

Significant Causes behind Payment Delays in Public Sector Building Construction Projects in North Western Province of Sri Lanka.

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Abstract: Payment delay is one of the most significant issues experienced in public sector building construction projects. Correspondingly, most of the building construction projects in North-Western Province (NWP) of Sri Lanka are often characterized by delayed payments. Hence, the objective of this research is to identify the significant causes behind delayed payments in public sector building construction projects in NWP; as an initiation to develop a preventive framework for payment delays. First and foremost, a detailed literature review was carried out and identified 28 number of payment delay causes, including seven client related causes, nine consultant related causes, seven contractor related causes, and five other causes. Then a questionnaire was articulated and distributed among 100 (census) population of experienced professionals belong to the NWP Engineering Department and its 7 numbers of divisional engineers' offices in NWP. Sixty-five of them were responded.

The Relative Importance Index (RII) method was used to rank the most significant causes. Results indicated, the client's failure to follow the pre-set procedure as the most significant client-related cause for payment delays. The results further portrayed that delays in subcontractor's interim payment application, errors in contractors' claims, and delay in the valuation of work done by the quantity surveyor as the prominent payment delay causes respectively fit into other, contractor, and consultant related category of causes. Besides, the client-related

causes category with highest average RII was identified as the highly influential group of causes behind payment delays in public sector building construction projects in NWP of Sri Lanka.

Keywords: Client, Consultant, Contractor, Payment Delays.

Introduction

Background of the Study

Payment is the lifeblood of the construction industry; construction projects are involving a very large capital outlay (Nassem, 2005). Since large amounts of money disbursed for construction works, the overall cost of the project may vary with payment delays (Ranasinghe, 2019). As indicated in contract conditions, payment delay needs to be identified by a paymaster to pay with certificates on time (McCaffer and Harris, 2003). On-time payment in construction project practices is one of the critical factors induces the success of the project. According to Latham (1994), identification of issues caused by late payments in construction projects is also important.

Most of the public sector building construction projects under the NWP engineering department and thereto engaged divisional engineer's offices predominantly suffer from payment delays in most building construction projects (Ranasinghe, 2019). Hence, it is important to identify and analyze the critical causes behind such payment delays. Therefore, the objective of this research is to analyze the causes behind payment delays of public

sector building construction projects in the North-Western Province of Sri Lanka.

Delays in Construction Industry

The issue of delayed payment in the construction industry is a global phenomenon (Hasmori et al., 2012). Poor payment performance is likely to dispose of late payment culture in the construction industry (Johnston, 1999). Generally, delays can be convinced as the most common, costly, complex, and risky problem faced by construction projects, and it could be liable to put ample pressure on construction time and cost (Ayudhya, 2012).

Syed et al. (2002) present five significant types of delays in the construction industry; non-excusable delays, excusable delays, compensable delays, excusable compensable delays, and concurrent delays. Events for which the contractor assumes the risks of costs and the time consequences involve are "non-excusable-compensable delays." The risk for events for which the contractor is entitled to both time extensions and recovery of extra cost consequential upon the delay; is the "excusable compensable delays." Events for which no party has control over or bears the risks such as acts of God and strikes can be depicted as "excusable non-compensable delays." Concurrent delays are upon both client and the contractor's responsibility for the delay.

Causes for Delayed Payments

Many factors affect the delayed payment in the construction industry (Nazir, 2006). Sambasivan and Soon (2007) indicates 28 significant factors that contributed to the delayed payment and categorizes them under eight major groups namely, client-related, contractor-related, consultant-related, material-related, labor and equipment-related, financial-related, contract-related, and external factors related. Alghabari et al. (2005) also highlights financial related factor as one of

the most critical factors which cause delays in construction projects. Moreover, Rahman and Ye (2010) elaborates 40 common factors causing delayed payments, and the factors categorize into 10 number of groups including cash flow problems due to client's poor financial management, ineffective utilization of funds, lack of capital to finance projects, failure to the source of money from the bank, delay in releasing retention money to contractors, evaluation delay in interim payment certificates (IPCs) and final payments. Ayudhya (2012) identifies the client's poor financial management in terms of adequate funding and errors in Bills of Quantities (BOQ) as the critical causes related to delayed payments. Frimpong et al. (2003) also claims BOQ errors as one of the critical causes of delayed payment. According to Alaghbari et al. (2007), lack of resources in current projects is another significant cause behind delayed payment in public sector construction projects. Besides, Cheng (2006) describes the withholding of payments as a major cause of delayed payments. Similarly, Ameer-Ali (2005) identifies potential causes for delayed payments, such as the client's poor financial management and client's withholding payment. Johnston (1999) also states the client's poor financial management as a prominent cause for delayed payment in public sector building construction projects.

As a summary, there are several causes for payment delays in public sector building construction projects and client, consultant, contractor, and other related factors predominantly behind each cause. During the review of the literature, the researcher identified seven client related causes, seven contractor related causes, nine consultant related causes, and five other factors related causes behind payment delays in the construction industry as further tabularized in Table 1.

Table 1. Delayed payment Causes

No	Causes for delayed payment	References
Client related causes		
1	Unrealistic Cash Flow	(McCaffer and Harris, 2003 and Naseem, 2005)
2	Client's poor financial management	(Johnston, 1999 and Hasmori et al., 2012)
3	Client's failure to follow the pre-set procedure	(Ayodele and Alabi, 2011)
4	Client failure to agree to the Valuation of Work	(Sambasivan and Soon, 2007)
5	Client failure to understand the contract agreement / Payment term	(Sambasivan and Soon, 2007)
6	payment to the contractor unduly by the client	(Sambasivan and Soon, 2007 and Ayodele and Alabi, 2011).
7	Change in the legislation	(Bob, 2005 and Olalusi and Otunola, 2012)
Consultant related factors		
8	Lack of coordination of project team activities	(Aziz, 2013)
9	Inadequate flow of information between the project team	(Danuri, 2006 and Ayodele and Alabi, 2011)
10	Consultant failure in treating claims	(Frimpong et al., 2003)
11	Delay in the certification of work done by an architect or Engineer	(Ayodele and Alabi, 2011)
12	Administration of Consultant's Party	(Danuri et al., 2006)
13	The inability of the consultant to manage funds	(Ayudhya, 2012)
14	Delay in the valuation of work done by the quantity surveyor	(Rahman and Ye, 2010)
15	Poor estimation of the project cost	(Frimpong et al., 2003)
16	Not having the proper idea about payment term / Interest charges	(Ramachandra and Rotimi, 2010)
Contractor related factors		

17	Contractor failure to agree to the valuation of work	(Mohamad and Isah, 2012)
18	Error in contractor claims	(Reeves, 2003 and Bob, 2005).
19	Contractors' failure to follow certain procedures in claims	(Odeyinka and Kaka, 2005)
20	Contractor failure to do work based on BOQ	(Hui and Wong, 2006)
21	Contractors' failure to understand the contract agreement	(Murdoch and Hughes, 1996 and Hasmori et al., 2012)
22	Failure to submit the Interim Payment Application (IPA) within the specified time limit as per the contract	(Rahman and Ye, 2010 and Olulusi and Otunola, 2012)
23	Failure to provide the particulars, backups, measurement sheets/work done approvals	(Rahman and Ye, 2010)
Other related factors		
24	Delay in subcontractor's IPA	(Latham, 1994 and Wu, 2010)
25	Improper choice of the standard form of contract	(Latham, 1994)
26	Unfair contract terms	(Rahman and Ye, 2010)
27	Contract terms which are too complicated to be understood by the parties	(Danuri, 2006)
28	Complex IPA formats approved by the Engineer	(Sambasivan and Soon, 2007)

Methodology

According to Durban University of Technology (2005), a research methodology is used to select a remedy for a significant problem followed by a step by step procedure. In this research, the methodology depicts the arrangement of the research questionnaire, data collection, data analysis, and presentation of results.

Secondary data for this research was gathered from books, academic journals, published research articles, conference papers, etc. available online and in University College Library and articulated the general causes behind payment delays in public sector construction projects. Accordingly, a structured questionnaire was developed to support the primary data collection. The questionnaire was embraced with a five-point Likert scale ranging from zero impact (0) to very high impact (4).

By considering the time limitation, the data collection was limited to the professionals who engaged with the building construction projects handled by NWP Engineering Department and its seven divisional offices in NWP.

Census means the survey method used to collect data from the overall population (Jupp, 2006). There were 100 professionals belongs to the NWP Engineering Department and related seven divisional engineer's offices who made aware of delayed payments of public sector building construction projects in the North-Western Province of Sri Lanka. Hence, a questionnaire survey was conducted among that 100 census population and 65 number of respondents were replied.

As Patil et al. (2016) exercised, the Relative Importance Index (RII) was utilized to rank the causes behind payment delays to determine the significant causes for payment delays. Indexes were ranked for the categories of client, consultant, contractor and other categories of causes. Moreover, group indexes are also obtained by considering the average relative important index of the causes behind payment delays in each group to identify the highly influential category of causes. The researcher adopted Statistical Packages for Social Science (SPSS) software to obtain the index values.

$$\text{Relative Important Index (RII)} = \frac{\sum W}{AN}$$

W = Weight given to each attribute by the respondent

A = Highest Weight

N = Total Number of Respondents

W is the weight which should be given to each factor by a respondent using a 5 point Likert scale ranges from zero (0- no impact) to four (4- very high impact).

Results and Discussion

Analysis of Delayed Payment Causes

An analysis was carried out under four prominent categories of payment delays, namely; client related causes, consultant related causes, contractor related causes, and other related causes.

1) Client Related Causes: According to the tabulated results indicated in Table 2, almost all the causes that depicted >0.5000 RII can be considered as significant. Among the seven number of causes, the most important client-related payment delay cause with the uppermost RII value of 0.9508 was the client's failure to follow the pre-set procedure. Hence, it can be depicted as highly influential client base delay payment cause in public sector building construction projects in the North-Western Province of Sri Lanka, and the result was similar to the results perceived by other researchers such as Ravees (2003), and Alaghbari et al. (2007). Therefore, if clients follow poor pre-set procedures, it is highly caused for the delayed payments. The client's poor financial management was the second most critical issue related to the client with RII of 0.9477. Moreover, unrealistic cash flow (RII=0.9354), followed by the client's failure to agree to the valuation of work (RII=0.9077), payment to the contractor unduly by the client (RII=0.9046), and changes in legislation (RII=0.8892) largely impact the delayed payments respectively.

Client failure to understand the contract agreement/payment term with 0.7692 RII value was the comparatively least impact client-related cause behind payment delays in public sector building construction projects in the North-Western Province of Sri Lanka.

Table 2. Ranking of Client Related Causes

No:	Factor	RII	Rank
1.1	Client's failure to follow pre-set procedure	0.9508	1
1.2	Client's poor financial Management	0.9477	2
1.3	Unrealistic Cash Flow	0.9354	3
1.4	Client failure to agree to the Valuation of Work	0.9077	4
1.5	payment to the contractor unduly by the client	0.9046	5
1.6	Change in the legislation	0.8892	6
1.7	Client failure to understand the contract agreement/Payment term	0.7692	7

2) Consultant Related Causes: Among 09 number of consultant related causes, delay in the valuation of work done by quantity surveyor with RII of 0.9015 was the highly influential delayed payment cause for public sector building construction projects in the North-Western Province of Sri Lanka as stated in Table 3. That result was in line with the findings of Arditi and Chotibhongs (2005) and Ayudhya (2012) related to the delayed payment causes in countries other than Sri Lanka.

Consultant failure in treating claims (RII=0.8985) was considered as the second-highest significant consultant allied factor behind delayed payments in public sector building construction projects in the NWP. Cheng (2006), Sambasivan and Soon (2007), Ravees (2003), and Frimpong (2003) were also agreed with consultant failure in treating claims as one of the most important delayed payment causes. Poor estimation of project cost (RII=0.8954), delay in

certification of work done by Architect or Engineer (RI=0.8862), the inability of the consultant to manage funds (RII=0.8769), lack of coordination of project team activities (RII=0.8708) were also indicated as highly impacting delay payment causes connected to consultants of public sector building construction projects. According to the tabulated RII values in Table 3, the inadequate flow of information among the project team (RII = 0.8523), poor awareness of payment term/interest charges (RII=0.8308), and poor administration of the consultant's party (RII=0.8185) represented comparatively less impact for payment delays compared to the other consultant related causes in public sector building construction projects in the NWP of Sri Lanka.

Table 3. Ranking of Consultant Related Causes

No :	Factor	RII	Rank
2.1	Delay in the valuation of work done by the quantity surveyor	0.9015	1
2.2	Consultant failure in treating claims	0.8985	2
2.3	Poor estimation of project cost	0.8954	3
2.4	Delay in the certification of work done by an architect or Engineer	0.8862	4
2.5	Inability of consultant to manage funds	0.8769	5
2.6	Lack of co-ordination of project team activities	0.8708	6
2.7	Inadequate flow of information between project team	0.8523	7
2.8	Poor awareness of payment terms / Interest charges	0.8308	8
2.9	Poor administration of Consultant's Party	0.8185	9

3) Contractor Related Causes: As shown in Table 4, the most important contractor related factor with the uppermost RII of 0.9138 was an error in contractor claims. Cheng (2006), Sambasivan and Soon (2007), Mansfield et al. (1994), Frimpong (2003), and Latham (1994) also elaborated the impact of errors in contractor claims as a predominant cause behind delayed payment in building construction projects of other countries. The study specified, the contractor's failure to follow certain procedures in claims as to the second most important contractor related issue with significant RII of 0.9108.

According to the rest of RII values indicated in Table 4, contractor's failure to understand the contract agreement (RII=0.9046), failure to provide the particulars, backups, measurement sheets/work done approvals (RII=0.9015), contractor failure to conduct the works based on BOQ (RII=0.8985) and contractor failure to agree the valuation of work (RII=0.8923) respectively instigated payment delays in public sector building construction projects. Failure to submit the Interim Payment Application (IPA) within the specified time limit with 0.8769 RII value was the comparatively least impact contractor related delay payment cause in contractor related category.

Table 4. Ranking of Contractor Related Causes

No	Factor	RII	Rank
3.1	Error in contractor claims	0.9138	1
3.2	Contractors' failure to follow the certain procedures in claims	0.9108	2
3.3	Contractors' failure to understand the contract agreement	0.9046	3
3.4	Failure to provide the particulars, backups, measurement sheets/work done approvals	0.9015	4
3.5	Contractor failure to do work based on BOQ	0.8985	5

3.6	Contractor failure to agree to the valuation of work	0.8923	6
3.7	Failure to submit the IPA within the specified time limit as per the contract	0.8769	7

4) Other Related Causes: According to Table 5, the most substantial other related factors with the highest RII value of 0.9323 were the delays in the subcontractor's IPA. The result was similar to the outcomes of researches completed by Hamzah et al., (2011), Latham (1944), Sambasivan and Soon (2007), Ammir-Ali (2005), and Arditi and Chotibhongs (2005). Improper choice of the standard form of contract was ranked as the 2nd cause with high RII of 0.8923 in other related categories. Unfair contract terms (RII=0.8800) and complex IPA formats approved by the Engineer (RII=0.8646) were the other causes behind payment delays that can be made significant impact.

Table 5. Ranking of Other Related Causes

No	Factor	RII	Rank
4.1	Delay in subcontractor's IPA	0.9323	1
4.2	Improper choice of standard form of contract	0.8923	2
4.3	Unfair contract terms	0.8800	3
4.4	Complex IPA formats approved by the Engineer	0.8646	4
4.5	Contract terms which are too complicated to be understood by the parties	0.8462	5

However, contract terms that are too complicated to be understood by the parties (RII=0.8462) were the comparatively least influential other related delayed payment cause in public sector building construction projects in the North-Western Province of Sri Lanka, as in Table 5.

According to the tabulated results of high average RII (avg. RII) values shown in Table 6, client-related causes, contractor related causes, other related causes, and consultant related causes categorically influence the delay payments in the respective order.

Table 6. Ranking of Average RII values of each category

Causes category	Average RII	Rank
Client related causes	0.9007	1
Contractor related causes	0.8998	2
Other related causes	0.8831	3
Consultant related causes	0.8701	4

All the group indexes with high Avg. RII (>0.5000) depicted the significance of each category of causes. However, despite the least comparative impact of consultant related causes category with 0.8701 Avg. RII value, client-related causes category with 0.9007 Avg. RII value demonstrated the highly influential nature of delay payments. Correspondingly, Contractor related causes (Avg. RII=0.8998) also shared high index value while other related causes (Avg. RII=0.8831) reached the 3rd position of group ranking.

Conclusions

As an overview, almost all the causes behind payment delays instigated in the study were significant with high index values. However, the most influential category of causes behind payment delays of public sector building construction projects in the North-Western Province of Sri Lanka was the client related group of causes. Hence, the prime responsibility for the prevention and mitigation of delay payments in the NWP building construction projects carried out by the NWP engineering department is vested over the clients.

Besides, this study suggests the importance of taking corrective action to the client's failure to follow pre-set procedure, client's poor financial management, client's unrealistic cash flows, delay in subcontractor's IPA, errors in contractor claims, and contractor's failure to follow the relevant claim procedure to minimize payment delays in public sector building construction projects initiated by NWP engineering department of Sri Lanka.

Subsequently, contractors and consultants also to be shared the responsibility for the reduction of delay payments occurred in the region with greater awareness on contractual terms and associated documentation. However, to generalize the findings of this research, further researches need to be carried out with the support of different types of public sector construction projects belong to various public sector institutions in the Sri Lankan context.

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