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THE LATE PAYMENT EPIDEMIC IN UK CONSTRUCTION

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ABSTRACT

The UK government has elaborated the effect of late payment on the economy, with its impact on the construction sector being particularly pronounced. This paper evaluates the late payment epidemic that persists within the construction industry, specifically analysing the effectiveness of government-led voluntary payment initiatives. A mixed philosophical lens is adopted that incorporates both pragmatism and post-positivism to examine the late payment phenomena. Couched within deductive reasoning and a case study strategy, a questionnaire survey was conducted to elicit responses from one-hundred construction professionals. Elucidating upon respondents' perceptions of the UK's late payment epidemic, a comparative analysis was undertaken of upstream (main contractor) and downstream (subcontractors/suppliers) contractors through Cronbach's alpha, descriptive statistics, independence chi-square test, Kruskal Wallis Test and Mann-Whitney U Test. Emergent findings reveal that in practice, the monitoring and enforcement of government-led voluntary payment initiatives has been unprosperous with numerous contractors being forced to adopt indefensibly poor and punitive payment practices. Survey responses and extant literature substantiate and underscore the industry's need to strengthen voluntary government-led payment initiatives. To create a responsible payment culture, any future code created should be mandatory and enforceable as a self-regulating approach has failed dismally. The work concludes with practical additional measures that could be introduced to create a responsible payment culture and promote ethical trading within the UK construction industry. This paper constitutes a novel vignette of, and reflection upon contemporary practice in this area of construction finance and serves to emphasise that very little has changes in the sector despite numerous UK government led reports and interventions.

KEYWORDS: Late payment, construction industry, sub-contractors, main contractors, government-initiatives, and economy.

INTRODUCTION

The construction industry represents a major contributor to the UK economy (The Insolvency Service, 2020). It generates approximately £117 billion annually; equivalent to 6% of the UK's total economic output (Rhodes, 2019). In 2019, 2.4 million jobs in the construction industry

represented 6.6% of all UK employment (*ibid*) with government business population estimates in the period showing that the number of construction companies with less than 50 employees (small-to-medium enterprises (SME's)) has increased to over 1,035,205, up 988,645 from 2018 (Department for Business, Energy & Industrial Strategy, 2019). However, these SME's are amongst the most vulnerable businesses in the UK, with late payment exposing the high-risk nature of the industry (Alderson, 2018). In February 2020, a global health emergency (Covid-19), combined with an economic crisis of historic proportions and unfair payment practices (Manjili *et al.,* 2020) resulted in a total of 36 construction companies falling into administration, with a further 246 companies involved in stages of liquidation and 82 formally holding meetings with creditors (Contract Journal, 2009). Propelled by the collapse of a major contractor in 2018, the construction industry has had the highest level of insolvencies of any grouping in almost every quarter since Q1 2018 (The Insolvency Service, 2020). In the 12 months to the end of September 2018, 2,954 construction insolvencies demonstrated a 12% increase on the previous year (*ibid*). Despite the introduction of voluntary government-led payment initiatives to strengthen the position of SMEs and create consequences for non-complying industry-leading companies, progress to date has been lacklustre (Parliament UK, 2018). Government initiatives, notably voluntary, have simply not been effective enough in practice (Jordan, 2018). This is most obviously demonstrated by the Prompt Payment Code (PPC) and Construction Supply Chain Payment Charter (CSCPC).

Exhibited on a grand scale in January 2018, the collapse of the UK's second-largest contractor Carillion, sent cash flow gaps reverberating through the economy (Levine, 2020). Carillion, a notorious late payer, enforced standard payment terms of 120 days to its suppliers, despite being a signatory of two of the key initiatives designed to tackle late payment (Morris, 2018). Carillion was forced into compulsory liquidation with liabilities of £7 billion, owing over £2 billion to suppliers, sub-contractors and other short-term creditors (Lakha, 2019). Its collapse resulted in numerous small businesses becoming victims of late payment, causing severe financial strains through expensive bank finance to stay in business, while others faced bankruptcy (Bibby Financial Services, 2018). Despite deliberately breaking the rules, the UK government rewarded Carillion with numerous contracts including the construction of the new Royal Liverpool hospital (estimated £335 million) and an army base programme in Salisbury (Carillion and KBR Joint Venture worth an estimated £1.1 billion). Carillion's collapse has called into question the effectiveness of government-led payment initiatives and raised the need

for urgent reform to successfully tackle the UK's late payment epidemic (Federation of Small Businesses, 2018).

In 2018, Bibby Financial Services (the UK's leading independent invoice finance specialist) published 'Subcontracting Growth Report; a study of UK subcontractors', stating the key findings from research undertaken in the aftermath of Carillion's collapse (Bibby Financial Services, 2018). In 2018, the year of the collapse of the construction giant, Bibby highlighted that three-fifths of subcontractors had suffered from bad debt in the previous 12 months, with the average firm writing-off £16,149 (*ibid*). Similarly, in the same period, the UK Government Department for Business, Energy & Industrial Strategy found that '24% of UK construction companies deemed late payment as a threat to their survival' - the highest reported level among all European countries (The Department for Business, Energy and Industrial Strategy, 2018). Supported with statistics from insolvency specialist Begbies Traynor, a study conducted in 2019 delved into the number of days firms waited for payments during the previous 12-month period. Results demonstrated that over 115,000 UK construction companies were forced to wait an average of 57 days, triggering more than 1000 insolvencies in 2018 (Palmer, 2019). Simon Hanson, development manager at the Federation of Small Businesses rounded, states:

> *"the poor payment practices that run rampant through UK supply chains is a national disgrace with the country falling behind almost all other industrialised nations in our ability to pay small businesses on time. These practices are putting small businesses at risk forcing many to turn to personal credit cards or overdrafts just to survive."* (Hanson, 2018)

Twelve months on, data published in 2019 by Pay.UK/BACS found that on average, 78% of SMEs owed money are being forced to wait one month or more beyond their agreed terms before they are paid (Pay UK, 2019). Intuit Quickbooks global research project conducted in April 2019, suggests an even worse picture revealing that small business owners lose £26,000 on average by turning work away as a result of insufficient cash flow (Intuit, 2019), impacting their ability to take on new work, pay suppliers, their employees or themselves on time, with 34% of SME business owners relying on overdrafts to help them meet their monthly obligations (*ibid*).

Given this contextual setting of unethical payment practices being rife within the sector, this paper explores the challenges, the measures taken, and the scope of two voluntary supply chain finance initiatives sought to tackle poor payment practices viz: The Prompt Payment Code and the Construction Supply Chain Payment Charter. Concomitant objectives are to critically appraise two government-led payment initiatives introduced to prescribe benchmark payment practices; to assess the limitations of these initiatives; and to propose additional measures that could be introduced to strengthen each initiative.

THE LATE PAYMENT EPIDEMIC

Since the 1960s, poor payment practices have been an issue within the UK construction industry, with smaller businesses and those lower down the supply chain most severely affected (Lakha, 2019). Identified in the BEIS Longitudinal Small Business Survey 2017, late payment is a major obstacle to business success, driven by three high-level factors: power imbalances in the supply chain, the current economic situation, and the prevailing business culture (*ibid*). Often, larger contractors use the disparity of power in business relationships to squeeze their suppliers, delaying payments to improve their own cash flow, leaving smaller by larger contractors using late payment as a strategic goal, unofficial business model and corporate culture (Pay4, 2020).

UK government-led, voluntary payment initiatives such as *The Prompt Payment Code* and subsequently the *Construction Supply Chain Payment Charter*, set standards for payment practices and best practice, striving to end the culture of late payment (Parliament UK, 2018). However, in 2016, The Federation of Small Businesses published a comprehensive report, 'Time to Act: the economic impact of poor payment practice' which deemed existing government policy interventions to have had *"no discernible effect on tackling the UK's poor payment culture"* with statistics *"demonstrating a clear correlation between a poor payment culture and business failure rates, business productivity and in turn, economic growth"* (Federation of Small Businesses, 2016). Four years later (in 2020), a recorded 84% of the UK's top 100 construction and engineering firms are failing to meet government payment targets set out under the Prompt Payment Code (Horgan, 2020). Enhanced by the Coronavirus pandemic, the situation has only worsened throughout recent months. Payment statistics published by the Federation of Small Businesses in June 2020 from a survey of 4,000 companies show that three in five (62%) small businesses have reported either an increase in late payments and/or had payments frozen because of Covid-19 since the beginning of March 2020 (Federation of Small

Businesses, 2020). Undeniably these payment initiatives are admirable, but they are (as of September 2020) still failing the many businesses that tackle late payments on a daily basis (Pay4, 2020). David Frise, Chief executive of the Building Engineering Services Association, states that the voluntary measures have failed the industry by continually allowing late payment to undermine the supply chain. In agreement with Frise, Mike Cherry, National Chairman at the Federation of Small Businesses states despite the Prompt Payment Code being fundamentally a good idea, it does not work when needed most (Federation of Small Businesses, 2018). Opinions are distinctively polarised, for example, Frise (2017) states the UK has had multiple voluntary late payment initiatives introduced over the last two decades – none of which proved of to be of any use whatsoever in the face of notorious late payers like Carillion (Construction Enquirer, 2018). This stance is supported by Klein (2019), who states that payment performance in the UK has worsened over the same period and is still showing no signs of long-term improvement (Cable Talk, 2019). In contrast, King (2017) states that: *"the PPC allows suppliers to raise a challenge if they feel they are not being treated fairly by a signatory, and such challenges are proving successful not only in delivering payment but also in further improving practices and processes"* (Department for Business, Energy & Industrial Strategy, 2017).

CROSS COMPARATIVE ANALYSIS OF EXISTING PAYMENT INITIATIVES

Since 2004, 19 separate payment initiatives (i.e. directives, codes, and regulations) to combat poor payment practices have collectively failed to resolve the issue despite attracted some notable signatories (CE Funding and Finance Group, 2016).

< Figure 1 - Payment Initiatives, Directives, Codes and Regulations 2004 – 2020>

The Credit Protection Association describes the Construction Supply Chain Payment Charter (CSCPC) as a "*dismal failure*" gaining only ten industry signatories in its first two years, and only 35 industry signatories in 2018, four years after its launch (The Credit Protection Association Limited, 2018). Similarly, The Prompt Payment Code, introduced in 2008 to reduce the scourge of late payments has only enticed 1,700 signatories to date - with 343,000 registered construction businesses (those that have employees or with turnover above the VAT threshold of £85,000 a year) in the UK (December 2019), the true scale of the problem is demonstrated (Rhodes, 2019).

The Prompt Payment Code

The Prompt Payment Code (PCC), introduced by the Labour Government in 2008, sets standards for payment practices and is administered by the Chartered Institute of Credit Management, on behalf of the Department for Business Innovation & Skills (Prompt Payment Code, n.d.). Companies who sign up to the voluntary code pledge to uphold best practice for payment standards to help end the culture of late payment, assist SMEs, and stimulate growth in the economy (The Credit Protection Association, 2019). Signatories of the code are expected to pay suppliers on time within the terms agreed at the outset of the contract; a minimum of 95% of invoices are expected to be paid within 60 days, working towards adopting 30 days as the norm (Greenwood, 2020). In addition, signatories are expected to give clear guidance to suppliers on payment procedures and to encourage good practice, promoting the adoption of the code throughout the supply chain (Prompt Payment Code, n.d.). If signatories of the code fail to meet the standards required (e.g. unable to demonstrate effective systems are in place to ensure a fair and responsible approach to payment of their supply chain), they will be removed or suspended until an 'action plan' is produced to demonstrate that invoices are paid within 60 days (The Department for Business, Energy and Industrial Strategy, 2018).

Performance of the Prompt Payment Code

There is a significant conflict of opinion on the effectiveness of the Prompt Payment Code. In 2019, Rudi Klein, SEC Group CEO and Barrister Professor expressed doubts about the effectiveness of the Prompt Payment Code, highlighting the ability and simplicity of larger contractors signing up to the code as a gesture, and then not adhering to its terms (Cable Talk, 2019). Klein argues the voluntary initiative *"lacks a formal and public reporting process"* resulting in the code not being as effective as intended. Subsequently, the small business community is losing confidence; in 2015, research carried out by the Federation of Small Businesses found that only one in five (21%) of FSB members felt confident that the code is sufficient to address the UK's poor payment culture (Federation of Small Businesses, 2018).

Mike Cherry, National Chairman at the Federation of Small Businesses, states to overcome this issue the Government must strengthen the PPC by *"introducing a tough penalty regime for those companies flaunting the rules, as companies taking advantage of small businesses for their own gains should have no right to public sector contracts"* (ibid). In response, the world's leading professional body for Accounting Technicians (AAT) proposed three simple changes that could significantly strengthen the code viz: 1) reduce the maximum payment terms from

60 days to 30 days; 2) make the code compulsory for all organisations employing more than 250 people; and 3) give the Small Business Commissioner the power to impose financial penalties on persistent late payers (AAT Comment, 2020). Twelve months on, these recommendations gained the support of 73% of MPs in YouGov polling commissioned by AAT, yet the Government has not implemented the proposed changes (*ibid*). In March 2019, an analysis of the UK's top one hundred (ranked by turnover) contractors determined an average median of 43 days for an invoice to be paid (marginally changed from 44.5 days in 2018), which despite being far below the reported 120-day of Carillion, is still significantly above the 30-day target set out in the Prompt Payment Code. Ominously, a comparison between the percentage of invoices paid (not to terms) between 2018 to 2019 reduced from a median of 45.50% to 34.00% (respectively) – thus illustrating a worsening of this phenomena. Moreover, only six of the twenty-four signatories not adhering had been suspended, implying most contractors that are not achieving the 95% mark, or even 90% remain signatories of the code.

< Table 1 – The Prompt Payment, The Best and Worst Payers Revealed >

However, slow but questionable progress is being made. In September 2019, new rules on prompt payments emerged. Oliver Dowden, Cabinet Office Minister for Implementation, stated any supplier that bids for a government contract above £5m per annum would be required to answer questions about payment practices and performance (Cabinet Office, 2019). Yet, in January 2020, the Crown Commercial Service's (CCS) construction works framework agreement was launched to find contractors to build key infrastructure projects (i.e. schools, hospitals, offices, universities, prisons and housing) (The Construction Index, 2020). CCS named Balfour Beatty and John Sisk as the contractors selected to undertaken major projects on the framework valued at more than £80m, despite being suspended from the government's Prompt Payment Code (*ibid*). Similarly, research by Tussell found contracts worth over £90bn had been awarded to contractors with poor payment practices since 2015, whereas only 10% of contracts have been awarded to compliant contractors. In reality, under the new standard proposed by Oliver Dowden, four-fifths of the government's 'strategic suppliers' would be excluded from bidding on government contracts.

The Construction Supply Chain Payment Charter

The Construction Supply Chain Payment Charter (CSCPC) is a voluntary scheme introduced by the Construction Leadership Council (CLC) in 2014 (Construction Leadership Council). Managed by the Chartered Institute of Credit Management on behalf of BEIS. The CSCPC sets out '11 fair payment commitments' to create a more collaborative payment culture (Parliament UK, 2018). Signatories are required to reduce supply chain terms to 60 days applying to all new contracts from January 2015: 45 days from June 2015 and 30 days from January 2018 (Department for Business, Innovation and Skills, 2014). Other commitments include: making payments electronically; not deliberately delaying or unreasonably withholding payment; agreeing to be monitored for compliance, by reporting against a set of agreed key performance indicators; and an 'ambition' to move to zero retention by 2025 (Parliament UK, 2018). The Charter specifically seeks to create a more collaborative culture and ensure a strong, resilient and sustainable supply chain by 'building on and complement existing legislation and policy, namely: the Housing Grants, Construction & Regeneration Act 1996 (as amended); the Late Payment of Commercial Debts Regulations 2013; the Fair Payment Charter; Cabinet Office Procurement Information Note 2/2010; and the Prompt Payment Code' (The Confederation of Construction Specialists, 2014).

Performance of The CSCPC

Similar to the Prompt Payment Code, there is a significant conflict of opinion on the effectiveness of the CSCPC. Rudi Klein SEC Group CEO and Barrister Professor expressed doubts about the effectiveness of the Charter, referring to the voluntary scheme as a "*dismal failure and a distraction*" (CPA, 2018). Disappointingly, since its launch in 2014, the CSCPC has only received a small number of signatories (CE Funding and Finance Group, 2016), demonstrating its lack of promotion, confidence and effectiveness within the UK Construction industry (Department for Business, Energy and Industrial Strategy, 2017). In its first two years, the Construction Supply Chain Payment Charter gained only 10 industry signatories (*ibid*). In January 2018, only 35 companies had signed up to the charter (four years after its launch) with the most recent new company to commit to the voluntary payment initiative in August 2017 (Construction Enquirer, 2018). Institute of Credit Management chief executive Philip King acknowledged that the charter would not meet everybody's expectations immediately, but that expectations had to be *"tempered with some pragmatism"* (HNV Plus, 2014).

Colin Hale, Deputy Chairman of The Confederation of Construction Specialists Advisory Board, supports Klein by stating that the Charter is another failed attempt to address a major

flaw in the UK Construction procurement process (The Confederation of Construction Specialists, 2014). However, government chief construction adviser Peter Hansford states that changing the payment culture in the industry is not an easy or quick win and argues that the Charter sets out a position that the Leadership Council is prepared to work towards. How businesses work to achieve that is for them to determine; ultimately, the Charter is not a contractual document (Hansford, 2014). However, in July 2018, a survey carried out by Build UK found that none of the leading Tier 1 contractors of the CSCPC (including Balfour Beatty, Vinci, Sir Robert McAlpine and Skanska) paid their suppliers within 30 days, despite all having committed to doing so (Construction News, 2018). Similarities can be drawn from the lack of standardisation surrounding the Prompt Payment Code; the lack of strict rationale to ensure signatories adhere to the required standards of the Charter ultimately allows larger contractors to abuse the supply chain continually.

RESEARCH APPROACH

This research adopts a mixed philosophical design (cf. Tashakkori and Teddlie, 2003; Ellis *et al.,* 2021; Smith *et al.,* 2021; Ahmed *et al.,* 2021) that incorporates both pragmatism and postpositivism to examine the late payment phenomena within the UK construction industry. Pragmatism advocates the development of an understanding through practical applications and the acquisition of sound knowledge through thoughts and experiences (Edwards *et al.,* 2021), whilst postpositivism balances both positivist and interpretivist approaches, focusing on issues in the context of experiences of the majority (Panhwar *et al.,* 2017). Pragmatism has been extensively used within prevailing construction management literature, for example: Shehu *et al.* (2009) adopted a pragmatic approach to establish the relationship, similarities and differences between construction programme management theory and practice. Similarly, Scott (2016) adopted a pragmatic approach to determine the education of construction professionals, specifically the philosophical positioning and paradigms of construction education. The postpositivistist pragmatic paradigm encourages the use of triangulation to collect and interpret both qualitative and quantitative data (Edwards and Holt, 2010; Panhwar *et al.,* 2017); where triangulation is broadly defined by Denzin (1978) as: *"the combination of methodologies in the study of the same phenomenon."* This approach goes some way to ensure that research is conducted with depth, breadth and rigour (Williamson, 2018).

Primary data for the study was obtained from a case study of a civil engineering contractor based in the East Midlands, UK. The contractor boasts an impressive client portfolio from both

public and private sectors, specialising in framework agreements, highway works including Section 278 agreements, bridgeworks, car parks, drainage, infrastructure, environmental and public realm works. In 2019, the contractor had an annual turnover of £15m, with ambitious plans to grow that figure to £30m in the next five-year period. A population of 50 contractors and 50 sub-contractors nominated by this contractor were selected to participate in this research to ensure respondents had sufficient experience of construction to add meaningful insight to the present study.

To evaluate respondents' perceptions of the UK's late payment epidemic, a comparative analysis was undertaken for the upstream (main contractors) and downstream (subcontractors and suppliers) contractors using descriptive statistics (frequencies and mean scores), independence chi-square test, Kruskal Wallis Test and Mann-Whitney U Test. The option for non-parametric test was fuelled by non-normal distribution of the data using skewness, kurtosis, Kolmogorov-Smirnov and Shapiro-Wilk normality test. The reliability (internal consistency) of the variables (constructs) containing multiple indicators was assessed using Cronbach's alpha (α).

Survey Design and Pilot Work

To gain greater depth and penetration to the study, a questionnaire survey adopted used a mix of both closed (i.e. Likert) and open style questions (Salant and Dillman, 1994; Owusu-Manu *et al.,* 2021); where questions posed were premised upon the literature review conducted (Edwards *et al.,* 1998; Spellacy *et al.,* 2020; Newman *et al.,* 2020). Closed-ended questions survey questions focused on general information about the respondent and the case study construction company under consideration, and their views and opinions on the effectiveness of government-led payment initiatives introduced to benchmark payment practices (McIntyre, 2014). Specifically, the study used a 5-point Likert scale (1 = worse than ever and 5 = improved fully) to indicate the extent of change in the industry's payment practices in the previous five-year period (viz: 2016-2020). Open-ended survey questions focused on generating wider discourse and obtaining proposals of innovative, feasible and practical additional measures that could be introduced to encourage and adopt more efficient payment practices. A pilot study was conducted to pre-test the survey and data collection procedures before the actual survey commenced (Levy *et al.,* 1999). Opportunity sampling determined five construction professionals who would participate in the research viz: two Quantity Surveyors, one Commerical Director, one Project Manager and one Contracts Manager. All participants

completed the survey, stating the questions posed should elicit insightful response, that the questions were wordy clearly and no further amendment (other than minor edits) was required. Stratified sampling was then adopted to group participants into subcontractor, other (i.e., suppliers and consultants) and main contractors thematic groups. The main sample survey was then administered.

From 100 questionnaires distributed, 65 respondents completed questionnaires were returned within the 7-week timeframe between 1st January 2020 and 15th February 2021 (representing a 65% response rate). To ensure that strict ethical considerations were adhered to, all participants: were informed about the purpose of the study via cover correspondence; signed informed consent forms; and were given assurance of strict anonymity and confidentiality but also their right to withdraw at any stage without providing reason (cf. Fisher *et al.,* 2018; Law *et al.,* 2021). Upon completion, all data collected would be securely disposed of once analysed and published, and any personal details disclosed voluntarily would be kept strictly confidential.

DATA ANALYSIS AND DISCUSSION

Table 2 provides the demographic profiles of participants.

< Table 2 - Entry Criteria, Demographic Profile of Participants >

A near equal percentage of participants from main contractors (frequency (*f*) = 27 or 41.55%) and sub-contractors (*f* = 28 or 43.07%), whilst the remaining 15.38% (*f*=10) worked for 'other', namely suppliers or consultants. In terms of profession, 83% (*f* =46) of participants work within a commercial field (Commercial Directors, Finance Directors, Contracts Managers, Quantity Surveyors and Project Managers) representing the largest group of participating respondents, followed by 17% (*f*=19) of participant professions classified as 'other', including General Managers, Supply Chain Managers and Operations Directors. Demographic data shows over 50% of participants (*f* =32) have > 15 years' experience in the industry, whilst 14% (*f* =10) have between 11 and 15 years. Participants with 6-10 years, 1-5 years and <12 months experience came to 14% (*f* =9), 22% (*f* =14) and 0% (*f* =0), respectively. This demographic profile illustrates that participants are representative of industry professions engaged in industry and are actively involved in the phenomena under investigation.

< Table 3 - Demographic Profile of Participants, Years in the Industry >

Reliability Assessment

Cronbach's alpha was used (cf. Hair *et al.,* 2011) to test the two main constructs; consequences of late payment and the additional measures proposed to drive behavioural change. Davidoff *et al.* (2002) and Debrah *et al.* (2020) interpret Cronbach Alpha coefficient values in surveys as: 0.6 adequate/acceptable/marginal, 0.70 reasonable/preferable, 0.80 desirable/good and 0.90 excellent. In this study, the Cronbach's alpha values for consequences of late payment and the additional measures proposed to drive behavioural change were respectively 0.900 and 0.812 (Table 4), indicating that the internal reliability of the measures were substantially good.

<Insert Table 4 about here>

Payment Practices in the Industry

Since the collapse of Carillion in 2018, the power imbalance between construction SMEs and the main contractors they serve has been emphasized. The results revealed that the responses were between gradually declined to improve slightly (30.8% indicated gradually declined, 29.2% indicated stayed the same and 36.9% said improved slightly). There was not significant difference between opinions of industry stakeholders in the study on the payment practices changes in the past 5 years, $\chi^2_{(df=2)} = 9.128$ and p-value of $0.332 > 0.05$ (Table 5). This meant the distribution of the rating was not subject to opinion based on if the respondent is employed by the main-contractor, sub-contractor or other, namely supplier or consultant.

<Insert Table 5 about here>

Payment Terms

The payment terms captured the ability to negotiate payment terms, payment performance and late payment related imbalance of power and size. In the study, responses to the dichotomous ('Yes' or 'No') binary variables have been used to determine the power of negotiating payment terms, payment performance and late payment related to the imbalance of power and size.

Question: Do you feel able to negotiate and/or challenge payment terms?

From the results (Table 6), 63% of respondents felt able to negotiate and/or challenge payment terms, whilst the remaining 37% felt unable to negotiate on the most advantageous terms due to a lack of equality in bargaining power. To emphasise this finding, one participant stated: "*I don't think a lot of companies expect you to challenge their payment terms, but I have found that quite often, people are willing to compromise."* Other respondents expressed that, some of companies are opened for negotiation, e.g.: "*I challenge immediately should a payment be late. Luckily, our main customer is very approachable and understanding"* and *"we offer quite a specialised service for our client's, this gives us a little bargaining power, with some clients we ask for part payment upfront if they have poor credit rating or poor payment history with ourselves."* It was also stated that: *"We always challenge payment terms, the most we'll go to as a business is 35 days month end. We've walked away from schemes before as payment terms were too many days beyond month end for us to ensure adequate cash flow and available cash at hand to commercially manage workflow.*"

<Insert Table 6 about here>

However, respondents that felt unable to negotiate and/or challenge payment terms were of the view that, sub-contractors had no protection regrading pricing and no opportunity to negotiate. Participants stated: *"Depends on the client where we have been on a framework as a subcontractor there is little opportunity to negotiate on individual there is opportunity to negotiate prior to commencement "; "we negotiate for quicker payment terms by offering MCD* [main contractor discount usually 2.5%] *however, this comes out of the profit margin priced into the job";* and *"often, clients have a 'take it or leave it' approach-custom terms do not fit within their internal payment infrastructure."* Participants also stated that main contractors often use power imbalances in the supply chain (specifically driven by higher management i.e. directors) to make negotiation processes (with smaller sub-contractors) laborious. They made statements such as: *"When trying to work alongside new clients you are forced to 'tow the line'. Contracts and sub-contract orders are heavily sided with main contractors. They offer little to no protection to the sub-contractor/supplier";* "*Tier 2 contractors still bully sub-contractors, they are only involved to get a margin off the sub-contracted works then most outsource compliance and the purchase ledger to make things difficult with constant delays*"; and *"the main contractors will place orders with people who agree to their terms, and don't care if you do agree to them, someone else will, example kier - 90 days payment from month end."* It was also mentioned that payment terms are set in the pre-qualification questionnaire

(PQQ) process or sub-contractors' data and therefore, smaller contractors payment terms can be changed by exception. Responses substantiated this view included: *"Payment terms are frequently set in the sub-contract data and are therefore only changed by exception"* and *"this is often set in the PQQ process and therefore there is little than can be done when it comes to contract award."*

Question: Do you research the payment performance of a business before entering into an agreement with them?

In determining payment performance of a business before a business enters into an agreement with contractors, circa 76.9% (f =50) of the respondents said they research the payment performance of business before entering into agreement with the suppliers. In terms of industry stakeholders in the study, there was no significant difference among the responses, $\chi^2_{(df=2)} = 0.136$ and p-value of 0.987 > 0.05 (Table 6). However, the 23% of contractors that indicated they do not research the payment performance of businesses before entering into agreement stated the reasoning for this included difficultly to act with professional clients and the importance of awarded work as opposed to ensuing payment terms. Contractors are able to look at clients' financial history using credit checking tool called 'safe'. It was also revealed that, researching into payment performance forms part of full background check on all new clients and existing clients (to determine the days beyond terms that they pay their supply chain). This meant all clients are credit checked prior to acceptance of any order/agreement on payment terms – one participant stated that: "*Due diligence of checking a company's history should be done as a matter of course which should usually be carried out by an accounts team. Looking on companies' house is also a good tool as it provides vital information to aid in decision making"* while another stated: *"Yes, we always credit check the businesses we are working for, we look at their payment history and how many days beyond terms they pay their supply chain. If this is greater than the industry standard then we'll discuss their payment performance with them and ask the question as to why they're paying late."* It was explained that researching into payment performance was necessary to ensure a better understanding the cash position of the supply chain and provided insight in to the reliability of the firm. Though they work with familiar clients but check credit and other matters on all new suppliers to ensure they fit permissible risk profiles. Another important aspect of researching into the payment history of clients was to obtain credit insurance, participants stated: *"Prior to entering into contract our business checks whether we can obtain credit insurance. If there is an issue where*

credit insurance would not be provided, we look at potential for advanced payments to mitigate business risk"; and *"We research the credit worthiness of every business, and have credit insurance in place also. We have turned down work with potential customers in the past where we have considered them to be a credit risk",*

Question: Do you feel that late payment is related to the imbalance of power and size in the supply chain between larger and smaller contractors?

Overwhelmingly, 77% of respondents felt an imbalance between smaller and large contractors whilst the remaining 23% disagreed (refer to Table 6). Typical verbatim comments of respondents that felt power imbalances are prevalent in the industry revealed that large organisations hold the balance of power. Typical statements made included: *"Late payment can be used by some larger sized organisations as they hold the balance of power and fail to support their supply chain - it may be part of their strategy to increase profits. Whilst this can be challenged through legislation, many SME's either do not have the resource or alternative source of works to take this course of action"; "It is the whole David and Goliath relationship where the balance of power lies with the larger companies on whom the smaller ones are reliant for business hence the large companies are able to dictate"; and* "*Larger companies can hold smaller companies to ransom and threaten loss of future works"* and *"It's a cut-throat world with many small sub-contractors trying to win work on ever-decreasing margins - some are prepared to be on long payment terms to win - this is too easy to exploit by less ethical large companies."* These compelling statistics and comments are most likely due to larger contractors imposing onerous terms on SME's, alongside a promise of more work or exclusion if SMEs does not comply. Conversely, other respondents with the same view also expressed that, though some of the larger companies delay/stretch the credit terms, other large companies pay earlier than terms – as one participant stated: "*…I have seen a shift in some larger organizations recognizing the importance of supply chain cash flow and so are being more reasonable."*

In comparison, respondents that disagreed stated that: *"It's a matter of company's beliefs and financial stability - some smaller companies have stronger financial performance than greater companies, and usually bigger companies have greater expenses and bigger risks"* and *"while cash flow is key for a large number of smaller organisations in the industry, there are plenty of good-sized subcontractors out there; both main and subcontractors of all sizes are susceptible late payment, and I wouldn't put the imbalance of power and size down to this."*

Because some of the larger companies make payment within payment terms/standard, some respondents argue that late payment could not be related to the imbalance of power and size between larger and smaller contractors.

CONSEQUENCES OF LATE PAYMENT

Table 7 showed the consequences that late payment has caused study participants in the previous 5-year period. Interestingly, main-contractors, sub-contractors and others (suppliers and consultants) identified significant waste of time, resources and increased administrative costs. Reduced profit and delays or sabotages to work were also indicated as frequent occurrences because of late payment, along with similarities amongst the parties of being forced to pay suppliers late. These six consequences were rated averagely as sometimes occur, thus, mean scores of the combined data ranged from 2.42 to 3.37 (refer to Table 7). There were however, no significant variations between the contractors as well as the years of experience in the construction industry. From the result, Kruskal-Wallis test of the three contractors and the years of experience revealed no significant differences in opinions on the consequences of late payment, p-values of the chi-squares > 0.05 (5%). This suggested participants all scaled the consequences the same statistically. Evidently, long payment terms and late payments practices have a huge knock-on effect, especially on SME's, such as cash flow shortages, hindered business growth and lower profitability.

<Insert Table 7 about here>

Government-Led Voluntary Payment Initiatives - Creating a Responsible Payment Culture

From Table 8, only 29% knew about the prompt payment code while 4.6% only the CSCPC. Meanwhile, 26% were familiar about both the code and the charter but 40% had no knowledge about either payment initiative.

<Insert Table 8 about here>

To discourage the Code and Charter being perceived by contractors as 'lacking powers of enforcement', the study asked participants to comment on the introduction of incentives and consequences of becoming voluntary signatories. Intriguingly, most participants encouraged incentives (f =49 or 79% agree) for contractors that join voluntary led payment initiatives and

consequences (*f* = 40 or 66% agree) for those that do not comply (once a signatory) to the obligations of the payment initiative (Table 8).

The participants who agreed with incentives for contractors to become a signatories of government-led payment initiatives explained that incentives help ensure prompt payment and foster responsible payment culture in the construction ecosystem. It reduces the risk of late payment. Comments recorded included: "I*t encourages a responsible payment culture throughout the construction";* and *"There are clearly significant payment issues within the industry and any incentives to promote and encourage prompt payment has got to be a good thing."* Others commented that incentives provided the tools to secure stability within the weaker or smaller companies and scale both small and large companies to abide by the same regulations. Typical comments included: "*I believe that it will aid in all contractor's small or large to abide by the same regulations more promptly."*

There were two main reasons provided by the participants who disagreed with incentives for contractors to become a signatories of government-led payment initiatives. First, companies should be faithful to the contract entered into to ensure prompt payment are made. Participants said: "*Consider that contracts should be administered as entered into. A don't believe there should be an incentive to carry out business as intended";* and *"If one completes work to an acceptable standard and there are agreed payment terms you should be paid on time, there shouldn't be incentives for main contractors to pay people on time."*. Second, companies should not be incentivised to simply 'do the right thing'. Participants said: "*Incentives... companies should have the morals and working ethics to do what they say they are going to do against agreements made when setting up accounts or orders. Shouldn't need to be encouraged to do so by basically being rewarded for adhering to their responsibilities as companies."* While such rhetoric is laudable, the scale of statistics presented in this present study simply do not support the view that major contractors are behaving ethically.

PROPOSED MEASURES TO CREATE A RESPONSIBLE PAYMENT CULTURE

To mitigate the late payment epidemic that persists within industry, additional measures have been proposed in the study to create a responsible payment culture. was Analysis results were subsequently segregated into disagree (strongly disagree and disagree), undecided and agree (strongly agree and agree) to provide clearer description of the respondents' level of agreement. Interestingly, most participants agreed to the: introduction of a robust audit scheme to ensure

that signatories are complying; introduction of a traffic light system to identify companies with poor payment records; and creating online 'hubs' for payment advice for SME. From the results (Table 9), 87.5% (f = 56), 87.3% (f = 55) and 74.6% (f = 47) respectively agreed to these measures to effectively create a responsible payment culture. There was no significant difference among the contractors' proposal measure of the introduction of a robust audit scheme to ensure that signatories are complying, p-value of Kruskal-Wallis test was 0.130 > 0.05 (5%) (Table 9). However, introduction of a traffic light system to identify companies with poor payment records and creating online 'hubs' for payment advice for SME were rated differently among the contractors. Using a Mann-Whitney U test to investigate the differences revealed sub-contractors rated introduction of a traffic light system to identify companies with poor payment records higher than main contractors but the same as others (suppliers and consultants). The difference in rating for the creation of online 'hubs' for payment advice for SMEs was between main contractors and other stakeholders (suppliers and consultants). There was no significant difference between the recommendation of main contractors and sub-contractors on creating online 'hubs' for payment advice for SME.

<Insert Table 9 about here>

There was also high level of agreement by participants on naming and shaming companies that have not adhered to the principles of the initiative and introduction of an independent and anonymous 'whistle-blowing' process. These were averagely recorded 3.86 (SD = 1.006) and 3.85 (SD = 0.712) respectively with no significant variations in level of agreement, p-values > 0.05 (Table 9). The analysis revealed five most significant measures to contribute to a responsible payment culture. These were: 1) the introduction of traffic light system to identify companies with poor payment records; 2) the introduction of a robust audit scheme to ensure that signatories are complying; 3) naming and shaming companies that have not adhered to the principles of the initiative; 4) creating online 'hubs' for payment advice for SME; and 5) introduction of an independent and anonymous 'whistle-blowing' process. The measure that recorded the least mean score and low percentage level of agreement was the publication of the contact details of a designated person for each signatory.

For future work other proactive measures (not considered in this present paper) should be explored to determine to determine their impact upon the payment culture. Such measures could include for example, shared risk procurement arrangements where both client, contractor

and members of the supply chain assume equal responsibility for both risks posed and profits gained. Such an approach has been tentatively trialled in public private partnership (PPP) arrangements (Owusu-Manu *et al.,* 2020; Chileshe *et al.,* 2021) but a true spirit of a partnership is rarely attained. Perhaps future is therefore needed to explore and develop new procurement paths that enable a true partnership to be entered into – one where all parties involved share the risks and rewards equally.

CONCLUSIONS

Extant literature and survey results confirm the UK government has elaborated the effect of late payment on the economy, with its impact on the construction sector being particularly pronounced. Despite the introduction of 19 separate payment initiatives (directives, codes, regulations since 2004) to combat poor payment practices, systematic research demonstrates that in practice, the monitoring and enforcement of these payment initiatives has been unprosperous despite some notable signatories. The voluntary approach adopted to subscribing to these initiatives is not having the desired effect both in terms of companies signing up or adhering to their principles. Numerous contractors remain forced to adopting indefensibly poor and punitive payment practices. Responses from survey and the extant literature further substantiate and underscore the industry's need to strengthen voluntary government-led payment initiatives, reducing the likelihood of unreasonable payment terms continuing to damage SMEs that ultimately form the backbone of the British economy and enable the construction industry to prosper. To overcome the detrimental impact that the late payment epidemic has forced (further exacerbated by a global health emergency (Covid-19), an economic crisis of historic proportions and the collapse of a major contractor in 2018) additional measures are required to create a responsible payment culture. Any future code of system created should be mandatory and enforceable as it is clear that a self-regulating approach has failed dismally.

Of course, there are inherent limitations of this current study. The findings of a case study adopted cannot draw inference for the wider population and it may be that companies within this major contractors supply chain may have tainted views. Hence, a larger sample of major contractors is needed to definitively test the outcomes of this present study. That said, the scale of the issue (as reported upon) is indelible and therefore, future academic discourse should not focus on the scale of the issue but rather focus more on solutions and testing these in practice to determine which measure works best. Such work may include: evaluating modern payment

systems to improve payments in the industry, focusing on three main areas: 1) risk mitigation (reducing cycle time and accelerating payments through electronic signatures and payment documents); 2) efficiency gains (by reducing time spent on administrative elements of the payments process); and 3) transparency (ensuring a healthier supply chain and also reducing conflict). Another direction for future work could be to evaluate the role of the client-contractor relationship regarding late payment in the UK construction industry.

REFERENCES

AAT Comment (2020, 09 28) Government Inches Towards Progress on Late Payments. Retrieved from AAT Comment: https://www.aatcomment.org.uk/news/government-inches-towards-progress-on-late-payments/

Aggarwal. (2019, 09 19). Why the UK Prompt Payment Code Matters to Treasurers. Retrieved from Treasurers: https://www.treasurers.org/hub/treasurer-magazine/why-uk-prompt-payment-code-matters-treasurers

Ahmed, H., Edwards, D.J., Lai, J.H.K., Roberts, C., Debrah, C., Owusu-Manu, D.G. and Thwala, W.D. (2021) Post occupancy evaluation of school refurbishment projects: multiple case study in the UK, Buildings

Alderson. (2018, 08 21). Construction News. Retrieved from Late Payment: Is History Repeating Itself?: https://www.constructionnews.co.uk/news/archive-news/late-payment-is-history-repeating-itself-21-08-2018/

Baines Jewitt. (2019, 07 17). Late payment terms remain miserable for small businesses. Retrieved from Baines Jewitt: https://bainesjewitt.co.uk/news_jan16-late-payment.htm

Bibby Financial Services. (2018). Subcontracting Growth Report. England: Bibby Financial Services. Retrieved from subcontractors

BIM Plus. (2019, 08 04). Why we need technology to back Prompt Payment Code. Retrieved from BIM Plus: bimplus.co.uk/analysis/technology-missing-ingredient-construction-payment/#:~:text=Risk%20mitigation%3A%20it%20helps%20to,adherence%20to%20the%20Construction%20Act.

Building. (2019, 05 01). Code red – pressure grows to change poor payment practices. Retrieved from Building: https://www.building.co.uk/communities/code-red-pressure-grows-to-change-poor-payment-practices/5099229.article

Cabinet Office. (2019, 06 19). Kier Group - Question for Cabinet Office. Retrieved from UK Parliament: https://questions-statements.parliament.uk/written-questions/detail/2019-06-19/266680

Cable Talk. (2019, 10 01). Professor Rudi Klein on the Prompt Payment Code. Retrieved from Cable Talk: https://www.cabletalkmagazine.com/single-post/2019/10/28/Prompt-payment-code

CE Funding and Finance Group. (2016). The Payments Minefield. England: Constructing Excellence .

CFI. (n.d.). What is Pragmatic? Retrieved from CFI: https://corporatefinanceinstitute.com/resources/knowledge/terms/pragmatic-definition/

Chileshe, N., Kavishe, N. and Edwards, D.J. (2021) Identification of critical capacity building challenges in public-private partnerships (PPPs) projects: The case of Tanzania, International Journal of Construction Management. DOI: https://doi.org/10.1080/15623599.2021.1892947

Cherry, M. (2018, 01 25). Carillion Crisis Exposes Toothless Prompt Payment Code. (F. o. Businesses, Interviewer) Retrieved from Federation of Small Businesses: https://www.fsb.org.uk/resources-page/carillion-crisis-exposes-toothless-prompt-payment-code.html

Christensen, P. (2018, 05 10). Time to Strengthen the Prompt Payment Code. (B. Matters, Interviewer)

Construction Enquirer. (2018, 03 26). Carillion M&E Firm Collapse Spurs Call for Late Payment Law. Retrieved from Construction Enquirer: https://www.constructionenquirer.com/2018/03/26/carillion-me-firm-collapse-spurs-call-for-late-payment-law/

Construction Enquirer. (2018, 05 01). Construction Payment Charter is 'Dismal Failure'. Retrieved from Construction Enquirer: https://www.constructionenquirer.com/2018/01/05/construction-payment-charter-is-dismal-failure/

Construction Leadership Council. (n.d.). Construction Supply Chain Payment Charter . Retrieved from Gov UK: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/541454/construction-supply-chain-payment-charter.pdf

Construction News. (2018, 07 31). Put Up or Shut Up Time on Fair Payment. Retrieved from Construction News: https://www.constructionnews.co.uk/agenda/opinion/cn-briefing/put-up-or-shut-up-time-on-fair-payment-31-07-2018/

Construction News. (2019, 03 25). CN Payment 100. Retrieved from Construction News: https://www.constructionnews.co.uk/data/data-news/cn-payment-100-when-do-they-pay-25-03-2019/

Contract Journal. (2009, 03 2020). Construction Sector Loses 36 Firms in February. Retrieved from Contract Journal: https://www.contractjournal.co.uk/construction-sector-loses-36-firms-february/

CPA. (2018, 01 05). Construction Payment Charter is 'Dismal Failure'. Retrieved from The Credit Protection Association: https://cpa.co.uk/construction-payment-charter-dismal-failure/

Cronbach. (1951). Coefficient Alpha and the Internal Structure of Tests. Psychometrika, 297–334.

Cumberlege et al. (2018). Contractors' Perceptions of Late Payments. Journal of Construction Project Management and Innovation, 2138 - 2145 DOI https://doi.org/10.36615/jcpmi.v8iSupplement.168.

Denzin. (1978). Sociological Methods . New York: McGraw-Hill.

Denzin. (1978). The Research Act: A Theoretical Introduction to Sociological Methods. New York: Praeger.

Denzin and Lincoln. (2008). The Landscape of Qualitative Research (3rd ed). Sage Publications.

Department for Business, Energy & Industrial Strategy. (2017, 07 05). Businesses get on Board with the Prompt Payment Code. Retrieved from Gov UK: https://www.gov.uk/government/news/businesses-get-on-board-with-the-prompt-payment-code

Department for Business, Energy & Industrial Strategy. (2019, 10 10). Business Population Estimates 2019. Retrieved from National Statistics : https://www.gov.uk/government/statistics/business-population-estimates-2019

Department for Business, Energy and Industrial Strategy. (2017, 09 07). Retention Payments in the Construction Industry. The Government and the Construction Leadership Council (CLC). Retrieved from Summary: Intervention and Options .

Department for Business, Innovation and Skills. (2014, 04 22). Government and Industry Agree New Construction Payment Charter. Retrieved from Gov UK: https://www.gov.uk/government/news/government-and-industry-agree-new-construction-payment-charter

Edwards, D. J., Holt, G. D. and Harris, F. C. (1998) Predictive maintenance techniques and their relevance to construction plant. Journal of Quality in Maintenance Engineering, 4(1), pp. 25-37. DOI:10.1108/13552519810369057

Edwards, D. J. and Holt, G. D. (2010) The case for '3D triangulation' when applied to construction management research. Construction Innovation, 10(1), pp. 25-41. DOI: https://doi.org/10.1108/14714171011018292

Edwards, D.J., Akhtar, J., Rillie, I., Chileshe, N., Lai, J., Roberts, C. and Ejohwomu, O (2021) Systematic analysis of driverless technologies, Journal of Engineering Design and Technology, Vol. ahead-of-print No. ahead-of-print. DOI: https://doi.org/10.1108/JEDT-02-2021-0101

Ellis, J., Edwards, D.J., Thwala, W.D., Ejohwomu, O., Ameyaw, E.E. and Shelbourn, M. (2021) A Case Study of a Negotiated Tender within a Small-to-Medium Construction Contractor: Modelling Project Cost Variance, Buildings, 11(6), 260; DOI: https://doi.org/10.3390/buildings11060260

European Commission. (2018). Business-to-business transactions: a comparative analysis of legal measures vs. soft-law instruments for improving payment behaviour. Brussels: European Commission.

Federation of Small Businesses. (2016). Time to Act: The Economic Impact of Poor Payment Practice. Federation of Small Businesses.

Federation of Small Businesses. (2018, 01 25). Carillion Crisis Exposes Toothless Prompt Payment Code. Retrieved from Federation of Small Businesses: https://www.fsb.org.uk/resources-page/carillion-crisis-exposes-toothless-prompt-payment-code.html

Federation of Small Businesses. (2020). How the Coronavirus Pandemic is Impacting Payment Terms for Small Firms. Federation of Small Businesses.

Fisher, L., Edwards, D. J., Pärn, E. A. and Aigbavboa, C. O. (2018) Building design for people with dementia: a case study of a UK care home. Facilities, 36(7/8), pp. 349-368. DOI:10.1108/F-06-2017-0062

Gibbons. (2019, 12 3). Managing Late Payments in the Construction Industry. Retrieved from CEA Limited: https://cealimited.co.uk/managing-late-payments-in-the-construction-industry/

Glasow. (2005). Fundamentals of Survey Research. The MITRE Corporation.

Government UK. (2015, 03 24). Changes to the Prompt Payment Code. MCB2015/05124/FO London: Department for Business, Innovation and Skills

Government UK. (2016). Payment Reporting Requirement. Department for Business, Energy and Industrial Strategy.

Government UK. (2018, 11 29). Prompt Payment Policy. Retrieved from Government UK: https://www.gov.uk/guidance/prompt-payment-policy

Gowling WLG. (2017, 04 05). New duty for "large" businesses to publish UK payment practices. Retrieved from Gowling WLG: https://gowlingwlg.com/en/insights-resources/articles/2017/duty-for-businesses-to-publish-uk-payment-practice/

Greenwood. (2020). Paying the Price. Construction Journal, 14-15.

Guba. (1990). The Paradigm Dialog. In Guba, The Alternative Paradigm Dialog (p. 23). Newbury Park, CA: Sage Publications.

Hansford. (2014, 04 23). Payment Charter will Show Up Bad Payers and Improve Industry. Retrieved from Infrastructure Intelligence: http://www.infrastructure-intelligence.com/article/apr-2014/hansford-payment-charter-will-show-bad-payers-and-improve-industry

Hanson, S. (2018, 08 3). Construction firms accused of "utter disregard" for SMEs. (F. o. Businesses, Interviewer)

HNV Plus. (2014, 11 04). Revealed: Charter signatories to report on four KPIs. Retrieved from HNV Plus: https://www.hvnplus.co.uk/news/revealed-charter-signatories-to-report-on-four-kpis-04-11-2014/

Horgan. (2020, 09 02). UK Contractors are Failing to Meet Prompt Payment Requirements. Retrieved from New Civil Engineer: https://www.newcivilengineer.com/latest/uk-contractors-are-failing-to-meet-prompt-payment-requirements-02-09-2020/

Infrastructure Intelligence. (2016, 07 06). Scourge of Late Payment Still Persists in Construction. Retrieved from Infrastructure Intelligence: http://www.infrastructure-intelligence.com/article/jul-2016/scourge-late-payment-still-persists-construction

Intuit Quickbooks. (2019). The State of Payments. Intuit Quickbooks.

Jordan. (2018, 05 23). Insolvency: Government Initiatives Have Failed Small Businesses. Retrieved from Small Business: https://smallbusiness.co.uk/insolvency-prompt-payment-commissioner-2543832/

Lakha. (2019, 09 09). Charles Russell Speechlys LLP. Retrieved from Late Payment and the Prompt Payment Code: Where to from here?: https://www.lexology.com/library/detail.aspx?g=69b4178b-0c5d-482b-93d3-4e6aa1a28195

Lakha. (2019, 05 24). The Problem of Late Payment in the Construction Industry. Retrieved from Charles Russell Speechlys: https://www.charlesrussellspeechlys.com/globalassets/pdfs/insights/construction/the-problem-of-late-payment-in-the-construction-industry.pdf

Law, R.C.K., Lai, J.H.K., Edwards, D.J. and Hou, H. (2021) COVID-19: Research Directions for Non-Clinical Aerosol-Generating Facilities in the Built Environment, Buildings, 11(7). DOI: https://doi.org/10.3390/buildings11070282

Levine. (2020, 10 07). Managing Late Payments in the Construction Industry. Retrieved from Iwoca: https://www.iwoca.co.uk/insights/late-payments/

Levy et al. (1999). Sampling of populations: Methods and Applications. New York: John Wiley and Sons.

Likert. (1932). A Technique for Measurement of Attitudes. Archives of Psychology.

Manjili et al. (2020). Covid-19 as an Acute Inflammatory Disease. The Journal of Immunology, DOI: https://doi.org/10.4049/jimmunol.2000413.

Maritz . (2012). What are the legal remedies available to contractors and consultants to enforce payment? Journal of the South African Institution of Civil Engineering, 27 - 35.

McIntyre. (2014). The Practical Skeptic: Core Concepts in Sociology. Mountain View, Calif.

Morris. (2018, 04 05). Government Under Pressure to Tackle Late Payments. Retrieved from RIBA Architecture: https://www.architecture.com/knowledge-and-resources/knowledge-landing-page/government-under-pressure-to-tackle-late-payments

Newman, C., Edwards, D.J., Martek, I., Lai, J. and Thwala, W.D. (2020) Industry 4.0 Deployment in the Construction Industry: A Bibliometric Literature Review and UK-based Case Study, Smart and Sustainable Built Environment, 10(4), pp. 557-580. DOI: https://doi.org/10.1108/SASBE-02-2020-0016

Owusu-Manu, D-G., Kukah, A., Boateng, F., Asumadu, G. and Edwards, D.J. (2020) Exploring strategies to reduce moral hazard and adverse selection of Ghanaian Public-Private-Partnership (PPP) Construction Projects. Journal of Engineering Design and Technology, 19(2), pp. 358-372. https://doi.org/10.1108/JEDT-05-2020-0195

Owusu-Manu, D., Mankata, L.M., Debrah, C., Edwards, D.J. and Martek, I. (2021) Mechanisms and challenges in financing renewable energy projects in sub-Saharan Africa: a Ghanaian perspective, Journal of Financial Management of Property and Construction, 26(3), pp. 319-336. DOI: https://doi.org/10.1108/JFMPC-03-2020-0014

Palmer. (2019, 04 08). 115,000 Businesses Waiting an Average of 57 days for Payment. Retrieved from Begbies Traynor Group plc: https://www.begbies-

traynorgroup.com/news/commentary/115000-businesses-waiting-an-average-of-57-days-for-payment

Pandis. (2015). Comparison of 2 Means (Independent Z Test or Independent T Test). Statistics and Research Design, 350-351 DOI: https://doi.org/10.1016/j.ajodo.2015.05.012.

Panhwar et al. (2017). Post-Positivism: An Effective Paradigm for Social and Educational Research. International Research Journal of Arts and Humanities.

Parliament UK. (2018, 12 05). Late Payments, Retentions and Government Procurement. Retrieved from Parliament UK: https://publications.parliament.uk/pa/cm201719/cmselect/cmbeis/807/80709.htm

Pay UK. (2019). Late Payments. Pay UK.

Pay4. (2020, 07 26). Turning The UK's Late Payment Problem On Its Head. Retrieved from Pay4: https://www.pay4.com/late-payment-problem-turned-on-head/

Pinsent Masons. (2015). Compliance with UK Prompt Payment Code to be 'rigorously enforced'. https://www.pinsentmasons.com/out-law/news/compliance-with-uk-prompt-payment-code-to-be-rigorously-enforced-says-minister: Pinsent Masons.

Pinsonneault and Kramer. (1993). Survey Research Methodology in Management Information Systems. Journal of Management Information Systems, 75-105.

Prompt Payment Code, Volume 552 (House of Commons 11 8, 2012).

Prompt Payment Code, Volume 791 (House of Lords 05 10, 2018).

Prompt Payment Code. (2020, 07 01). Prompt Payment Code. Retrieved from Department for Business, Energy and Industrial Strategy: http://www.promptpaymentcode.org.uk/

Property Aspects. (n.d.). Why is the Prompt Payment Code Failing Construction? Retrieved from Property Aspects: https://propertyaspectsmagazine.co.uk/prompt-payment-code-fail/

Pymnts. (2019, 07 18). UK Firms Suspended From Prompt Payment Code. Retrieved from Pymnts: https://www.pymnts.com/news/b2b-payments/2019/uk-firms-suspended-prompt-payment-code/

Research Methodology. (n.d.). Pragmatism Research Methodology. Retrieved from Business Research Methodology: https://research-methodology.net/research-philosophy/pragmatism-research-philosophy/

Rhodes, C. (2019). Construction Industry, Statistics and Policy. House of Commons Library.

Rupa Lakha. (2019). The problem of late payment in the construction industry. Charles Russell Speechlys LLP.

Rzepecka et al. (2018). Business-to-Business Transactions. Brussels: European Commission.

Salant and Dillman. (1994). How to Conduct your own Survey. New York: Wiley.

Salkind. (2010). Encyclopedia of Research Design. SAGE Publications.

Scott. (2016). Theory and research in construction education: the case for pragmatism. Construction Management and Economics (Issue 7-8: Theorizing Expertise in Construction), 552 - 560 https://doi.org/10.1080/01446193.2016.1151539.

Shehu et al. (2009). Construction programme management theory and practice: contextual and pragmatic approach. International Journal of Project Management, 703 - 716.

Smith, J., Edwards, D.J., Martek, I., Chileshe, N., Roberts, C. and Hayhow, S. (2021) The antecedents of construction project change: an analysis of design and build procurement application, Journal of Engineering Design and Technology. DOI: https://doi.org/10.1108/JEDT-12-2020-0507

Spellacy, J., Edwards, D.J., Roberts, C.J., Hayhow, S. and Shelbourn, M. (2020) An investigation into the role of the quantity surveyor in the value management workshop process, Journal of Engineering Design and Technology, 19(2), pp. 423-445. DOI: https://doi.org/10.1108/JEDT-07-2020-0289

Tashakkori and Teddlie. (2003). Handbook of Mixed Methods in Social & Behavioral Research. Sage.

Tender Consultants. (2019, 06 04). PPC New Measures. Retrieved from Hudson Succeed: https://www..co.uk/prompt-payment-code/

The 4, 5, and 7 Point Likert Scale +. (2020, 06 25). Retrieved from Formplus: https://www.formpl.us/blog/point-likert-scale

The Confederation of Construction Specialists. (2014). Construction Supply Chain Payment Charter - An Analysis. The Confederation of Construction Specialists.

The Construction Index. (2020, 01 03). Government Ignores Balfour Beatty's Late Payment Record. Retrieved from The Construction Index: 9. https://www.theconstructionindex.co.uk/news/view/government-ignores-balfour-beattys-late-payment-record

The Credit Protection Association. (2019, 07 23). SMEs to Benefit from a Prompt Payment Code Overhaul. Retrieved from The Credit Protection Association Limited: https://cpa.co.uk/smes-to-benefit-from-a-prompt-payment-code-overhaul/

The Credit Protection Association Limited. (2018, 01 05). Construction Payment Charter is 'Dismal Failure'. Retrieved from The Credit Protection Association: https://cpa.co.uk/construction-payment-charter-dismal-

failure/#:~:text=Professor%20Rudi%20Klein%2C%20the%20CEO,60%20days%E2%80%9D%2C%20he%20added.

The Department for Business, Energy and Industrial Strategy. (2018). Creating a Responsible Payment Culture. England: UK Government.

The Insolvency Service. (2020). Company insolvency statistics, Q4 October to December 2019. England: Gov UK. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/861187/Commentary_-_Company_Insolvency_Statistics_Q4_2019.pdf

The Insolvency Service. (2020). Quarterly Company Insolvency Statistics - Q2 April to June 2020. England: The Insolvency Service.

Twin FM. (2014, 04 25). Construction Leadership Council Lacks Leaders. Retrieved from TWinFM: https://www.twinfm.com/article/construction-leadership-council-lacks-leaders

UK Government. (2017, 07 05). Businesses get on board with Prompt Payment Code. Retrieved from Gov UK: https://www.gov.uk/government/news/businesses-get-on-board-with-prompt-payment-code

Williamson. (2018). Ethnographic Research. Research Methods (Second Edition), 311-335 https://doi.org/10.1016/C2016-0-03932-3.

World Health Organization. (2020, 07 27). Media Briefing on Covid-19. Retrieved from WHO Director-General: https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---27-july-2020

Table 1: The Prompt Payment Code, The Best and Worst Payers (2019)

		Current (2019)		Previous (2018)	
Rank	Contractor	Average Time to Pay (days)	% of Invoices Paid (not to terms)	Average Time to Pay (days)	% of Invoices Paid (not to terms)
1	Balfour Beatty *	50	50%	54	54%
2	Kier *	52	57%	54	48%
3	Interserve *	44	49%	50	83%
4	Laing O'Rourke *	53	42%	N/A	N/A
5	Morgan Sindall *	44	19%	44	24%
6	Galliford Try *	50	29%	47	26%
7	Amey *	46	37%	48	44%
8	Mace *	34	26%	45	43%
9	Skanska UK *	40	9%	41	11%
10	ISG *	40	38%	42	48%
11	Costain *	53	61%	59	67%
12	Wates *	41	53%	44	62%
13	Bouygues UK *	42	30%	40	31%
14	Willmott Dixon *	32	8%	33	8%
15	Multiplex	46	38%	43	47%
16	Bam Construct *	42	28%	43	34%
17	Sir Robert McAlpine *	35	28%	49	70%
18	Bowmer & Kirkland *	41	42%	41	51%
19	Vinci *	33	20%	52	36%
20	VolkerWessels UK *	35	19%	35	19%
21	Graham	50	39%	N/A	N/A
22	Robertson *	36	31%	N/A	N/A
23	Murphy Group *	57	56%	66	66%
24	Bam Nuttall *	43	34%	44	68%
25	Engie Regeneration *	61	6%	61	1%
Mean averages:		44	33.96%	47.04	37.64%
Median averages:		43	34.00%	44.50	45.50%

*N.B *Signatories of the Prompt Payment, The Best and Worst Payers Revealed 2019*

Table 2: Demographic Profile of 65 Participants (Role)

		Total	Category %	Study %
Main-Contractors	Director Role	2	7.41	3.11
	Managing Role (Commercial)	4	14.82	6.15
	Managing Role (Contracts)	1	3.70	1.50
	Managing Role (Operations)	2	7.41	3.11
	Managing Role (SHEQ)	2	7.41	3.11
	Managing Role (Supply Chain)	1	3.70	1.50
	Quantity Surveying Role	12	44.44	18.46
	Site Based Role	1	3.70	1.50
	Other	2	7.41	3.11
	Total	**27**	100%	41.55
Sub-Contractors	Director Role	4	14.30	6.15
	Managing Role (Commercial)	1	3.57	1.54
	Managing Role (Contracts)	4	14.28	6.15
	Managing Role (Operations)	1	3.57	1.54
	Managing Role (Supply Chain)	1	3.57	1.54
	Quantity Surveying Role	13	46.43	20.00
	Site Based Role	1	3.57	1.54
	Other	3	10.71	4.61
	Total	**28**	100	43.07
Others	Director Role	3	30.00	4.61
	Managing Role (Commercial)	1	10.00	1.54
	Managing Role (Operations)	1	10.00	1.54
	Quantity Surveying Role	1	10.00	1.54
	Site Based Role	1	10.00	1.54
	Other	3	30.00	4.61
	Total	**10**	100.00	15.38

Table 3: Demographic Profile of 65 Participants (Years in the Industry)

		Total	Category %	Study %
Main-Contractors	< 12 months	0	0%	0%
	1-5 years	5	19%	8%
	6-10 years	5	19%	8%
	11-15 years	5	19%	8%
	> 15 years	12	44%	18%
Sub-Contractors	< 12 months	0	0%	0%
	1-5 years	7	25%	11%
	6-10 years	4	14%	6%
	11-15 years	4	14%	6%
	> 15 years	13	46%	20%
Others	< 12 months	0	0%	0%
	1-5 years	2	20%	3%
	6-10 years	0	0%	0%
	11-15 years	1	10%	2%
	> 15 years	7	70%	11%

Table 4 - Reliability Assessment

	N of Items	**Cronbach's Alpha** (α)
Consequences of Late Payment	14	0.900
Proposed Measures to Create a Responsible Payment Culture	9	0.812

Table 5 - Level of Payment Practices in the Industry in the Past 5 years

Streams of Contractors	Payment Practices Rating Distribution by Contractors					Chi-square Test	
	Worse than ever	Gradually declined	Stayed the same	Improved slightly	Improved fully	χ^2-value	p-value
Sub-contractor	1(3.6)	12(42.9)	7(25.0)	8(28.6)	-		
Main contractor	0(0.0)	7(25.0)	7(25.0)	13(46.4)	1(3.6)		
Others (Supplier/ Consultant)	-	1(11.1)	5(55.6)	3(33.3)	-	9.128	0.332
Overall	**1(1.5)**	**20(30.8)**	**19(29.2)**	**24(36.9)**	**1(1.5)**		

Table 6 - Descriptive Statistics and Chi-Square Test of Payment Terms

	Negotiation		**Research the payment performance**		**Late payment is related to the imbalance of power and size**	
	No	**Yes**	**No**	**Yes**	**No**	**Yes**
Sub-contractor	12(42.9)	16(57.1)	7(25.0)	21(75.0)	3(12.0)	22(88.0)
Main contractor	10(35.7)	18(64.3)	6(21.4)	22(78.6)	10(35.7)	18(64.3)
Others	2(22.2)	7(77.8)	2(22.2)	7(77.8)	1(12.5)	7(87.5)
Overall	***24(36.9)***	***41(63.1)***	***15(23.1)***	***50(76.9)***	***14(23.0)***	***47(77.0)***
χ^2-value (p-value)	**1.276 (0.528)**		**0.105 (0.949)**		**4.769 (0.092)**	

Table 7 - Consequences of Late Payment

	Combined (N = 65)		Sub-contractor (N = 27)		Main contractor (N = 28)		Others (N = 8)		Contractors	Years of Experience
	Mean (SD)	Rank	Mean (SD)	Rank	Mean (SD)	Rank	Mean (SD)	Rank	Chi-Sq (p-value)	Chi-Sq (p-value)
Significant wasted time	2.42(1.081)	1	2.19(0.921)	1	2.75(1.236)	1	2.11(0.782)	1	3.830(0.147)	2.473(0.480)
Significant wasted resources	2.60(1.144)	2	2.56(1.155)	2	2.79(1.197)	2	2.13(0.835)	2	2.071(0.355)	0.931(0.818)
Increased administrative costs.	2.76(1.088)	3	2.70(0.993)	3	2.89(1.100)	3	2.50(1.414)	3	1.182(0.554)	4.511(0.211)
Forced to pay suppliers late.	3.27(1.234)	4	3.26(1.196)	6	3.14(1.239)	4	3.75(1.389)	8	1.694(0.429)	5.105(0.164)
Reduced profit	3.35(0.986)	5	3.15(0.989)	4	3.46(0.962)	5	3.63(1.061)	7	1.612(0.447)	6.178(0.103)
Delays or stoppages to work	3.37(0.988)	6	3.19(1.096)	5	3.50(0.923)	6	3.50(1.069)	5	1.178(0.555)	4.577(0.206)
Significant sums written off	3.56(1.041)	7	3.35(1.129)	7	3.78(0.892)	8	3.50(1.195)	6	1.674(0.433)	4.470(0.215)
Legal disputes or arbitration.	3.69(1.001)	8	3.76(1.052)	9	3.75(0.887)	7	3.33(1.225)	4	1.030(0.597)	3.463(0.326)
Forced to rely overdrafts.	3.87(1.338)	9	3.41(1.474)	8	4.11(1.197)	10	4.63(0.744)	11	6.006(0.050)	7.029(0.071)
Reduced quality of work	4.03(0.967)	10	3.93(1.141)	11	4.07(0.858)	9	4.25(0.707)	9	0.259(0.878)	3.962(0.266)
Company survival threatened.	4.24(3.9862)	11	3.78(1.281)	10	4.50(0.745)	13	4.88(0.354)	14	8.377(0.015)	5.029(0.170)
Pay freezes.	4.39(0.930)	12	4.31(1.123)	13	4.43(0.742)	11	4.50(0.926)	10	0.288(0.866)	4.027(0.259)
Unable to hire new employees.	4.40(0.853)	13	4.22(1.013)	12	4.46(0.744)	12	4.75(0.463)	12	2.343(0.310)	6.746(0.080)
Redundancies	4.66(0.676)	14	4.54(0.905)	14	4.75(0.441)	14	4.75(0.463)	13	0.437(0.804)	2.342(0.504)

Table 8 - Government-led Voluntary Payment Initiatives

	N	Percent
Familiarity of Initiatives	-	
The Prompt Payment Code	19	29.2
The Construction Supply Chain Payment Charter	3	4.6
Both payment	17	26.2
Neither	26	40.0
Total	65	100.0
Incentives for contractors to become a signatories of government-led payment initiatives	-	
No	13	21.0
Yes	49	79.0
Total	62	100.0
Consequences for contractors that do not become signatories of government-led payment initiatives	-	
No	20	33.3
Yes	40	66.7
Total	60	100.0

Table 9 - Proposed Measures to Create a Responsible Payment Culture

	N	Statistics		Frequency Distribution			KW χ^2-value (p-value)
		Mean	Std. Dev.	Disagree	Undecided	Agree	
Introduction of an independent and anonymous 'whistle-blowing' process.	65	3.85	0.712	2(3.1)	16(24.6)	47(72.3)	5.957(0.051)
Naming and shaming companies that have not adhered to the principles of the initiative.	64	3.86	1.006	6(9.4)	10(15.6)	48(75.0)	4.934(0.085)
The introduction of a robust audit scheme to ensure that signatories are complying.	64	4.02	0.678	3(4.7)	5(7.8)	56(87.5)	4.081(0.130)
Introduction of a traffic light system to identify companies with poor payment records.	63	4.22	0.812	2(3.2)	6(9.5)	55(87.3)	7.738(0.021)
Disclosure of the average actual payment terms published on an annual basis.	64	3.67	1.099	11(17.2)	10(15.6)	43(67.2)	13.725(0.001)$^{s\uparrow m}$
Publication of the terms and conditions of a company's standard contract.	64	3.39	1.190	16(25.0)	13(20.3)	35(54.7)	17.366(0.000)$^{s\uparrow m}$
Publication of the contact details of a designated person for each signatory.	64	2.97	1.154	21(32.8)	22(34.4)	21(32.8)	7.944(0.019)$^{s\uparrow m}$
A fixed charge introduced to cover debt recovery costs depending on the size of the debt.	64	3.50	0.959	9(14.1)	20(31.3)	35(54.7)	5.256(0.072)
Creating online 'hubs' for payment advice for SME.	63	4.10	0.817	1(1.6)	15(23.8)	47(74.6)	6.880(0.032)$^{o\uparrow m}$

KW = Kruskal Wallis; χ^2 = Chi-Square; m = main contractors, s = sub-contractors and o = others (suppliers and consultant), $^{\uparrow}$ = Higher level of agreement (from Mann Whitney U Test comparison)

Figure 1: Payment Initiatives Introduced 2004 – 2020