub-kontraktor dan pembekal manakala, merayu kepada majikan berulang kali dan melambatkan kerja-kerja adalah strategi yang paling banyak diambil oleh kontraktor untuk mengurangkan masalah pembayaran. Rangka kerja yang dicadangkan dibina berdasarkan pandangan segitiga masa, kos dan kualiti di mana punca, kesan dan strategi juga berkaitan dengan satu sama lain.

Kata kunci: Masalah Pembayaran; Pembayaran lewat; Perspektif kontraktor;

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TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

PI	Payment Issue
CIDB	Construction Development Board Malaysia
RO	Research Objective
SPSS	Statistical Package of Social Sciences
Std. Dev.	Standard Deviation
Approx. Sig.	Approximate Significant
CPI	Causes of Payment Issue
IMP	Implications of Payment Issue
STR	Strategies of Payment Issue
SOP	Standard of Procedure
CIPAA	Construction Industry Payment and Adjudication Act
IEM	Institution of Engineers Malaysia
PAM	Persatuan Arkitek Malaysia

CHAPTER 1

INTRODUCTION

1.1 Background of study

Construction industry is one of the sector that boost economic growth in Malaysia by 6% in Gross Domestic Product (Azhari et al., 2014). This economic transaction involved money as a payment and rely heavily on it. It is clearly seen on construction project in which it took longer period and payment is being made progressively until completion date (Ameer-Ali, 2006). Payment is being made by client to any parties taking part in completing the project. Parties involved are agreed for the requirements and amount of payment that should be paid during contract stage. Payment is important to allow them survive in this sector where problem due to it can affect relation between parties. This is significance when payment is not being paid according to schedule by defaulting party due to poor financial management organization. At this time, defaulting parties will try their best to solve this payment issue, but due to the challenges they are facing, payment is being paid insufficiently or it was paid late from the schedule and even worse is no payment at all. In this kind of circumstances, the defaulting parties will get out with reasons to protect their own mistake. When this issue mediates, it of coarse will influence the progress of construction project (Jalilah et al., 2015). Payment issues in the construction industry are not a new situation. Past research shows this issues have been generally recognized for over four decades ago as mention in Banwell (1964), Latham (1994), Wu (2010), Ye and Rahman (2010), and Wu, Kumaraswamy and Soo (2011). This issues can be

summed up with contractors and subcontractors are not getting paid their money on time including under-payment, late payment and non-payment. Non-payment or under-payment refers to circumstances where an expected amount of money was never received or would be said as partially loss of money. Meanwhile, late payment is a situation where payment is not made to contractors or subcontractors on time as bounded in the schedule between the parties in the contract (Ramachandra and Rotimi, 2015).

Wu, Kumaraswamy and Soo (2008) claims that payment issues can cause severe effect on cash flow in which turn contractors and even subcontractors to take additional source of funding like overdraft and trade credit that could lead them to risks of bankruptcy. Productivity of industry became incompetent and even worst construction parties down the supply chain is also affected and evidence shows that payment delay cause material delivery become late which impacts on manpower productivity on site (Kadir et al., 2005 cited in Ramachandra and Rotimi, 2015). Problem associated with payment generally caused by paymaster is not able to pay or not willing to pay, however it may vary across countries due to peculiar characteristics, economic and political set ups. (Wu, Kumaraswamy and Soo, 2008 cited in Ramachandra and Rotimi, 2015). All those example indicate that this issues is a serious matter to deal with, hence identifying the causes of payment issues can provide solution to the problems.

1.2 Problem statement

In every development, construction industry is not excluded in confronting obstacles and issues such as project delays and abandoned, payments problem, disrupted cash flow, type of agreement used in contract and valuation of work done; those are commonly issues circulating around (Ali, 2006). Every year, a large number of contractors faced liquidation and business failure. These parties abandon unfinished private and public construction projects. Surprisingly, they cause billions of dollars in losses for project owners (Strischek&McIntyre, 2008 cited in Dzulkalnine, 2015).

Construction Industry Development Board Malaysia shows statistical evidence which from January 2006 to August 2008, dormant and non-active construction companies is about 11,321. High non-active construction player means lacking in successful contractors and there are still a lot of construction project completed exceeding stipulated time. Major factors contributing to the failures is related to financial issues (CIDB, 2008).

Time is a major constraint in construction industry due to every project consume long time for completion. It involves participation from many parties start from clients, consultant, main and sub-contractors, down to the suppliers. It is not only involves multi layered hierarchy but also requires many phases such as earthworks, sub and super structure, finishing works and mechanical and electrical services is also engage. All of these supply chain implies different requirement and understanding between each parties (Dzulkalnine, 2015). According to Azman et al., (2013), payment issues arise in higher end series of hierarchy might create devastating effect on cash flow down the chain. Client who does not pay within agreed time will make everyone in

supply chain suffer as main contractors depending on sub-contractors, suppliers and hirers. Failure of contractors getting paid in periodic and stipulated time cause project delay, less profit and the worst case contractors might faces liquidation (Azman et al., 2014).

Disagreements on valuation of work done is contributing to payment issue. As documented in the contract, contractor will be paid if they meet the expectations put by client. When contractor did not perform their jobs as per agreed and diligently, client might reject certificate claim by the architect with an excuse of 'overvaluation' to express dissatisfaction of work done. Undervaluation of certification may put cash flow and profitability of contractors in a danger state and causing them dilemma (Saad, 2008). Hence, a comprehensive study is needed to demonstrate the ways to reduce or even avoid current state of payment issue in the industry.

1.3 Research Questions

The following relevant questions were expected to guide the study especially for the construction industry in Malaysia.

i. What are the causes related to payment issues for contractors?

ii. What are the impact and reaction of contractors when do not get payment?

iii. How can contractors practice be improved in resolving payment issues?

1.4 Research Objectives

The objectives of the study are:

i. To identify and rank causes related to issues of late, under, and non-payment.

ii. To examine the extent of impact and strategy of contractor in dealing with payment issue.

iii. To develop a framework for mitigating payment issue.

1.5 Scope and Limitation of Study

The scopes and limitations of study are:

i. Targeted respondents are only contractors certified from Construction Industry Development Board Malaysia (CIDB) Selangor branch under category of building construction.

ii. Sampling from various construction firms is very important to contribute for analysis but due to time frame limitation, criteria of the company that will be choose is only grade G4 which tendering capacity is not exceeding three millions. In addition, construction company involved is only limited to Selangor area.

iii. Based on problem statement, this study is only focused on factors contribute to issues under late, under, non-payment categories during construction phase only.

1.6 Contribution of Study

Findings on problem related to payment can gradually reduce project delay and failure whereas the main sources for every construction project is money. Payment is considered as the lifeblood of the construction industry because constructions often involve very large capital outlay and take a considerable time to complete (Naseem, 2005). This can be understood as good financial management is one of the key to be success in this industry, hence it is a must for every player to be good in it.

Medium scale company may not able to keep on par with large scale company in every aspects, however they still need to have good cash flow, which one of the factor contribute to project success, in order to keep being competent and survive. With the aid of developed system/framework, it may ease them to resolve issue related to payment.

Lastly, this study may further enhance existing theory and data collected where it can be beneficial for future researchers alike. By adding new possible theories and explanation, it may enlighten normal people to easily understand about this topic.

1.7 Summary

There are various challenges to be faced by contractors in finishing their project. One of them is late payment issue that give significant effects to contractors while many factors trigger late payment to happen. Extensive study in this problem helps medium scale contractors to stand on par with another large scale contractors.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter discussed about the definition of payment, what is mean by late payment, under payment and non-payment. Causes, impacts and strategy to mitigate payment issue were identified through extensive reading to be applied on Malaysian construction industry.

2.2 Payment

Payment is a total of cash paid to somebody. In the construction industry, contractors, consultant, and suppliers will get paid after they successfully done their works or services. It is always been tension for these parties due to payment is very important as poor payment practices is common issues spinning around. In a contract, it is clear that contractors must complete every one of the works within stipulated time; then again, the client must keep their promise to grant a payment for every works done (Zarina, 2006).

Chen, O'Brien and Herbsman, (2005) state that contractors can keep alive by having periodic disbursement of interim payment. Late payment or does not getting paid in the amounts agreed, both implies huge issues to the contractors as income will be affected even small construction company would close business because due to late payments (Zarina, 2006). Payment issues arise in higher end series of hierarchy might

create devastating effect on cash flow down the chain. (Azman et al.,2013). Ramachandra and Rotimi, (2015) suggest that payment issues can be classified into three which are late payment, under payment and non-payment.

2.2.1 Late Payment

Late payment means delay in getting payment or not following the schedule after work had been done. In other words, it can be express as payment made after the due date. Schedule agreed in contract form is strictly bound to all parties and they must follow the terms of payment. Late payment can make the progressing project to be interrupted while some projects are even cannot move to another stage. Occasionally, only one miss in getting payment might contribute to progress of works been stuck or unaffected. Contractors are waiting for money from paymaster to pay sub-contractors and suppliers while sub-contractors is depending on contractors to use the cash for their employee. This association ties each other's work and payment related issues (Jalilah et al.,2015). In different circumstances, the suppliers is also affected by late payment or not getting paid which result in they stop supplying materials which is required for the work to advance to next stage. This late payment issue is not a newcomers into the industry as it has been generally spread and been highlighted as one of the significant issues faced by industry (Howorth and Wilson, 1998).

2.2.2 Under Payment

Underpayment means payment made is lesser than the promised cash or amount received after the work has been finished either taking after stage per stage payment or at the full completion of the work. If underpayment concept is being apply, some contractors will experience issues to continue to another phase as they have

insufficient working capital to continue. In some cases they may have the cash, however it is not adequate for their other project. Hence, the work need to be suspended or even worst, the project will be abandoned (Jalilah et al.,2015). Thus, please think about others business just as you think about yours and paid as agreed terms. Every business required money as it is key element to start a business which without it, business will go bankrupt. Although company is still getting money rather than no payment at all to fund for next project, but it will resulted in less profitability and outcome of their business is not achieved. Every developer or client must change their mindset on getting easy profit to only spend when capable. Meaning that, prepare the money first before decided to be part of contract. Consecutive talk, the medicine is still on the management of business and finance of the business (Jalilah et al.,2015).

2.2.3 Non-Payment

Non-payment is means not getting any payment, it equivalent to work finished or done without consideration. Under contract law, consideration is necessary in dealing between parties where without consideration, contract is considered void and null. For example, exchange of items in terms of money is consideration and in industry, sub-contractors is paid for their work done. Work done is equivalent to cash and this is consideration from one to another. Payment is crucial where any parties engaged to do any works will expect money in return. There is no such word as gratuitous work been done with the intention to finance the pockets of other parties. It is unfair for those who work hard to do another work of chasing payment. This term chasing look not proper to the business but rather it occurred in every business industry as non-payment issues are common (Jalilah et al.,2015).

2.3 Factors that Cause Payment Issue

Issues in payment at the higher end of the hierarchy system will prompt a serious cash flow problem down the chain of contracts as indicated by the Construction Industry Working Group on Payment (2007). Contractors in Malaysia said that it is acceptable to have a delay for few day not more than five working days in receiving payments from the clients as they always at the mercy of the clients and the clients is always right (Yee and Abdul Rahman, 2010). This is due to local culture attitude in Malaysian construction industry like to postpone things where delay in payment for a few days were tolerable (Azman et al.,2013). There are many causes that lead to late payment issue in construction industry which are:

i. Paymaster's Poor Financial Management

Whole supply chain of payment will be effected if there is a delayed payment by a paymaster who is involved in processing the payment claim. Hasmori et al. (2012), indicate the key factors in paymaster's poor financial management. The factors are:

- Cash flow issues due to insufficiency in client's financial limit.
- Client's incapable usage of assets.
- Scarcity of cash-flow to rolling back the venture capital.
- Poor income on account due to lack of process execution on project.
- Financial failure due to bankruptcy or liquidation.
- Overlook the gradually expanding influence of economic downturn.

ii. Unreasonably Withholding Payment by Paymaster

Client are deliberately holding the payment where they are doing this to acquire some sort of "gift" from contractors once they release a payment. Thus, contractors need to tolerate with this activity to get their payments. Other than that, there are variety of reasons for client to withhold a payment for contractors and sub-contractors. For example, significant deformities in construction works, dispute over quality of work done and disagreement in provision of the contract (Hasmori et al.,2012).

iii. Conflict between Parties Involve

Hasmori et al. (2012), demonstrated that payment has dependably been the main subject of dispute. Every conflict happened is expected if unsettle will grow into dispute which can likewise cause payment issue. There are additionally the troubles in achieving settlement among the parties, contradiction in the valuation of the work, lack of trust with the consultant in accreditation of contractor's claim and variation order and lack of understanding on what actually client want based on requirement agreed are examples that cause payment issue.

iv. Local Culture/Attitude

Bad behavior among contractors have picked up consideration from various staff and player in the construction industry and one of them came from Prime Minister of Malaysia. He demands that any government worker with this sort of attitude to be charged (Azman et al., 2014). Contractors in Malaysia said that it is acceptable to have a delay for few day not more than five working days in receiving payments from the clients as they always at the mercy of the clients and the clients is always right (Yee and Abdul Rahman, 2010). Contractors might find it normal to postpone a payment to

another sub-contractors that works with them after getting late endorsement of payment from client where this is cause by client that delay the payment first. Hence, parties involved need to have a good attitude even though they are facing late payment.

v. Deficits of current year's budget

It might happen when amount of work done surpass allocated spending budget for that current years. This is mostly occur on government projects that it might cause late payment since payment to the contractors must be delayed to the next year because of deficient budget. The payment will be disbursed if fund assigned for has been received by government's organization (Hasmori et al., 2012). The prevailing economic situations constitute key factors of construction risks. At the point when the economic situations are tight, risks sources increase. Downturns in the economy are felt by all sector, including construction industry. Clearly when the investment decrease because of tight monetary conditions, client will suffer in cash flow issues which could reduce their capability to fulfil financial obligations in current projects. Additionally, demand for construction work become stiff rivalry for projects which frequently implies little or zero profit mark-ups in tenders (Mbachu, 2011)

vi. Delay in certification

As indicated by Yee and Abdul Rahman, (2010), delay in accreditation by parties involved in the project may likewise be a reason for late payment issues. The parties involved may postpone in endorse the application for payment claim because of specific reasons which may arise from late evaluation of work done. Hence, late certification issued.

vii. Disagreement on the valuation of work done

It is an ordinary in the construction industry where one of the parties will not agree on the evaluation of the progress done. The difference may cause delay in endorsing the measure of work executed. As indicated by Mohamad et al. (2012), contractors that disagree on valuation would then result in conflict among consultant and client and late certification issued

viii. Technical Problems

One of the fundamental reason behind late payment is when contractors make a mistake in submitting claims. Among the mistakes done are claims without satisfactory supporting documents, wrong amount of payment in claiming and those submitted without the correct methods which will lead to contractor need to resubmit the claims and repeat the entire procedure after making an adjustments. Usually, general rule of payment is payment will be made after 14 days on submission of finished documentation with the Finance Department. Keeping in mind, to avoid deferral in getting payment, person in charge need to ensure that documentation is complete enough (Azman et al., 2014).

2.4 Implications of Payment Issue

Economic condition of a nation could be affected by delays in construction projects where it might slow down the advancement in construction industry (Abdul-Rahman et al., 2009). As indicated by Abdul-Rahman et al. (2009), late completion of construction projects would be the main reason for additional cost and loss in money return or benefits from the projects. In other words, deferral is expensive for both client and contractors as delay implies loss of potential income for client, while for contractor, a delay implies expanded cost in overhead.

Payment is a major issue and serve as a root in the construction industry and most of contractors revealed that they have experienced late payment issue when dealing with government project while a greater amount of them confirmed that they also face the same problem in private funded project (Hasmori et al., 2012). Late payment issues happened worldwide and in Malaysia, implication of this issue might cause huge devastation to the economy and this have discolor the great picture of the construction industry (Azman et al., 2013). The impact of late payment are described in Table 2.1.

Table 2.1: Impacts of Payment Issue (Azman et al.,2013)

Impact	Description	Author
Creates negative chain effect on other parties	The construction payment blues have domino effects. A delayed payment by one party may affect the whole supply chain of payment of a construction project. For instance, if an employer delays in making payment to the contractor this in turn will result in contractor's delay in making payment to the sub-contractors and suppliers.	Mohamad et al. (2012)
Results in delay in completion projects	Late payment causes cash flow problems which in turn can affect the overall progress of works. Financial problem is confirmed by the top management as the main cause of delay in addition to manpower shortage.	Abdul-Rahman et al. (2009), Haseeb et al. (2011)
Leads to bankruptcy or liquidation	Late payment may affect the financial status of the contractor. It will influence a company's cash position.	Ab. Halim et al. (2010)
Project delay	A failure of the Contractor getting regular and timely payment could result in project delay, reduced profitability and in the extreme case, the company may go into liquidation	Judi and Rashid (2010)
Affect the contractors reputation	Frequent late payments could result in loss of reputation, trade credit constraints, and reduced credit ratings	Hasmori et al. (2012)
Profitability of the project	The profit margin is small and this situation can led a player to go on bankruptcy and there goes another project on abandoned list	Hasmori et al. (2012)

2.5 Potential Solution of Payment Issue

Contractor need to be smart in accepting the contract and to choose a good paymaster (Abdul-Rahman et al., 2011). Before any payment is being certified, it is a contractual responsibility of the committee to also monitor whether the claim is made in accordance to the terms, product delivery and other criteria prescribed. In fact, 98 percent of such processing can be completed within 10 days. If the payment is late, the finance officer must inform the reason for the delay in writing (Hasmori et al., 2012).

Legislation should be amended to give a clear message to constructors and clients as to clarity the payment matters and refund procedures said by Abdul-Rahman et al. (2011). Termination at common law can only take place where one party commits a breach of contract, and that breach amounts to a repudiatory breach. A party is said to have repudiated a contract if he expressed by his words or conduct that he does not intend to be bound by the contract or to perform his obligations. Normally, refusal by the Employer to pay sums due is clearly a default and Contractor can take action based on such reason. But, failure to pay one installment out of many is not ordinarily sufficient to amount repudiation.

Hasmori et al. (2012) said that the remedies to overcome the late and non-payment is by adopting a new way of payment method among developers or clients whom wrongfully withholding the payment. Penalties shall also be given personally to the employees if they are found wrongfully withholding the payment. Table 2.2 show the potential solutions of late and non-payment issues in construction industry.

Table 2.2: Possible Solutions of Payment Issues (Azman et al.,2013).

Solution	Description	Author
Financial Management	1. To conduct training on cash flow management and financial management 2. Accessing risk management in managing material, transportation, labour, and maintenance. 3. To apply payment bond with bank and client.	Abdul-Rahman et al. (2011)
Contractual Matters	1. To be smart in accepting the contract and to choose a good paymaster. 2. Determining the contract with the Employer 3. The development of principles of modern construction contracts 4. There should be a specific clauses in the contract related to managing construction failure.	Abdul-Rahman et al. (2011); Hasmori et al. (2012)
Legislation	1. Legislation should be amended to give a clear message to constructors and clients as to clarity the payment matters and refund procedures. 2. A right to a speedy dispute resolution mechanism 3. A right to suspend work 4. A right to regular periodic payment. 5. Applying charges to overdue payments. 6. A right to a defined time frame for payment 7. Collection period (CP) in 48 days. 8. A specific agencies or bodies must be existed for the party involved to set guideline in resolving that matters.	Abdul-Rahman et al., (2011); Judi and Rashid (2010)
New way of payment method	1. Adopting a new way of payment method among developers or clients whom wrongfully withholding the payment.	Hasmori et al., (2012)
Local Attitude	1. Fundamental change in the mind-set towards timely payment and statutory enactment to deal with payment in construction industry	Hasmori et al. (2012)
Technical Issue	1. The detail and proper procedures of claim issuance to resolve matters arising 2. The relevant provisions of construction failure should be stated in separate clause due to its scope of event.	Mohamad et al. (2012)
Financial institution	1. Reduced interest rates/bank fees for businesses with robust cash flow management 2. Extension of credit facilities on a temporary basis 3. Seasonal repayment/ payment based on money flowing into the business 4. Repayment holidays 5. Slow or delayed start to repayment terms 6. Access to free/ heavily subsidised cash flow software	

2.6 Summary

Many research conducted regarding this payment issues, yet there is no specific solution or strategy to mitigate the problem for medium scale contractors. Most of the researcher conduct a survey based on perspective of all of the classes of contractors where different grade of contractors required different strategy to be applied. Some studies also investigate on payment issues in term of law and regulation. Extensive reading from literature found that a lot of strategy and solution provided by several author from their research hence, this study is to establish the most suitable solution to be used.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter discover about steps need to be taken before coming out with framework of solution to mitigate payment issues. It is included the population that have been selected, how much sample is needed, data collection method, questionnaire development and data analysis method.

3.2 Research Methodology

Any knowledge or information can be obtain by referring to a comprehensive literature review process regarding any payment issues across countries. Method of analysis used is conducting a questionnaire survey among potential players in construction industry to perform appropriate analysis on the survey. The survey conducted to gain experience of targeted contractors to share their opinion relevant to the topic as below:

- Identify any factors that cause payment issue faced by contractors by extensive reading of literature review.
- Establish and rank causes of payment issue happened during construction stage.
- Determining contractor's practice or reaction and impacts of the payment issues to their carrier.
- Compare the results with literature review and document the findings.

- Develop a model/framework to enhance the current techniques used to reduce or solve payment issues.

3.3 Research Design

Developing research guides help the researchers to formulate and implement the studies in their way, to obtain the desired results, thus increasing the chances of getting the information that can associate with the actual situation (Burns and Grove, 2001). The survey method is used in the study because it is highly efficient where a large sample selection from a pre-determined population is involved, and is relatively inexpensive (Kelley et al., 2003). Thus, online questionnaires have been sent to all contractors with grade G4 by identifying it from CIDB directory database and this take almost one month to completely get a sufficient return of questionnaires.

Data obtained from the survey was analyzed using Statistical Package for the Social Sciences (SPSS). Inferences from the study are based on descriptive and inferential statistical techniques. Proposed framework for mitigating payment issues were established and validated by a project manager who have more than 15 years working experience. He was asked to share his point of views and comment on the proposed framework for further improvement.

Developed framework of the study as a guideline planning for completing the research is shown on Figure 3.1.

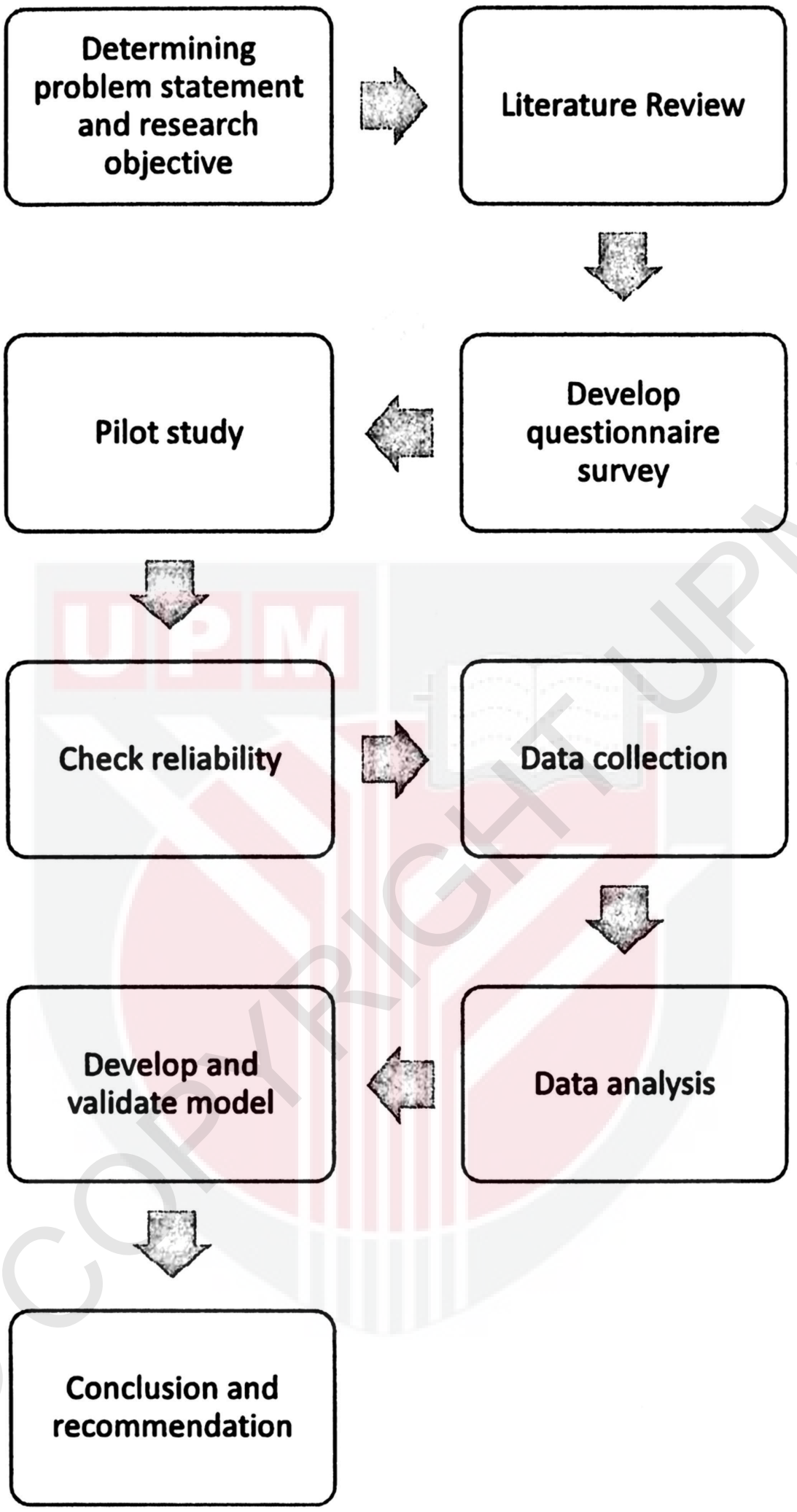

Figure 3.1: Flow Chart of the Study

3.4 Questionnaire Survey Design

A quantitative approach is used to identify causes related to payment issues and to determine contractor's practices and impact of payment issues confronted by every player in this construction industry.

i. Population is defined as the collection of items statistically analyzed. For this study, population is limited to only contractors who registered to the CIDB Selangor under building construction category. Medium scale contractor which tendering capacity not exceeding three millions is the only selected population used for this study.

ii. Sample is a subset of the population selected to participate in the study, it is a small part of the total that take part in research project which represent the whole population. Sample size determined based on below equation with 90% of confident level and 10% of errors.

$$Sample\ Size = \frac{\frac{z^2 \times p(1-p)}{e^2}}{1 + (\frac{z^2 \times p(1-p)}{e^2 N})}$$

N = Population size

e = Margin of error

z = Confidence level (as a z-score)

p = Percentage value (normal distribution = 50%)

Table 3.1: Z-score for desired confidence interval.

Confidence Level	z-score
80%	1.28
85%	1.44
90%	1.65
95%	1.96
99%	2.58

$$Sample\ Size = \frac{\frac{1.65^2 \times 0.5(1-0.5)}{0.1^2}}{1+\left(\frac{1.65^2 \times 0.5(1-0.5)}{0.1^2 817}\right)}$$

$$Sample\ Size = 63$$

Thus, by allowing 90% of confidence level and 10% margin of errors for 817 population of grade G4 contractors in Selangor, only 63 of respondents required to represent the whole population.

iii. Questionnaire is a pre-formulated written set of questions where the can be administered personally, mailed to the respondents or electronically distributed to which respondents record their answer, usually within rather tightly defined alternatives (Wiley, 6th edition). It is widely used due to less expensive and consume less time than interview, convenience and ease the process of returning (Ling et al., 2009).

iv. Questionnaire survey used might have some limitations when dealing with it. There is no guarantee that who respond to the questionnaire is the targeted respondents of the study also person who respond to the question may answer some questions in general or based on their knowledge and not based on current practices in the industry.

v. A 5-point Likert scale ranging from 'Strongly Disagree = 1' to 'Strongly Agree = 5' was employed to determine the degree of importance for the causes of payment problems.

vi. Conducting pilot test is a must after finalization of the questionnaire to ensure that respondents would understand the questions and identify possible problems with the completion of the questionnaire by having some targeted respondent answer for it.

3.5 Questionnaire Development

The questionnaire was developed into three sections as follows:

- Section A: Demographic Data - This section is meant to collect respondent's profile which are age, current primary role, the highest educational level achieved and their experience in construction industry.

- Section B: Causes of Payment Issue – This section is about ranking the causes of payment issue based on contractor's perspective using relative importance index.

- Section C: Impact and Strategy to mitigate Payment Issue – this section intended to measure the extent of strategy used by contractors is effective to mitigate the problems

After the question has been develop, pilot study was conducted and the questionnaire were distributed randomly to 30 respondents. This is to ensure that the questionnaire that has been develop is acceptable and understand by the contractors. No issue detected as value of Cronbach's Alpha is greater than 0.7 for all of the variables which indicate good internal consistency and stability.

3.6 Data Analysis Method

Data obtained from the survey was analyzed using Statistical Package for the Social Sciences (SPSS) which it can utilize both quantitative and qualitative methods. Section A is analyzed using qualitative methods while Section B and C require quantitative methods to be analyzed. Inferences from the study are based on descriptive statistical techniques. Basic descriptive analysis conducts to find mean and standard deviation of the variables for Section B and C. The aim is to find the most significant variables in the specified category also the results used as a guideline for comparing independent variables (Teo, 2012). The analysis method chooses for this survey is appropriate to the types of survey that has been developed earlier. Analysis method includes ranking each factor, impacts and remedial actions according to relative importance index for all response. A reliability test conducted to measure the validity of the 5-point Likert scale using Cronbach Alpha Test. The value for the alpha should be greater than 0.7 (Pallant, 2001) and the acceptable modest reliability values is in the range of 0.5-0.6

(Nunnally, 1978). In addition, Frequency Analysis is used to recognize the distribution of the respondents.

For this research, there are a lot of statistical analysis to be conducted and there are listed and described in Table 3.2.

Table 3.2: Types of Statistical Analysis Methods

Analysis Method	Purpose
Relative Importance Index (RII)	It aids in finding the contribution a particular variable makes to the prediction of a criterion variable both by itself and in combination with other predictor variables (Somiah, Poku & Aidoo, 2015).
Descriptive statistics	Data analysis techniques enabling the researcher to meaningfully describe data with numerical indices or in graphic form (Fraenkel et al., 1993).
Cronbach's Alpha	Measure of interior consistency, that is, the manner by which firmly related an arrangement of things are as a gathering which alpha value must be greater than 0.7 (Nunnally, 1978).
Non-parametric Technique	Suitable for data that measures on nominal and ordinal scales of measurement (Siegel & Castellan, 1988)
Kendall's Tau-b Correlation Test	Kendall's tau-b (τb) correlation coefficient (Kendall's tau-b, for short) is a nonparametric measure of the quality and direction of affiliation that exists between two factors measured on no less than an ordinal scale. (Prier, McCue & Behara, 2010)

3.7 Summary

Questionnaires consist of 22 questions constructed to determine the most significant causes in payment issue and its impact to the contractors. This is important in order to develop a framework to reduce payment issues for medium scale contractors. This chapter also consist of statistical analysis methods used.

CHAPTER 4

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter consist of analysis of data from questionnaire survey conducted followed by discussion of the findings. The purpose of this study was to rank causes of payment issue and determine interconnection between causes, impact and strategy of contractors in Malaysian construction industry.

4.2 Descriptive Analysis

Pilot study is feasibility study in small scale version or trial run, done before conducting major study (Polit et al., 2001). It is to check for proposed method or variables is suitable or not which it can give clear picture whether the questions is good enough or need some improvement. Hence, a pilot study was conducted and distributed to 30 contractors chosen randomly from CIDB directory website.

Table 4.1: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.906	.917	32

Table above showed the reliability test of variable in section B and C measured by Cronbach's Alpha. The value of 0.906 in Table 4.1 represent high internal consistency among the questions. Number of items means number of respondent involved where items less than 30 is considered not good enough to run an analysis on SPSS.

Based on the Cronbach's Alpha value, the questionnaire doesn't need to be redesigned as it indicate high internal stability and consistency between items.

4.3 Data Analysis

4.3.1 Response Rate

Three hundred of Google form questionnaire was distributed among potential contractors chosen from CIDB directory website but the response is quite low. Hence, another 500 google form questionnaires were sent to all of the G4 contractors in Selangor by preparing both English and Malay version of questionnaires. In three weeks, a total of 83 questionnaires consist of 31 and 52 questionnaires from English and Malay version is collected from the contractors. However only 80 questionnaires is valid and usable due to three questionnaires is blank. 80 returned questionnaires is considered enough to represent the whole population in Selangor area which the sample needed is only 63 questionnaires.

4.3.2 Section A: Demographic Data

This section consist of age, educational level of respondent, current primary role and their experience in construction industry field. This data is not usable in achieving all of the three objectives stated but it is served as describing variety of population respond to the questionnaires where it is not only engineers who answer the questions, but varies from project manager, team member and also director. Distribution of the respondent is recognized by Frequency analysis and shown in Table 4.2.

Based on Table 4.2, it is clearly seen that most of the surveyed age are between 30 and 39 years (33.8%) and 25-29 years (22.5%), followed by 17 respondents (21.3%) were 40-49 years, and 14 respondents (17.5%) lie in 50 years and above. Besides, only 4 respondent (5.0%) were up to 25 years, shows that less involvement from them in construction industry level. Table 4.2 also indicate that highest educational level for them start with 12.5% of basic education (PMR, SPM etc.) level, 25.0% a diploma/technical qualification, followed by most education level, 55.0% of bachelor degree, 7.5% a master's certificate and zero percent, 0%, for doctoral level.

Meanwhile, Table 4.2 demonstrate that the most current primary role is 43.8% director with 35 respondents, 27.5% project manager, 22.5% from team members and only 6.3% engineers involved in completing this survey. For their experience, 27.5% of respondents were for 5 to 10 years and more than 15 years, while 18.8% for 1 to 3 years, 13.8% for 3 to 5 years and followed by 12.5% for 10 to 15 years.

Table 4.2: Demographic Data

Item	Survey No.	Survey Percentage
Respondent Age		
Up to 25	4	5.0
25-29	18	22.5
30-39	27	33.8
40-49	17	21.3
50 years and above	14	17.5
Total	80	100.0
Highest educational level		
Basic education (PMR, SPM etc.)	10	12.5
Diploma/ Technical Qualification	20	25.0
Bachelor Degree	44	55.0
Master's certificate	6	7.5
PhD	0	0.0
Total	80	100.0
Current Primary Role		
Engineer	5	6.3
Team members	18	22.5
Project manager	22	27.5
Director	35	43.8
Total	80	100.0
Experience in construction industry		
1-3 years	15	18.8
3-5 years	11	13.8
5-10 years	22	27.5
10-15 years	10	12.5
More than 15 years	22	27.5
Total	80	100.0

4.3.3 Section B: Causes of Payment Issue

The purpose of this section is to achieve the first objective which is to identify and rank causes of late payment, under payment, and non-payment. All of the causes are identified through literature and need to be rank based on contractor's perspective. Respondent need to indicate level of important for each of the causes by choosing only one of the scale provided in questionnaire (Appendix 1). Likert scale was used which indicate "1" as "Strongly Disagree" through to "5" as "Strongly Agree". Relative Importance Index (RII) was employed as it can find which variable shows the most contribution and fit the purpose of this research.

A total of fifteen (15) causes of payment issue are listed through Table 4.3 and it show mean, standard deviation and relative importance index for each causes. Therefore, all thirteen (13) causes of payment issue except C2 and C4 have an average value ranging from 3.91 to 3.06, where this represent that the contractor's perspective for the causes of each variable is approximately, "Average" as "Average" is coded as "3". Meanwhile, C4 shows the highest mean value for all of the causes with value of 4.05 which responses to this variable is approximately, "Agree" as "Agree" is coded as "4" but C2 shows the lowest mean score for the CPI with value of 2.56 that indicate the responses is approximately "Disagree" as "Disagree" is coded as "2". According to George and Mallery (2003), it is suggested that coefficients alpha of 0.80 to be considered as good, and a value exceeding 0.70 to be considered as acceptable which Cronbach's Alpha value for this section is 0.757 that indicates good stability and consistency.

Table 4.3: Descriptive Statistics for Causes of Payment Issue

No.	Causes of Payment Issue	N of Valid cases	Mean	Std. Dev.	RII	Rank	Approx. Sig.
1	Improper cash flow management by client.	80	3.71	0.917	0.743	6	.000
2	Lack of knowledge and expertise in the field.	79	2.56	1.035	0.511	15	.000
3	Cash flow difficulties due to delay on other projects.	80	3.91	0.970	0.783	2	.000
4	Payment culture of industry (like to postpone things).	79	4.05	0.918	0.810	1	.000
5	Disagreements on the valuation of work done.	80	3.55	1.005	0.710	7	.000
6	Lack of understanding general contract provision (delivery, payment terms, etc).	80	3.06	1.129	0.613	14	.000
7	Low initial capital by contractors.	80	3.21	1.110	0.643	13	.000
8	Budget deficits for current year.	80	3.46	1.102	0.693	9	.000
9	Delay in evaluation and certification (consultant, QS, etc).	79	3.84	0.993	0.767	4	.000
10	Improper supervision and financial control.	80	3.38	0.960	0.675	11	.000
11	Cost overrun and contract failure.	80	3.45	1.078	0.690	10	.000
12	Claiming for uncompleted site works (disputes over quality).	77	3.35	1.109	0.670	12	.000
13	The uses of clause "pay when paid"	80	3.49	1.006	0.698	8	.000
14	Economic and market conditions.	79	3.90	1.045	0.780	3	.000
15	Unreasonably withholding payment.	80	3.79	1.087	0.758	5	.000

Cronbach's Alpha = 0.757

Payment culture of industry (like to postpone things), cash flow difficulties on contractor due to delay on other projects, bad economic and market conditions, delay in evaluation and certification (consultant and quantity surveyor) and client's unreasonably withholding payment are among the top five causes that affect payment issue from being paid based on schedule agreed. Contractor's lack of knowledge and expertise in construction industry is rated as the lowest causes that affect payment issue as most contractors does not want to blame themselves. Test of normality used in this research project is Shapiro-Wilk test where value of approximate significant for every variables in Table 4.3 shown as 0.000. Significant value less than 0.05 indicate the data significantly deviate from a normal distribution and categorized as non-normal distribution.

4.3.4 Section C: Impact and Strategy to mitigate Payment Issue

Section C revealed general overview about the worst impact happened and how contractor react when there are facing this problem. Basically, this part is to achieve second objective of this research which is to examine the extent of impact and strategy of contractor in dealing with payment issue. This section consist of two subsection; implication of the payment issue and strategy to mitigate payment issue where 17 question of research variable need to be tested using analysis stated in methodology. Again Likert scale is applied through this section in which "1" as "Strongly Disagree" through to "5" as "Strongly Agree".

4.3.4.1 Implication of Payment Issue

There are various impacts to the contractors when they are facing late payment, under payment and non- payment. However, only nine (9) implication are selected as a variable in this research question by referring to literature review. RII is applied once again to examine the extent of the impacts where which of the variables will give the most significant impact to contractors. Table 4.4 shows that Cronbach's Alpha value is 0.864 that indicates high internal consistency and stability. It also revealed that I4, I5, I6 and I9 have mean value ranging from 4.04 to 4.33 which represent "Agree" voted by respondent while the rest of the impacts (I1, I2, I3, I7, I8) lie in "Average" value of mean ranging from 3.46 to 3.98.

The most significant impact of payment issue based on contractor's perspective is create financial hardship in paying bills and debt, followed by contractor's reputation is affected in the second place, less profit earned from the project, end up paying high interest to bank and create negative chain effect on other parties like sub-contractors and suppliers are among the top five factors. Delay in completion of project, leads to abandonment of projects, lead to bankruptcy or liquidation and poor quality of works done by contractors give moderate impact according to this research. From the Table 4.4, approximate significant value for all of the variables give a value of 0.000. Significant value less than 0.05 shows that the data is not distributed normally, thus it indicate researcher need to use non parametric technique to do further analysis.

Table 4.4: Descriptive Statistics for Implication of Payment Issue

No.	Implication of Payment Issue	N	Mean	Std. Dev.	RII	Rank	Approx. Sig.
1	Create negative chain effect on other parties (sub-con, supplier)	80	3.98	1.031	0.795	5	.000
2	Delay in completion of project	80	3.96	0.999	0.793	6	.000
3	Lead to bankruptcy or liquidation	80	3.55	1.030	0.710	8	.000
4	Affect the contractor's reputation	80	4.20	0.848	0.840	2	.000
5	Less profit earned for the project	80	4.10	0.894	0.820	3	.000
6	Creates financial hardship (unable to pay debt & bills)	80	4.33	0.742	0.865	1	.000
7	Leads to abandonment of projects	80	3.91	0.889	0.783	7	.000
8	Poor quality of works done by contractors	79	3.46	1.084	0.691	9	.000
9	Paying high interest to bank	80	4.04	1.037	0.808	4	.000

Cronbach's Alpha = 0.864

Next, correlation test is conducted to measure the strength and direction of relationship between variables and to determine there is any evidence of statistically significant between variables. Kendall's tau-b is chosen as it is used for determining correlation between two independent variable and ordinal variables which is suit well to this data. Table 4.5 shows correlation between causes and impacts of the payment issue. Light shaded box in the table indicate that there are relationship between two variables. Some of the box have one star while some of it have two stars which demonstrate 99% and 95% of confidence interval for two and one stars. For example, based on the value of correlation coefficient, the first cause of payment issue (1CPI) has a relationship with IMP1 (p=.216), IMP2 (p=.245), IMP3 (p=.266) and IMP6 (p=.237). The fourth cause (4CPI) has the most significant relationship between impacts as it is related to eight impacts and only one of the impact does not relate with it which is IMP8. Meanwhile, the second and sixth causes (2CPI and 6CPI) have none relationship at all with the impacts which indicate both causes does not lead to the implication of payment issue listed by researcher. Table 4.5 also revealed that second impact (IMP2) has eight causes related to it, followed by fifth impact (IMP5) with seven causes, first impact (IMP1) with six causes while third and ninth impacts (IMP3 & IMP9) both counts with five causes. The rest of the impacts only have below than four causes related to them hence, they are excluded from framework development where the darker shaded box are selected to be included in the framework (IMP1, IMP2, IMP3, IMP5, IMP9). From the table, 1CPI, 4CPI, 5CPI, 9CPI, 13CPI, and 15CPI have the highest significant relationship with IMP1, IMP2, IMP3, IMP5, and IMP9 compared to other causes, thus there are also selected to be included in the framework.

Table 4.5: Kendall's Correlation Test between Causes and Impacts of the Payment Issue

		IMP1	IMP2	IMP3	IMP4	IMP5	IMP6	IMP7	IMP8	IMP9
1CPI	Correlation	.216*	.245*	.266**	.161	.054	.237*	.193	.054	.174
2CPI	Correlation	.024	.029	.028	-.127	-.141	-.134	.032	.144	.030
3CPI	Correlation	.126	.127	.016	.185	.187	.164	.173	.202*	.094
4CPI	Correlation	.303**	.303**	.273**	.342**	.430**	.424**	.337**	.074	.339**
5CPI	Correlation	.062	.237*	.093	.188	.230*	.057	.183	.157	.209*
6CPI	Correlation	.121	.162	-.022	.013	-.068	-.100	.020	.017	-.011
7CPI	Correlation	-.016	.141	.222*	.040	-.020	.085	.076	.161	-.079
8CPI	Correlation	.164	.215*	.008	.180	.353**	.327**	.066	.152	.170
9CPI	Correlation	.284**	.328**	.191	.161	.356**	.297**	.282**	.096	.348**
10CPI	Correlation	.193	.353**	.129	.167	.020	.131	.050	.041	.092
11CPI	Correlation	.231*	.270**	.184	.188	.195	.181	.074	.280**	.135
12CPI	Correlation	.091	.149	.215*	.206*	.022	-.043	.025	.174	.057
13CPI	Correlation	.283**	.193	.334**	.322**	.258*	.133	.299**	.265**	.217*
14CPI	Correlation	.119	.020	-.021	.220*	.285**	.100	.096	-.042	.213*
15CPI	Correlation	.251*	.310**	.112	.069	.213*	.137	.169	.201*	.143

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

4.3.4.2 Strategy to mitigate Payment issue

In this section, there are only eight (8) selected strategy on mitigating payment issue based on literature review. Cronbach's Alpha value for Table 4.6 is 0.728 which indicates good internal consistency and stability. From the table, the highest mean score is 4.05 which is appealed to employer repeatedly and it is represent "Agree" coded as "4" while the rest represent "Average" coded as "3". Value of approximate significant in the Table 4.6 have a value of 0.000 which indicated the data is not normally distributed ($p < 0.05$).

Table 4.6: Descriptive Statistics for Strategy to mitigate Payment Issue

No.	Strategy to mitigate Payment Issue	N	Mean	Std. Dev.	Approx. Sig.
1	Suspension of minor works (finishing, etc)	80	3.80	.8773	0.000
2	Use of contingency reserves	80	3.76	.9710	0.000
3	Appealed to employer repeatedly	80	4.05	.7940	0.000
4	Slow down works (reduce or optimize worker)	79	3.84	.9258	0.000
5	Ignore and follow up with another claim the next month	80	3.45	1.1012	0.000
6	Make improvement in cash flow forecasts	80	3.75	.7026	0.000
7	Initiate arbitration or litigation	79	3.51	1.0362	0.000
8	Send notice to client threatening to suspend works	80	3.15	1.2232	0.000

Cronbach's Alpha = 0.728

Table 4.7: Kendall's Correlation Test between Implication and Strategy to mitigate Payment Issue

		STR1	STR2	STR3	STR4	STR5	STR6	STR7	STR8
IMP1	Correlation Coefficient	.106	.190	.330**	.285**	.156	.231*	.092	.046
	Sig. (2-tailed)	.287	.056	.001	.004	.108	.023	.347	.631
IMP2	Correlation Coefficient	.168	.036	.271**	.263**	.101	.243*	.251*	.072
	Sig. (2-tailed)	.093	.715	.008	.008	.298	.017	.010	.457
IMP3	Correlation Coefficient	.089	.098	.187	.226*	.059	.225*	.213*	.050
	Sig. (2-tailed)	.363	.315	.060	.021	.536	.024	.027	.600
IMP4	Correlation Coefficient	.238*	.164	.352**	.334**	.144	.299**	.246*	-.063
	Sig. (2-tailed)	.019	.105	.001	.001	.147	.004	.013	.525
IMP5	Correlation Coefficient	.310**	.241*	.394**	.251*	.283**	.280**	.236*	-.070
	Sig. (2-tailed)	.002	.016	.000	.012	.004	.006	.017	.471
IMP6	Correlation Coefficient	.236*	.207*	.407**	.361**	.219*	.226*	.280**	.098
	Sig. (2-tailed)	.022	.044	.000	.000	.030	.032	.006	.329
IMP7	Correlation Coefficient	.265**	.273**	.347**	.356**	.241*	.346**	.350**	.103
	Sig. (2-tailed)	.008	.006	.001	.000	.013	.001	.000	.287
IMP8	Correlation Coefficient	.179	.163	.100	.307**	.227*	.311**	.432**	.232*
	Sig. (2-tailed)	.068	.094	.313	.002	.017	.002	.000	.014
IMP9	Correlation Coefficient	.286**	.161	.383**	.093	.176	.090	.187	-.083
	Sig. (2-tailed)	.004	.107	.000	.351	.071	.377	.056	.389

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The result from Table 4.7 showed STR3, STR4 and STR6 have the most significant relationship with IMP1, IMP2, IMP3, IMP5 and IMP9 shown by four light shaded box which indicate correlation between variables. Hence, those three strategy are selected to be included in the framework.

4.4 Model Development

Third research objective is to develop a framework for mitigating payment issue and it is constructed based on analysis data from survey. Figure 4.1 showed the root causes of payment issue that have association with impacts of the payment issue. Double-headed arrow between causes and impacts demonstrated their relationship. In other words, each of the causes have a possibility that it can yield the listed impacts while, listed impacts might be caused by the causes mentioned. The framework emphasized strategy that would be taken in order to mitigate payment issue which downward arrow means that some of the causes and impacts can be mitigated by applying strategy listed.

Project manager from a project at "Hospital Pengajar UPM" had been interviewed to establish the framework where he was asked to give his opinion about this issue and make a comment for improvement of this framework. One of the improvement needed is the second strategy proposed, "make improvements in cash flow forecast", is too general and does not indicate what type of improvement needed. He gives a suggestion to replace it with something specific which are "establish schedule of cost and approved by the client" and "contractors need to understand standard of procedure (SOP) for payment term by client". He said that this framework is good but it may differ according to place where rural area might require other strategy as this research is based on Selangor area only.

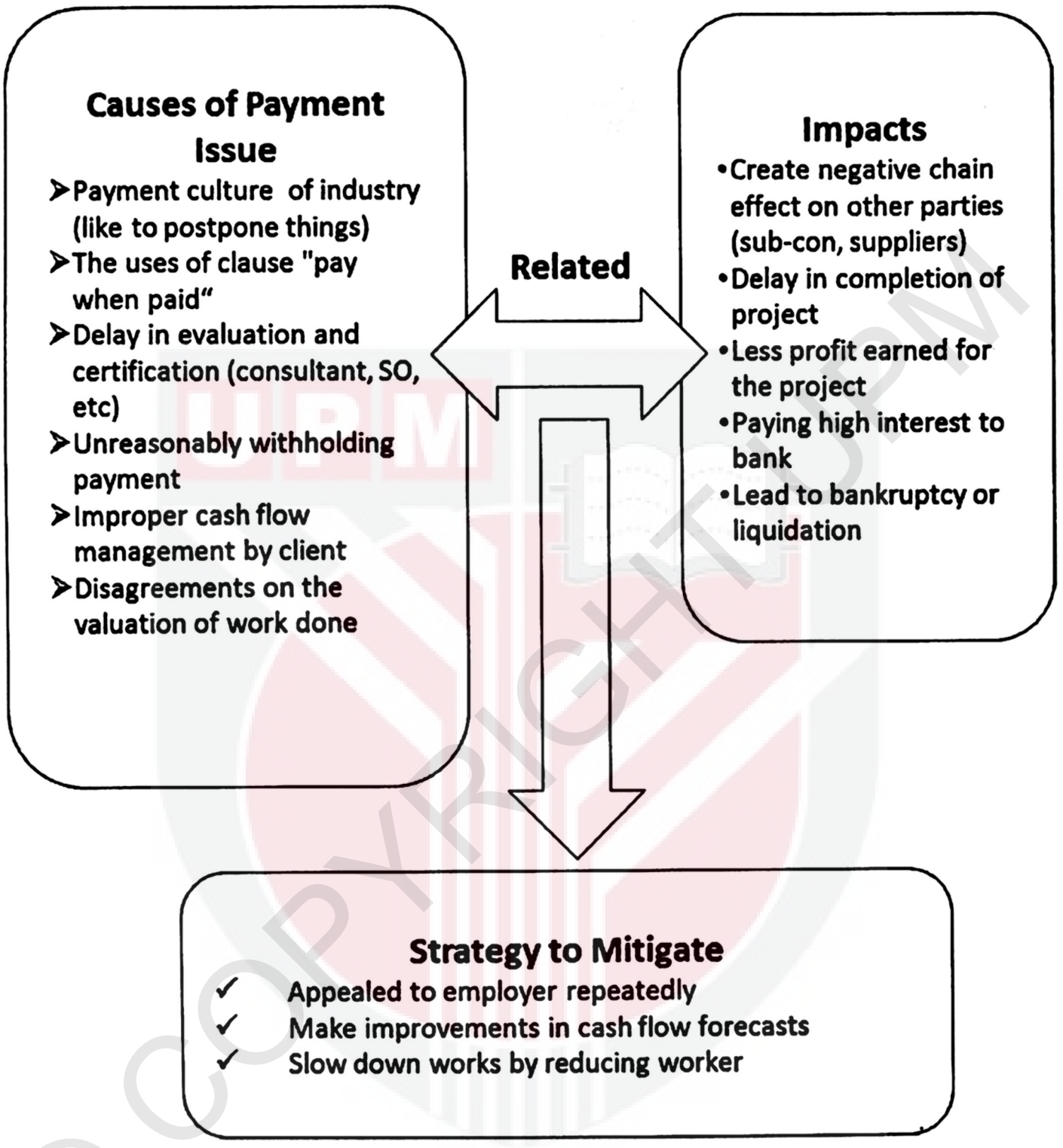

Figure 4.1: Framework for mitigating Payment Issue

4.5 Discussion and Findings

From the survey outcome, most of the respondent come from director of the company (43.8%), age from range 30 to 39 years old (33.8%), have a bachelor degree (55.0%) and most of them have an experience more than 15 years in construction industry (27.5%). Most of the director take part in completing this questionnaire is due to higher person in hierarchy system are usually the one who manage about financial and have a lot of experience in this field.

Based on the study, to achieve RO 1, fifteen of the causes of payment issue are identified through literature and ranked based on contractor's perspective using importance index. Payment culture of industry is the most significant causes of payment issue however, late payment attitude by locals are considered as acceptable if late is less than five working days (Abdul Rahman and Yee, 2010). Meanwhile, lack of knowledge and expertise in the field is ranked as the last causes due to most of the contractors does not admit that the payment issue happened because of they are doing the wrong thing. According to Pareto Analysis or 80/20 rule, top three causes of payment issue are affected by payment culture of industry, cash flow difficulties due to delay on other projects and economic and market conditions respectively.

In order to achieve RO 2, relationship between implication and strategy to mitigate payment issue need to be tested. Firstly, causes and implications of payment issue are analyzed using correlation test to check for their relationship. 1CPI, 4CPI, 5CPI, 9CPI, 13CPI, and 15CPI respectively showed the highest significant relationship with IMP1, IMP2, IMP3, IMP5, and IMP9. This can be explain by referring to dark shaded box and correlation coefficient in Table 4.5 where only six of the causes showed strong

relationship with those five impacts while the others show weak association. Strong association has a value of 0.2 and above where when the value is approaching 1, it has the strongest relation. This test is important to determine which of the causes and impacts that will be included in the proposed framework. Secondly, researcher is finding the association between implication and strategy to mitigate payment issue and it used the same step as above. STR3, STR4 and STR6 respectively have the most significant relationship with IMP1, IMP2, IMP3, IMP5 and IMP9 compared to the other strategy hence, there are selected to be included in the proposed framework. Dark shaded box in Table 4.7 show the association between them. STR3 and STR6 which are appealed to the employer repeatedly and slow down works by reducing progress show the best way to mitigate payment issue as it has association with most of the impacts. Hence, it can be said that applying both of the strategy above would be the best options to reduce payment problems.

For RO3, a framework for mitigating payment issue was developed based on analysis of data from literature review. This framework is validated by a project manager from HPUPM and the finding indicate that some improvement is needed. He stated that second strategy proposed, make improvements in cash flow forecast, is too general and it does not show right direction to the contractors. It is better to replace it with something specific which are establish schedule of cost approved by the client and contractors need to understand standard of procedure (SOP) for payment term by the client. When contractors show their real budget to construct the project through forecast S-curve, the client might help them by approving an advance payment. It is not good to show the real profit and financial status to the client, unless the contractors are in the stated of having financial problem and low working capital, thus this strategy

would be applicable. Besides, establishing standard of procedure for payment term can help contractors forecast their schedule of cost properly where different clients might have different style of paying a payment. Client A might only need seven days before imbursing a payment while Client B needs at least two weeks to process interim certificate, hence knowing this type of payment term can be beneficial to contractors. Lastly, this framework is good and beneficial to be applied but it may differ according to place of the project where rural area might require other strategy as this research is based on Selangor area only

4.6 Summary

The result shows the most significant causes and the framework constructed highlight about proper strategy that might be taken to reduce payment issues. All of the relevant analysis shows there are relation between causes, impact and strategy to mitigate the problems.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This research focus on payment issue happened in Malaysian construction industry and it affect almost every contractors. There are a lot of topic discuss about this issue but most of the research is too general and focused on all grade of contractors. Finding from conducted research on all grade of contractors might be different as small, medium and large scale contractors is not under the same situation. Meanwhile, this research project is only focusing on G4 contractors only which lie in medium scale contractors. Majority of the sample population come from directors which promote a better findings as they are having a lot of experience.

RO 1, "to identify and rank causes related to issues of late, under, and non-payment", achieved through extensive study on literature and survey that yield the top three causes such as payment culture of industry, cash flow difficulties due to delay on other projects and economic and market conditions. However, only one of them is selected be included in the framework, "payment culture of industry", due to the other two have no association with implications of the payment issue. Even though researcher is considered as not trying to solve the causes listed, the association between causes, impact and strategy explain a smarter ways to mitigate payment issue.

In order to achieve RO 2, "to examine the extent of impact and strategy of contractor in dealing with payment issue", correlation test is conducted and the findings show impacts of the payment issue, create negative chain effect on other parties, delay in completion of project, lead to bankruptcy or liquidation, less profit earned for the project and paying high interest to bank, have the most significant association with the strategy which are, appealed to employer repeatedly, slow down works and make improvement in cash flow forecasts. In other words, five impacts above have strong relationship with three of the strategies listed thus, the impacts can be reduced by applying three strategies.

For RO 3, "to develop a framework for mitigating payment issue", establishing the strategy to mitigate payment issue can be beneficial to the contractors as this framework designed based on their perspective. The framework highlights the causes that is related to the impacts while both causes and impacts are related to the strategy to mitigate the payment issue. Although the strategy for mitigating payment issue might be different due to place as this research is based on Selangor area, it is still can act as reference to contractors on rural area.

Contractors are the key players in the construction industry and they rely heavily on the payment to complete their works. Assuming the payment is not made on time as agreed in the contract, their organization might find it difficult to sustain in this industry. Hence, the findings of this study is to enlighten them and provide the best way to reduce payment issue.

5.2 Recommendation

Based on findings of the study, there are a lot of recommended actions in order to improve payment issue in Malaysia construction industry. They are:

- Contractors need to play their role by establishing their schedule of cost and approved by the client before start a project in order to let client know contractor's actual ability by looking at their budget allocated.
- The government should change their standard of procedure for payment term by not taking longer time than usual to imburse a payment in all government project so the project can be constructed efficiently.
- To researchers, it is more beneficial if there is extensive study on improving contractual agreement where a new clause can be amended based to CIPAA in which there are difference in IEM and PAM contracts. This study can provide enlightenment to every construction player and to make sure they are understanding the risk they are going to take.

Meanwhile, further study can be carried out by adding more variables for causes, impacts and strategies or conducting the research based on Klang Valley area which it might give significant effect and beneficial to more contractors.

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APPENDICES

Payment Issues on Contractors in Malaysian Construction Industry

Dear Sir/Madam,
I am final year student from University Putra Malaysia (UPM) who is currently conducting a study to evaluate effect and how contractors reacts upon payment issues. This questionnaire consists of three sections. I would like to express my deepest gratitude for your cooperation. Thank you.

Sincerely,
Ahmad Zaim Harith Bin Bibudin
Bachelor of Civil Engineering

* Required

1. **1. YOUR AGE in years**
   Mark only one oval.

   - ◯ Up to 25
   - ◯ 25-29
   - ◯ 30-39
   - ◯ 40-49
   - ◯ 50 years and above

2. **2. Please state the highest education level acquired**
   Mark only one oval.

   - ◯ Basic education (PMR, SPM etc.)
   - ◯ Diploma/ Technical Qualification
   - ◯ Bachelor Degree
   - ◯ Master's certificate
   - ◯ PHD

3. **3. What is your current position/ role? (select one only)**
   Mark only one oval.

   - ◯ Engineer
   - ◯ Team members
   - ◯ Project manager
   - ◯ Director

4. **4. Experience in the construction field (in years)**
Mark only one oval.

- ◯ 1-3
- ◯ 3-5
- ◯ 5-10
- ◯ 10-15
- ◯ More than 15 years

Skip to question 5.

B. What are the causes of late and non-payment issues for contractors?

For each of the factors, indicate the level of acceptance.

5. **1. Improper cash flow management by client.**
Mark only one oval.

	1	2	3	4	5	
strongly disagree	◯	◯	◯	◯	◯	strongly agree

6. **2. Lack of knowledge and expertise in the field.**
Mark only one oval.

	1	2	3	4	5	
strongly disagree	◯	◯	◯	◯	◯	strongly agree

7. **3. Cash flow difficulties due to delay on other projects.**
Mark only one oval.

	1	2	3	4	5	
strongly disagree	◯	◯	◯	◯	◯	strongly agree

8. **4. Payment culture of industry (like to postpone things).**
Mark only one oval.

	1	2	3	4	5	
strongly disagree	◯	◯	◯	◯	◯	strongly agree

9. **5. Disagreements on the valuation of work done.**
Mark only one oval.

	1	2	3	4	5	
strongly disagree	◯	◯	◯	◯	◯	strongly agree

10. **6. Lack of understanding general contract provision (delivery, payment terms, etc).**
Mark only one oval.

	1	2	3	4	5	
strongly disagree	◯	◯	◯	◯	◯	strongly agree

11. **7. Low initial capital by contractors.**
Mark only one oval.

	1	2	3	4	5	
strongly disagree	◯	◯	◯	◯	◯	strongly agree

12. **8. Budget deficits for current year.**
Mark only one oval.

	1	2	3	4	5	
strongly disagree	◯	◯	◯	◯	◯	strongly agree

13. **9. Delay in evaluation and certification (consultant, SO, etc).**
Mark only one oval.

	1	2	3	4	5	
strongly disagree	◯	◯	◯	◯	◯	strongly agree

14. **10. Improper supervision and financial control.**
Mark only one oval.

	1	2	3	4	5	
strongly disagree	◯	◯	◯	◯	◯	strongly agree

15. **11. Cost overrun and contract failure.**
Mark only one oval.

	1	2	3	4	5	
strongly disagree	◯	◯	◯	◯	◯	strongly agree

16. **12. Claiming for uncompleted site works (disputes over quality).**
Mark only one oval.

	1	2	3	4	5	
strongly disagree	◯	◯	◯	◯	◯	strongly agree

17. **13. The uses of clause "pay when paid"**
Mark only one oval.

	1	2	3	4	5	
strongly disagree	◯	◯	◯	◯	◯	strongly agree

18. **14. Economic and market conditions.**
Mark only one oval.

	1	2	3	4	5	
strongly disagree	◯	◯	◯	◯	◯	strongly agree

19. **15. Unreasonably withholding payment.**
Mark only one oval.

	1	2	3	4	5	
strongly disagree	◯	◯	◯	◯	◯	strongly agree

Skip to question 20.

C. What are the impacts and reactions/strategies of contractors to face payment issues?

1. Implication of the payment issues.

For each of the impacts, indicate the level of acceptance.

20. *Mark only one oval per row.*

	Strongly disagree	Disagree	Average	Agree	Strongly agree
Create negative chain effect on other parties (sub-contractors).	◯	◯	◯	◯	◯
Results in delay in completion of project.	◯	◯	◯	◯	◯
Leads to bankruptcy or liquidation.	◯	◯	◯	◯	◯
Affect the contractor's reputation.	◯	◯	◯	◯	◯
Profitability of the project is affected.	◯	◯	◯	◯	◯
Creates financial hardship (unable to pay debt & bills).	◯	◯	◯	◯	◯
Leads to abandonment of projects.	◯	◯	◯	◯	◯
Poor quality of works done by contractors.	◯	◯	◯	◯	◯
Paying high interest to bank.	◯	◯	◯	◯	◯

2. Reactions to the payment problems.

For each of the strategy, indicate the level of acceptance.

21. *

Mark only one oval per row.

	Strongly disagree	Disagree	Average	Agree	Strongly agree
Suspension of minor works (finishing, etc).	◯	◯	◯	◯	◯
Use of contingency reserves.	◯	◯	◯	◯	◯
Plead with employer for payment repeatedly.	◯	◯	◯	◯	◯
Slow down works (reduce or optimize worker).	◯	◯	◯	◯	◯
Ignore and follow up with another claim the next month.	◯	◯	◯	◯	◯
Forecasting cash flow (improvement).	◯	◯	◯	◯	◯
Initiate arbitration or litigation.	◯	◯	◯	◯	◯
Send notice to the client threatening to suspend works.	◯	◯	◯	◯	◯

22. **From your opinion, what is the best possible solution to overcome payment problems to the contractors?**

_____

_____

_____

_____

_____

Thank you for your time.

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