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Development of Contract Management Strategy to Control Late Payment in Building Projects

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ABSTRACT

Building projects with private ownerss have high level of payment issues (late payment, underpayment, or non-payment). The purpose of this study is to develop a risk-based contract management strategy to avoid late payment from private ownerss to contractors. The research data consisted of literature reviews, questionnaires, and qualitative risk data analyses. The risk analyses identified 10 highest risks as the dominant risk factors from 37 risk variables. The risk response to dominant risk variables was used as a strategy for developing a contract management system. Risks affecting late payment were largely due to contractual clause and contracting clients with less financial capacity due to lack of analysis in the pre-contract phase.

Keywords: Building Project, Contract Management System, Late Payment, Risk Management

INTRODUCTION

Payment problem in construction industries is of importance compared to other industries since duration of construction project are relatively long while the size of construction project and the sum of each progress payment are relatively large. Payments term are usually on credit than payment on delivery. Services are rendered before progress payment is made, and product become fixtures disabling removal (Azman, Dzulkalnine, Hamid, & Bing, 2014). The payment default in construction industries eventually become common. This is because most of construction contract permit non payment for significantly defected works, disputed works and if there is a filed or reasonable third party claim, evidence will be filed (Ansah, 2011; Reeves, 2003).

Payment problems are often generalised as contractors and subcontractors do not get paid their due amount on time. This could be under-payment, late or delayed payment, or non-payment. Non-payments or under-payment refer to situations where an expected payments was never received, and/or would be considered bad debt, written off or lost partially/fully. Late or delayed payment is a situation when payment is not made in time as stipulated in contract timeline (Ramachandra & Rotimi, 2015).

Payment problems should have received greater attention, since they are the main pillars of cash flow and project profits (Liu & Wang, 2008). The timing of payments is a key factor in firm's profitability performance (Heron & Lie, 2002) as cash is the most important construction company's resources. The efficient and suitable timed payments is an essential components in ensuring contractor performance (Hasmori, Ismail, & Said, 2012). Late payment could create significant financial losses and lead to bankruptcy. It

is important to understand cash flow forecasting, particularly the factors that cause late payment (Hwee & Tiong, 2002).

Project Management Body of Knowledge (PMBOK) defined project risk as an uncertain event or condition that, if occur, has a positive or negative impact on one or more project objective, such as a scope, schedule, cost and quality (Project Management Institute, 2017). The payment problem will impact better working capital management, cost control, and proper construction project management. From the input and output perspective, payment risk is related to the inhibiting factors for achieving the expected income or contributing to the cost overrun in the project (Mbachu, 2011).

Payment problems have become a global phenomenon. In the United Kingdom, the construction industry has shown an increasing trend in the amount owed to the contractors. Late payments value have doubled from USD 26 billion to USD 50.6 billion during 2008-2012 (Peters, Subar & Martin, 2019). In China, unpaid arrears were more than half of China construction industry's profit and estimated as 15% of the industry's total production (Wu & Soo, 2011). In Indonesia, based on a sample from the 2018 financial report from a reputable construction firm, the payment arrear value was about 14.11% of total sales. The study identified that 50.20% of payments arrear comes from private owners. The majority of payment arrears (45.07% of total sales) come from the building project, 42.86% of the building project comes from private owners with the proportion of private contract value of 50.04%.

From the perspective of construction sector, contract management is an integral phase of the procurement life cycle which serves to ensure that the parties involved (contractors and clients) play their respective roles (obligations) to fulfill contractual commitments (operational targets of contract) (Acharya, Lee, & Man, 2006; Barrie & Paulson, 1992). Contract management processes are divided into three stages, including pre-contractual, contractual and post contractual (Van Weele, 2013). On contractor's perspective, contract management processes are divided into three major key tasks comprising bid preparation, contract signing, and contract implementation & closing (Park & Kim, 2017).

Table 1. Key Task on Contract Management Process

Bid Preparation Stage	Contract Signing Stage	Contract Implementation& Closing stage
• Feasibility study	• Post tender negotiation	• Claim management
• Task force team constitution	• LOA Reception	• Reception of progress payment
• ITB (Invitation to Bid) review	• Contract drafting/ signing	• Variation related works
• Site survey	• Signing of contract subcontractors	• Other project management tasks
• Query transmission	• Preparation of construction	• Test on completion & receipt of Taking Over Certificate
• Bid preparation & Submission		• Defect notification Period

This study identified previous research on late payment, and updated late payments from a contractor's point of view, particularly in building projects with private owners, by combining with developing a contract management strategy. In contract management, there is a risk distribution to the contracting parties. It protects the contractor from the risk of delays (Hansen, 2015).

The objectives of the study are (1) to identify risk factors of late payments, (2) to identify the dominant risk factor of late payment, and (3) to develop contract management process.

RESEARCH METHOD

The risk factors for late payment are obtained from literature studies, validated by experts, and distributed to respondents through a questionnaire. The results were processed and qualitatively analyzed using risk analysis with a probability and impact matrix. The high-risk factors for late payment were chosen as the dominant risk factor. Then, an impact and cause analysis, and risk response analysis were conducted. Preventive and corrective actions from risk response analysis were used as the basis for developing an existing contract management system. Then the results are validated by experts. Figure 1 presents the details.

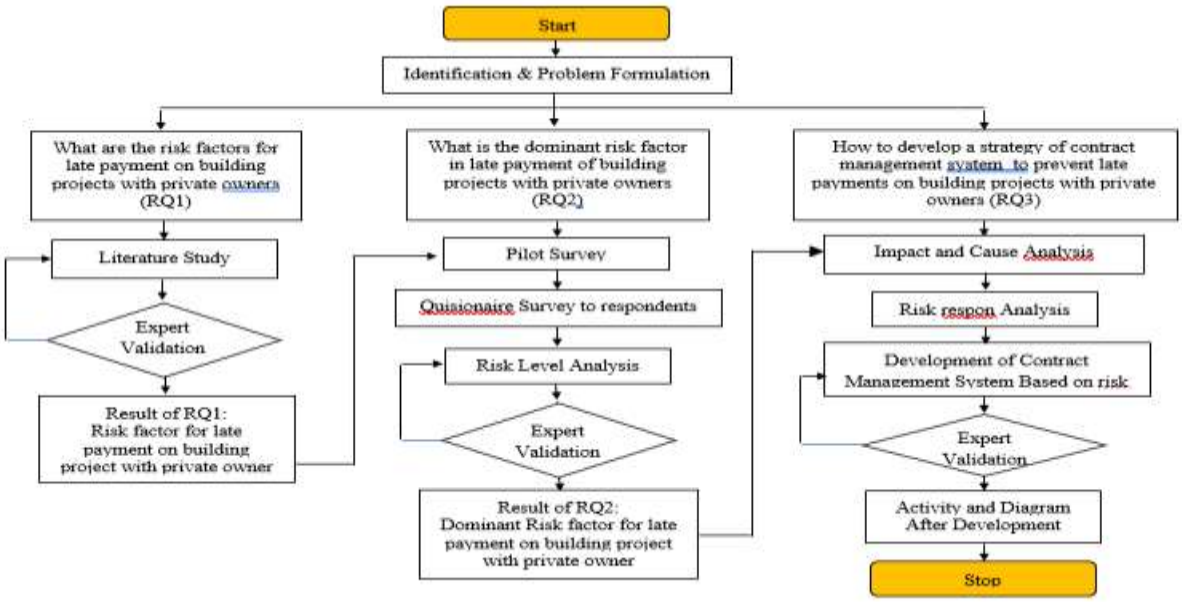

Figure 1. Study Flow Chart

RESULTS AND DISCUSSION

Risk Factors for Late Payment of Building Projects from Private Owners

At this stage, risk variables from the literature study were validated by experts. There were 37 risk factors; 33 were obtained from the literature, and 4 were obtained from the interview results (see Table 2).

Table 2. Risk Factor for Late Payment on Building Project from Private Owners

No	Variable	Code	Risk Factor	Reference
X_1	Pre-Contractual Phase	X1	Lack of identification about payment patterns from the previous project	Andalib, Hoseini, & Gatmiri (2018)
		X2	Cash flow difficulties due to lack of initial capital	Abdulrahman, Kho, & Wang, (2014); Azman et al; Hasmori et al., (2012)
		X3	Short of budget on current years project	Azman et al.
		X4	Client financial difficulties to get capital from bank if sales do not hit the target amount	Abdulrahman et al, (2014)
		X5	Contract terms that are burdensome for the contractor	Azman et al.
		X6	Unclear contract on payment process and time frames	Mohamad, Suman, Harun, & Hashim, 2018
		X7	Lack of identification about macroeconomic conditions	Peters, (2019)
X_2	Contractual Phase	X8	Clients cash flow problem because of deficiencies in client's management capacity	Azman et al., (2014) Hasmori et al., (2012)
		X9	Shortage allocation of fund from sources of funding when contract sum increased due to variation orders	Abdulrahman et al., (2014)
		X10	Contractor's delay in preparing payment documents	Azman et al., (2014)
		X11	Insufficient invoice document submitted by contractor	Mohamad et al., 2018
		X12	Delay in the consultant's assessment of invoice value	Azman et al., (2014)
		X13	Disagree on the valuation of work done	Azman et al., (2014)
		X14	Lack of communication to follow up invoicing process	Mohamad et al., (2018)
		X15	Clients deliberate delay for their financial advantages	Azman et al., (2(Hasmori et al., 2012
		X16	Deliberate breach of the contractual terms by owner	Azman et al., (2014)
		X17	Technical problems	Azman et al., (2014)
		X18	Dispute over quality of works	

No	Variable	Code	Risk Factor	Reference
				Ramachandra & Rotimi, (2015)
	Variation	X19	Dispute over the claim	Azman et al., (2014) Ramachandra & Rotimi, (2015)
		X20	Slow process of approving variations	Peters et al., (2019)
		X21	Contractor's error in submitting variations	Reeves, (2003)
	Administration and culture:	X22	Deliberately delaying payment or willful withholding of payment for personal reasons (including personal gain)	Abdulrahman et al., (2014)
		X23	Perception in the industry that late payments for a few days were acceptable	Azman et al., (2014) Peters et al., (2019)
		X24	The assumption that payment is the absolute right of the owner and accept that payments may be late	Peters et al., (2019)
		X25	Clients assume contractors will finance the project in advance in the event of late payment	Wang, Hadavi, & Krizek, (2006)
		X26	Change in key personnel of project	Peters et al., (2019)
		X27	Lack of communication in project implementation	Azman et al., (2014)
		X28	Conflicts among involved parties	Azman et al., (2014)
		X29	Lack of personnel knowledge and experience	Hasmori et al., (2012) Ramachandra & Rotimi, (2015)
X_3	Post Contractual Phase	X30	Reluctance to collect late payment to preserve good relationship in order to get repeat order	Interview result
		X31	Late final payment due to late final account	Ramachandra & Rotimi, (2015)
		X32	Retention payments delay due to project close out document delays	Azman et al., (2014)
		X33	Late payment of retention due to repair of defect work which has not been done	Ramachandra &

No	Variable	Code	Risk Factor	Reference
				Rotimi, (2015)
		X34	Prolongation of project closing due to disagreement for extension time and fine	Ramachandra & Rotimi, (2015)
		X35	Dispute about finding from inspectorate/examiner	Interview result
		X36	Delay in building certification and commissioning tests	Interview result
		X37	Uncertainty of handover schedule from inspection team	Interview result

Dominant Risk Factor for Late Payment

At this stage, a questionnaire was sent to respondents who have experienced in payment of building projects. There were 31 respondents consisting of 15 project managers (48,4%), 6 managers/senior managers in the management office (19,3%), and 10 engineering managers/site managers at the project site (32,3%), with a work experience of more than five years. By qualitative risk analysis with probability and impact matrix, there are 10 high risks as the dominant risk factor after validated by experts (see Table 3).

Table 3. Dominant Risk of Late Payment on Building Projects with Private Owners

No.	Code	Dominant Risk Factor	Source
1	X2	Cash Flow difficulties due to lack of initial capital	Owners
2	X4	Client financial difficulties to get capital from bank if sales do not hit the target amount	Owners
3	X31	Late final payment due to late final account	Owners & Contractors
4	X5	Burdensome contract terms for the contractors	Owners
5	X3	Short of budget on current years project	Owners
6	X15	Clients deliberate delay for their financial advantages	Owners
7	X33	Late payment of retention due to repair of defect work that has not been done	Owners & Contractors
8	X6	Unclear contract on payment process and time frames	Owners
9	X8	Clients cash flow problem because of deficiencies in client's management capacity	Owners
10	X19	Dispute over the claim	Owners & Contractors

Based on table 3 above, 70% of the dominant risk factors are caused by the owners; they are their financial and contractual provisions. Besides, 30% of late payment delay

are caused by contractors and owners; they are disputes with owners, delay in payment of retention by owners due to improvements to defects which have not been committed, and the delay in finalizing the final account.

From the dominant risk factors, this study found that the majority of causes occurred in the pre-contract phase, which concerns with the financial capacity of the owner and the existence of an unbalanced contract regulating the rights and obligations of the contracting parties and the payment time frame caused by the contract draft less elaborated and negotiated by the contractors.

Development of Contract Management System

At this stage, a structured interview with a questionnaire was carried out with experts to identify the risk impact and causes, followed by a structured interview regarding the identification of risk responses. Risk response consists of preventive action and corrective action.Its development activities were added to the existing contract management process (indicated by the activity in red letters in yellow box in the flow chart. See Figure 2). The results of developing contract management system were validated by experts.

Based on the three major key tasks in the contract management process, there are three procedures on contract management system at PT. X, including project bidding, contract signing, and contract implementation and closing stage.

Table 4. Development of Contract Management System at Bid Preparation Stage (Bidding Procedure)

No.	Risk Response Development Activities	PIC	Procedure
1	Evaluating the owner's financial capacity (Financial Closing)	Finance	Pre-bid
2	Owner reputation assessment	Risk Mngt	Pre-bid
3	Make a standardized checklist for the pre-bid decision based on owners' and contractors' financial capabilities	Risk Management	Pre-bid
4	Assistance by a legal / contract administration team during the tender and implementation period	Contract Adm	Pre-bid
5	Evaluate the contract according to company's risk appetite criteria, such as legal (right and obligation, dispute mechanism), technical (handover mechanism and retention money), and financial procedure (time frame, fines, pinalties, suspension and termination contract on late payment)	Contract Adm	Pre-bid
6	Proposed amendment of contract clause according company risk appetite criteria	Contract Adm	Pre-bid
7	Owner payment security from bank or payment from bank	Contract Adm	Pre-bid
8	Construction work in stages according to availability of funds	Contract Adm	Pre-bid

Table 3 illustrates that the dominant risk factors for late payment, in general, concern with owners' financial capacity and the existence of an unbalanced contract regulating the rights/obligations of contracting parties and the payment time frame. Owners and

contract draft should be elaborated before making a bid decision. The activity of development needs to be carried out to prevent the risk factor (as shown in Table 4), then added to the existing contract management system. It is indicated with a yellow box and red letter in the flow chart of the bidding procedure (see Figure 2).

The risk response activity developments added in the existing contract management system of pre-biding procedure regarding the financial capability of the owner are (1) evaluating the owner's financial capacity/financial closing, (2) assessment regarding owner reputation, (3) standardized checklist development for the pre-bid decision based on owner's financial capabilities and the capabilities of contractors, (4) owner payment security from bank or payment from bank, and (5) construction work in stages according to the availability of funds. The activity of development regarding the contract clause draft are (1) evaluating the contract according to company's risk appetite criteria legal (right and obligation, dispute mechanism), technical (mechanism of hand over and retention money payment), and financial (procedure, time frame, fines, penalties, suspension and termination contract on late payment), (2) proposed amendment of contract clause according to the company's risk appetite criteria, and (3) all activities should be assisted by a legal/contract administration team during the tender and implementation period (see Table 4).

NO	ACTIVITY	RESPONSIBILITY					Input	Output	Remarks
		OPERATIONAL DIVISION	RISK MNGMT	*CONTRACT ADM (LEGAL)*	*FINANCE*	DIRECTOR			
1	Start								
2	Info and Invitations to Bid								
a	*Assessment for Contractor Capability & Project Criteria*								
	Meet the Contractor's Capability Assessment & Project Criteria?								
b	*Owner Reputation Assessment*								
	Meet the Owner Reputation Assessment?								
c	*Owner Financial Capability Assessment*								
	Meet the Owner Financial Capability Assessment?								
d	*Availability of Payment Guarantee (from bank)*								Minute of Bidding Participatation
	provide a Payment Guarantee (from the bank)?								
2	Contract Review Discussion								Bidding Documents : - Contract Draft - Guarante
	Conducting a contract risk assessment from a legal view								
	Conducting a contract risk assessment from a technical and metodology								
	Conducting a contract risk assessment from comercial/ financial								
	Construction work in stages according to availability of funds								
3	Fulfillment of Contracts In accordance with the Company's Risk Appetite and Risk Tolerance								
4	Discussion and Proposal for Contract Amendments								minute of draft contract review
5	Submission of proposed changes to contracts in accordance with the company's risk criteria at the Aanwijzing								
6	Review of Acceptance of Proposed Amendment to Draft Contract								Minute of Aanwizjing
	Changes to the draft contract meet the company's risk criteria?								
7	Submission for approval of Contractual Risks to director								Recomendation to contactual risk
8	Management Policy (Directors)								Director's approval on bidding contactual risk
10	Calculation of the Bid Price (including Contractual Risk)								
11	Bid Price proper with According to Company Target ?								
12	Proposal of Price (including risk) to the Board of Directors								Minutes of tender participation
13	Board of Directors approval of the Bidding Price								Director's approval to Bid
14	Cancellation of tender participation								Tender cancellation letter
15	Bid Submission								Bid Submission Documents
16	Finish								

Figure 2. Flow Chart for Bidding Procedure after Development

Table 5. Development of Contract Management System at Contract Signing Phase

No.	Risk Response Development Activities	PIC	Procedure
1	Ensure changes to the article of the contract to comply with company's risk criteria	Contract Adm	Contract Signing
2	Ensuring the financial closing of the project or existence of a payment guarantee from the	Risk Management	Contract Signing

	owners issued by bank or payment from / guaranteed by the bank		
3	Ensuring the phasing of construction work is under fund availability.	Contract Adm	Contract Signing

The risk response activity development added in the existing contract signing procedure of contract management system is to ensure that the assessment in the pre-bid procedure is stated in the contract (see Figure 4).

Table 6. Development of Contract Management System at Contract Implementation & Closing Stage

No.	Risk Response Development Activities	PIC	Procedure
1	Contract suitability and site actual condition of at certain milestone (e.g., 30%, 60%, 95%)	Operational Div	Contract Implemenation
2	The construction work is carried out in stages according to the availability of fund by age limitation from receivable account	Operational Div	Contract Implemenation
3	Gradual final account preparation by forming team together with owners and consultants to start final accounts after 70% progress	Operational Div	Contract Implemenation
4	Arrange a hold point that the final account must be completed when the progress is 95% -100%	Operational Div	Contract Implemenation
5	Monitor the duration of payment time	Operational Div	Contract Implemenation
6	Fine, suspension or project termination as stipulated in contract about mechanism of dispute	Operational Div	Contract Implemenation
7	Establishing a dispute resolution board at project level	Operational Div	Contract Implemenation

The risk response activity development added in the existing procedure of contract implementation and closing stage are regarding the suitability of contract and actual condition of the site by holding point at certain milestone progress (e.g., 30%, 60%, and 95%), stages of construction according to the availability of funds, payments process and duration, a limitation period of the late payments, approval of final account and holding point to set up final account team and approval of the final account, fine, suspension or project termination as stipulated in contract about mechanism of dispute, and establishing a dispute resolution board (see Figure 3).

This study found that there was a need for assistance by a competent legal / contract administration team during the entire project and an integrative involvement of risk management to assess and provide assistance of project risks. This is necessary as an effort to provide a conflict of interest-free assessment of managerial decisions on the pre-bid stage, contract signing stage, and contract implementation and closing stage.

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NO	Activity	Responsibility				Input	Output	Remarks
		Site Project Management	Operational Division	Contract Administration	Risk Management			
1	Start							
1	Establish Dispute Resolution Board at Project Level							
2	Review contract and Actual Site Condition							Contract Dokument: - Contract - Review of site condition
3	Conformity Contract and actual condition of site?							
4	Risk Assessment and Proposal for Changing contract							Minutes of Addendum Submission
5	Submission of Addendum to Owner							Letter for Addendum Submission
6	Owner Approval on Addendum submission by contractor							Approval or Rejection Addendum by Owner
7	Is owner refusal included in contractual risk?							
8	Making proposal for Dispute							
9	Submission of Dispute							Dispute Submission
10	Winning on dispute regarding on Dispute							
11	Contract Addemdum							Contract Addendum
12	Site Construction							
	Hold Point I : Review Conformity of Contract with actual condision at certain milestone of progress (30%, 60%, 95%) or Limitation maturity of variation						Hold Point Instruction Letter	Hold Point Independen Team by Operational Divison
	Conformity of milestone progress with contract condition							
	Hold Point II : Set-up Final Account Team with Owner (Progress 70%)							
	Has Final Account Team establish with Owner?							
	Submission of Payment to Owner							
	Monitoring of Time Frame Payment from Owner							
	Time Frame Limitation for Owner Payment.							
	are payment from owner in the time frame of contract and meet risk appetite contractor?							
	Fine, suspension or project termination as stipulated in contract about mechanism of dispute							
	Project Monitoring at Progress of 95%-100%							
	Holdpoint Instruction 95%-100% : Final Account, Payments and other as stipulated in contract							
	Hand Over							
13	Finish							

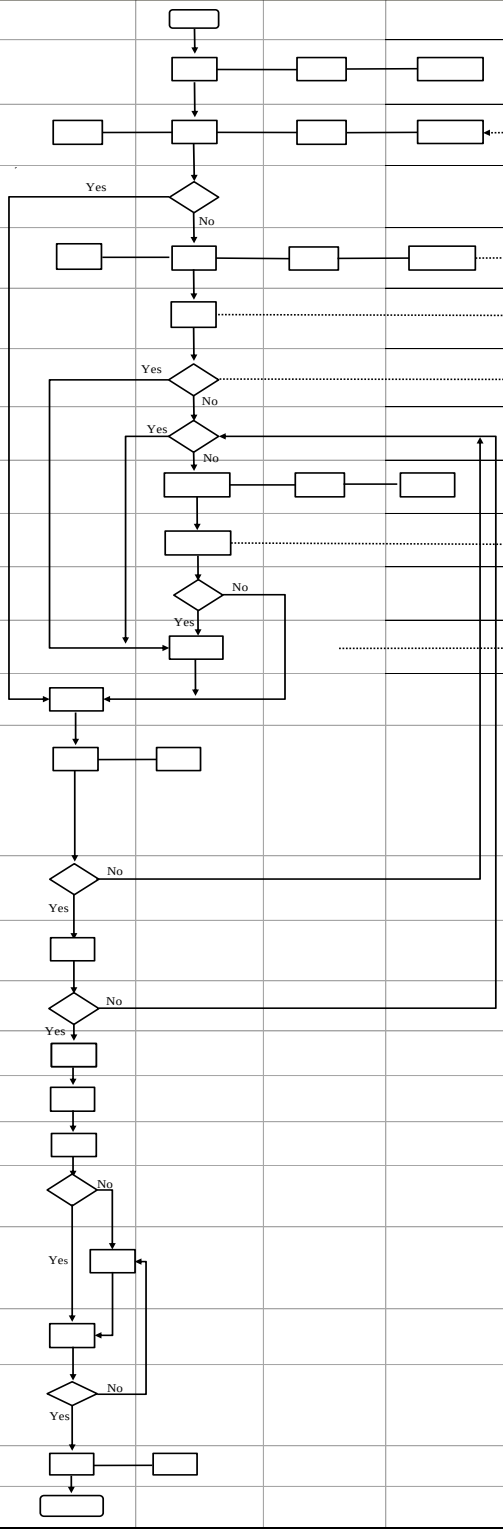

Figure 3. Flow Chart for Contract Implementation, Addendum and Closing Stage after Development

No	Activity	Responsibility					Input	Output	Remarks
		Operational Division	Risk Mngmt	*Contract Adm (Legal)*	*Finance*	Operation Director			
1	Start								
1	Checking Status of Project Financial Closing								
	Is the Project candidate have Financial Close?								
2	Check the availability and validity of the Owner Payment Guarantee from the bank								
	Is there a payment guarantee from the bank?								
3	Checking the adequacy of funding and Payment Guarantee from the Owner								
	Adequate ?								
4	Construction in stages according to the availability of funds								
	The owner's willingness to implement is in accordance with the availability of funds								
2	Discussion on Contract Risk Assessment Review								- Aanwijzing - draft contract
3	Conformity with Company Standards and risk profile								
4	Discussion and Proposal for Contract Amendments in accordance with the company's risk criteria								Minutes of Contractual Risk of Project Bid
5	Submission of Proposed contract Changes to the Owner (Contract Negotiation Meeting)								
6	Review of Acceptance of Proposed Amendment to Draft Contract								Minutes of Contract Negotiation Meeting
7	Submission of Contractual Risks for Director Approval								
8	Management Policy (Director)								Director approval on Contractual risk
10	Bid Price Negotiation (including Contractual Risk Price) to owner								
11	Negotiated Price of tender suitable with Company Target (according to targetted cost)								
12	Submission to director result of negotiated Price from owner								Director Approval on Contract Price
13	Director's Approval on Bid Price								
14	Cancellation Of Contract								Contract Cancellation Letter
15	Contract Signing								Contract Document
16	Finish								

Figure 4. Flow Chart for Signing Contract Procedure after Development

CONCLUSIONS

Through literature studies, questionnaires, and expert validation, this study highlights 37 risk factors for late payment of building projects with private owners. Then through qualitative risk analysis and validated by experts, there were ten dominant risk factors for late payment. The development of the contract management system was carried out by adding 18 new activities to the existing contract management system, consisting of eight new activities on bidding procedure, 3 new activities on contract signing procedure, and seven new activities on the procedure of implementation and change contract.

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