

The Effect of Delayed Payments and Retention on Contractors Cash Flow ¹

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1. ABSTRACT

Cash flow is the backbone of any successful construction project. Delayed payment and retention have much greater effect on contractors' cash flow; as such proper cash flow management is also important. Also excess retention in a project holds back the contractor's cash flow, which also prevents the contractor from completing the work within the stipulated time. Information was gotten from articles, books and other researchers' works around the world. 350 questionnaires were administered and 100 responses fit for analysis were received, representing a 28.6% response rate which is typical of the norm of 20-30% response rate in most postal questionnaire surveys of the construction industry. Contractors were requested to score on a Likert-type scale of 0-5, their level of satisfaction with payment terms impacting cash flow forecast. Results show that contractors are satisfied under both design and build contracts and traditional procured contracts with 'valuation intervals', 'time lag between being committed to making payment to nominated sub-contractors and actually paying'. Whilst sub-contractors expressed their dissatisfaction on all payment methods except for 'valuation intervals'. Also a related study by Adeyinka et al. (2003) found that delayed payment to sub-contractors and suppliers has been identified as some strategies contractors employ to fund their deficit cash flow. In view of the fact that contractors and sub-contractors are dissatisfied with delayed payments and retentions, it is suggested that attention be focused on devising new innovative payment systems that will address these issues.

Key words: cash flow, delayed payments, retention, contractor, sub-contractor, supplier, construction industry.

2. INTRODUCTION

Construction projects cash flow is a subset of cash flow for the organization. It is the inflow of cash to the contractor from the client and also the outflow of cash to the suppliers, sub-contractors and to direct costs (Kenley, 2003). Cash flow management has long been recognized as an important tool and proper cash flow management is crucial to the survival of a construction company because cash is the most important resource for its day-to-day activities (Peer, 2002; Singh and Lakanathan, 2002). A proper cash flow management is also important as a means to obtain loans, as banks and other money lending institutions are normally much more inclined to lend money to companies that can present periodic cash flow forecast (Navon, 2005).

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According to Kenley (2003), the client-oriented flows of cash from the client to the contractor generally flows in from the client in periodic payments called ‘progress payments’. According to him, building contracts generally provide for such payments for two reasons:

- a. To provide a mechanism whereby the contractor may recover money for work in progress so that the contractor will not fund the project.
- b. To restrict these payments to set periods (usually of one month) in order to reduce the amount of administration required by all parties.

Cash outflow to suppliers, sub-contractors and direct costs is very different to cash inflows from the client. These payments according to Kenley(2003) follows the disparate contracts and agreements that exist between the contracted suppliers on the other, and also occur on an as required basis as labor and materials are called up and used during the construction of the project. Payment is defined as failure of a paymaster to pay within the period of honoring of certificates as provided in the contract (Harris and McCaffer, 2003). The parties involved in the process of payment claim such as client, contractor, superintending officers, architect, quantity surveyor, banker and other construction players may cause a payment delayed. Construction delay can be observed by several indication factors. One significant factor is owners’ performance in making payment to contractors. The extra time required for payments is clear evidence that company is in financial difficulties (Ayudhya, 2012).

Retention is a percentage of the contract payment value which is held by the construction customer. Half is released at project completion. The other half is released following the expiry of a defect liability period. Holding retention money is a long-established way of providing insurance against project defects. However, anecdotal evidence and research has identified a number of issues associated with how retentions work in practice.

3. LITERATURE REVIEW

3.1 payment terms impacting construction cash flow

It is common practice in the construction industry for payment of the contract sum to be made by installments, except on the smallest contracts and sub-contracts (Murdoch and Hughes, 2000). One of the main purposes of this according to Kenley (2003) is to reduce the need for the contractor to fund the development of the project. This is due to the fact that the total value of each contract forms a large proportion of a contractor’s annual turnover. According to Kenley (2003), the more common methods of payment installment in the construction industry is the monthly or stage payment. According to him, one method that is also becoming common may be described as turnkey, under which a single payment only is provided for at the conclusion of the project.

The problems of cash flow along the chain of recipients has been formally recognized as early as 1960s when Bamwell report (1964) noted the importance of prompt payments and the need for a procedure to secure the proper flow of money. Latham (1994) and Egan (1998) came after three decades, echoed similar concerns. A consequence of the chain payment structure is the

repercussion of the failure of one party on the other parties. Even in situations where there are no obstacles in the flow of cash along the chain, there is often a considerable delay before those at lower levels receive payments (Khosrowshahi, 2000).

The institute for construction training and development (2002), states that payment term is something considered very important because it has an effect on the price and also on the efficiency of the contractor. According to them, the cardinal principle is that the contractors should not be required to fund the construction; there must be an appropriate flow of funds so that the contractor doesn't have to commit his resources for the funding of the construction. According to Abeysekera (2002), two issues of fundamental importance arise regarding payment procedures:

(a) the time lag between expenditure and payments, and
(b) cash retentions from progress payments. One reason for dissatisfaction with retention funds is the uncertainty that surrounds the status of a sub-contractor's retention in the event of main contractor's insolvency (McCartney, 2002). The problem identified here is that if the main contractor goes insolvent during project, it is very difficult for sub-contractors to obtain the funds held by the main contractor as retention, unless special arrangements have been made (Huxtable, 2002).

Different standard forms of building contract tribunal (JCT) set out contract conditions, some of which attempt to regulate cash inflows into the construction business. The standard form also set out contract conditions, which regulate the way money flows out of construction business. The JCT 98 (2003) states that valuation interval is to be mutually agreed between the contractor and the employer and if none is stated, it is to be one month.

3.2 Retentions

Cash retention is a percentage of the payment value (typically 5%) which is held by the customer. Half is released at project completion. The other half is released following the expiry of a defect liability period (typically 12 months, though 24 months in the house building sector) which is agreed between parties to a contract.

3.2.1 Value of Retention

As outlined by PyeTait (2017), a previous report into retentions published by the Trade and Industry committee in 2002 multiplied sector gross value added (GVA) by an average retention percentage of 5% to produce an estimate for the total amount held in retentions over the course of a year. It highlighted, however, that it is challenging to produce a point estimate as there would be outstanding retention monies from previous years, to be added to this estimate, and that there would furthermore be some reduction in the resulting figure, reflecting the amount of retention in that year. Retention are a proportion of contract value, therefore, it is believed that sector turnover is a more appropriate basis for estimating the total amount held in retentions over the course of a given year. The important information available is the results from the PyeTait research which shows that:

- Around a quarter of contractors surveyed did not have any experience of retentions in the last three years, and

- The three-quarters of the contractors say retentions are not held on an average of 35% of all their current contracts.

3.2.2 Retentions as “Insurance” Against Defects

- Incentivize timely completion of work, and act as a warranty against poor quality work: contractors will not get their retention monies until work is completed without defects, strengthening incentives to complete work quickly and to a high standard.

Encourages contractors to return to fix any defect: contractors will not get their full retention monies until all project defects have been rectified, strengthening incentives for them to quickly return to fix defects. There is a cost to contractors from returning to fix defects, as it involves additional resources, and may also prevent them to move on to new work. Without retention they do not have a direct financial incentive to return can be used to fund works required to fix defects in the events that the contractor did not return to rectify these: Retention payments reduce the risk to the customer as the retention monies can go towards the cost of having to pay another contractor to come back and fix defects, in the events that the original contractor did not return to fix them.

Glenigan (2016) KPLs, shows that over a quarter (27%) of client interviewed rated the impacts of defect at project handover at or below 7 out of 10 (10 representing 0 defects). Further, the same survey indicated that almost 60% of projects (for the combined design and construction phases) came in late.

3.3 Construction Payments

Payments has been said to be the life-blood of the construction industry. Yet, the industry knows payment default, specifically payment delay remains a major problem (Ali, 2006). Contract period refers to the duration for completing the construction project. When the contract period is delayed, it means the contract cannot be completed within the stipulated time. Payment delay will lead to time overrun, delay in completion, termination of contract (Amoako, 2011). The payment condition patterns are seen to defer between the public and private sector, the payment in time as said to be a key element of a contractors profitability performance, the impact on specialist contractors on payment delay, contractors were dissatisfied with the time lag to receiving payments, contractor non-payment as a cause of dispute escalating (Carmichael and BALATBAT, 2000). As stated by Kennedy (2005), ‘payment not unexpectedly has always been the main subject of disputes’. It is anticipated that conflicts if unsettled will escalate into disputes which can also cause late and non-payment.

4. DATA AND METHODOLOGY

Data were obtained through a questionnaire survey of 350 randomly selected South Eastern Nigerian based subcontractors, small, medium and large-scale contractors. This was followed by a reminder letter. In all, 100 responses fit for analysis were received, representing a 28.6% response rate which is typical of the norm of 20-30% response rate in most postal questionnaire survey of the construction industry (Akintoye and Fitzgerald, 2000). The questionnaire identified

from literature and from discussion with industry practitioners, various payment terms thought to impact construction cash flow. Contractors were then requested to score on a Likert-type scale of 0-5, their level of satisfaction with payment terms impacting cash flow forecast. The measuring scale of 0 represents a situation where the contract-related factors are very unsatisfactory whilst the scale of 5 represents extremely satisfied. This then gives the measuring scale the property of an interval scale, which enables the collected data to be subject to various statistical analyses. The questionnaire elicited information regarding the firms' annual turnover, which enabled their groupings into very small, small, medium and large firms. It is noteworthy that the very small firms function essentially as subcontractors. Information regarding respondents' designation was also obtained.

5. DATA ANALYSIS AND RESULTS

Data analyses were carried out using the Statistical Package for Social Sciences (SPSS). The analysis deals mainly with the ranking of the variables based on their mean values. This was followed by the Analysis of Variance (ANOVA) to test the null hypothesis that the mean values of the dependent variables are equal for all the sizes of construction companies considered.

5.1 Assessment of Contractors' Level of Satisfaction with Payment Terms Under Traditionally Procured Contract

An analysis was carried out to assess contractors' level of satisfaction with payment terms thought to impact construction cash flow under traditionally procured building contract. From Table 1 which summarizes the result of the analysis, it is evident that overall, contractors appear to be satisfied with 'valuation intervals', 'time lag between being committed to making a payment to sub-contractors and actually paying', 'time lag between being committed to making a payment to nominated suppliers and actually paying' and 'payment method'. From a closer look at Table 1, it is evident that contractors were unanimous in the expression of their satisfaction regarding 'valuation intervals' and 'payment method.' These are payment terms dealing with cash in-flows into the construction business and the unanimity of opinion expressed by the contractors is an indication that these payment provisions dealing with cash in-flows into construction business are working well. Although, contractors under the traditionally procured contracts expressed satisfaction with 'time lag between being committed to making a payment to subcontractors and actually paying' and 'time lag between being committed to making a payment to nominated suppliers and actually paying,' opinions among the different categories of contractors were statistically different ($p < 5$), using the F-statistic to test the hypothesis that there is no difference of opinion among the different categories of contractors. These two payment terms deal with cash out-flows and the significant difference of opinion suggests that the method and approach of dealing with these payment terms vary from one category of firm to another.

It is evident from Table 1 that whilst 'time lag between being committed to making a payment to sub-contractors and actually paying ranked 2nd overall, it ranked 1st under the large firm,' it ranked 2nd under the medium firm, ranked 4th under the small firm and 3rd under the subcontractors. Odeyinka et. al. (2003) found that UK construction contractors utilize delayed payment to sub-contractors as one of the strategies to fund deficit cash flow. However, since medium and large firms have qualified personnel who are knowledgeable in cash flow management, the use of delayed payment to subcontractors to fund deficit cash flow is not one of

their prime strategies to fund deficit cash flow. It is therefore not surprising that their satisfaction level with time lag between being committed to making a payment to nominated sub-contractors and actually paying ranked higher. On the other hand, it could be inferred that 'time lag between being committed to making a payment to sub-contractors and actually paying' as a payment term ranked lower under small firms and subcontractors (rank of 4 and 3 respectively) possibly because the payment to be made, being of some significance to them, they may want to use it to improve their cash flow position in the short run. As such, it is not surprising that their satisfaction level ranked lower under this payment term. An analysis based on firm size shows that while overall, contractors appear to be satisfied with 'time lag between being committed to making a payment to sub-contractors and actually paying,' 'time lag between being committed to making a payment to nominated supplier and actually paying' and 'payment method', subcontractors appear to be dissatisfied with these payment terms. This is not a surprise because subcontractors sit at the bottom of a long contractual payment chain. As such, they suffer the most if client delays payment as contractors usually pay subcontractors after they get paid.

Overall, contractors under traditionally procured contracts were dissatisfied with 'time lag between entitlement to receive and actually receiving cash payment' and 'percentage of contract sum retained.' Contractors' dissatisfaction with these twin factors of delayed payment and retention is not a surprise as these are two key issues that are known to be responsible for contractors' deficit cash flow. According to Abeysekera (2002), given these issues of delayed payment and retention, coupled with the fact that contractors operate at a very low profit margin, it is difficult to expect them to have surplus cash. As such, contractors would be forced to operate with negative cash flows, sometimes over the whole duration of a project. Not surprisingly, they turn to banks and other financial institutions (i.e. external sources) to meet such shortfalls when internal sources of funds fail to meet such requirements (Brownie and Harris, 1987 and Hamilton and Fox, 1998). Faced with these negative impacts on contractors' cash flow, it is not surprising that overall; contractors were dissatisfied with delayed payments and retentions. Another analysis based on firm size shows that while overall, contractors were dissatisfied with 'time lag between entitlement to receive and actually receiving cash payment', the large and medium firms appear to be satisfied.

This is a surprise, given the generally held view that delayed payment impacts negatively on contractor's cash flow. A possible explanation may be due to the fact that large and medium firms have established commercial department with qualified personnel that deal with cash flow management. As such, they are expected to have strategies in place for accommodating this delay payment in their cash flow calculations and also to have devised means of funding deficit cash flow through other means. Odeyinka et. al., (2003) found that medium and large firms prefer to fund their deficit cash flow through company cash reserves, tender unbalancing, etc.

On the other hand, it is not surprising that small firms and contractors are dissatisfied with the delayed payment because their sole means of funding the project is through payment received from interim valuations. In many cases, they have to contend with lack of qualified personnel to plan cash flow in advance such that the possibility of delayed payment is already anticipated. This lack of cash flow planning causes undue financial stress to the contractor, which results in having to fund deficit cash flow through borrowed funds. Further analysis based on firm size showed that contractors irrespective of firm size are dissatisfied with percentage of contract sum retained. This is not surprising because the negative impact of retention on contractor's cash flow has widely

been criticised. Since the Latham Report (Latham, 1994), which heavily criticised the adverse effect of the use of retention on contractor’s cash flow, there have been numerous calls in the UK to find alternatives to cash retention (Cook, 1997; Klein, 1997; Latham, 1997). Again, the fact that the contractor is expected to fund the project while his money is held as retention is not an attractive option among contractors. Further, the length of time the retention sum is held on a contract in which the subcontractor’s work comes early could be unbearable. Besides, the difficulty of securing the release of retention in many cases makes it unattractive.

Corroborating this view, National Specialist Contractors Council (2003) in one of its quarterly surveys expressed the opinion of one of its members as follows: ‘Our biggest problem is not with interim payments, which are generally paid, in a reasonable timescale. It is with the final payment where the main contractor will try to get us to settle on a figure of less than our claim. Retentions are also very difficult to obtain without monumental effort. In short, we as a company will be shrinking in order to lessen our reliance on sub-contract work.’

Table 1. Contractors Satisfaction with conditions of contract in traditionally procured contract.

Contract related factors	Overall mean score	Rank	Large firms mean	Rank	Medium firms mean	Rank	Small firms mean	Rank	Sub-contractors mean	Rank	F Stat.	Level of significance (p value)
Valuation intervals	3.47	1	3.62	2	3.11	2	3.10	5	3.91	1	1.694	0.184
Time Lag between being committed to making a payment to Sub-contractors and actually paying	3.30	2	3.85	1	3.11	2	3.20	3	2.91	2	2.672	0.06
Time Lag between being committed to making a payment to nom. Suppliers and actual paying.	3.28	3	3.69	2	3.22	1	3.30	2	2.82	3	1.861	0.152
Payment method.	3.12	4	3.23	5	3.00	4	3.40	1	2.82	3	0.889	0.455
Time lag between entitlement to receive and actually receiving cash payment	2.81	5	2.85	5	2.89	5	3.20	3	2.36	5	1.504	0.229
Percentage of contract sum-retained.	2.28	6	2.46	6	2.22	6	2.60	6	1.82	6	0.792	0.500
Significant at 5% level.												

5.2 Assessment of Contractors’ Level of Satisfaction with Payment Terms in Design and Build Contract

Another analysis was carried out to assess contractors' level of satisfaction with payment terms perceived to impact construction cash flow in design and build contract. Table 2 summarizes the result of the analysis. From the table, it is evident that overall, contractors were unanimous regarding their satisfaction with 'valuation intervals', 'payment method', 'time lag between being committed to making a payment to nominated sub-contractors and actually paying', 'time lag between being committed to making a payment to nominated suppliers and actually paying' and 'payment method'. A cursory look at this list indicates that two of the payment terms, namely, 'valuation intervals' and 'payment method' are payment terms dealing with cash in-flows into the construction business. The fact that contractors were unanimous in the expression of their level of satisfaction regarding these payment terms is an indication that they are working well under the design and build contract. This is not a surprise because the JCT 98 with Contractor's Design (WCD) seems to put the contractor in the 'driving seat' regarding valuation intervals and payment method. Clause 30.1.1.1 of JCT 98 with Contractor's Design (WCD) for instance states that interim payments shall be made by the employer to the contractor in accordance with clause 30.1 to 30.4 and whichever of alternatives A or B in Appendix 2 is applicable to the contract. Alternative A according to the contract conditions refers to stage payments and alternative B refers to periodic payments. According to Chappell and Powell Smith (1999), whichever of the alternatives is adopted, it is for the contractor to apply to the employer for payment and he also carries out the valuation. In that regard, as Chappell and Powell Smith (1999) put it, he is in the driving seat. As such, it is not a surprise that overall, contractors are satisfied with 'valuation intervals' and 'payment method' under the design and build procurement method.

Moreover, a further observation of the list of payment terms (Table 2) which contractors appear to be satisfied with overall, indicates that 'time lag between being committed to making a payment to subcontractors and actually paying' and 'time lag between being committed to making a payment to nominated suppliers and actually paying' are payment terms dealing with cash out-flows from the construction business. Unlike the situation under the traditionally procured contracts, contractors under the design and build contracts were unanimous in their opinion regarding their satisfaction with these payment terms. This is not a surprise because the contractual arrangement under the design and build contract is different from that of traditionally procured contracts. For instance, under the design and build, subcontractors do function as domestic subcontractors, making the main contractor to perceive them as an integral part of their construction outfit. On the other hand, the JCT 98 WCD is silent about the issue of nominated supplier. This may be due to the manner in which this is generally interpreted.

According to Murdoch and Hughes (2000), a person is only a nominated supplier where the goods or materials to be supplied are the subjects of a prime cost sum. This situation obviously does not arise under the JCT 98 WCD. These major differences in the two procurement methods may explain why contractors' were unanimous in the level of their satisfaction to these two payment terms under the design and build procurement method. Although contractors were unanimous in scoring their level of satisfaction with the afore stated payment terms, the subcontractors only expressed satisfaction with 'valuation intervals' but appear dissatisfied with all other payment terms. This follows the same trend with subcontractors' responses under the traditionally procured contracts (Table 1). This is not unexpected because subcontractors under the design and build contracts also get paid only when the main contractor is paid, as such, they suffer the most if client delays payment. Moreover, it is evident from Table 2 that overall; contractors irrespective of size as well as subcontractors were dissatisfied with 'time lag between entitlement to receive and

actually receiving cash payment’(delayed payment) as well as ‘percentage of contract sum retained’. This trend is the same with the traditionally procured contracts (Table 1). As such, contractors and subcontractors’ dissatisfaction with these twin payment terms of delayed payment and retention is not a surprise. This is because these are twin payment terms that are known to be responsible for contractors’ deficit cash flow. Given these twin payment terms, together with the fact that contractors operate at a very low profit margin, it is difficult to expect them to have surplus cash. As such, it is not surprising that overall, contractors as well as subcontractors were dissatisfied with delayed payment and retentions.

Table 2. Satisfaction with conditions of contract in design & build contract

Contract related factors	Overall mean score	Rank	Large firms mean	Rank	Medium firms mean	Rank	Small firms mean	Rank	Sub-contractors mean	Rank	F Stat.	Level of significance (p value)
Valuation intervals	3.47	1	3.62	2	3.11	2	3.10	5	3.91	1	1.694	0.184
Time Lag between being committed to making a payment to Sub-contractors and actually paying	3.30	2	3.85	1	3.11	2	3.20	3	2.91	2	2.672	0.06
Time Lag between being committed to making a payment to nom. Suppliers and actual paying .	3.28	3	3.69	2	3.22	1	3.30	2	2.82	3	1.861	0.15
Payment method .	3.12	4	3.23	5	3.00	4	3.40	1	2.82	3	0.889	0.45
Time lag between entitlement to receive and actually receiving cash payment	2.81	5	2.85	5	2.89	5	3.20	3	2.36	5	1.504	0.22
Percentage of contract sum retained.	2.28	6	2.46	6	2.22	6	2.60	6	1.82	6	0.792	0.50
Significant at 5% level.												

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This study has examined contractors' level of satisfaction regarding various payment terms thought to impact construction cash flow under both traditionally procured and design and build contracts. The study concludes that overall, contractors seem to be satisfied under the two procurement systems with 'valuation intervals', 'time lag between being committed to making payment to nominated sub-contractors and actually paying', 'time lag between being committed to making payment to nominated suppliers and actually paying' and 'payment method'. Out of these, two payment terms, namely, 'valuation intervals' and 'payment method' deal with cash in-flow into the construction business whilst the other two payment terms deal with cash out-flows from the construction business. However, under the traditionally procured contract, opinions were significantly different among the different categories of contractors regarding their level of satisfaction with payment terms dealing with cash out-flows. This suggests that the method and approach employed in dealing with these payment terms vary significantly from one category of firm to another.

This is an issue that will benefit from further research. Under the design and build contract, contractors were unanimous in their opinion regarding their satisfaction with 'valuation intervals' and 'payment method' which are payment terms dealing with cash in-flows. This is as expected because the JCT 98 WCD seems to put the contractor in the 'driving seat' regarding these payment terms. Unlike the situation under the traditionally procured contracts, contractors and irrespective of size were unanimous in their opinion under the design and build contracts regarding their satisfaction with 'time lag between being committed to making a payment to subcontractors and actually paying' and 'timelag between being committed to making a payment to nominated suppliers and actually paying.' As these are payment terms dealing with cash out-flows, this suggests that contractors under the design and build procurement method seem to have a similar method and approach of dealing with these payment terms.

This again is an issue that will benefit from further research, especially when pitched against the finding of Kaka and Dawood (2000) who demonstrated that cash flow profiles take different shapes depending on procurement method employed and construction duration. Whilst contractors expressed their satisfaction with the afore listed payment terms under both the traditional and design and build contracts, subcontractors expressed their dissatisfaction on all but 'valuation intervals.' Subcontractors sit at the bottom of a long contractual chain and only get paid after contractors are paid. As such, it is not unexpected that they are dissatisfied with these payment terms. Besides, in a related study, Odeyinka et. al. (2003) found that delayed payment to subcontractors and suppliers have been identified as some strategies contractors employ to fund their deficit cash flow. Having to operate under this payment regime, it is not surprising that subcontractors are dissatisfied with most of the payment terms.

Finally, the study concludes that contractors, irrespective of size as well as subcontractors were unanimous in expressing their dissatisfaction with the twin issues of delayed payment and retentions. These are payment terms that impact cash in-flows into construction business and Abeysekera (2002) has identified them as payment terms responsible for contractors' deficit cash flow. Given these twin payment terms as well as the fact that contractors operate at a very low

profit margin, it is difficult to expect them to have surplus cash. It is therefore not surprising that contractors as well as subcontractors were dissatisfied with ‘delayed payment’ and ‘retention’.

6.2 Recommendations

In view of the fact that contractors and subcontractors are dissatisfied with delayed payments and retentions, it is suggested that attention may need to be focused on devising new innovative payment systems that will address these issues. Two of such systems that have been suggested by Abeysekera (2002) are transparent accounting and advanced payment (client financed projects). This obviously is an area that needs further research in order to address this issue of dissatisfaction. In view of the dissatisfaction of the subcontractors to some payment terms that contractors were satisfied with, it is also suggested that innovative payment systems be devised that will not put the subcontractor at a disadvantage by putting him at the end of a long payment chain. This is because subcontractors are the smallest and most vulnerable. One such innovative payment system that has been proposed is transparent accounting. In all, further research still needs to be carried out in order to devise more satisfactory payment systems.

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