MODELLING THE RELATIONSHIP BETWEEN PROJECT PAYMENT SYSTEMS, FINANCIAL MANAGEMENT STRATEGIES AND CONSTRUCTION ORGANISATION PERFORMANCE IN SOUTH AFRICA

by

Emmanuel Dele Omopariola

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Supervised by

Professor Abimbola Olukemi Windapo

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ABSTRACT

The failure of construction projects to be delivered successfully – the root of poor performance in the construction industry – is attributed by scholars to the improper payment (or no payment at all) of contractors, and subsequently, of sub-contractors and suppliers. Therefore, proficient payment systems, adequate cash flow and effective financial management strategies are required for the success of construction projects. However, there is limited or no objective research that explores the impact of financial management strategies and project payment systems on construction company performance in South Africa. Also, previous research efforts have focused on various modelling approaches and their success/failure; thus, a model is yet to be developed for South Africa that will assist the construction industry practitioners in South Africa to have a reliable payment system and financial management strategy. Such a model might improve project/organisational performance. This study investigated the project payment systems and financial management strategies used by large construction organisations in achieving better performance within the business and project environment. The study further examined whether financial management strategies mediate the relationship between project payment systems and construction organisation performance.

The study made use of a sequential mixed-method research approach that involves the collection of both quantitative and qualitative data to achieve the research objectives. The sample size for the study consisted of 176 contractors listed in Grades 7 to 9 on the Construction Industry Development Board (cidb) Register of Contractors. Data on the financial performance of the construction companies was obtained by gathering historical information on past projects undertaken within a five-year period (2013-2017), the payment systems used, financial management strategies adopted by the companies, and project and organisation performance data. Quantitative data analysis was carried out using both descriptive and inferential statistics. Descriptive statistics, such as percentiles and mean scores, were used to analyse the background information of the respondents and how the study population responded to the questionnaires, the typical payment systems used on construction projects and financial strategies, and the level of project and organisation performance. Structural Equation Modelling (SEM) was employed in modelling the extent to which project payment systems and financial management strategies in business and project environments influence, and are associated with, construction organisation performance.

It emerged from the study that construction organisations that lack effective financial management strategies accept the use of the interim project payment system by clients on construction projects; and that financial management strategies adopted by construction companies indirectly affect their financial performance. The research also revealed that the interim payment system mediates the impact of the financial management strategies adopted, on the financial performance of construction organisations.

Based on these findings, the study concluded that the failure of construction projects and organisations would be reduced through the adoption of effective financial management strategies by construction organisations and appropriate payment systems by the clients. The study highlighted channels of improving project payment systems in the construction industry, by recommending appropriate methods that suit the project environment. Also, the research proposed financial strategies and measures relating to payment and usage of the funds in the contract, so that payment and construction company performance problems in projects may be reduced. The research extends the theory on financial management strategies and its impact on financial organisational performance in the context of construction companies and the construction industry. The study contributes to the knowledge of payment systems and

construction company performance, and the research and practical implications of the payment systems for the operations and performance of construction firms.

DECLARATION REPORT

This is to declare that this research work has been originally carried out by Mr. Emmanuel Dele Omopariola (OMPEMM002), and that, other than where certain and acknowledged references to the published research of other researchers are made therein, this is all his own work.

Signature: Signed by candidate

Date : 12/07/2020

DEDICATION

This thesis is dedicated to the **MERCIFUL GOD,** who always meets my needs, gives ear unto my supplications, and made me what I am today.

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PUBLICATIONS ARISING FROM THE THESIS

In the process of this PhD work, I have attended and presented papers in the following conferences: Association of Researchers in Construction Management (ARCOM) Conference held at Leeds in UK (2-4 September 2019); Australasian Universities Building Education Association (AUBEA) Conference at Singapore (26-28 September 2018), and the South Africa Council of Quantity Surveying Profession (SACQSP) Conference, Johannesburg, South Africa (29 September – 1st October 2018). The comments, criticisms, and feedback from each conference attended have impacted on, and greatly improved, the PhD work and led to the development of the following conference papers and journal articles.

Conference papers

1. **Omopariola, E.D.** & Windapo, A.O. (2019). Financial management strategies that influence project and organisation performance. In: Gorse, C. & Neilson, C.J. (Eds) *Proceedings of the 35th Annual ARCOM Conference*, 2-4 September 2019, Leeds, UK, Association of Researchers in Construction Management. 476-485.

2. **Omopariola, E.D.** & Windapo, A.O. (2019). Domino effect of advance payment on project cash flow and organisation performance. In: Gorse, C. & Neilson, C.J. (Eds) *Proceedings of the 35th Annual ARCOM Conference*, 2-4 September 2019, Leeds, UK, Association of Researchers in Construction Management. 619-628.

3. **Omopariola, E.D.** & Windapo, A.O. (2018). Impact of payment systems on construction project and organisation performance. *Proceedings of the 42nd AUBEA Conference*, 26 - 28th September 2018, Singapore, Australasian Universities Building Education Association (AUBEA).

4. **Omopariola, E.D.** & Windapo, A.O. (2018). Framework for matching payment systems to project environment in the construction industry. *Proceedings of the 5th SASCQSP Conference,* 29 September - 1st October 2018, Johannesburg, South Africa.

Journal papers (Under review)

1. **Omopariola, E.D.** & Windapo, A.O. (2020). Impact of project payment systems on cost and time performance of construction projects. *Journal of Construction Engineering and Management.*
2. **Omopariola, E.D.** & Windapo, A.O. (2020). A Structural Equation Model of the relationship between payment systems and financial performance. *Journal of Construction Economics and* Building.
3. **Omopariola, E. D.** & Windapo, A. O. (2020). Effects of financial management strategies on project and financial performance of construction organisations. *Journal of Engineering Design and Technology*.

4. **Omopariola, E. D.** & Windapo, A. O. (2020). Impact of financial management strategies on the relationship between project payment systems and financial performance of construction organisations. *International Journal of Construction Management.*
5. **Omopariola, E. D.** & Windapo, A. O. (2020). A Structural Equation Model of financial management strategies on project and financial performance of construction organisations. *Journal of Financial Management of Property and Construction.*
6. **Omopariola, E. D.** & Windapo, A. O. (2020). A model of the interaction between financial management strategies and project payment systems moderates the relationship between project payment systems used by clients and construction company financial performance. *Built Environment Project and Asset Management.*
7. **Omopariola, E. D.** & Windapo, A. O. (2020). Mediating role of financial management strategies in the relationship between project payment systems used by clients and financial performance of construction organisations. *Journal of Construction Management and Economics*.
8. **Omopariola, E. D.** & Windapo, A. O. (2020). Structural Equation Modelling of the relationship between project payment systems used by clients and financial management strategies used by construction organisations. *Journal of Management in Engineering*.

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LIST OF ABBREVIATIONS AND ACRONYMS

CE	Civil Engineering Construction
CF	Cash Flow
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
cidb	Construction Industry Development Board
CW	Class of Work
DCW	Direct Cost of Work
DT	Domino Theory
FIDIC	International Federation of Consulting Engineers
FS	Firm Size
GB	General Building Construction
GCC	General Conditions of Contract
GM	Gross Profit Margin
ICTD	Institute for Construction Training and Development
JBCC	Joint Building Contract Committee
KMO	Kaiser Meyer Olkin
LQ	Liquidity
LV	Leverage
M	Financial Management Strategies
MTRC	Mass Transit Railway Corporation
N	number of observations
NEC	New Engineering Contract
NM	Net Profit Margin

R Rand

RICS Royal Institute of Chartered Surveyors

RMSEA Root Mean Square Error of Approximation Index

RT Resource-based Theory

SEM Structural Equation Modelling

SRMR Standardised Root Mean Square Residual Index

TA Total Current Asset

TC Total Indirect Cost

TE Total Expenditure

TI Total Income

TL Total Liability

TLI Tucker Lewis Index

TR Total Revenue

UK United Kingdom

Y Construction Company Organisation Performance

WT Working Capital Turnover

X Project Payment Systems

CHAPTER ONE

GENERAL INTRODUCTION

1.1 Introduction

Several challenges, such as cost and time overruns, the increasing cost of building materials, and poor financial performance of projects and organisations, have been reported as confronting the South African construction industry (Windapo and Cattel, 2013; Windapo, 2016, Oshungade and Kruger, 2017). A fundamental concern that steers research in resolving these challenges has been to understand why project and organisation performance differs between construction companies. In explaining the causes of poor project and organisation performance**,** Motawa, Kaka and Wong (2008) identify appropriate payment systems used in the business and project environment as the major determinant of performance. Other scholars (such as Kaka, 1994; Fortune and Hinks, 1998; Skitmore, 1998; Kaka and Lewis, 2003) see improper application of financial management strategies in the early phase of the construction project, poor cost advice, and choice of unsuitable payment systems as the fundamental causes of poor project and organisation performance.

The major goal of any construction organisation is to attain viable performance. Construction organisations concentrate substantially on the business and project environment to build up strategies to improve performance by using different financial management approaches. Financial management strategies allow established organisations to manage their financial resources to exploit profit over the long term of its operation, while their use in the construction setting is restricted and not well understood (Chinowsky, 2000; Price, Ganiiev and Newsons, 2003; Tucker et al., 2015). Ascertaining these interactions and expounding how they influence performance constitute the main reason for this study.

This chapter presents the general idea of the study with the argument as the foundation for the later chapters. A discussion of an extensive background to the research is presented, followed by details of the rationale, aims and objectives of the research, a concise description of the research scope and limitations, significance of the research, and a general idea of the research methodology espoused in the study. Finally, an overview of the thesis structure is presented.

1.2 Background to the research

In accordance with the system of industrial arrangements used for statistical and government determinations, a construction organisation is defined as an organisation that comprises only firms that are involved with civil engineering and building projects (Stasiak-Betlejewska and Potkany, 2015). Thus, the construction industry is the segment encompassing the erection, maintenance, and demolition of civil engineering and building edifices in an economy (Winch, 2010). According to CIB (1999), the method applied in order to improve the capacity and efficiency of the construction industry to meet the demand for building and civil engineering products, and to sustain the national economic and social development goals is through construction industry development. In addition, part of the function of construction industry developments is to augment value for money to industry customers' environmentally friendly accountability, and the viability and the affordability of local construction enterprises in the delivery procedure (Ofori, 1991). One of the major means by which wealth is generated in the contemporary world is through construction projects that create physical assets, such as factories, highways, commercial structures, schools, and hospitals, which can then be transformed into social and economic capital. As such, these assets are created through the construction of civil engineering and building projects, and, as the size and complexity of these construction projects expand, the need for more rigorous strategic management and levels of project management arises to effectively meet the prediction of time, cost and quality (Winch, 2010).

Clients expect the construction project to be finished at a specific estimated cost that is within budget, and on time (ciob, 2004; Windapo et al., 2017). However, this has often not been the case. The poor performance of construction projects has been recognized internationally (Magnusson and Olsson, 2005; Azhar et al., 2008; Winch, 2010; Kazimu, 2012; Memon, 2012). Kazimu (2012) and Oke et al. (2016) established that construction projects are faced with numerous simple to complex difficulties, ranging from late payments to litigation, in which one of the significant contributors is the use of inappropriate payment systems. Moreover, inappropriate payment systems have been cited as one of the factors contributing to failed projects globally (Johnston, 1999; Murdoch and Hughes, 2000; Kenley, 2003; Suhaini, 2005; Danuri et al., 2006), mitigating against project success, and a critical obstacle to the performance of the construction industry (Danuri et al., 2006).

Sherif and Kaka (2003) indicated that to achieve excellent financial performance of any construction project, the chosen payment system should be appropriate to the project qualities and client requirements. Bob (2005) views bad payment systems as a severe problem that needs to be identified and solved. Njie et al. (2005) submit that, when there is insufficient money to continue with construction project activities as planned, it results in mistrust amid supply chain teams, and leads to a reduction in project performance with all its ramifications. Furthermore, according to Danuri et al. (2006) and Kennedy (2005), payment has always been the main subject of disputes, which leads to financial adversity if these disputes result in arbitration or litigation (Bob, 2005). Davis Langdon and Seah Consultancy (2000) note that construction payment problems have a domino effect on the payment chain of a construction project. When delays in payment of a contractor by the client occur, such delays affect the payment due to the nominated subcontractor, who is bound in a contract with the construction company.

The difficulties with the flow of cash down the chain of beneficiaries were acknowledged as early as the 1960s in the UK, when the Banwell report (1964) noted the significance of prompt payments and the call for a practice to have the proper flow of money. This was followed by the Latham (1994) and Egan (1998) reports. Odeyinka and Kaka (2005) posited that, due to the way the supply chain in the construction industry was structured, once there is a failure in the cash flow from the client to another party, such as the contractor, it will jeopardize the efficient delivery of a project when due, as the contractor and the sub-contractor will not support the progress of the work on site. Both the contractor and the sub-contractor will lose expected income, resulting in insolvency, which affects the organisational performance of the construction companies.

Previous researchers (see Sheriff and Kaka, 2003; Odeyinka and Kaka, 2005) have shown that contractors are dissatisfied with the available payment systems because of difficulties encountered, which affects their cash flow projection during project execution. Njie, Langford, Kaka and Fortune (2005) established that several main contractors sometimes encounter financial problems when payments for work done (their basis of cash flow) do not come as projected, and even, occasionally, cease altogether. According to the Institute for Construction Training and Development (ICTD) (1992), appropriate payment systems impact on both the price and the efficiency of the contractor. Also, the cidb (2012) noted that construction companies would be able to accomplish healthy organisational growth and performance through the strategic management of their cash flow. Theoretically, this suggests that using sound appropriate project payment systems with the mediating influence of strategic management of resources will help to achieve company organisational performance in project delivery.

Adeyemi (2004), Onukwube (2005), Akinola (2010), Lowe and Moroke (2010), and Windapo and Cattell (2011) noted that a cause of poor construction project and organisation performance is the entry of vast numbers of entrepreneurs into the construction industry, who lack a basic understanding of financial management application in relation to construction projects; a circumstance that may lead to a project not being successfully carried out and, eventually, construction organisation insolvency (Omopariola and Windapo, 2019). Also, the availability of large numbers of contractors at the lower levels results in increased competition and narrow profit margins as a product of competitive tendering, since competition influences the profit margin permitted by contracting firms (Majumdar, 1997; Bowen, 1999; Jonsson, 2007; Lee, 2009). Conversely, profitability is vital to the corporate survival of every company project, as business failure arises where an enterprise finds it challenging to maintain appropriate profit levels.

Potts (1988), Kaka (2001), Egan (2002), Njie et al. (2005) and the Department of Trade and Industy (DTI) (2006) argue extensively on the need to amend the current payment practices of monthly valuation, abolish retention, remove pay-when-paid practice, and shift to more innovative practices of stage and milestone payments. They state that the objective behind milestone payment is not only to increase profitability or cash flow positively but also to facilitate successful management of the project. Previous studies have revealed that many countries, including Malaysia, Australia, New Zealand, Singapore, and the United Kingdom, have included payment systems in the construction industry as part of their construction-specific constitutional policy. This includes payment procedures/legislation arrangements to purge bad payment systems and to support continuous construction project activities (Ameer-Ali, 2005; Lim, 2005; Lip, 2005; Danuri et al., 2006; cidb, 2012).

The right of subcontractors to be paid regardless of whether the main contractor has been paid or not, also makes unacceptable any “pay-when-paid” section in construction contracts, and is being examined by various countries (Ameer Ali, 2005; Lip, 2005; cidb, 2012). In the U.S., modern methods of project procurement, which support targets and client satisfaction with payments, called performance-based service contracting or performance-based incentives, are being explored (Office of Management and Budget, 1998). The Federal Government of Nigeria promulgated the Budget Monitoring and Price Intelligence Unit (Due Process Unit) to safeguard strict compliance by way of openness, competition, and cost precision regulations and procedures that guide the awarding of contracts within the Federal Republic of Nigeria (Budget Monitoring and Price Intelligence Unit, 2006). As a result, most construction projects awarded and executed in Nigeria more recently were procured through standard project procurement systems. In South Africa, the cidb recommends modification to the policy that specifies the prerequisite of "prompt payment" (cidb, 2012).

Oke et al. (2016) and Bird (1992) posit that the achievement of the performance required in executing any type of construction development relies significantly on the level of strategic management of financial resources, organisational performance, appropriate payment systems in use, the completion time set for the project, and the managerial production of the relevant players involved. Adequacy of financial management strategy has been recognized as a critical success factor for any construction company for efficient construction project delivery (Peer, 1982; Singh and Lakanathan, 1992). Cash flow projection, as an intrinsic tool for financial management and decision-making, has been used to varying degrees in the construction industry for particular projects or the operation of a company as a whole, concerning the monetary position of the construction company so that the utmost proper means of financing its requirements may be determined (Navon, 1995; Kenly, 2003; Odeyinka and Kaka 2005; Onukwube, 2005; RICS, 2014).

Contractors have come up with novel means of improving cash flow, such as lessening the outstanding balances owed by clients; the adjustment of price policies, such as unbalancing and front-end loading; inequitable measures, such as over-measurement; and the delay of payments to sub-contractors and suppliers (Sherif and Kaka, 2003; Murdoch, 2005). According to Wong et al. (2006), some of these innovative financial strategies still call for more efficiency in the management of resources that are disadvantageous to the link between client and contractors; client and consultants; contractor and sub-contractor; and contractor and suppliers.

Furthermore, an obvious omission, particularly within the South African context, has been a lack of empirical study on reasons for the incompetence of contractors in running efficient companies/projects, and managing their resources well. These reasons are not known and have not been empirically established.

Collins (1996) notes that, as construction becomes more complicated, a more complex system is required to deal with initiating, forecasting, funding systems, designing, approving, and implementing a construction project. Zahra (1996) observed that success in competitive settings necessitates that a company trial a sound payment system approach to align its plan to growth, goal attainment, and adequate resources deployment. In this vein, the study extends earlier studies on how payment systems aid the construction delivery process in being efficient and effective, and assess how well a firm can use innovative payment systems and financial management strategies to attain better project and organisational financial performance.

Thus, at a theoretical level, the study will argue the link between payment systems and construction company performance. Nonetheless, rarely have researchers determined the exact strategic approaches within the strategy framework that best achieve organisational objectives through payment systems. Although there is some efficiency in a combination of systems (Allen and Helm, 2006), strategic systems are still lacking to some extent, and there is a necessity for empirical work in South Africa to fill this gap.

This investigative study filled this gap by examining whether the strategic financial management of resources mediates the relationship between payment systems and organisational financial performance.

1.3 Statement of the problem

The poor performance of construction projects and organisations in the construction industry is a global phenomenon. Internationally, research has found that the construction industry, perhaps more than most, is plagued by poor project delivery. The delivery of successful, quality projects, meeting client requirements, and disputes between stakeholders during construction activities on site are often impacted by inappropriate payment systems in the South African construction industry. The client choice of payment systems is not appropriately aligned to the project environment, while the contractor's financial management ability is poor. However, the interventions of government and contractor strategies in place have not mitigated the problem of poor performance in the construction industry. Also, limited research has been done in this area. Therefore, this research examined the interactions between payment systems used by clients, the financial management strategies used by construction companies, and whether these result in better performance of the organisation, towards determining the appropriate payment systems and financial management strategies that best suit the construction business and project environment.

1.4 Research questions

The main question investigated by this study was:

What project payment systems and financial management strategies result in better performance of construction companies, and how can the impact of these (payment systems and financial management strategies) on company performance can be assessed and *modelled?*

To answer the main research question, these related research sub-questions are to be addressed:

1. What are the project payment systems commonly used in construction projects procurement?
2. What financial performance indicators are used in assessing construction project/organisation performance?
3. What is the level of performance of construction companies within a specific period?
4. What are the cost and time performances of projects using different payment systems?
5. What are the financial management strategies responsible for better organisation performance?
6. What is the influence of project payment systems on organisation performance, through their relationship to financial management strategies, as a mediating construct?
7. How can the payment systems and financial management strategies impacting on organisational performance be modelled to enhance performance?
8. How can the developed model be tested and validated to determine its accuracy/reliability and analytical performance?

1.5 Aim and objectives of the research

This broad aim of this research is to examine the interactions between project payment systems and financial management strategies of construction companies and whether these mediate the relationship between project payment systems and organisation financial performance, with a view to developing models that will assist construction industry practitioners in South Africa to have a reliable payment system and financial management strategy that may impact a better project/organisational performance.

Linked to this, the specific objectives (SO) are to:

SO1. identify and assess the project payment systems are used in construction project procurement

SO2. identify the financial performance indicators used in assessing construction companies

SO3. determine the level of performance of selected construction companies within a specific period

SO4. evaluate the cost and time performances of projects executed by construction companies using different payment systems

SO5. Identify the prevalent financial management strategies, used by construction organisations in construction project procurement to achieve organisation financial performance

SO6. evaluate the relationship between project payment systems, financial management strategies, and construction company financial performance

SO7. develop a model for the complex interactions between project payment systems, financial management strategies and the financial performance of the construction company

SO8. validate the model developed to determine its accuracy/reliability and analytical performance.

1.6 Justification for the study

An examination of literature confirms the existence of a relationship between the appropriateness of the selected payment systems and successful construction project completion due to its effect on contractors' cash flow (Institute for Construction Training and Development, 1992; ciob, 2004; Abdul-Rahman and Berawi, 2006; Danuri et al., 2006; Kaka et al., 2008; Motawa and Kaka, 2009; Ramachandra and Rotimi, 2011). This is underscored by the work of Sheriff and Kaka (2003), who aver that cash flow is one of the essential means for contractors to deliver a successful project in the construction industry. They noted that, if payment is not made when due to the contractor, it will hurt the success of the construction project and construction company performance. This is aligned to the findings of previous research by Xiong et al. (2014) that the success of construction projects is a result of construction team performance due to improvement in their motivation, suitable payment method and cooperation. Furthermore, the failure of a construction company to perform as expected, that is, on time and within budget, is attributed to the insufficient financial management strategies in place, in which poor cash flow management is regarded as central (Slater, 1984; Boussabaine and Kaka, 1998; Kenley, 1999; Mutti et al., 2002). This draws attention to the work of McGeorge and Zou (2013), who argue that a construction project calls for an inclusive strategy if it is to be successful in carrying out its project activities and developing the business. This is because the industry is project-driven, and is often characterized by construction projects that are complex, with complications resulting from not paying the contractors when due, leading to litigation with a prolonged negotiation process, as a result of two significant factors: inappropriate payment systems and financial management strategies (Soetanto et al., 2007, McGeorge and Zou, 2013; Oke et al., 2016). Conversely, Soetanto et al. (2007) posit that construction companies habitually fail to adopt lasting strategies that provide for their continued existence in difficult business and project environments. In line with this, Barney (1991) and Park and Lee (2011) assert that, when a company makes use of better strategies, with the ability to apply those strategies in construction projects, it will attain a sustainable competitive advantage and, ultimately, superior growth and performance, if the company facilitates and manages them well. These researchers (ibid.) acknowledged the adoption of financial management strategies and innovative payment systems in the construction company and concluded that the strategies and the alternative payment systems used by construction companies have an impact on their performance. Thus, Motawa and Kaka (2009) and Choil and Kim (2014) proposed that an investigation of the management features, (payment patterns, financial management strategies, and organisational performance) of a construction company was of importance.

Several types of research in the construction industry have thus far focused on the relationship between project payment systems and construction company organisational performance. For example, Sheriff and Kaka (2003) developed a framework to define a payment system. They also concluded that the selection of unsuitable payment systems resulted in cost and time overruns and, also excessive claims and disputes on a project with the consequence of poor project performance. The awareness that no single system could be an appropriate method for the choice of payment system for entire projects led Wong et al. (2006) to propose a multi-criteria decision-making framework for the choice of alternative payment systems, using Analytical Hierarchy Process (AHP) Analysis. Motawa et al. (2008) concluded that a suitable payment system will act as a performance enabler.

Furthermore, few studies have considered the relationship between financial management practices/cash flow administration and construction organisation performance (e.g., Lowe, 1997; Hughes, Hillebrandt and Murdoch, 1998). These studies conclude that the construction industry experiences much more insolvency than any other segment of the economy, which they attributed to the companies' inadequate financial management strategies and lack of consideration of their cash flow management processes. Meanwhile, several construction companies' performance-related problems were recognized in research work that examined the organisational financial performance of construction companies in South Africa (Emuze and

Smallwood, 2011; cidb, 2012; Martin and Root, 2012; Windapo, 2013; Tucker et al., 2015). Some of the concerns recognized as reasons for poor construction organisation financial performance in South Africa are poor financial management of resources and cash flow, bad policies that specify fixed prerequisites for prompt payment, lack of strategic planning, lack of concern by construction organisations for project and business environments, and poor productivity (Emuze and Smallwood, 2011; cidb, 2012; Martin and Root, 2012; Windapo, 2013; Tucker et al., 2015). In general, these research works explored construction organisation financial performance on the completion of the projects carried out but did not consider what made construction organisations fail to deliver projects as expected.

None of these studies has examined holistically the effect of project payment systems and financial management strategies on construction organisation financial performance. It is a necessity for construction companies to understand the effect of their choice of project payment system on the business and project environments and the financial management strategies they could employ.

Against this background, this research examined the influence of the dependent variables of project payment systems and financial management strategies on construction organisation financial performance.

1.7 Scope of the study

This study investigates the performance of large construction organisations in the South African construction industry, exploring how project payment systems and financial management strategies impact performance. The research work focused on large construction organisations in the nine provinces of South Africa: Gauteng, Limpopo, Eastern Cape, Western Cape, Free State, Mpumalanga, Northern Cape, North-West, and Kwazulu-Natal**.** The research also included the case study of thirty-two large potentially emerging contractors to identify the projects undertaken within five years (2013-2017), payment systems used, and project and organisation performance. Consequently, the unit of analysis for this study was construction organisations, and these construction organisations were limited to construction companies listed as Potentially Emerging in Grades 7 to 9 on the cidb Register of Contractors. The selection of contractors listed in Grades 7 to 9 was due to their maturity of experience in construction activities, skill and technology requirements, financial competence, and reputation (Windapo and Cattell, 2011; cidb, 2012). Since the research focused on South Africa, data was only collected on the construction organisations whose project and business were based in

South Africa. Large construction companies working globally, but who have their base in South Africa, were not considered in this research.

1.8 Overview of the research methodology

The requirements of each study determine the research methodology to be adopted, according to Dainty (2008), Fellow and Liu (2008), and Holt and Goulding (2014). The field of construction economics and management, of which this study is one, combines numerous fields of study, such as engineering and technology, management studies, and social sciences. Moreover, company performance evaluation researchers noted that performance evaluation is complicated and perplexing, necessitating an amalgamation of research approaches (Sun, 2000; Allen and Helm, 2006; McKelvie and Wiklund, 2010). As posited by Murray, Kotabe and Wildt (1994) and Raisbeck, Duffiel and Ming Xu (2009), performance denotes the successful outcome flowing from carrying out construction projects in due time, and within the agreed budget of good quality and product. Thus, this research holds that point of view, that "performance is an outcome".

Therefore, diverse paradigms contend for methodological predominance. According to Dainty (2008) and Bryman (2012), pragmatism justifies a mixed-methods approach using more than one type of method in research, such as qualitative and quantitative methods. In order to attain the goal of the research, which is to examine the impact of project payment systems and financial management strategies on construction company financial performance that results in their better performance, a positivist approach was adopted. This is, due to its effectiveness in revealing deep insights of the way professionals perform management in the construction organisation (Amaratunga et al., 2002; Dainty, 2008). In solving the problem of intricacy, Amaratunga et al. (2002) posit that an interpretivist paradigm is appropriate for use in resolving the difficulty of construction organisation performance.

Hence, researchers in construction economics and management support the adoption of a multi-methodology strategy derived from the potency of both an interpretivist (qualitative technique) and a positivist (quantitative technique) approach (Love et al., 2002; Creswell, 2005; Dainty, 2008) due to the complex nature of construction business. The research, therefore, made use of a mixed-method strategy, which comprised both quantitative and qualitative data collections in order to aid the development of a standard model of the project payment systems and financial management strategies that impact construction organisation performance. The use of these methods helped to overcome the weakness of using only one method or the other, and also facilitated convergent validation of results through internal cross-checking (Gill and Johnson, 1977; Creswell et al., 2003; Creswell and Plano Clark, 2011; Easterby-Smith et al., 2012). Easterby-Smith et al. (2012) argue extensively on the need for the combination of methods in research, as it will facilitate reliance in, and the strength of, findings reported, with an improved perception of the phenomenon being studied.

A comprehensive review of existing literature on project payment systems, financial management strategies and construction organisation performance in South Africa was carried out. The aim was to provide a theoretical basis for the research and lay the foundation for the development of a conceptual framework of the research constructs. In addition, the review of the literature was used as a guide in the preparation of the research instruments. Data on project payment systems, financial management strategies and construction organisation financial performance was collected from a sample of contractors listed in Grades 7 to 9 on the cidb contractor register, using an online questionnaire, survey and interviews.

Quantitative data analysis was carried out using both descriptive and inferential statistics. Descriptive statistics, such as percentiles and means scores, were used to analyze the background information of the respondents and how the study population responded to the questionnaires. To establish the relationships between payment systems, financial management strategies and construction organisation performance, multiple regression analysis was adopted. Also, Structural Equation Modelling (SEM) was employed to develop the models of the association and the extent to which project payment systems and financial management strategies used in the construction business and project environments influence organisation performance. To draw the vital themes that were derived from the data collected from the interviews, as posited by Blaxter et al. (2016), a thematic analysis of the semi-structured interviews was employed. Chapter Four of this research presents more details on the methodology and methods that were employed in the study.

1.9 Limitations

The choice of the professionals and contractors listed in Grades 7 to 9 of the cidb register of contractors limits the extent to which the outcomes of the findings can be generalized, as the respondents could not be representative of all cidb registered contractors listed in Grades 7 to 9 of South African construction organisations.

The success of online questionnaires/surveys depends on the respondents being able to obtain access to the internet and connect to the site where the research is being carried out. A further limitation is that respondents may have their diverse opinions, views, experience and understanding of the Likert scales in the questionnaire/study, as it was difficult to determine the base level for each respondent. Thus, it could have an impact on the report analysis and evaluation of the data. There are also individual participant differences, and, thus, their responses would limit generalizing further to the whole sample.

Also, quantitative method of analysis was the main priority of this research. Qualitative method of analysis was used in supporting and enriching the quantitative analysis.
The readiness of the respondents, and the responses obtained from them, determined the accuracy of the findings, as some of the professionals and the registered contractors did not release the financial information about their construction organisations. Such a limitation was experienced due mainly to the Privacy Acts in operation within the industry.

1.10 Significance of the study

The research made available important information for managerial administration at the levels of senior executives and project managers, on the impact of project payment systems and financial management strategies on the financial performance of their organisations. Mostly, the research presented empirical evidence on the impact of project payment systems and financial management strategies on construction organisations' financial performance.

This study enables the understanding of how project payment systems, financial management strategies and construction organisation financial performance relate with each other so that construction organisations can aspire for the best possible strategy for the precise eventualities they may face. Better consideration of these issues will assist stakeholders, who are concerned to ascertain threats and prospects amidst their working environments, to be aware of how they can utilize the resources at their disposal to attain persistent viable improvement, which is the essence of competitive strategy. An enhancement in the performance of construction organisations would assist in the growth of the local industry, which would, in turn, translate into cost-effective development of the nation due to the construction industry's connection to other sectors of the economy.

1.11 Structure of the thesis

The structure of the thesis comprises eight chapters as described below:

Chapter One: Introduction

This chapter introduced the broad construct of the study, summarized the background to the research, briefly highlighted the statement of the problem, and set out the research questions. The research aim and objectives were also presented, together with the justification for the study, scope of the study, overview of the research methodology, limitations of the research, and significance of the study.

Chapter Two: Literature Review

Chapter Two presents a broad literature review of past studies on the nature of project payment systems, financial management strategies, construction organisation financial performance, and the relationships between these variables, which set the theoretical background for the study.

Chapter Three: Theoretical and Conceptual Framework

This chapter presents the theoretical viewpoint adopted for the study, centering on the interaction connecting the key research constructs, and which formed the basis, along with the review of extant literature, for developing the research conceptual framework. Due to the gaps in knowledge identified from the literature review, research hypotheses were developed and used to answer the research questions.

Chapter Four: Research Design and Methodology

Chapter Four presents the research approach adopted for the study. It discusses the whole research design employed to attain the aim of the study; a specified mixed-methods approach was used to underpin the study. This chapter also describes the method used to select the sample, and to collect and analyse both qualitative and quantitative data obtained for the study.

Chapter Five: Data Analysis

Chapter Five presents the descriptive information of the background details of the respondents' projects, mean item score analysis, thematic analysis and the multiple regression analysis of the relationship between the constructs (project payment systems, financial management strategies and construction organisation and project performance).

This chapter also presents the descriptive information of the details of the respondents' projects, the number of construction projects handled by the respondents' company in the previous five years (2013-2017), analysis of the level of performance of the construction companies within the five years, analysis of the organisational performance of construction organisations, analysis of the cost and time performance of projects executed by construction companies using different payment systems, and the characteristics of projects executed by construction companies using different payment systems.

Chapter Six: Structural Equation Models (SEM) Result.

This chapter presents the data analysis for the measurement and structural models. It also describes the implications of the results of the data analysis.

Chapter Seven: Discussion of Findings

This chapter presents the interpretation and validation for the measurement, structural models, and discussion of findings. It also describes the implications of the results of the data analysis.

Chapter Eight: Conclusions and Recommendations

This chapter reports the summary of findings, conclusions drawn from the findings, recommendations that resulted from the findings, as well as the contributions to knowledge, and areas indicated for further study.

1.12 Summary of the chapter

This chapter served to introduce the topic, structure of the thesis and research process, and to describe its method, limitations and significance. The next chapter reviews the relevant literature about the research question.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of previous studies on the payment systems used in project procurement, and theoretical background on the relationships between the constructs (project payment systems, construction company financial performance, and financial management strategies) in this study.

2.2 Overview of previous studies

The following sub-sections present the review of previous studies on the project payment system used in project procurement, financial management strategies used by construction organisations, the financial performance of construction organisations, and the cost and time performance of construction projects.

2.2.1 The project payment system used in project procurement

Studies on project payment systems have focused solely on the causes of payment system default and problems, tools, and strategies for selecting appropriate payment systems, and the relationships between payment systems and cost overruns. Studies, such as Wong et al. (2006), Wu et al. (2008; 2011), Kenyatta et al. (2015), Ramachandra and Rotimi (2015), Judi et al. (2017) and Peter et al. (2019), have investigated the causes of payment delay in project procurement. For example, Ramachandra and Rotimi (2015) investigated the key causes of payment delays and losses with the optimum goal of attempting to find moderating solutions in a New Zealand construction firm. They found that payment difficulties were mostly connected to contractual problems, financial leverage of construction industry disputes, players, deficiency of payment procedures, and domino effects. Based on their findings, the study concluded that the financial strength of players is paramount in payment glitches in the construction industry.

The study by Wong et al. (2006) addressed the problems connected with payments default for contractors, and assessed matters that have an impact on suppliers, consultants, sub-contractors and other stakeholders participating in the construction projects within the construction industry. The impact of payment systems on the whole construction supply chain in the UK construction industry was also assessed by the study (Wong et al., 2006). These authors found that a complex multi-criteria decision making (MCDM) setting explained and found mathematical solutions, using rational scales and paired assessments to obtain the comparative significance for each decision-making selection on payment issues. In China, Wu et al. (2011) presented and examined payment default glitches, their root causes, and interrelated appraisals, and mitigating solutions through gametric models. Empirical evidence was found in the study from an international systematic review of literature on safeguarding measures. Knowledge about how to resolve payment arrears was gained from a survey in mainland China. Together, these provided support to the models. It was concluded in the study that the working rudiments of managerial measures are: penalizing opportunistic and exploitative payers, costs to parties in referring debtors in order to restore and obtain justice, and corrective measures for unpaid payees**.**

Wu et al. (2008) studied the recent moves that prevail over the accrued payment arrears in mainland China and offered a concise preview of likely developments in the future. It was found in the study that the reasons for the payment issues within the construction industry can be varied. The study posits that extra-contractual issues or contractual disputes, rooted in the system and market, are the causes of the payment issues in the construction industry. Thus, from the findings, the study concluded that construction organisations should employ a strategy to prepare for a long-term mechanism. It also concluded that lessons learned from both the preceding disputes, and the successful reduction of payment arrears should be applied to deal with modern payment issues.

The study by Judi et al. (2017) highlighted the present-day situation on payment-related issues in Malaysia and ascertained the crucial determining factors of guaranteeing that payment is made when due. It was found in the study that, if the payment-related difficulties were settled prior to a dispute arising, the Construction Industry Transformation Plan (CITP 2016-2020) would be subjected to two thrusts: firstly, quality (Q1) to strengthen significance value and carry out quality appraisals and achievement in terms of time, cost and quality through productivity that will enhance constant investment in human and capital development in construction projects within the construction industry, and, secondly if the payment-related difficulties were reduced at the inception phase. These strategies would boost the efficiency of the construction parties engaged in construction projects. From the determining factors for respective payment-related difficulties (PRD) discussed above, the study concluded that lackadaisical processing, postponement in working out variations of work, and contractor work that does not follow the essential standard specifications, are adjudged as key contributors to non-payment problems.

Moreover, Kenyatta et al. (2015) reviewed the impact of payment default by clients on contractors in Kenyan construction companies. It was found that the resulting effects of payment default in the form of underpayment, non-payment, and not honouring several certificates when due, had led to non-completion of construction projects, construction disputes, inadequate cash flow to contractors and other lower-tier parties, and even construction firms' insolvency. Based on their findings, it was concluded that contractual arrangements should require the contractors to factor in a margin for late payment during their tender bids to the clients. In Trinidad, Peter et al. (2019) assessed the impact of late payment by scaling the causative factors and prospective approaches to minimize payment problems as experienced by small and medium-sized construction firms. It emerged from their study that guaranteeing construction project viability entails small and medium-sized construction firms undertaking regular cash flow management training and speedy dispute resolution, which are key and critical for the survival of the construction industry. From the findings of the study, it was concluded that integrating cultural transformations into consideration of legal and technical avenues to minimize late payment would offer solutions to lessen the insolvency rate of small and medium-sized construction companies.

The strategies for selecting appropriate payment systems have been proposed by studies such as Sherrif and Kaka (2003; 2004), Ahmed and Abdel (2007), Motawa et al. (2008), Motawa and Kaka (2009), Gogoski (2012) and Greene et al. (2015). For instance, Sherrif and Kaka (2003) investigated the strategies used for the selection of suitable payment systems by the construction project team through the creation of a list of factors that influence the appropriate payment system selection process. It was found that conditions of contract, contractors' cash flow, and the prospect of disputes impact the layers of the payment mechanism. This serves as a key consideration when choosing the project payment system. From the findings, it was concluded that the choice of an appropriate payment pattern is required to assist in achieving the best results for successful construction projects.

Sherrif and Kaka (2003) posit that there is a likelihood of the selection of unsuitable payment systems leading to time and cost overrun of construction projects, and to unwanted disputes and claims on projects. The study by Gogoski (2012) investigated how the architecture of payment methods, such as processing, payment instruments, and participants, give effect to the payment industry (microeconomic system) and the function of the central bank in payment systems (macroeconomic-public approach). The findings showed that suitable payment infrastructure assists the appropriate functioning of markets and helps to abolish resistance in trade. The study concluded that the economics literature in the field of payment is surprisingly scarce. Because of this, the researcher offers some ideas within the field of payments in the future.

Motawa et al. (2008) conducted research in the United Kingdom to encourage and enable the use of suitable payment systems that pleased all construction project stakeholders. The consequence of the study was to give rise to forecasting cash flows that satisfy all the construction team members. The planned cash flow frameworks are used to monitor the execution of the appropriate payment system. It was concluded from the findings of the study that suitable payment systems act as a performance enabler and the simulation tool that results in project teams coming to conscious and rational conclusions in choosing these systems. Greene et al. (2015) investigated the cost-benefit analysis and the effects that a faster payment system probably had on the rest of the United Kingdom (UK) payment system. From the findings of the study, the research defines the consequences for the US payment system based on the UK experience, which the Federal Reserve, in the policy declarations, anticipated would work faster.

In order to allow the supply chain members to adopt the most suitable payment mechanism, Motawa and Kaka (2009) introduced an IT scheme developed to model diverse payment mechanisms. The product led to developing cash flow and payment mechanisms that serve the supply chain members. The conclusion showed a coherent identification of applying innovative and suitable payment mechanisms, and hence, enhancing the success of how construction projects are achieved and implemented. Ahmed and Abdel (2007) examined the application of payment mechanisms in several design-build-finance-operate (DBFO) transportation construction projects in British Columbia, Canada, in terms of payment forms, features, purpose, structure and funding. The study found that more payment systems are being used and that the mechanisms have been developed to attain precise government goals. The study concluded that stakeholders have to be flexible with applying insights about project delivery, as the incorporation of payments for services, inputs, and usage might have to be utilized.

Sherif and Kaka (2004) focused on unit rates, lump sum, cost-plus for pricing approaches and interim evaluations, lump-sum payment, and milestones for payment systems in the U.K. It was argued in the study that the choice of a suitable payment system would bring in improved performance and enhanced satisfaction for all project stakeholders. From the findings of the study, it was concluded that the implementation of a more inclusive choice of payment method would assist clients to take into consideration the interests of the supply chain and assist in reducing the chance of conflicts and disputes. Rameezdeen et al. (2006) investigated the merits and demerits of advance payment as a financial system, which has been applied for some time on construction projects in the Sri Lankan construction industry. It was found from the study that advance payment mobilization is good for the construction industry, specifically for the contractor when undertaking construction contracts. It was concluded from the findings of the study that the misuse and misappropriation of advance payments should be controlled through appropriate contract administration between the client and contractor.

A few studies have also been conducted on the relationship between payment systems and cost overruns. In Nigeria, Aje et al. (2017) assessed the relationship between factors that cause cost overruns when advance payments are allotted to contractors in the construction firms. The study found that there is no significance in the statistical correlation between advance payments and overrun causations. It was concluded from the evidence from the study that the desire to evade delay is a significant motivation for advance payment, and that it was not enough to conclude that advance payment impacts overruns. The study by Odeyinka and Kaka (2005) acknowledged from the literature that the payment terms are theoretically assumed to influence construction cash flow in the U.K. It was found in the study that contractors were satisfied with most of the contractual arrangements considered under the procurement systems, but they were dissatisfied with two of the factors, namely, percentage of contract sum retained, and the time lag between entitlement to receive, and receipt of a cash payment. It was concluded in the study that this dissatisfaction calls for action to consider developing other means of managing delayed payment and retention of earnings.

These studies have ascertained payment systems to be an important consideration in project procurement. However, none of these studies has shown the project payment systems that are commonly used in construction project delivery. This indicates the need to investigate the commonly used payment systems in construction project procurement in South African construction industry.

2.2.2 Review of previous studies on the financial management strategies used by construction organisations.

Financial management strategies have been well investigated with a focus on financial management practices and the impact of financial management techniques on sustainability and organisation performance. Researchers, such as Khosrowshahi (2000), Spicka (2013), Akinyemi (2015), Musah et al. (2018) and Tran et al. (2019), have investigated financial management practices in corporate organisations. For example, Khosrowshahi (2000) appraised the business risk of project financial management practices as a tool for gaining benefit to an organisation’s company financial objectives in the U.K. It was suggested in the research that a proactive system for project financial management can produce benefits to all project parties involved. It was concluded that the development of a precise forecast is no more than only an indication of present knowledge and prior experience. The study by Spicka (2013) assessed the significance of the forthcoming insolvency in the Czech construction industry. It was found in the study that an improper innovative financial management strategy serves as the source of business failure in the Czech construction industry. The study recommended that construction companies should manage their debts cautiously in relation to their profitability, and create organisational financial reserves that would curb a future crisis.

In Nigeria, Akinyemi (2015) studied financial management practices in small and medium enterprises. It was established in the study that non-current assets, appropriate management of working capital, and cash flows are vital for small-scale business survival. The study concluded that small and medium enterprises (SMEs) must evade shortages of cash flow that maylead to insolvency. Musah et al. (2018) conceptualized accounting information, capital structure management, working capital management application, financial reporting systems, fixed asset management, and budgeting as the financial management systems for small and medium enterprises (SMEs). It was found in the study that accounting information systems, working capital management applications, capital structure administrations, and financial reporting systems are valid financial management methods for SMEs in Ghana. The study concluded that SMEs need to better their financial management techniques in order to increase their growth and profitability. Tran et al. (2019) reviewed the usage of cash flows as a monetary strategy in business investment. It was found in the study that there are variances in internal cash flow causation on the sustainable growth of both company and non-corporate investments.

These studies have established that financial management systems are an important practice by corporate organisations in project procurement. However, financial management techniques are more than capital budgeting and fixed asset management. The impact of budgeting and fixed asset management on organisation performance cannot be used to determine the impact of financial management strategies on organisation performance.

Financial management studies have also investigated the impact of financial management techniques on sustainability and organisation performance. Notable among these studies is the one by Babar et al. (2010), which assessed the relationship between organisational performance and financial management techniques, such as dividend policy, choice of capital structure, investment appraisal methods, working capital administration methods, and financial performance evaluation, in a Pakistani corporate segment. It was found in the study that there is a significant relationship between financial management techniques used and organisational performance in the Pakistan commercial sector. It was concluded that investment appraisal methods and dividend policy should be the focus of financial managers alongside other techniques to get the attention of stakeholders, which will, in due course, affect their organisation performance. Their research focused only on corporate institutions and not on construction organisations. Moreover, the study only investigated the impact of investment appraisal and dividend policy. Nevertheless, construction organisation financial management strategies entail more than investment appraisal.

In Ghana, Pimpong and Laryea (2016) examined the effect of capital budgeting on companies' performance among non-banking financial institutions. It was found in their study that capital budget management has a statistically significant impact on company performance. The study revealed that the budgeting strategy necessitates capital budget coordination, budget planning, budget regulation, and budget appraisal. This study focused only on capital budgeting as a financial management strategy. However, financial management strategies are more than budgeting, as earlier discussed. This implies that the impact of budgeting on organisation performance cannot be used to determine the impact of financial management strategies on organisation performance. Also, the study by Pimpong and Laryea (2016) focused only on financial institutions and not on construction organisations.

Meanwhile, in South Africa, Haupt and Padayachee (2016) investigated the challenges and obstacles facing the Construction Industry Development Board (cidb) contractors registered in Grades 2-4, with attention to the consequence of their lack of financial skills on the sustainability of their construction businesses. It was revealed in the study that contractors are faced with numerous difficulties in accessing finance, due to their lack of financial management competencies. This shows that there is a lack of innovative financial management strategy skills among construction organisations. The findings by Haupt and Padayachee (2016) in South Africa further underscore the need to critically examine the prevalent financial management strategies in use by construction organisations in construction project procurement to achieve organisation performance, in order to ascertain their level of financial management skills and knowledge in the South Adrican construction industry.

2.2.3 Review of previous studies on financial performance of construction organisations

Studies on organisation financial performance have considered the financial factors that determine the success and failure of organisation performance (Chen, 2009; Chiu and Wang, 2011; Alfan and Zacharia, 2013; Halim et al., 2014; Lai et al., 2014; Turker et al., 2015). Table 2.1 presents a summary of these previous studies on factors influencing financial performance of construction organisations.

Table 2.1: Some previous studies on factors influencing financial performance.

Area of focus	Geographical context	Reference
Financial factors that determine the success or failure of construction organisations	Developing country	Matar and Eneizan (2018)
Interaction between financial-economic factors and financial performance	Developed country	Chen (2009)
Model for evaluating the financial performance of construction firms	Developed country	Chiu and Wang (2011), Alfan and Zacharia (2013)
Financial factors influencing the performance of construction organisations in the construction industry	Developing country	Halim et al. (2014), Matar and Eneizan (2018)
Effect of an international financial predicament on the financial performance of public registered construction firms	Developing country	Lai et al. (2014)
Variables that impact the business performance of construction firms	Developing country	Turker et al. (2015)
Effects of diversification on the performance of construction firms	Developing country	Adamu et al. (2011)

Other studies have found a link between financial performance and project environment. For example, Moneva and Ortas (2010) evaluated the implication of the relationship between business environmental performance and financial performance in the European establishments to demonstrate to managers how appropriate management of environmental issues contributes to the firm’s financial achievement. It was found in the study that companies which gained higher rates of environmental performance, exhibited improved and healthier financial performance levels in the outlook. The study concluded that executives should consider environmental issues when constituting the firm's strategic policy and how the financial success of the companies can be accomplished through proper environmental management.

Lam and Gale (2014) explored the financial performance of structures for highway maintenance construction projects within the framework of the most important district council. It was found that the use of framework procurement approaches sustains substantial cost savings when applied within a public setting. From the findings of the study, it was revealed that there are significant decreases in the entire contract cost for engagement and performance monitoring and that there is no significant alteration in production costs of tender prices. In the Korean construction industry, Woo et al. (2016) assessed the communication proficiencies for green supply chain organisation and the connection between green cost decrease, company competitiveness, and external green alliance, from the suppliers' perception. It was found in the study that suppliers with greater information-sharing skills attained competitive advantage, enhanced environmental cooperation, and contributed to green cost-saving.

The relationships between strategic management and organisation financial performance have been investigated by Maes et al. (2005), Moneva et al. (2007) and Oyewobi et al. (2015). Maes et al. (2005) developed a structural model to examine the direct and indirect effects of owner-manager and firm features, and selected management strategy on the financial performance of a sample of 218 small Belgian construction companies. The study found that the owner-manager and firm features, such as company size, firm age, education, knowledge of cost accounting, financial knowledge, experience, have a significant indirect impact on financial performance. The study by Moneva et al. (2007) investigated whether the strategic commitment of an organisation to its stakeholders in Spanish firms is positively related to its social and financial performance. The study reported that the outcomes did not show a high level of investor approach, publication, and quality of sustainability reports, and no significant relationship between variables and financial performance in the companies.

In South Africa, Oyewobi et al. (2015) investigated the type of competitive strategies used by construction organisations in attaining their strategic objectives. The study reported that generic competitive strategies are related to non-financial performance, and that differentiation and cost-leadership strategies are effective in assisting construction organisations to realize their financial performance goals. From the findings of the study, it was concluded that Porter's generic competitive strategies are significantly connected to organisational financial performance measures, except focus strategy. Based on the understanding provided by these previous studies, it becomes clear that there is no consensus on the indicators for assessing the financial performance of construction organisations. Also, there is a dearth of concepts on the financial performance indicators for construction organisations in the South African construction industry.

2.2.4 Cost and time performance of construction projects

The cost and time performance of construction projects has been of great concern to scholars. This has led to the assessment of cost and time performance, the establishment of the relationships between cost and time overruns, and investigation of causes of cost overrun and time delays. Studies, such as those by Meeampol and Ogunlan (2006), Aje et al. (2009), Abdul Rahman et al. (2012) and Doloi (2013), have assessed the cost and time performance of construction projects in project procurement. The cost and time performance of highway construction projects in Thailand was analysed from the perspective of the public client by Meeampol and Ogunlan (2006). It was found in the study that the following factors, namely, capital budget management, communication, schedule management, selection of construction method, control, supervision, and well-managed construction resources, led to successful cost and time performance. In Nigeria, Aje et al. (2009) assessed the effect of contractors' management ability as a pre-selected measure on cost and time performance of some carefully chosen building construction projects. It was revealed in the study that construction contractors' management ability has a significant effect on both cost and time performance of construction building projects. From the findings of the study, it was concluded that the study was of great benefit at the execution phase of the public procurement process.

Using a structured questionnaire survey in Malaysia, Abdul Rahman et al. (2012) investigated the cost and time performance of building and civil engineering projects. The implication of their findings revealed that most construction projects were abandoned due to the majority of the construction projects being affected by time and cost overruns, with few of the construction projects meeting their completion duration. Abdul Rahman et al. (2012) indicated that project and contract administration problems, management of financial resources, and design and documentation difficulties were the main factors that led to the poor performance of most of the construction projects. Doloi (2013) analysed the construction industry in Australia and gained extensive insight into cost performance being severely dependent on the contracting firms' performance. It was found in the study that satisfactory programming, effective design, efficient site management, and strong control measures were the most important factors that led to cost performance. From the findings of the study, it was concluded that there is a need to shift the preferences in cost assessment and management systems across the construction industry environment.

Love et al. (2005) and Shr and Chen (2006) established the relationships between cost and time overruns in Australian and Florida construction firms, respectively. Love et al. (2005) investigated project timecost relationships using construction project scope features as predictors for construction projects that were completed in several Australian construction firms. It was found from the study that the major factors of time performance in construction projects are the total number of floors in a structure and the gross floor area. From the findings of the study, it was concluded that cost served as a determinant of time performance. In Florida, Shr and Chen (2006) examined the practical link between cost and time of highway construction projects. It was found in the study that the proposed model would intensify control and consider the time value of highway construction projects to both the contractors and the state highway agencies. It would also assist the contractor to regulate the construction project time and cost more flexibly, in order to make it easier for them to win tender bids.

The causes of cost overruns and time delays have been investigated by studies, such as Le-Hoai et al. (2008), Kaliba et al. (2009), Ahsan and Gunawan (2009), Baloyi and Bekker (2011), Alinaitwe et al. (2013), Shanmugapriya and Subramanian (2013), Ubani et al. (2013) and Rachid et al. (2019). For instance, Le-Hoai et al. (2008) investigated the reasons for delays and cost escalation in construction projects through the construction experts in the construction companies in Vietnam. It was found in the study that human and management issues are the causative root of cost overrun and delay of construction projects in the Vietnamese construction industry. The implications of their results were vital, because they described how enhancing the capability of the engineers and managers working in the Vietnamese construction industry translated into emergent cost and time underrun.

The reasons for, and impacts of, cost overrun and schedule delays in civil engineering construction work in Zambia were reported by Kaliba et al. (2009). From the results of the study, it was established that several factors, for example, inadequate site supervision, economic issues, unavailability of equipment when needed, unqualified professionals, lack of coordination, contract and drawings alteration, material procurement issues, disagreement among labour, financial process difficulties, and payment delayed by the client, are the root causes of schedule delays in civil engineering construction projects. On the other hand, the major challenges faced on cost escalation in Zambian construction projects are delays in schedule, lack of technical know-how, inflation, pressures from local government, bad weather, changes in scope, cost mitigation, and environmental protection. From the study, it was concluded that, to control the causes and effects of cost overrun and schedule delays, there is a need for proper project management systems.

Ahsan and Gunawan (2009) investigated cost and schedule performance and the main roots for poor construction project outcomes of global development projects. The report explained that late construction projects experience an uncommon cost and schedule modification relation in projects. In South Africa, Baloyi and Bekker (2011) reported the causes of cost overrun and time lags during upgrading and construction of the numerous stadia, and the report compared the global and stadia projects in South Africa. Both global and stadia projects have an increase in material cost as the sole major contributor to cost overruns. Likewise, it was found in the study that the most significant causative factors for global and stadia projects' poor outcomes were a delay in payments and design-related factors, respectively. From the findings of this study, it was concluded that the FIFA World Cup stadia projects have shown that South Africa is not exempted from global economic pressures. Most importantly, the major causative factors of cost overruns and time delays on international construction projects enumerated in literature are comparable to those experienced on the FIFA World Cup stadia construction projects.

In the study of Alinaitwe et al. (2013) on the causative factors of cost overrun and project delays in the public sector in Uganda, it was found that the interaction among the causative variables of cost overrun and delays was moderate. From the findings of the study, it was concluded that employing design and build project procurement type, and enhanced cash flow and project management will lessen project payment delays from the contract owner. Research by Shanmugapriya and Subramanian (2013) focused on the substantial factors responsible for Indian construction projects cost and time overruns. The empirical findings of the study indicated that the main factors responsible for cost overruns are alteration in material specification, and increase in the cost of transportation and material price,; and the major causes of time overrun are contract changes, fluctuation in the market rate of material, and the level of the quality stipulation.

In the southern part of Nigeria, Ubani et al. (2013) surveyed and identified the factors determining cost and time escalation on a construction project. It was shown from the results of the study that all the parties involved in the construction project agreed that external factor groups and materials factors contributed vastly to delays in the project. Conversely, the following factors, namely contractual and government relations, professional management, labour and equipment, client's and consultant's responsibilities, and contractor's responsibilities, do not have a significant influence on construction project delays. For efficient and effective delivery of construction projects at the right time and right cost, the study concluded that contractors, clients, and consultants should pay considerably more attention to material and external issues. Rachid et al. (2019) identified the factors responsible for delays in the Algerian construction industry, and evaluated their priority in accordance with the key project stakeholders: the customer, the consultant, and the contractor. It was found in the study that client-related causes are the most significant causes of delay.

These studies have ascertained cost and time performance to be an important consideration in construction project execution in the construction industry. However, none of these studies has established the cost and time performances of projects executed by construction companies using different payment systems in the South African construction industry. This indicates the need to investigate the cost and time performances of projects executed, using different payment systems in the South African construction industry.

2.3 Theoretical background

The following sub-sections present the literature review: the relationship between project payment systems used in project procurement and cost and time performance of construction projects; the relationship between project payment systems and financial performance; the relationship between financial management strategies and the organisation's financial performance; the relationship between financial management strategies, project payment systems and financial performance; and, the relationship between financial management strategies and project payment systems.

2.3.1 Relationship between project payment systems and cost and time performance of construction projects

The links between project payment systems (interim payment system, advance payment system, stage payment system, milestone payment system, payment on completion) used in project procurement and cost and time performance of construction projects are reviewed under this subsection.

2.3.1.1 The interim payment system and cost and time performance of construction projects

The most commonly used method of payment in terms of contracts is the interim or progress payment system (Sherrif and Kaka, 2003; Judi and Abdul-Rashid, 2010; Ansah, 2011). Interim payments are suitable for functional elements of larger projects, such as ramps, intersections, bridges, structural and reinforcement steel, retaining walls, materials delivered to the site (such as backfilling materials, concrete and asphalt) (Maritz and Robertson, 2012; Washington Department of Transportation, 2013). The features that make the interim payment system suitable to the construction project environment include the consideration of limited factors in decision-making, and of project activities pertaining to the functional elements of larger projects, in terms of project environment (Omopariola and Windapo, 2018). The interim payment system requires the structuring of the timing of the work by the client and all parties to the contract (Anderson and Damnjanovic, 2008). As a result, the interim achievement dates are vital when the transitional segments are crucial for the entire project, or else the whole project will be interrupted (Omopariola and Windapo, 2018).

The interim payment system serves as payment terms that aim at speeding up completion of a detailed section of a contract. It sets up incentives for the contractor to achieve specific construction goals on or before a specified date (AASHTO, 2006). Previous researchers (see Anderson and Damnjanovic 2008; Gary et al., 2010) have shown that the interim payment system allows an overall project schedule to be maintained in cases where there are sequential contracts; it supports proactive and creative approaches by contractors to strive to complete the project on time, enhances safety, and assists in the reduction of administrative requirements by the parties involved.

In the standard form of contract, the interim or progress payment is effected by the issuance of an interim certificate. An interim certificate is a periodic certification due to the contractor during the progress of work on the construction site. The failure of the consultant to issue interim certificates in accordance with the stipulations of the contract risks exposing the employer to a claim of breach of contract by the contractor (Singh, 2003). Bob (2005) opines that this can lead to financial difficulty if it results in late resolution of disputes in arbitration or litigation, triggering project abandonment and failed projects caused by the increased level of interest rates that give rise to cash flow glitches (Khosrowshahi and Kaka, 2007). Moreover, when interim certificates are not honored when due, this leads to cost and time overruns on projects. Omopariola et al. (2017) hold that contractors will abandon construction projects when payment certificates are not honoured by the client when due, as timely payment is required to avoid unnecessary outsourcing of cash, which attracts high interest rates and, therefore, has adverse effects on profitability (Adjeil et al., 2018). Delays on-site because of insufficient cash flow to sustain construction outlays may be caused by late payments – particularly for those contractors who are not financially buoyant (Sambasivan and Soon, 2007; Mahamid et al., 2012).

In conclusion, this review shows that construction of projects are exposed to risk by the use of the interim payment system.

2.3.1.2 The advance payment system and cost and time performance of construction projects

Kaka and Lewis (2003) describe the advance payment as that amount of money remunerated to the contractor by the employer at the early start of work on site. This is done to aid the contractor in commencing the work when due and to fund the contract without having recourse to look externally for funds. Ansah (2011) posited that this system of payment is mostly used in public works projects. In financial management literature, the advance payment method serves as an important factor in project achievement (Elazouni and Gab-Allah 2004; Li et al., 2005). The appropriateness of advance payment is for the purchase of non-perishable construction project materials that will be needed for the execution of a construction project, such as in large engineering projects (Jagboro 1998; Berends and Dhillo 2004; Oke et al., 2013). Aje et al. (2017) support the view of Jagboro (1998) that payment made for material in advance assists in evading price instability that causes cost overruns in construction. It helps the contractors to ascertain the client's commitment to project finance, and clients can demand speedy performance from contractors (Aje et al., 2017). Based on this, Abeysekera (2002) identifies advance payment as a strategy to lower projects' outturn costs.

Previous researchers, Ofori (1991), Jaafari (1996), Jagboro (1998), Motawa and Kaka (2009), Oke et al. (2013) and Aje et al. (2017), have argued that clients use the advance payment system to avoid execution delays and speed up the progress of work, to ensure the quality of work, to buy material ahead in order to avert cost escalation, to assist contractors out of financial burdens in relation to the projects, and to avoid payment delays on the part of the clients, so as to achieve performance. Advance payment to contractors is the livewire catalyst of a large number of successful projects in the construction industry (Ellis, 1991). Wang (1984) asserts that construction development is capital-demanding and requires an enormous amount of funds for its realization. Therefore, advance payment to contractors should have a positive impact on construction project delivery (Oke et al., 2013).

Project finance literature has adjudged the advance payment system as an important factor in project accomplishment (Yescombe, 2002; Elazouni and Gab-Allah, 2004; Sorge, 2004; Li et al., 2005). Advance payment aids the contractor to establish the client's commitment to project finance, and aids project owners to commit contractors to prompt performance (Jagboro 1998; Berends and Dhillon, 2004; Oke et al., 2013; Aje et al., 2017). Advance payment is the strategic and statutory practice that helps avoid price fluctuation (a cause of cost overruns in construction) and facilitates project achievement (Jagboro, 1998; Aje, Olatunji and Olalusi, 2017). Abeysekera (2002) and Rameezdeen et al. (2006) have shown that advance payment assists the contractor to maintain positive and robust cash flow at one or other stage of project contracts. It serves as a benefit to both clients and contractors when project start-up funds are not sourced externally, as it makes it possible for contractors to evade the increased cost of finance that could, in due course, add to clients' project costs (Spackman, 2002). However, advance payment opens up the client to greater risks if the contractor is incapable of completing the work (Potts, 1988; Cheetham et al., 1995).

2.3.1.3 The stage payment system and cost and time performance of construction projects

The stage payment system is an incentive for the satisfactory and timely completion of a project (Blyth and Kaka 1999; Scott and Mitchell 2017). The stage payment system has been generally and best applied to simple projects with a well-defined scope, such as small housing developments by local developers, and a low risk of unforeseen conditions (Njie et al., 2005; Omopariola and Windapo, 2018) that have been completed on time and within the agreed budget (Potts, 1988; Blyth and Kaka 1999; Motawa et al., 2008). The stage payment system is cost-effective in that it lessens the cost of design, and contract administration cost and time, spares the contractor costly measurement of incomplete work and unfixed materials, and encourages the contractor to make progress to the client's benefit (Potts, 1988; Cheetham et al., 1995). Scott and Mitchell (2017) posit that stage payment is a strategy used to improve the efficiency and performance of construction organisations. Blyth and Kaka (1999) argue that there would be no disagreement between contractors' and project owners' quantity surveyors' over-evaluation of works if stage payments were engaged as a payment method. These authors also note that there would be less necessity for quantity surveyors' work if stage payments were frequently used, and if they were more engaged in the administration rather than the finance side.

However, Potts (1988), Cheetham et al. (1995) and Blyth and Kaka (1999) also noted that stage payment has a negative impact on contractors' cash flow, requiring the contractor to have either a higher borrowing capacity or a larger cash reserve to continue to buy materials for the next stage, and leading to a reduction in profit contained within the contract, if work is completed early in the project while full payment is tied to a later date. Stage payment may be linked to task completion or to dates. In comparison to the traditional approach, there will be a likelihood of overpayment when, in the effort of a contractor to bid for higher percentages at the early stages of the project, they may be poorly paid when construction progress is early – in other words payment may lag behind the programme of work.

2.3.1.4 The milestone payment system and cost and time performance of construction projects

Milestone payment has been described as payment made to a contractor based upon attaining a distinct number of construction activities, or after all items of work have been effectively completed (Cheng, Soo, Kumaraswamy and Jin, 2009). This payment system aims to identify milestones that, if attained, would guarantee payments that bolster the contractor's possible cash outflow at any point in the construction project activities when the milestone becomes appropriate and due (Blyth and Kaka, 1999). According to Potts (1988) and Cheetham et al. (1995), distinct milestones present a logical plan for the incentive of performance. Client and contractor to the contract, hence, have a clear perception of the connection between performance and payment, and, as a result, are provided the necessary confidence in the contract agreement. The objective behind milestone payment is not only to increase profitability or cash flow positively but also to facilitate the successful management of the project (Potts, 1988; Blyth and Kaka, 1999). Cheng et al. (2009) and Potts (1988) advocated the use of milestone payment to motivate contractors to deliver better performance, as it was considered that it ensures greater certainty of payment, lower financing charges and the creation of better working relationships, and a better quality project and the attainment of improved organisational performance. Further, in the work of Potts (1988), the client considered the milestone payment system a success, as the project was completed within budget and planned completion dates, while the contractor's senior managers, who participated in the study, noted that the milestone payment system provided a positive motivation to succeed, and contributed to their company's motivation to attain milestone dates.

Zack (1998) and Cheng et al. (2009) note that the flexibility of milestone payment is open to abuse if it is not managed correctly, and that, because of the required exigency of the strategy, could lead to rushed work or inadequate attention to quality. The demand for early completion resulting from the application of this method serves as a challenge to the contractor's and project owner's representatives to stabilise manpower and resources on other simultaneous construction developments. This is because contractors find it complicated to bear the financial burden of payment if it is rushed or not sufficiently planned for (Scott and Mitchell, 2017).

The milestone payment system has been used mainly on international multi-contract, multi-disciplined fast-track construction projects (for example, the Hong Kong Mass Railway, UK fast track construction project and some core airports) with milestones in individual contracts, such as a multi-storey office block, public projects, civil engineering work, and a basement project, and this has contributed to the achievement of the planned project completion date and budget (Potts, 1988; Cheng et al., 2009; Scott and Mitchell 2017). Milestone payment motivates contractors financially to attain the essential sectional completion and completion dates, making it easy for both contractors and clients to ascertain the project cash flow with a realistic level of certainty before the construction project commences (Scott and Mitchell 2017).

2.3.1.5 Payment on completion and cost and time performance of construction projects

This type of payment functions well where it is practical to complete a project by a definite date, but not imperative to finish before the agreed time. This implies that the contractor is solely responsible for funding the project until completion. The contractor is given a "drop-dead date" for the achievement of a part of the project or the whole work (Ansah, 2011). According to Wong et al. (2006) and Ansah (2011), payment on completion is the type of payment made to a contractor at the practical completion stage of a construction project on-site. It is beneficial if the contractor completes the construction work earlier than the stipulated time. A study by Olatunji et al. (2017) shows that payment on completion is the preferred choice of contractors for settlement of payment for work carried out, but this is in exceptional cases where the contract is based on drawing and specification, that is, where the project is rather small and to be executed within the range of the client's financial budget to pay once.

Payment on completion as a type of payment system enhances managerial inefficiency, and not meeting client and employee satisfaction due to the fact that the contractor is solely responsible for funding the project until the phase is attained and certified by the contract administrator before the contractor can be remunerated. The flow of cash across the supply chain may be limited, leading to poor quality of work. Scott and Mitchell (2017) posit that there is no justification for a contractor not meeting the completion date, whether there is any variation, sort of natural disaster, or any other reason, except liquidated damages that can be assessed.

2.3.2 Project payment systems and financial performance of construction companies

Poor project and construction organisation performance and the failure of construction projects have been related to the use of unsuitable payment systems (Omopariola and Windapo, 2018). It is difficult for any construction activity to function well without due consideration for financial issues. According to Odeyinka and Kaka (2005) appropriate and fair payment systems, when matched to supply chains in construction organisations, improve performance. For instance, payment made to contractors to buy construction materials in advance, in order to avoid price fluctuation and to avert cost escalation (Jagboro, 1998; Aje et al., 2017) will reduce or eliminate contractors' financial burdens in relation to the construction projects, and assist in maintaining healthy cash flow, and similarly will facilitate the execution of construction projects (Abeysekera, 2002; Rameezdeen et al., 2006). Doing that, construction organisations' receipt of payments prior to the commencement of construction operations will enhance their liquidity and investment capabilities (i.e., to earn interest) (Schulz, Schlereth, Mazar and Skiera, 2015). Payment made on time to contractors allows project owners to commit contractors to prompt performance, ultimately reducing the risk of litigation and delays (Jagboro 1998; Oke et al., 2013).

The use of innovative payment systems can collectively increase clients' satisfaction as well as provide liquidity and profits to the construction organisations. Some financial management scholars argue that using innovative payment systems to pay the construction services rendered to contractors by clients can be a principal source of firms' financial performance (Lowe, 1997; Arditi et al., 2000; Elazouni and Gab-Allah, 2004; Li et al., 2005; Motawa et al., 2008; Ugochukwu and Onyekwena, 2014; Abubakar et al., 2016; Aje et al., 2017).

The appropriate payment system allows the reliable project stakeholder to embark on productive project performance, thus increasing the possibility of higher levels of profit, and encourages the contractor to make progress to the client's benefit and ultimate cost-effectiveness (Potts, 1988; Cheetham et al., 1995; Scott and Mitchell, 2017). This also improves the efficiency and financial performance of construction organisations (Scott and

Mitchell, 2017). The objective of payment systems is not only to increase profitability or cash flow, but also to facilitate the successful management of the project (Potts, 1988; Blyth and Kaka, 1999). Omopariola and Windapo (2018) posit that an appropriate payment system impacts the profitability of construction projects and improves the financial performance of construction organisations, due to its presentation of a logical plan, motivation for performance, and the improvement of efficiency.

Payment made to the contractor when due has an effect on the efficiency and profitability of construction projects, as it allows for managerial efficacy in the entire construction project, and sound financial management (Grunfeld and Griliches, 1960; Wong et al., 2006; Olatunji et al., 2017; Tran et al., 2019). According to Omopariola and Windapo (2018), project payment systems influence project and financial organisation performance in diverse ways, and construction projects and organisations would continue to experience poor financial performance if payment systems were not carefully chosen to match the project and construction organisation setting.

2.3.3 Financial management strategies and financial performance of construction organisations

As mentioned above, the very high rate of insolvency (the highest among all segments in the economy) in the construction industry (Hughes, Gray, and Murdoch, 1994; Lowe, 1997) can be laid squarely at the door of inadequate financial management strategies on the part of companies, and their disregard of these strategies' management processes (Calvert, 1986; Clough and Sears, 1994; Navon, 1995; Boussabaine and Kaka, 1998; Harris and McCaffer, 2001; Ramanchandra and Rotimi, 2011).

Also, as pointed out in the previous chapter, the inadequacy of high numbers of new entrepreneurs to manage the finances of construction projects is likely to lead to project failure and construction company insolvency (Adeyemi, 2004; Onukwube, 2005; Akinola, 2010; Lowe and Moroke, 2010; Windapo and Cattell, 2011). Haupt and Padayachee (2016) posit that sound financial management strategies contribute to a successful construction business. Profitability is vital to the corporate survival of every company project, as business failure arises where an enterprise finds it challenging to maintain appropriate profit levels.

Bird (1992) and Oke et al. (2016) posit that the successful completion of any type of construction development relies significantly on the level of strategic management of financial resources, organisational performance, and use of financial management, the completion time set for the project and the expertise of the relevant players involved. Adequacy of financial management strategies has been recognized as a critical success factor for any construction company for efficient construction project delivery (Peer, 1982; Singh and Lakanathan, 1992). Strategy is, in effect, management's game plan for consolidating and strengthening the construction organisation's setting, satisfying customers, and attaining performance targets (Festus and Adeniren, 2013). Consequently, Ali and Ali (2015) posit that an organisation lacking a strategy is purposeless and uneconomical. Strategy, as an essential tool for financial management and decision-making, has been used to varying degrees in the construction industry for projects or the operation of a company (Navon, 1995; Kenley, 2003; Odeyinka and Kaka 2005; Onukwube, 2005; RICS, 2014). According to Bell (2003), financial management strategy is the capability of corporate organisations to develop from having the ability, to a level of gaining financial competence that determines their optimum performance.

Previous research by Cormican (1985), Kaka and Price (1993), Mawdesley et al. (1997), Evans and Kaka (1998), Harris and McCaffer (2001), Odeyinka, Kaka and Morledge (2003) and Windapo and Cattell (2011) affirmed that financial management strategies employed by a company impact on both project and company performance. Argenti (1976), Peer (1982), Slatter (1984), Singh and Lakanathan (1992), Lowe (1997), Arditi, Koksal and Kale (2000) and Wang et al. (2015) posit that getting acquainted with financial management strategies (such as cash flow, appropriate debt management – which helps to develop the creditworthiness of companies, risk management, budgetary plan, review, and evaluation) will facilitate the decision-making process. Failure in the construction industry is due to poor financial management systems, resulting in the poor performance of the construction company and possible liquidation (Lowe, 1997). This buttress the argument of Sheriff and Kaka (2003) that a cash flow strategy serves as one of the most important means for contractors to deliver successful projects in the construction industry. If payment is not made when due to the contractor, it will have an adverse effect on the success of the construction project. Therefore, the effective completion of projects is a product of the selected financial management strategies and project features and constraints (Sheriff and Kaka, 2003).

Construction firms' resources (finance) and capabilities are the assets that construction companies can use to comprehend and implement their construction projects when sound financial management strategies are employed (Porter, 1981; Barney 1992; Omopariola and Windapo, 2019). Having robust financial incomes enhances the ability of the construction organisation, which, in turn, has higher profits when sound financial management strategies are in place (Warszawski, 1996; Haupt and Padayachee, 2016). Most construction projects are funded by the client, who pays the contracting firm periodically for services rendered, and who, in turn, pays the sub-contractors, the suppliers, and other parties involved in carrying out the construction project (Kenley, 2003; Odeyinka and Kaka, 2005). The achievement of this routine rests on the financial management strategies put in place both by the client and the contracting firm (Gunhan and Arditi, 2005). The progression in construction project activities is dependent on its cashflow and the financial strategies applied (Omopariola and Windapo, 2019), which serve as key factors in maximizing the construction firm's profitability (Hwee and Tong, 2002; Grosse-Ruyken et al., 2011; Choil and Kim, 2014).

According to Omopariola and Windapo (2019), cashflow strategy has an influence on profitability, adequate cashflow, and liquidity. Calvert et al. (2003) and Omopariola and Windapo (2019) indicate that success of a construction project is particularly reliant on its sufficient cashflow and profitability. Likewise, Navon (1996), Egbide et al. (2013), Mohammed et al. (2014), and Omopariola and Windapo (2019) inferred that cash flow strategy influences construction organisation liquidity and sufficient cash flow. There is a link between the project and organisational performance, and budgetary planning, profitability, sufficient cash flow, and liquidity strategies of organisations (Khan et al., 2011; Sur and Chakraborty, 2011; Mohammed et al., 2014; Egbide et al., 2013). According to Harelimana (2017) and Omopariola and Windapo (2019), the extent of construction organisation profitability, adequate cashflow and liquidity of any construction project or its organisation is influenced by the budgetary strategy employed. Researchers (see Kangari, 1991; Berger and Frame, 2007; Omopariola and Windapo, 2019) have posited that, because of interest rates, and insufficient cashflow, most companies have bad debt and are not able to repay their debt, resulting in construction organisations not being creditworthy. The choice of creditworthiness plan by a company depends on the plan's effect on adequate cashflow and leverage (Esty, 2002; Visconti, 2013; Omopariola and Windapo, 2019).

2.3.4 Financial management strategies and project payment systems

The construction project environment is dynamic and unpredictable. The construction company is confronted with several uncomplicated situations to complicated problems (varying from delayed payments to litigation caused by inappropriate financial management strategies and unsuitable payment systems used) (Sheriff and Kaka, 2003; Kazimu, 2012; Oke et al., 2016; Oyewobi et al., 2019). Construction organisations, therefore, have to employ different financial management strategies to survive, and improve their profitability using suitable payment systems that represent pricing innovation, in which the payment made by the clients to the construction companies is based on the prediction of the expenses of the companies on the construction projects (Schulz et al., 2015; Oyewobi et al., 2019). Construction organisations employing appropriate financial management strategies, and innovative payment systems may be a company's most powerful and, least explored source of favourable competitive advantage (Hinterhuber and Liouzu, 2014; Schulz et al., 2015).

The risk of contracting construction firm businesses becoming insolvent is mainly ascribed to poor financial management strategies, and inadequate attention to finance (using an unsuitable payment system to procure the construction project) in an unmatched project environment and poor financial performance at the construction organisational level (Lowe, 1997; Arditi et al., 2000; Lazaridis, 2006; Ugochukwu and Onyekwena, 2014; Abubakar et al., 2016). This concurs with the previous research of Sherif and Kaka (2003), who find that review and evaluation of construction companies' financial management systems and performance are essential for contractors to deliver construction projects successfully, on time. The difficulties most contracting firms face in their day-to-day construction business entail two words: "late" and "payment" (Morgan, 2016). The deficiency of appropriate and detailed financial management strategies may delay the construction project, resulting in its not being constructed within the cost planned and the estimated time, and, sometimes, it will affect the quality of the end product (cidb, 2016; Judi et al., 2017). The indispensable aspects of financial management strategies are the judicious use of payment (advance payment) received earlier by the contractors before the project commences, which improves their liquidity and investment abilities (Schulz et al., 2015). Thus, sound financial management strategies assist in decision-making and help construction organisations to access capital in response to the payment system used on the project in pursuit of effective project operations (Agbemaya et al., 2016).

2.3.5 Financial management strategies, payment systems and construction financial performance

Construction management researchers have argued that construction project success depends mainly on the type of payment system used, and financial management strategies (Bird, 1992; Odeyinka and Kaka, 2005; Lowe and Moroke 2010; Oke et al., 2016). To buttress this, Naser, Kbhari, and Zulkifli (2004) maintain that high performance reflects innovative payment systems' usefulness and effectiveness in making use of financial management strategies. According to Singh and Lakanathan (1992) and Omopariola and Windapo (2019), an adequate financial management strategy is well known as the key factor impacting the delivery of successful project activities on construction sites. Festus and Adeniren (2013) defined strategy as the construction organisation administration's game and policy that underpin the firm's position in achieving organisation goals. Subsequently, Ali and Ali (2015) asserted that a construction organisation that is deficient in financial management strategies will be inefficient in applying payment systems appropriate to the project environment, thereby hindering construction organisation success (Karadag, 2015; Muneer et al., 2017).

The strategy has been used in various ways in the construction company including the means of financial management practices and in the decision making for the construction organisation context (Odeyinka and Kaka 2005; RICS, 2014). A financial management system serves to enhance the ability that increases and boosts the construction organisation's growth in order to have the capability of acquiring financial knowledge that assists firms to deliver optimal financial performance in their organisations (Bell, 2003). The insolvency of most construction organisations due to the delay of construction projects' activities, and their relevance to financial-related difficulties, has positioned financial management as the central strategy necessary in several project and corporate activities (Lowe, 1997; Mutti and Hughes, 2002). Importantly, in mitigating the effect of payment issues, financial management strategies have increased financial model development for construction projects. Nonetheless, the existing models are neither construction project specific nor suitable to examine the implication of sound financial management strategies with their influence on construction organisation performance. In short, to attain success in construction competitive settings requires a company to employ an evaluation strategy and a budgeting strategy, together with risk management strategy, in conformity with their construction organisation growth strategy, goal realization, and sufficient capital/disposition of assets (Omopariola and Windapo, 2019). For instance, if a construction firm employs financial management strategies to deal with their financial situation, it would yield better performance in adequacy of cashflow, leverage, and liquidity in their construction organisation and projects (Omopariola and Windapo, 2019).

In general, these research works explored construction organisation financial performance on the completion of the projects carried out but did not consider what made construction organisations fail to deliver projects as expected.

None of the previous studies has examined holistically the effect of project payment systems and financial management strategies on construction organisation financial performance. It is a necessity for construction companies to understand the effect of their choice of project payment system on the business and project environments and the financial management strategies they could employ.

Against this context, this research examined the influence of the dependent variables of project payment systems and financial management strategies on construction organisation financial performance.

2.4 Summary of the chapter

This chapter uncovers the need to investigate the commonly used payment systems in construction project procurement and the need to critically examine the prevalent financial management strategies in use by construction organisations on construction projects, to achieve organisational performance. The chapter shows that there is a dearth of concepts on the financial performance indicators for construction organisations. None of the previous studies reviewed in this chapter has established the cost and time performances of projects executed by construction companies using different payment systems. Also, the chapter puts forward arguments to support the relationships between project payment systems and cost and time performance of construction projects; between project payment systems and financial performance of construction companies; between financial management strategies and financial performance of construction organisations; also, the interactions between financial management strategies and payment systems; and the interactions between financial management strategies and payment systems, and financial performance. This chapter leads to Chapter Three where the theoretical and conceptual framework will be discussed.

CHAPTER THREE

THEORETICAL AND CONCEPTUAL FRAMEWORK

3.1 Introduction

This chapter presents the theoretical viewpoint adopted for the study, centering on the interaction between the key research constructs, flowing out of the review of extant literature. The theoretical viewpoint formed the basis for developing the conceptual framework of the study. Thereafter, the chapter presents the research hypotheses developed for answering the research questions and also presents the conceptual background of the study, from the gaps in knowledge which were identified in the literature review.

3.2 Theoretical insights and theoretical framework

Jary and Jary (1995) describe a theory as a set of propositions or hypotheses connected by a rational argument. The use of theory in research has also been described as a way of providing a strong basis for understanding and conceptualizing a topic (Hen et al., 2012). As noted by Herek (1995), Caliendo and Kyle (1996), Rocco and Plakhotnik (2009), Smyth (2004) and Miller (2007), the use of theory in research allows the researcher to test hypotheses and connect the knowledge of the existing research to the new contexts and provides assumptions that guide the research so as to enhance the quality of the study. In the same way, Hean et al. (2012) argued that theory guides the researcher, when involved with a new study, to articulate, reflect, and potentially reinterpret the current practices. According to Maxwell (2004), the purpose of theory is to inform the research design — to assist the researcher to evaluate and improve the research goals, develop accurate and pertinent research questions, select suitable approaches, and identify potential validity threats to the researcher's conclusions. Furthermore, LeCompte and Preissle (1993), Mishra and Koehler (2006) and Miller (2007) note the importance of theory in enhancing the quality of research, justifying research, and selecting suitable questions for a study. This also implies that the use of theory helps the researcher to make predictions of the results and to interpret and analyse the outcomes of the research (Abd-El Khalick and Akerson, 2007).

However, the use of a single theory in a multifaceted study is unsuitable and insufficient (Hean et al., 2012). The reasons for the unsuitability of the use of a single theory in multifaceted research, such as Ph.D. research, have been explained by various authors (Love, 2002; Meads et al., 2003; Barr et al., 2005; Hean et al., 2009; Scotland, 2012; Mayer and Sparrowe, 2013).

For example, Hean et al. (2009) argued that theories can be combined because they are not exclusive. While Meads et al. (2003) concluded that a single theoretical path is insufficient where diverse groups of variables meet for a variety of functions at diverse stages of academic research development. Also, Mayer and Sparrowe (2013) argued that a synthesized theory provides a strong basis (that is, having adequate descriptive, illustrative, and predictive power) for creating novel propositions. Barr et al. (2005) maintained that combining theories is a natural way of researching in order to develop a new theoretical framework. Love (2002) and Scotland (2012) stated that two or more theories can be used in research to buttress the philosophical underpinnings of a study. It has also been argued that the use of two or more theories increases the efficiency and effectiveness of research, such as adding values to multiple variables under study (Cropanzano and Mitchell, 2005). This means that, if different variables are involved in research, the use of two or more theories will support the diverse limitations of each variable, as no one theory can best explain the totality of research. The use of two or more theories would also enhance more knowledge about the relationship between different variables (Meads et al., 2003).

Theoretical frameworks are developed from the theoretical insights obtained from theories (Adom et al., 2018). A theoretical framework has been described as a research map, a system of concepts, and a contextual grounding for a phenomenon (Polit and Tatano, 2004; Sire, 2004; Lovitts, 2005; Grant and Osanloo, 2014; Ravich and Carl, 2016; Adom et al., 2018). For example, Sinclair (2007) and Fulton and Krainovich-Miller (2010) compared the role of a theoretical framework to that of a travel plan or map miles. As a contextual and theoretical grounding for a phenomenon of study, Grant and Osanlo (2014) stated that a theoretical framework is a derivative context from a current theory (or theories) in the literature, which has previously been tested and authenticated by others and is considered a widely suitable theory in the academic literature. Brondizio et al. (2014) described a theoretical framework as paradigms, concepts, and tenets of a theory that can be used to guide the study of events.

Hence, using a theoretical framework in research makes it possible for a researcher to identify the design and the evaluation of a problem in a way that will allow the theory to be measured, tested, and extended to serve as a guide for the design of a study (Grant and Osanlo, 2014; Adom et al., 2018). Also, a theoretical framework serves as a guide for research, stimulates every choice made by the researcher in carrying out the research, presents a unified way of looking at a problem under study, demonstrates the sequence of actions the researcher anticipates to carry out in a research study, and explains the relationships between the constructs and how the latent variables complement each other (Mertens, 1998; Liehr and Smith, 1999; Dixon, Gulliver, and Gibbon, 2001; Grant and Osanlo, 2014; Adom et al., 2018). Also, the use of a theoretical framework aids researchers in identifying and building their worldview on the phenomenon to be explored; serves as a means through which a scholar delivers their stated solutions to the problem defined; guides the researcher in order not to diverge from the confines of the supposed theories; and reflects the understanding of the researcher concerning the research (Liehr and Smith, 1999; Lester, 2005; Simon and Goes, 2011; Grant and Osanloo, 2014; Akintoye, 2015). Further, Grant and Osanloo (2014) and Ravitch and Carl (2016) state that a theoretical framework offers the researcher the structure and defines the study rationally, epistemologically, methodologically, and analytically. Lester (2005), Sarter (2005) and Adom et al. (2018) observe that a theoretical framework assists the researcher in finding a suitable research method, analytical tools, and procedures for research inquiry. Eisenhart (1991) and Maxwell (2004) conclude that, to enrich the strengths of research, a theoretical framework aids the researcher in considering different theories that might challenge the study perspective, so as to deepen the essence of the research.

This means that a theoretical framework guides and resonates with all features of the research process: from the description of the problem, literature review, methodology, presentation, and discussion of the findings, to the inferences that are drawn from the study (Adom et al., 2018). It also means that the use of a theoretical framework in research indicates that the study is robust and not based on the personal predispositions of the researcher but is deeply rooted in an established theory (Akintoye, 2015; Adom et al., 2018). However, Fisher (2007) argues that the researcher decides to adopt and modify the existing theories while developing theoretical frameworks, so as to fit the context of their research and the nature of their research questions into the existing theories.

Based on this understanding, this research adopted the Resource-based Theory (RT) modified with Domino Theory (DT). In RT, the most important contributing factors of construction company performance are the resources (for example, company assets, competencies, finance, construction organisational performances, information, and knowledge) acquired by the company (Grant, 1991; Chew et al., 2008; Demirgunes, 2016). These resources enhance the sustainable competitive advantage of the construction company and assist the construction company to implement strategies that intensify its competence and efficiency (Daft, 1983; Wernerfelt, 1984; Barney, 1991). Barney (1991) opines that the paramount influence of the resource-based view is that, when the construction firm uses better strategies and facilitates and relates them well, it will achieve a sustainable competitive advantage; more importantly, growth and performance. The competitive strategies yield cost advantage and differentiation, which are attained through decreasing costs, and improved profitability by providing improved levels of customization and service (Porter, 1980). According to Johnson and Templar (2011), increased levels of service can be provided through effective order value, a product with good quality, construction project on-time delivery, cost-effectiveness, information transparency, and improved responsiveness.

RT states that construction firm resources and its proficiencies influence the success and performance of the firm (Mahoney and Pandian, 1992). This theory also states that management-related shareholders can significantly increase financial performance through creativity, strategies, and the development or conservation of an imperative resource for the construction company (Jones, 1995). Orlitzky et al. (2003) found that construction firm accountability contributes to company value, which means a construction company's resources are being used to improve the interests of shareholders. Wang et al. (2015) propose that becoming conversant with financial management strategies (for example, payment of invoices when due to the supply chain, and proper debt management) aid the improvement of the creditworthiness of construction firms and their survival.

DT has been successfully applied to the field of financial management, payment systems, and performance of a construction company (Lowe, 1997). According to Mutti and Hughes (2002) and Lowe and Moroke (2010), DT states that the failure of a firm is likely to cause another firm to become insolvent. The DT applies to a situation where a client owes the contractor a considerable sum of money and is unable to pay the contractor when payment is due (Langdon and Seah Consultancy, 2003; Lip, 2003; Nicholas, 2005). The contractor’s inability to meet their financial commitment to the sub-contractor will result in the insolvency of both their own company and that of the sub-contractor (Lowe, 1997). Furthermore, as argued by Withanachchi and Fernando (2013) and Choil and Kim (2014), when a contractor or client is unable to obtain a credit facility from their financial institution, this could trigger a domino effect and result in poor organisational performance. According to Gray and Flanagan (1989) and Hughes et al. (1994), when the main contractor transfers risk to their sub-contractors in the process of protecting their interests, this could result in a domino effect on the work of other sub-contractors. Grosse-Ruyken et al. (2011) and Nicholas and Edwards (2003) posited that the domino effect of sub-optimum working capital management results in financial hitches for a lone supplier in the supply chain, and may even result in their liquidation. Grosse-Ruyken et al. (2011) concluded that each working capital management decision should reflect each upstream and downstream partner within the supply chain in the construction industry. Consequently, the inadequacy of working capital and the in- and outflow of cash stand as a concern, as they can, in extreme situations, drive effective and lucrative companies into insolvency (Lowe and Moroke, 2010). Thus, Choil and Kim (2014) propose that an investigation of the management features, (payment forms, financial management strategies, and organisational performance) of a construction company is of importance to its survival.

The theoretical insights from RT, when modified with DT, indicate that financial management strategies represent a dynamic competence and serve as an important resource in construction organisations, have a domino effect on the financial performance of a construction organisation, and are influenced by the financial situation of a construction organisation. They also indicate that there is a domino effect between financial management strategies, financial situation, and financial performance of construction organisations; and that financial performance is associated with the growth of construction organisations.

3.3 Developing the theoretical model

A theoretical model comprises theoretically linked conceptual ideas (DePoy and Gitlin, 1998). David et al. (2013) described a theoretical model as an integrated theory modified with improved knowledge on a phenomenon. Hart (1998) argued that theoretical models are comprehensive theories that allow more things to be clarified using an integrated approach. This implies that a theoretical model is related to variables that influence the research topic, as it serves as the research constructs that ultimately interpret mechanisms of the study (David et al., 2013). According to Sekaran (2003), a theoretical model describes how one theorizes or makes logical sense of the relationships between the numerous features that have been identified as significant to the research problem. By developing a theoretical model for a study, relationships between variables can be tested in isolation to confirm or contest the proposed impact of theories. Also, developing a theoretical model enables the researcher to examine the direct link between theories and latent variables, and study an internal component of the theoretical model in research, as the model will allow the researcher to gain a deeper understanding of the main subject of the topic (Hean et al., 2012; David et al., 2013). Sekaran (2003) confirmed that a theoretical model elaborates on the relationships among variables of interest to the research study, explains the theories that underlie these relations, and describes the nature and path of the relationship. This suggests that a theoretical model allows the delivery and development of research successfully, represents tentative explanations of reality that need to be validated empirically in order to determine how well they represent reality, and if they accurately portray reality, create the real-world boundaries of the theory, and contribute to addressing the rarity of designed literature on the backgrounds and results of engagement (Kerlinger and Lee, 2000; Lynham, 2002; Chermack, 2004; Holton and Lowe, 2007; Hean et al., 2012; Rana et al., 2014; David et al., 2013).

The theoretical model for this research is presented in Figure 3.1. Grounded in the resource-based and domino-effect theories of strategic management, the theoretical model as developed from the theoretical frameworks suggests that there is a strong association between the resources obtained and the performance of construction organisations. The financial-related resources of construction organisations were conceptualized to be financial management competencies (denoted as financial management strategies) and financial situation (denoted as project payment system). The project payment system describes the financial situation of construction organisations because it is the basic source of finance for construction organisations. In the theoretical model, the performance of construction organisations was conceptualized as project performance and organisational performance. This conceptualization was done based on the argument that the primary business of construction organisations is to participate in project delivery, and that the financial performance of the projects executed by these construction organisations is a sub-set of their financial performance. The activities and work processes in the construction organisations require money; this constitutes organisational performance, and it is also a sub-set of the financial performance of construction organisations. Further, the model shows that financial management strategies will significantly affect the project payment system, project performance, and organisational performance.

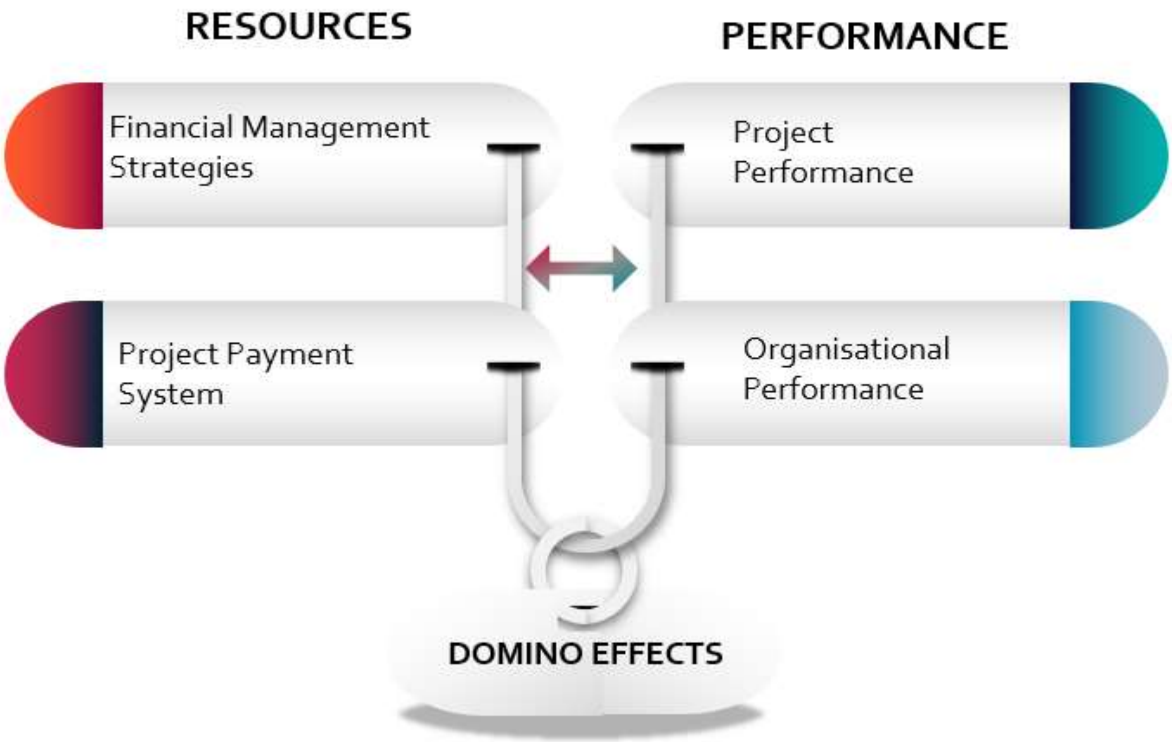

Figure 3.1 Theoretical model for the research

3.4 Developing the conceptual and hypothesized model

According to Meredith (1993), a conceptual model highlights the relationships posited and evaluated by means of a theoretical model. It is an inclusive and coherent group of interconnected concepts and propositions used as philosophies of clarification and understanding. Meredith (1993) further posits that a conceptual model inculcates epistemic propositions and comprises of variables and their interactions. In support, Swamidass (1991) and Grant and Osanloo (2014) describe a **c**onceptual model as a form of theory structure and a product of inductive reasoning that reflects and integrates several diverse works on the same subject, analyzes the essential elements, contrasts the differences, and uniquely expands the study. Developing a conceptual model is important for mixed-method research to pull the shared aims and patterns into an exclusive and insightful perspective (Raturi et al., 1990; Meredith, 1993), and explore how a research problem can be solved (Camp, 2001). As noted by Liehr and Smith (1999), Grant and Osanloo (2014), and Akintoye (2015) the use of a conceptual model aids researchers in identifying and building their worldview on the phenomenon to be explored and serves as the easiest means through which scholars deliver stated solutions to the problem defined.

Huberman (1994) described a conceptual model as a system of concepts and views that sustain and direct the research strategy: it is a model that lays out the main features, constructs, or latent variables, and deduces the relationships between them. A conceptual model was described by Grant and Osanloo (2014) as a logical structure of connected concepts, empirical research, and essential theories used in promoting and systemizing the data adopted by the researcher, which help provide a picture or visual display of how ideas in a study relate to one another within the theoretical framework in statistical perspective. Luse et al. (2012) concluded that a conceptual framework is not just a string of concepts but an easy opportunity to specify and define concepts within the research problem. Sire (2004) and Lovitts (2005) maintained that a conceptual model creates a structure within which the relationships between variables of a phenomenon are defined. According to Grant and Osanloo (2014) and Adom et al. (2018), the use of a conceptual model intensifies the efficiency and effectiveness of a researcher in understanding and exploring how a research problem can be solved, the shape and specific direction the research is taking, and the relationship between the diverse variables in the study.

Figure 3.2 shows the conceptual model of the study. The key variables are project payment systems, financial management strategies, and construction organisation performance. The conceptual model shows the interactions between payment systems used by clients in paying for construction work, and financial management strategies used internally by construction organisations. It also proposes that financial management strategies used by construction organisations mediate the relationship between project payment systems and construction organisation performance. In the model, dimensions were given to the key variables. The project payment system was divided into the payment system used by the client and payment systems impacting construction organisations. The concepts of financial management strategies were explained as a cash flow forecast, budgeting, creditworthiness, risk management, and review and evaluation strategies. Cost and time performance of projects and the financial performance of organisations formed the components of project and organisation performance. The mathematical models of the relationship between these variables are illustrated in Equations 1, 2, and 3.

In the hypothesized model, M represents financial management strategies used in construction project procurement ($M1$ = cash flow forecast, $M2$ = budgeting strategy, $M3$ = creditworthiness strategy, $M4$ = risk management strategy, $M5$ = review and evaluation strategy); Y denotes performance indicators used in assessing organisation performance ($Y1$ = financial performance of organisations, $Y2$ = cost and time performance of construction projects); while

X denotes project payment systems used by the client; and *K* stands for project payment systems impacting organisation performance.

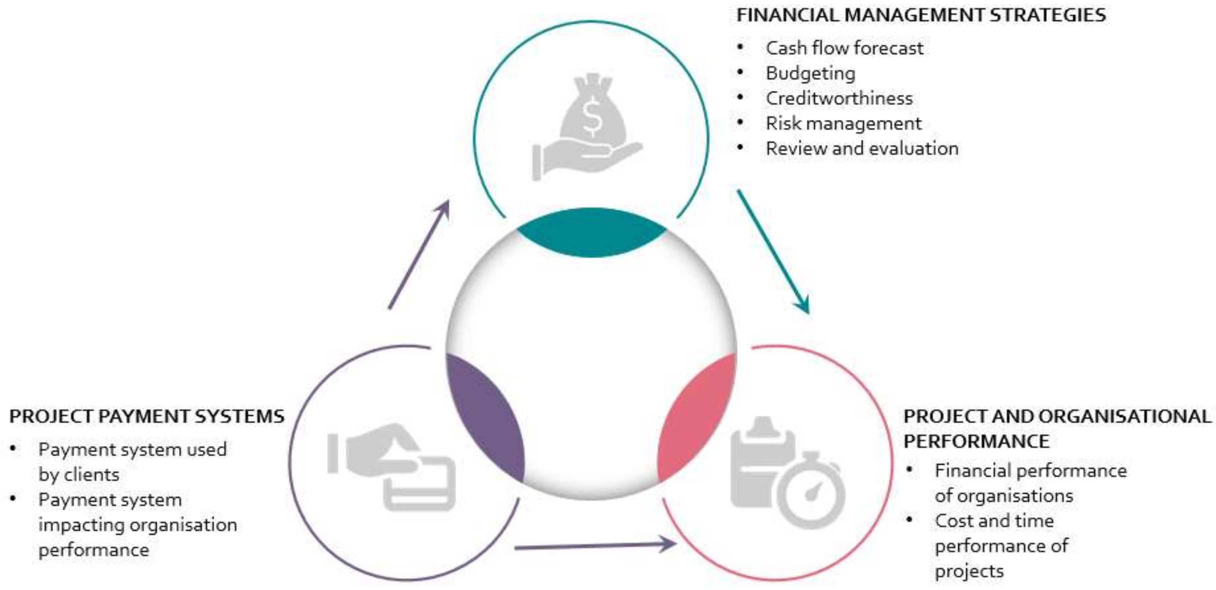

Figure 3.2: Conceptual model for the study

Y = bX ---Equation 1

Y = bX + bM --Equation 2

Y = bX + bM + bXM---Equation 3

Where: Y = Construction Company Organisation Performance;

X = Project Payment Systems; and

M = Financial Management Strategies (FMS).

b = Constant.

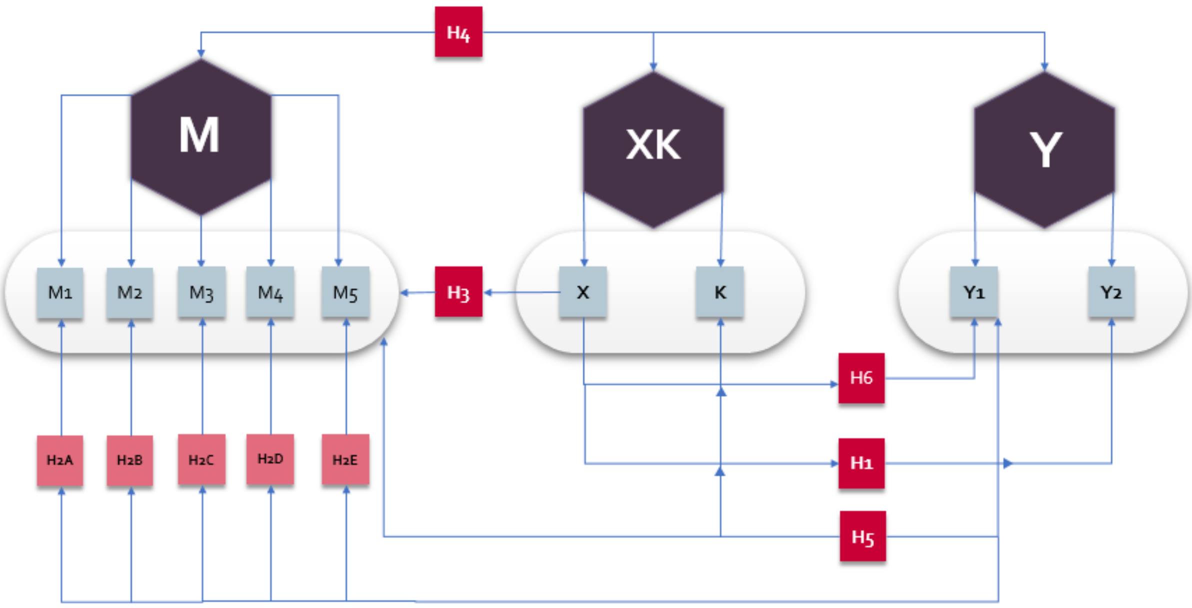

Figure 3.3: Hypothesized model for the study

Figure 3.3 shows the hypothesized model for the study. The following interrelationships were extracted and tested in the hypothesized model:

H1: There is a positive and significant relationship between project payment systems (interim, advance, stage, milestone, payment on completion) used by clients and financial performance of construction organisations (profitability, cash flow, liquidity, leverage, and market share).

H1a: An interim payment system has a positive and significant impact on the financial performance of construction organisations

H1b: An advance payment system has a positive and significant impact on the financial performance of construction organisations

H1c: The stage payment system has a positive and significant impact on the financial performance of construction organisations

H1d: The milestone payment system has a positive and significant impact on the financial performance of construction organisations

H1e: Payment on completion has a positive and significant impact on the financial performance of construction organisations.

H2: There is a positive and significant relationship between financial management strategies (cash flow forecasting, budgeting, creditworthiness, risk management, and review and evaluation) and construction company financial performance (profitability, cash flow, liquidity, leverage, and market share).

H2a: Cash flow strategy has a positive and significant impact on construction company financial performance

H2b: Budgeting strategy has a positive and significant impact on construction company financial performance

H2c: Creditworthiness strategy has a positive and significant impact on construction company financial performance

H2d: Risk management strategy has a positive and significant impact on construction company financial performance

H2e: A review and evaluation strategy has a positive and significant impact on construction company financial performance.

H3: There is a positive and significant relationship between project payment systems (interim, advance, stage, milestone, payment on completion) used by clients and financial management strategies (cash flow forecasting, budgeting, creditworthiness, risk management, and review and evaluation) used by construction companies.

H3a: The interim payment system has a positive and significant impact on financial management strategies used by construction companies.

H3b: An advance payment system has a positive and significant impact on financial management strategies used by construction companies.

H3c: A stage payment system has a positive and significant impact on financial management strategies used by construction companies.

H3d: The milestone payment system has a positive and significant impact on financial management strategies used by construction companies.

H3e: Payment on completion has a positive and significant impact on financial management strategies used by construction companies.

H4: Financial management strategies mediate a positive and significant relationship between payment systems used by clients and construction company financial performance.

H5: *The interaction between financial management strategies and project payment systems impacting organisation financial performance moderates a positive and significant relationship between project payment systems used by clients and construction company financial performance.*

H5a: There are significant differences in the cost performance of projects, as a result of different payment systems used.

H5b: There are significant differences in the time performance of projects, as a result of different payment systems used.

3.5 Conceptual background

This section presents the conceptual background that gives reflection to the issues relating to financial-related resources, financial situation, and the project and organisation performance.

3.5.1 Project payment systems

Several researchers, such as Sherif and Kaka (2003), Njie, Langford, Kaka and Fortune (2005) and Motawa and Kaka (2009) have elaborated on the numerous diverse rationales for payment systems. Payment is observed to have an important consequence on contractors' cash flow, which influences, and dictates the level of success of any construction project, whether negatively or positively. Payment systems are seen as key factors in project success in project finance literature (see Yescombe, 2002; Elazouni and Gab-Allah, 2004; Sorge, 2004; Li et al., 2005). Also, there is evidence from the literature that has proved that construction projects are only accomplished if the diverse stakeholders engaged in the project handle their finances efficiently (Yescombe, 2002; Kaka and Lewis, 2003). Egan (2002) has argued, from a broader supply chain perspective, that the conservative payment method places a substantial and unfair strain on stakeholders and, thus, on the overall spirit of team working, partnering and supply chain. Contractors have come up with several ways of augmenting cash flow (Sherrif and Kaka, 2003). The novel methods comprise strategy adaptation, such as unbalancing and front-end loading, the introduction of well-organised management practice and information systems, and extreme ways, such as over-measurement and delay in payment of sub-contractors and suppliers (Potts, 1988; Kaka, 2001; Sherrif and Kaka, 2003; Njie et al., 2005). These innovations assist in lessening an extensive balance of payment with the client. Thus, the following payment systems (progress/interim payment system, advance payment system, milestone payment system, stage payment system, and payment on completion payment system) were identified and are currently in use for payment of construction services (Talagala,1997; Sherrif and Kaka, 2003; Singh, 2003; Palliyaguru, Amaratunga and Rameezdeen, 2006; Wong et al., 2006).

3.5.1.1 Interim/Progress payment system

The most common type of payment, made as work undertakings on-site progress, is known as interim payment (Sherrif and Kaka, 2004; Judi and Abdul-Rashid, 2010; Ansah, 2011). Interim payment means a payment made for the time being and in gradual phases, based on a review of the estimated worth/value of work carried out by the contractor, which is done periodically on-site. This is also known as a running account bill (Baker, 2013; Omopariola and Windapo, 2018). The occurrence of interim payment could vary from fortnightly to monthly, and the actual duration is normally the period as agreed in the contract terms. According to Chen et al. (2005), the interim payment helps to sustain a contractor and, when it is not paid on time or below the sum certified, it has a domino effect on the contractors, as their cash flow will be affected. Some construction companies fail due to late payments. Therefore, the failure of the certifier to issue the appropriate interim certificates when due, in line with the requirement of the contract, can direct the employer to a possible claim of breach of contract against the contractor (Singh, 2003). Interim payment allows the overall project schedule to be maintained, and, in cases where there are sequential contracts, allows project acceleration, enables the owner to structure the timing of the work, reduces user inconvenience, and helps to reduce the amount of administration required by all the parties (Anderson and Damnjanovic, 2008; Scott and Mitchell, 2017). However, this system has related drawbacks and risks, as identified by Gary, Cackler, Trost and Vanzler (2010) including an increase in costs due to accelerated construction required, use of innovative methods and materials, and more work hours. The progress payment system has a limited adverse impact on quality, and has little or no impact on safety for both contractors and clients (Anderson and Damnjanovic, 2008; Gary et al., 2010; Scott and Mitchell, 2017; Omopariola and Windapo, 2018). However, there is a need to monitor how contract time and impacts connected with reasonable delays are measured, as they eliminate all the benefits offered by this system, if not done appropriately.

3.5.1.2 Advance payment system

The advance payment system is the sum of money mostly paid to the contractor by the employer before the commencement of the work on-site (Talagala, 1997; Palliyaguru et al., 2006; Schulz, Schlereth, Mazar and Skiera, 2015; Diabat, Taleizadeh and Lashgari, 2017). The ineffectiveness of the construction industry in meeting project final cost and duration by the client is becoming obvious, particularly with the high cost and time of borrowing money (Wang, 1984; Aje, Olatunji and Olalusi, 2017). An advance payment, in effect, provides the contractor with an interest-free loan at the inception stage of the contract, where the contractor's cash flow is under utmost strain (Oke, Ogunsemi, Aje and Morakinyo, 2013). This practice is frequently used in public works contracts (Ansah, 2011). The main reason for employing this system of payment is to help the contractor to start up and finance the contract without resorting to unnecessary external borrowing, and to maintain healthy cash flow (Abeysekera, 2002). According to Talaga (1997), in the research carried out by Aje, Olatunji, and Olalusi (2017), cash-flow issues are a perpetual difficulty for local contractors in under-developed countries. For this purpose, a vital phase of government support for the local construction industry is to pay contractors in advance at least once, commonly at the inception of the construction project. However, it is not obligatory to issue a contractor an advance payment. Such practice is sustained robustly by statutory authority and legislation, such as the manual of Nigeria's Bureau of Public Procurement (2011) and crucial policies of international agencies, such as the World Bank Guidelines on Procurement of Works (2011).

3.5.1.3 Stage payment system

The stage payment system is used to make payments at particular phases of work, and it is employed in small lump sum contracts without quantities where a percentage of the whole amount is settled to be paid over a number of stages (Anshah, 2011). This is often applicable in service work, and design and build contracts (Ansah, 2011). The stage payment system was adopted as a method for the payment of services by the UK and USA governments in their application for the Government Public Procurement form of contract such as GC/WKs/1, and for their project guidelines. These magnitudes are fixed and do not rely upon any re-measurement of work, and are also applied in turnkey, and design and build contracts, as well as contracts involving repetitive works (Latham, 1994; Singh, 2003; Anshah, 2011). A stage payment system decreases running time and cost of design and contract administration, estimates measure, and authenticates quantities to prepare interim payments (Potts, 1988; Cheetham et al., 1995; Scott and Mitchell, 2017).

3.5.1.4 Milestone payment system

Milestone payment is the mode of settlement payment made subsequently to the completed items of work that have been accomplished effectively (Cheng, Kumuraswany, Soo and Jin, 2009). Thus, milestone payment is described as payments made when distinctive, pre-agreed goals are met (Cheng et al., 2009). It is a method that functions with the use of bills of quantities or with a price schedule of activities, if linked to enhanced digital project planning systems (Potts, 1988). According to Potts (1988) and Cheng et al., (2009), the milestone payment has been used on some public projects including the Hong Kong Mass Transit Railway Corporation (MTRC) project, the airport core programme contracts, U.K. fast track construction project and some other significant works contracts in the public sector.

3.5.1.5 Payment on completion

Payment on completion is that type of payment whereby the contractor is paid, or payment is triggered at the realization of practical completion of a segment of work carried out on-site, or paid as an entire contract payment after the handing over of the project to the employer (Wong et al., 2006; Ansah, 2011). This implies that the contractor is solely responsible for funding the project, and the phase must be attained and certified by the contract administrator before the contractor can be remunerated. The employer must also be prepared to bear this burden, as well as be in a position to source and effect payment in due course of a considerable lump sum amount upon the taking over of the works (Wong et al., 2006; Ansah, 2011; Scott and Mitchell, 2017).

3.5.2 Financial management strategies

As detailed in Chapter 1, Section 1.2, the failure of construction projects to be delivered successfully – the root of poor performance in the construction industry – can be attributed to the lack of financial management competencies (or poor application of financial management practices) of contractors, and subsequently, sub-contractors and suppliers. Therefore, the place of financial management practices for construction services cannot be underestimated in the delivery of successful construction projects (Wang et al., 2015; Haupt and Padayachee, 2016; Aje, Olatunji and Olalusi, 2017) because proficient payment systems, cash flow, and financial management systems contribute to the performance of construction projects (Singh and Lakanathan 1992; Lowe 1997; Aditi, Koksal and Kale, 2000; Aje, Olatunji and Olalusi, 2017). Bird (1992), Oke et al. (2013; 2016), Aje, Olatunji, and Olalusi (2017) argue extensively on the need to attain significant success in a construction project, stating that, if project success is not achieved, it is as a result of the poorly funded construction project and the lack of financial management capabilities by the construction organisations. This is corroborated by Haupt and Padayachee (2016), who stated that contractors are faced with numerous difficulties in accessing and managing their finance due to their lack of financial management competencies. Thus, the following were identified as the financial management strategies (FMS) currently in use as regards the success of construction project and firm organisation performance namely: cash flow projection/forecast strategy, budgeting strategy, risk management strategy, creditworthiness strategy, review, and evaluation strategy (Calvert et al., 2003; Wang et al., 2015; Haupt and Padayachee, 2016).

3.5.2.1 Cash flow forecast/projection strategy

The progress of any construction project depends mainly on its cash flow (Lowe, 1997), as it affects its profitability. Construction companies will perform well and are profitable when they are solvent and have an adequate cash flow plan (Calvert et al., 2003). Navon (1996) explained that construction firms often fail due to liquidity constraints, and such companies could survive slow profits or even loss for a period but can fail due to an inadequate cash flow forecast, despite showing profits on paper. Forecasting of cash flow is essential at every construction phase for construction stakeholders, most especially the contractors (Hwee and Tiong, 2002). It serves as one of the most vital means of assessing the distribution of cash outflow and inflow of a construction project at various times of the project (Mohammed, Ali and Sumayia, 2014). Cash flow forecasting explains how cash flow will be affected as the construction project progresses and as the varying risk factors change (Hwee and Tiong, 2002). The cash flow forecast is the knowledge of the imminent rates of cash expenses and revenue, together with their combined outcome on the construction project cash balance. In other words, it serves as a cost controlling tool during the construction work stage (Hwee and Tiong, 2002).

Naoum (2003) and Beatham et al. (2004) established that financial availability and suitable cash flow forecast of a construction company improve profitability and, in turn, increase performance, which is the basic goal for the running of a construction business. Forecasting cash flow provides construction project stakeholders with details concerning the amount of capital required and interest needed to be paid to support an overdraft, and the assessment of different tendering approaches (Hwee and Tiong, 2002). According to Lamont (1997) and Khosrowshahi and Kaka (2007), cash flow forecasting guarantees efficient delivery of projects. Cash flow forecast, according to Kaka and Cheetham (1997), can be used by construction stakeholders to regulate working capital, payments to contractors, and the frequency and speed at which claims for payment from owners (debtors) are made. This proves that the specific sum of working capital can habitually be associated with cash flow prediction, and a substantial difference could reveal construction management difficulties with the performance of site personnel and construction stakeholders. Notwithstanding, profit measurement on the existing contracts involves discernment and subjectivity, because the actual cash flows recorded at any specific period may be related to forecasts made at the outset to produce an estimate of the profitability of current contracts (Cheetham, Kaka and Humphreys, 1995; 1996). The cash flow forecasting approach, as a financial management strategy, involves rethinking of finance and cash flow management by construction stakeholders (Mutti and Hughes, 2002).

3.5.2.2 Budgeting strategy

Scholars identify budgetary issues as the leading causes of construction failure (Kangari, 1988; Arditi, Koksal and Kale, 2000; Okpanachi and Mohammed, 2013). Silva et al. (2012) submit that integrating strategic management and budgeting allows a construction organisation to be competitive and increases organisation performance (Arditi, Koksal and Kale, 2000). Budgets are strategic tools expected to be used in planning, as a means of monitoring and proper financial control, and which allow construction managers to carry out their functions efficiently for the effective delivery of a construction project (Sivabalan et al., 2009). Meigs and Meigs (1981) note that the budget serves as an evaluation and performance measurement tool (continuous revalidation of financial plans) for management control. According to Djurovic-Todorovic et al. (2009), the desire for excess supplies to sell and make a profit, avoid liquidation, and for storage of sufficient cash flow leads the construction organisation to make plans to increase its income by budgeting a certain amount of cash and assets for advancing construction company activities and operations (Kren, 1992; Defranco, 1997). Therefore, a budget is an indicator of a construction organisation's liquidity or its availability of adequate cash. Consequently, budgeting is a very valuable tool for efficient management in making a profit (Defranco, 1997). From the empirical investigations of Khan et al. (2011), Sur and Chakraborty (2011) and Egbide (2013) using both partial correlation and regression analysis, it was discovered that liquid ratio and cash conversion period have a relationship with profitability measured by return on capital employed. Budgeting guarantees the realization of construction organisation objectives and provides a record of activities and resource allocation.

3.5.2.3 Creditworthiness strategy

Creditworthiness is the inherent value of firms and construction businesses mirrored in their capability and willingness to realize their business objectives (Safi and Lin, 2014). In assessing the construction firm's creditworthiness, a firm's managers must understand their clients, suppliers, and their firm (Schwaiger, 2002; Altman and Sabato, 2005; Safi and Lin, 2014). The customers' creditworthiness is a measure for assigning payment risks associated with transactions to the actual customer (Krahnen and Weber, 2001). According to Safi and Lin (2014), firms involved in the day-to-day business of the construction trade need to have reliable or comparable financial information to ensure their creditworthiness. Dynamic corporate financial management starts with outlining the creditworthiness of a prospective construction firm, in conducting construction business activities that will result in construction project and organisation performance. Most construction organisations have challenges in financing their business operations due to their lack of ability to meet collateral requirements (Bondinuba, 2012, Haupt and Padayachee, 2016). Kangari (1991) explained that most construction companies are not creditworthy due to economic and financial factors, such as inflation, debt interest rates and shortage of capital, which have resulted in failure (insolvency) and low performance of construction organisations. This, according to Berger and Frame (2007), confirms that credit judgment is like financial leverage ratios (Standard and Poor's, 2006). This is also in line with Esty (2002) and Visconti (2013), who hold that the selection of creditworthiness strategy by a construction organisation depends on its strategic impact on leverage and sufficient cash flow.

3.5.2.4 Risk management strategy

The construction organisation's systems, activities and operations, and the environment, within which construction projects function, have become highly multifaceted. Despite the imperative enhancement in the complexity of construction business analytical tools, the increasing level of uncertainty has placed risk management at the forefront of construction business enterprise (Khosrowshahi, 2000). Construction contracting largely involves unpredictable and complex processes and outcomes, making it a highly risky business (Zainudeen, Kumari and Seneviratne, 2010). Nevertheless, there is no clear-cut technique for risk management (Khosrowshahi, 2000). Failure is undesirable and can be prevented by an appropriate risk management strategy. A construction firm's high leverage could cause the firm to lose its market share because of the high risk presented by its clients and the response of its competitors (client- and competitor-driven); consequently, profitability and construction organisation order value would decrease (Jensen and Meckling, 1976; Sugiharto et al, 2016). Financial risk that might be projected in construction projects, given its importance to project viability, must be addressed (Edwards and Bowens, 1998). Jaafari et al. (1995), using the Monte Carlo simulation, holistically applied risk scenarios to a historical office building project to discover the effects of cost variations, delays, occupancy rates, and interest rates upon the internal rate of return. The outcome of the study was that a prudent pre-construction risk evaluation of the project in real life would have exposed its vulnerability to the property slump and, consequently, avoidance of the resultant threat to the company's financial feasibility. Construction organisations that have employed a financial risk management method have recognized that there would be a higher likelihood of failure if proper techniques are not cautiously employed during the financial risk identification stage of a project (Rostami et al., 2014).

3.5.2.5 Review and evaluation strategy

Review and evaluation strategy assists construction management activity, which, Cook (2006) points out, incorporates the whole management, operating systems, and culture of an organisation. In accountability-oriented organisations, review and evaluation produce a high level of analysis and results that are generally made against clear standards and norms established across a range of organisation performance areas (Cheng, Daint and Moore, 2007). Alfan and Zacharia (2013) assert that a construction organisation which conducts regular checkups on financial conditions and performance, is more likely to treat causes rather than only addressingsymptoms of difficulties, as this will yield profitability and sufficient cash flow, and avoid construction company liquidation. This would consist of the appropriate management of personnel, budgets, and legal and regulatory conformity with any plan of action. For instance, construction organisations, which review and assess their asset baseline, management practices, plan, credit rating, company profit ratio on cash return, weighting rate of return on capital and income, potential financial exposure incurred, access to finance, and diversification strategies, will ensure that risk and reward levels align with their long-term investment goals, as this will help the company to know how well it is doing in terms of staying on track (Krahnen and Weber, 2001; Cheng and Shiu, 2007; Adomako and Danso, 2014). In other words, the review and evaluation strategy will assist most construction organisations to solve the problem of predicaments in financial management (Lazaridis and Tryfonidis, 2006). Apart from review and evaluation providing accountability, it is also intended to stimulate the learning organisation (PMI, 2006), which comes about when outcomes are obtainable.

Therefore, review and evaluation strategy will help construction organisations to eliminate any inconsistencies occurring in the future through understanding their past financial performance, and to ensure the achievement of the best value for the firm by formulating a series of new strategies (Alfan and Zacharia, 2013). In view of its importance, project review and evaluation from a financial perspective received important attention, as they highlight the significance of duration of new projects, the delay between corresponding receipts and payment, credit arrangements with sub-contractors and suppliers, and phasing of the projects in relation to other projects (Khosrowshashi, 2000). In other words, systematic reviews and evaluation of company performance ensure the implementation of timely and suitable strategies important for survival in the construction business, and that would inevitably form part of the strategic planning procedure (Khan et al., 2011).

In conclusion, financial management plays a vital role in guaranteeing that a construction organisation's objectives are well-matched with its resources. Cavert et al. (2003) affirm that most construction firms are solvent, but still fail because they are not making a profit as expected, due to the type of financial management strategies they employ. Njie et al. (2005) submit that firms who are involved in decision making about financial management strategies, become engaged at the inception phase of the project, while employers are deliberating on decisions relating to procurement and contracting matters, and that this is an indicator for the financial success of the project.

3.5.3 Project and organisation performance

The construction industry is becoming more multifaceted (Oke et al., 2016) due to recurrent evolving reservations in budgets, technology, and developmental approaches. Those uncertainties, together with several other recognized difficulties, often lead to project delay and, at times, affect construction project and organisation performance (Ogunlana, Promkuntong and Jearkirm, 1996). Performance has been an erratic subject in strategy, that is, financial management strategy, and it has been of specific concern to both academic researchers and construction experts (Venkatraman and Ramanujam, 1986; Calvert et al., 2003; Farris et al., 2010; Wang, Dou, Zhu and Zhou, 2015; Haupt and Padayachee, 2016). The significance of the performance or efficiency perception, and its description and measurement are extensively recognized (see Campbell, 1977; Venkatraman and Ramanujam, 1986; Sun, 2000; Farris et al., 2010; Owolabi et al., 2014).

Performance encompasses the success of an outcome: carrying out construction plans that are delivered within completion time, budget and of required quality (Sun, 2000; Owolabi et al., 2014); a measure of a distinct entity, stakeholders, an organisation and realization of work outline; profitability, liquidity, productivity, sufficient cash flow, leverage, market share, order value, and meeting customer and employee satisfaction (Hooley and Lynch, 1985; Allen and Helm, 2006; Ramanchandra and Rotimi, 2011; Tucker et al., 2015); and indicating the capacity of the technical expertise of an organisation (Hatush and Skitmore, 1997).

Construction project and organisational performance have been described in vast numbers of sources, as characterized by the following difficulties: poor management capability, running over budget, work of poor quality, inappropriate use of financial management strategies and client dissatisfaction (Boussabaine and Kaka, 1998; Khosrowshahi, 2000; Odeyinka et al., 2003; Hai and Watanabe, 2014). Therefore, for any construction organisation, there is a need to assess its financial performance, as it can be used to measure the success of the construction company within a given time and serve as guidance on the performance improvement required of the construction organisation, in order for them to deal with their challenges.

3.5.4 Construction company financial performance indicators

The major construction business financial performance measures are profitability, cash flow, liquidity, efficiency, adaptability, market share and leverage, which, according to Alfan and Zacharia (2013) and Norris (2013), are seen as enhancements to financial increase, the basics of running a construction business (Walker and Ruekert, 1987; Naoum, 2003), and a function of timely delivery (Soetanto et al., 2001), within the setting of financial management in the construction organisation.

Nonetheless, as there is little agreement on which measure is best, any assessment of construction business financial performance with only these seven factors entails significant trade-offs. This implies that good performance in one dimension often means sacrificing performance in another (Donaldson, 1984). In this study, the construction organisation’s financial performance was measured using six indicators: profitability, liquidity, sufficient cash flow, turnover, market share, and leverage of the construction company. These indicators, together with sales (unit and value), have been the most recurrent measures of output that have engaged considerable attention by scholars globally (Buzzel and Gale, 1987; Bonoma and Clark, 1988; Ambler and Barwise, 1998; Clark, 1999; Mazzoli, 2014; Khantimirov, 2017; Sliwoski, 2018; Panayiotis, 2018).

3.5.4.1. Profitability

Profitability is key to business survival of every construction organisation project, as the lack of ability to maintain appropriate profit levels is a sig of business failure (Shleifer and Vishny, 1986; Mazzoli, 2014). According to Brigham and Gapenski (2006), the consequence of a number of strategies and decision management in a construction organisation is profitability. Company profitability refers to a company's capability to produce net income from the project activity carried out by the construction organisation within an accounting period (Haruman, 2008; Moel, 2014). Profitability is the competency of the construction companies to make returns (Weston and Copelan, 1995; Alonso, 2005). Greater profitability results in an upsurge of a construction company's stock price. Brigham (in Sujoko, 2007) revealed that greater profitability indicates that a construction company's prospects are good and that shareholders would respond positively and improve the firm's value (McConnell and Henri, 1990; Martin-Reyna and Duran-Encalada, 2012).

Profitability is an imperative concern for stakeholders in their investment choices. Higher dividend payments reveal the better prospects of a construction company; thus, investors would be encouraged to buy stock and that would increase the marketing of their construction company (Moel, 2014). Construction companies depend on retaining profits for growth to avoid external lenders retaining a stake in the firm, which reduces the profitability-growth connection. More profitable construction companies increase their market share and have access to external finance, which stimulates their growth, while the growth of less profitable construction businesses/companies will decline (Coad and Hölzl, 2010). A construction company putting in an effort to obtain outstanding profits attracts investment. Construction firms, which achieve very high returns, are said to be effective, thus exhibiting a good financial performance (Moel, 2014).

Measuring construction organisational financial performance in relation to economic profitability has the benefit of reducing measurement uncertainty (Phua, 2006). This corroborates proven research standards that use profitability to reveal construction organisation performance (McGahan and Porter, 1997). Besides, profit has been used as a measure of construction firm performance in earlier international construction management researches in the U.K. (Kagioglou et al., 2001), Australia (Furneaux et al., 2010) and Korea (Han et al., 2007; Han, Kim and Kim, 2007; Park et al., 2011), as well as universal construction organisation growth literature (Hines and Rich, 1997; Kaplan and Cooper, 1998; Norek and Pohlen, 2001; Stepleton et al., 2002; Sabbath, 2003; Johnson and Templar, 2011; Kiviluoto et al., 2011).

Profitability measures are considered most suitable for assessing large construction companies' performance (Begley, 1995). Profit becomes the rudiment of payment disbursement, either in cash or stock dividends (Moel, 2014). Hermi (2004) posits that profit is obtained from the variance among the incoming resources (income and profit) and expenditure (outlays and losses). Greater capacity to realize profit increases the anticipated fresh interest from investors (Moel, 2014). Thus, profitability makes a construction firm's business performance healthier.

3.5.4.2 Cash flow

The ability to have sufficient cash to meet the general expenses of a construction organisation is a necessity to stimulate performance in construction projects and organisations. A construction organisation is successful when the construction project is funded well **(**Kaplan and Cooper, 1998, Aje et al., 2017). Successful construction projects are reliant on sufficient cash flow (Sherrif and Kaka, 2003). Cash-flow problems are persistent issues with most contracting organisations in developing nations (Talagala, 1997). According to Sliwoski (2018), one of the core financial problems for most contracting companies is understanding and managing their cash. The basic knowledge and understanding of the gross cash flow, cash conversion cycle, permanent working capital, seasonal working capital, and matching cash sources and uses, which are critical for cash flow and cash management, help construction companies ascertain their future cash surpluses and shortages (Navon, 1996; Williams and Jeongwoo, 2010; Sliwoski, 2018). According to Habib and Huang (2019), construction organisations, which have sufficient cash flow and know how to manage cash, invest more in construction projects, as it attracts the attention of major stakeholders and brings about firms' growth opportunities.

Sufficient cash flow is the life-blood of a construction organisation because, without it, unresolved financial obligations cannot be met (Arafat and Skaik, 2016). Concomitantly, for expenditure items to be covered, a construction organisation needs to have sufficient working capital to pay its creditors, suppliers, sub-contractors, and employees, and may be reliant on its client's payments (Lowe and Moroke, 2010). A stable project and organisation performance, achieved through sufficient cash flow, provides the potential for construction firms to exploit their investment opportunities (Seo et al., 2018). Conversely, a construction company facing cash-flow risk may not be able to make the required investment to receive these benefits (Harris et al., 2019). Construction companies lacking required funds may be forced to decrease their investment in trade receivables (Summers and Wilson, 2002); for example, Love et al. (2007) opine that construction companies, which are more susceptible to financial crises, lessen their investment in trade receivables. Also, in some circumstances, where a construction firm desires to propose additional trade credit in an effort to increase sales growth, it may not be possible if the company has insufficient cash flow (Molina and Preve, 2009).

The more the cash flow, the larger the construction investment value, and the more the construction companies' revenue increases, the more likely the firms are to increase investment (Tran et al., 2019). Therefore, the risk connected with having insufficient cash flow is a prominent factor in managerial decision-making (Graham and Harvey, 2001). Adequate cash flow intensifies the contractor's profit and ensures that the project owners obtain value for money in terms of cost, time, performance, and sustainability, and could mean the difference between success and insolvency for a construction organisation (Lowe and Moroke, 2010). As a reflection of a project and construction organisation's financial performance prior to any contract being completed and the final account settled, sufficient cash flow serves as a key indicator of that contracting organisation's financial strength, due to its impacts on both performance and profitability (Tam, 2002; Naoum, 2003; Beatham et al., 2004).

3.5.4.3 Leverage

Leverage is a common term in financial management as an indicator that affects a construction company's risk profile, bringing about the ability to intensify results at a relatively low cost, and the ability to repay debts and take advantage of new opportunities (Ozkan, 2001; Gill and Mathur, 2011; Patel, 2014; Ahmad et al., 2015). Al-Moman and Obeidat (2017) posit that financial leverage has a robust influence on the achievements of most construction business organisations. A construction company that has more leverage financially is more profitable (Moghadam and Jafari, 2015). According to Gill and Mathur (2011), leverage is the application of an asset or fund for which the construction company pays a fixed cost or receives a return. Financial leverage enhances the changes that occur to earnings due to fixed costs in a construction company's capital structures. Essentially, leverage denotes the ability to incur debt or borrow funds to finance the purchase of a company's assets, or the extent to which a construction company employs borrowed money (Gill and Mathur, 2011; Ahmad et al., 2015).

The management of construction businesses may use either debt or equity to finance or buy the firm's assets. The use of leverage helps to increase the construction firm's risk of insolvency (Mandelker and Rhee, 1984; Al-Moman and Obeidat, 2017). It also increases the construction firm's returns, particularly its return on equity. If leverage financing is used rather than equity financing, then the construction business proprietor's equity is not affected by issuing more shares (Velez, 2010). Stakeholders in construction businesses are in favor of the business using debt financing, but only up to a point. Shareholders become concerned about too much debt financing, as it drives up the construction company's default risk (Larry et al., 1995; Elangkumaran and Nimalathasan, 2013). Al-Moman and Obeidat (2017) opine that the use of more debt in the construction company capital structure describes the construction company that is using borrowed funds to finance the firm's assets, that is, high financial leverage. Conversely, a construction company that hinges on more equity use and minor debt could be described as using low financial leverage. In conclusion, leverage is financial strategy planning that assists construction companies to boost the rate of revenue by making a higher profit on borrowed money than the cost of using that money (Ahmad et al., 2015). Therefore, if the large construction companies' income on assets is higher than the before-tax interest amount remunerated on debt, it is positive leverage (Larry and Stulz, 1995).

3.5.4.4 Liquidity

The construction industry functions in an extremely modest environment and contractors cannot survive without resourceful management (Liu et al., 2009). As a result, contractors are prompted to introduce low profit margins in tender bids to compete within the construction industry (Mahamid, 2012), and this, in turn, impacts on construction company liquidity (Adjei et al., 2018). Studies have revealed that a shortage of liquidity is a key problem triggering construction project failure (Al-Issa and Zayed, 2007). Earlier researchers have acknowledged that a shortage of liquidity signifies a key problem that leads to the failure of construction projects and the insolvency of construction companies (Liu et al., 2009; El-Kholy, 2014; Panayiotis, 2018). A contractor's liquidity is indispensable in the execution of several construction projects concurrently (Nesan, 2006). Liquidity plays a very important role in the management of a construction organisation and its operations, project and organisation performance, and portfolio diversification strategies from the stakeholders involved. They face liquidity risk when they transfer the ownership of their collaterals/securities (Panayiotis, 2018).

Liquidity remains a concept that is very difficult to describe or define accurately. Liquidity is the absolute key resource for construction companies (Adjei et al., 2018). Liquidity can be described as the ability to buy or sell an investment promptly and at a price close to its current market price (Chai et al., 2010; Brennan et al., 2012; Papavassilion, 2013). Inclusive liquidity is built-in in the form of global (broad) credit growth and gaps. Liquidity and its management, to a great degree, decide the growth and profitability of a construction company (Brigham, 1999; Egbide et al., 2013). For this reason, both insufficient liquidity and superfluous liquidity may be detrimental to the smooth operations of the construction organisation.

However, the essence of balance sheet liquidity is motivated by the level to which construction companies have access to external capital markets, as it enables construction companies to take on valuable projects when they arise (Almeida, Campello and Weisbach, 2004; Keynes, 1936). A financially unrestricted construction company does not need to safeguard against future investment, as the firm’s liquidity becomes inessential (Almeida et al., 2004). However, liquidity management becomes a key issue for construction business policy when such firms face financial friction. Liquidity management helps the large construction firms to utilize profits of their operations in other ways to meet their short-term debt, and the to provide for the upcoming operational expenses in such a way as to preserve liquidity (Panigrahi, 2014).

Working capital management is among the fundamental facets of financial management, which every commercially oriented construction organisation must practise (Pandey, 2005). The working capital elements of a construction company’s financial management deal with the liquidity of a construction company and are, therefore, vital for efficient and effective operations, as well as the sustainability of its growth (Enyi, 2006). Liquidity largely determines the quantity of a construction firm’s profit, which also affects the value of shareholders’ wealth (Ben-Caleb, 2008). The reason for this is that, for a construction company to survive, it must remain liquid, since, if the firm could not meet its obligations in due time, the result is a bad credit ranking by the short-term creditors, lessening the amount of goodwill in the market, and may, in due course, lead to insolvency (Bhavet, 2011). Therefore, a good firm financial management strategy strives to sustain sufficient liquidity to meet its short-term growth obligations without impairing success (Egbide et al., 2013). Therefore, liquidity is one of the key elements in the survival of a contractor.

3.5.4.5 Market share

Among diverse measures of performance, market share is an important indicator of the market competitiveness of a construction organisation. It indicates how well a construction company is performing compared to its competitors. Buzzel and Gale (1987) have conveyed some broad perceptions and better insight into the underlying developments that bring an upsurge in a share of the market relative to the competition. The basic principle of achieving a product perceived to be better quality compared to competitors to have a higher share of the market allows a construction company to distinguish itself from the competition and take the benefit of economies of scale, consequently attaining low-cost discrepancy (Sharp et al., 2002; Khantimirov, 2017).

Market share is defined as a construction company's sales in proportion to the entire construction industry sales for a definite period and related to those of other competitors in the market (O'Regan, 2002; Pearce and Robinson, 2003). Therefore, market share is habitually used to distinguish competitive position (Khantimirov, 2017). Market share has an important and positive influence on construction business profit, as it serves as an effective predictor of construction organisation performance (Buzzell and Gale, 1987; Buzzel, 2004; Sharp et al., 2002; Khantimirov, 2017). Increased market share can be associated with success; however, decreased market share serves as an indicator of precarious actions by construction firms and is habitually associated with failure (Khantimirov, 2017). For example, Pervan and Visic (2012) discovered that a construction firm's market share as a substitute for its magnitude plays a substantial role in amplifying its comparative performance. In large firms, Etale, Bingilar, and Ifureze (2016) linked market share with higher profits as a means of improving construction organisation performance.

3.5.4.6 Turnover

A construction company's turnover is a vital measure for deciding if a company is a micro-, small, medium, or large enterprise (Ekpenyong and Nyong, 1992; European Commission, 2015). According to Armstrong (2006), turnover is the volume of construction contracts carried out by construction firms, habitually rated per year of its operation. Most construction organisations are faced with less ambiguity in earning turnover, as they adopt policies that manifest an emphasis on strategic planning (Ballantine et al., 1993; Pawestri, 2006). Jonso (2007) explains that large construction firms that have high turnover proficiency achieve this mostly by using more leverage to grow, increase their market share, and integrate (or diversify into) other businesses. Categorizing construction enterprises into sizes, the European Commission (2015) stated that micro, small, medium, and large-scale enterprises can be classified in terms of their turnovers of between 1.5 to less than 2 million euro to less than 50 million euro, respectively.

In the research carried out by Tucker et al. (2015) and Abdullahi et al. (2017), firm turnover is dependent on changes in net asset value and capital structure of construction companies. This implies that the capital structure of the construction firm determines the turnover they realize. Therefore, the availability of finance and sufficient cash flow of construction companies improve turnover, which, in turn, increases financial performance (Morck et al., 1988; Bakar, 1993; Siallagan and Machfoedz, 2006; Moel, 2014). Thus, the greater the financial proficiency of a construction firm, the more the turnover that firm has; also, it is significant and impacts on construction organisation performance.

In conclusion, the financial resources of construction organisations must be sufficient in order to meet the demands of the competitive market (Odediran and Windapo, 2016). Thus, construction organisations that want to increase their firms' financial performance must guarantee sufficient cash flow, adopt financial management strategies that are relevant for decision-making, use more leverage, be able to manage their capital structure well, and make use of appropriate project payment systems (Motawa and Kaka, 2009; Nje et al., 2003; Sherif and Kaka, 2003; Musah et al., 2018).

3.6 Summary of the chapter

The growth process is arbitrary. Typical self-determining growth of construction firms is linked to company size and other company features (Hall and Weiss, 1967; Shepherd, 1972; Scherer, 1973; Amato and Wilder, 1985; Amato and Amato, 2004; Papadogonas, 2007). However, there are also other factors (such as the firm's financial situation, organisation financial management strategies, market structure, and entry barriers and construction) that determine the project and organisation performance of construction companies (Caves and Pugel, 1980, Sheriff and Kaka, 2003; Haupt and Padayachee, 2016). Among these factors mentioned above, this study highlights the financial situation (project payment systems) and organisation financial management strategies as the determining factors for successful project and organisation performance. Thus, this chapter presented exploration theories (resource-based theory and domino theory) that show how the constructs (project payment systems, financial management strategies, and project and organisation performance) are connected to one another to provide a better knowledge of the study's fundamental principles, as conceptualized in the models. The constructs were hypothetically linked together to develop the conceptual model for the study.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

This chapter explains the research approach that was employed to meet the goals of the study. The research adopted a sequential mixed-method research approach, in which information that answered the research question and met the aim and objectives, was collected via a cross-sectional questionnaire survey. A combination of these quantitative and qualitative methods helped to provide a more thorough and complex account of the research question.

4.2 Research philosophy

According to Guba and Lincoln (1994), a philosophy is a rudimentary set of beliefs or worldview that pilots the research investigation. Likewise, Denzin and Lincoln (2000) describe research philosophy as a researcher's construction that is concerned with the basis from which the researcher is approaching the hypothesis in order to obtain a meaningful set of data. A research philosophy is required to improve the researcher's understanding of the world and the researcher's study (Avramids and Smith, 1999; Burns, 2000). In educational research, a philosophy is described as a scholar's worldview (Mackenzie and Knipe, 2006). A scholar's worldview serves as the perception, group of mutual beliefs, or school of thought that relates the meaning of the research data to the researcher (Kivunjal and Kuyini, 2017). A scholar's worldview comprises the conceptual principles and ideologies that outline how they see the world, and how the researcher construes and performs within that world. In essence, defining the scholar's worldview by means of a philosophy effectively composes the abstract principles and ideologies that formulate how that scholar sees the world, and how a researcher may expound and act within that world (Burns, 2000; Kivunjal and Kuyini, 2017). Also, Mackenzie and Knipe (2006), St. Pierre and Jackson (2014), and Kivunjal and Kuyini (2017) stated that a philosophy serves as the abstract lens through which the researcher studies the methodological facets of their research, in order to ascertain which approaches will be used and how the data will be analyzed in search of the goal (the research objectives), and the pursuit of the solution of a problem (the research question).

Philosophies are very necessary because they proffer opinions and give direction to researchers in a specific discipline, helping to identify what should be researched, how it should be researched, and how the outcomes of the research should be analyzed (Avramids and Smith, 1999; Kivunjal and Kuyini, 2017). Philosophy offers a standard for deciding whether improvement has taken place within a certain field or not, and it expedites the ability to express and sustain ideas (Avramids and Smith, 1999). However, a research philosophy is comprised of three elements (epistemology, ontology, and paradigm) that give rise to the basic norms, beliefs, values, and assumptions that the paradigm embraces (Lincoln and Guba, 1985). Consequently, a researcher needs to be conversant with the use of these elements so that they may be guided by the assumptions, beliefs, norms, and values of the chosen philosophy (Kivunjal and Kuyini, 2017).

Epistemology implies information and knowledge. However, in research, epistemology simply means how the researcher comes to know something as truth or reality (Kivunjal and Kuyini, 2017) or as that which counts as knowledge in the world (Cooksey and McDonald, 2011). It is concerned with the primary element of knowledge, such as its nature, and systems, and the means of attaining it, and how it can be transferred to other scholars (Kivunjal and Kuyini, 2017). Thus, the epistemology refers to the nature of the knowledge obtained, and its validation (Schwandt, 1997). It is equally important that epistemology makes it possible for the researcher to have faith in the data collected (Mackenzie and Knipe, 2006; Kivunjal and Kuyini, 2017). Epistemology also transforms how the researcher approaches and explores the obtaining of knowledge in the research area that will be explored.

Ontology is a subdivision of philosophy that is related to the norms the researcher adopts to postulate that, to some degree, the assumption makes sense and is real, or that the very nature or core of the social phenomenon the researcher is investigating is real (Scotland, 2012). Again, ontology reflects the structure of the researcher's fundamental acceptance of the nature of life and reality. For instance, the orientation of the researcher's thinking about the research problem and its importance is guided by philosophical assumptions, concepts, or propositions. The way the researcher approaches it to answer the research question and understand the problem being investigated, enriches its result, and makes meaning of the data collected (Kivunjal and Kuyini, 2017). Ontology assists the researcher to identify and confirm the things that establish the world as it is known and accepted (Scott and Usher, 2004). In addition, ontology explores and finds the real nature of what underlies the themes that the researcher analyses, to make sense of the implications of the research data (Kivunjal and Kuyini, 2017).

4.3 Research paradigm

A research paradigm is another subsection of research philosophy that is referred to as the research design, methods, ways, and measures used so that the study is well-grounded in practice, and well planned to carry out the research (Keeves, 1997). For instance, data collection, participants, respondents, tools used, and data analysis, are all part of the comprehensive field of methodology (Mackenzie and Knipe, 2006; Kivunjal and Kuyini, 2017). Consequently, the research paradigm enunciates the logic and flow of the systematic procedures followed, that guide the process of conducting research, to improve knowledge about a research problem (Kivunjal and Kuyini, 2017).

The paradigm also describes a researcher's philosophical propensity, which has substantial consequences for every decision made in the research process, as well as the appropriate choice of methodology and methods. In other words, a paradigm explains how content in research will be built from the data the researcher gathered, based on the researcher's experiences (for instance where the researcher is coming from) (Sidgwick, 1907; Slote,1985; St. Pierre and Jackson, 2014; Kivunjal and Kuyini, 2017). It is imperative that a researcher must state clearly the paradigm upon which the research is based. Thus, the paradigm includes the assumptions made, the limitations experienced, and how they were reduced or lessened. It emphasizes how the researcher gains knowledge about a part of the world (Moreno, 1947; Finnis, 1980). Positivism, interpretivism, pragmatism, and subjectivism are examples of research paradigms (Guba and Lincoln, 1989; Hole et al., 2009; Clear and MacDonell, 2011; Kivunjal and Kuyini, 2017; Park et al., 2020).

The four paradigms are explained below.

Positivism is a system of a hypothetical deduction pattern that validates *a priori* propositions which are frequently specified through a quantitative approach; this occurs wherever functional associations were derived from the underlying constructs and descriptive features (autonomous constructs) and from the outcomes (reliant constructs) (Ponterotto, 2005; Park et al., 2020). The main aim of positivist investigation is to stimulate the descriptive links or connect the relations that essentially center on estimation and regulate the phenomena in the research question of a study (Sciarra, 1999; Gergen, 2001). The exploration pattern of positivism helped the analytical nature of this research, using the quantitative systems of gathering data that tested the hypothetical deduction of the model in the study, and resulted in a computed result. Hypothetical deduction technique serves as a circular procedure that initiates theory to figure out postulated hypotheses and research design, through engaging research constructs in performing the practical research, based on an investigation derived from the review of the relevant literature (Hole et al., 2009; Park et al., 2020).

Interpretivism takes a dependent position, by allowing an empathic perspective on the subjective world of human knowledge that relates to the expansion of applicable theory, as it emanates from the research investigation (Guba and Lincoln, 1989). This approach contends that only through subjective understanding, by making an effort to get into the head of the subjects being researched, so to speak, might it be possible to comprehend and interpret what the subject is thinking and to check whether the explanation the researcher is deriving from the context of any intervention can be fully understood in that reality (Kivunjal and Kuyini, 2017). According to Hasen (2013), interpretivists acknowledge that reality is built in the mind of the individual in their natural environment, rather than it being a superficially singular entity; they thus evade pre-set strategies, and they are required to fit in new insights introduced during the investigation. The researcher must use determination to understand the position of the subject observed, compared to the viewpoint of the observer (Kivunjal and Kuyini, 2017).

Importance is placed on understanding the individual and their construal of the world around them, as they admit that there may be several interpretations of reality, but uphold that these interpretations are, in themselves, a segment of the systematic knowledge they are pursuing (Morgan, 2007; Kivunjal and Kuyini, 2017). Interpretivism has a reputation that is no less valuable than that of positivism, neither is it quicker. The main precept of the interpretivist paradigm is that realism is socially built (Bogdan and Biklen, 1998). Consequently, Lincoln and Guba (1985) and Morgan (2007) state that a study conducted under the interpretivist philosophy usually displays the following features: firstly, the social world cannot be presumed from the point of view of a discrete individual, and realities are collectively and socially built. There is broad acceptance that there are unavoidable dealings between the researcher and the research participants, and that context is important for knowledge and insight. There is an acceptance that knowledge is actualized by the findings, which are value-laden, and that the values need to be made unambiguous. This is necessary to comprehend the individual, rather than general rules. There is an acceptance that motives, and influences are commonly related and there is a belief that related features need to be taken into deliberation in any systematic search of understanding.

Pragmatism in a paradigm supports the idea that action, circumstances, and reactions within a research situation are of more concern than preceding situations. The inherent reality and relativity of the current research focus are accepted as a pragmatic necessity, though pragmatism has never ceased to find support from other researchers, such as Patton (1990), Rorty (1990), Murphy (1990), and Cherryholmes (1992). Pragmatist philosophers do not agree that there are certain inducted concepts or contexts that may shape knowledge and truth, nor that a researcher can hypothesize truth out of an unknown context (Tashakkori and Teddlie, 2003; Biesta, 2010; Easterby-Smith, et al., 2012). For philosophers, a single paradigmatic direction of research is not sufficient; rather, they contend that what is required is a lens which would produce methods that are evaluated as the most suitable for researching the phenomenon at hand (Patton, 1990; Tashakkori and Teddlie, 2003a, and 2003b; Alise and Teddlie, 2010; Biesta, 2010). Thus, pragmatic method lays more emphasis on solving urgent and contemporary difficulties, to generate productive knowledge, and to convert successive versions of the established knowledge into real accomplishments (Fendt et al., 2008). Therefore, pragmatists and realists focus on what is engaging and has worth, research these themes with a method they can comprehend, and utilize the outcomes to make constructive effects upon the value system being researched (Tashakkori and Teddlie, 2003a).

The postulation of a subjectivist epistemology implies that the scholar describes their data by applying their thinking and reasoning to the information gathered in their communications with participants (Kivunjal and Kuyini, 2017). There is the consideration that the scholar will hypothesize knowledge socially, as a product of their understanding of the real-life situations among those studied (Punch, 2005). Subjectivism holds that the scholar and their research participants are involved in interactive ways in which they interact, exchange ideas, interrogate their ideas, listen, read, write, and record research data collected (Kivunjal and Kuyini, 2017). Subjectivism was adopted in this study because of the need to interpret the qualitative data based on the understanding and insights provided by the interviewees themselves.

4.4 Research approach

This research is grounded in the field of Construction Economics and Management in the Built Environment. This study adopted pragmatism as the main research method.

According to Love et al. (2002), Dainty (2008), and Easterby-Smith et al. (2012), pragmatism is relevant to construction management studies because its influence can be realized both in practice and in the system of theory. Regarding a study which is situated within pragmatic philosophy, Patton (1990), Creswell (2003), Tashakkori and Teddlie (2003) and Mertens (2015) posit that such a study should demonstrate the following features: a quest for positive links within the research theme that improve understanding of the practical settings; application of the best methods to acquire knowledge, by means of every suitable methodology that may assist the discovery of knowledge; the necessity of working within a positivist paradigm (data as an objective reality) or an interpretivist paradigm (related to the construction of knowledge); and the use of that which works, in order to allow the scholar to find a solution to the questions being explored, without the distraction of whether the research is solely quantitative or qualitative in nature. Consequently, the adoption of pragmatism as the main research approach of this study followed these aforementioned theoretical indications.

Therefore, this study is mainly centered on the exploration pattern of positivism and supported by interpretivism. The exploration pattern of positivism supported the analytical nature of this research, using the quantitative systems of gathering data that tested the hypothetical deduction of the model in the study, and resulted in a computed result. Moreover, Park et al. (2020) argue that the results being carried out using positivism with a deductive method of testing hypotheses assists the researcher to relate and refine theory, and to define the approach to the literature review. The interpretivist paradigm was also used in this study to guide the collection of qualitative data, to comprehensively understand the participants' involvement in the field of study. This was done using subjective approaches, based on the participant's insight, feelings, or personal view, to analyze the constructs of the research. According to Clear and MacDonell (2011), an interpretivist approach conveys extensive knowledge of a circumstance with the unique understanding of the complex phenomena surrounding it, and enables research techniques, such as interviews, to open more opportunities for observation and investigation that may be outside the focus of the study.

Consequently, to attain the aim of this research, that is, to assess the project payment systems and financial management strategies that result in the better performance of construction companies, and to establish the interaction among the research constructs, the research mainly employed a positivist paradigm that was effective in interpreting behavioural features and evaluating the expository aspect of Construction Economics and Management research (Amaratunga et al., 2002; Adediran, 2018). Also, to solve the issue of complexity obstructing the attainment of the better performance of a construction organisation, Amaratunga et al. (2002) proved that the interpretivist paradigm is appropriate to curb and solve that problem. The financial situation and management of any construction organisation is complex; thus, this study benefits from subjective approaches (such as interpretivism) as it allows for understanding and consideration of multifaceted circumstances. It does this by means of interviews and through the gathering of information that provides a better quality of understanding of the research question (Roth and Mehta, 2002; Carcary, 2011).

Hence, this study is mainly based on a pragmatic mixed-method system of research design for the gathering of data, mainly depending on quantitative systems (such as a survey) to gather data and supported simultaneously with a qualitative method of data collection (the interview). The research carried out by Love et al. (2002), Amaratunga et al. (2002), Dainty (2008) and Adediran (2018) in the field of construction management demonstrated the necessity and the application of multiple methods, such as positivism (quantitative method) and interpretivism (qualitative method) which draw strength from each other as research methods. Also, Teddlie and Tashakkori (2011) concurred that pragmatism is an acceptable paradigm for mixed-method research, because it generates a fruitful amalgamation of positivist and interpretivist viewpoints. Likewise, Onwuegbuzie and Johnson (2006) state that pragmatist assumptions are widely accepted as the basis of the mixed-method approach to research. Therefore, pragmatism emerged as the best approach for this study because it allowed more functional and diverse methods, which could be combined to shed light on the real behaviour of participants, the views behind those behaviours, and the outcomes that most probably follow from diverse behaviours (Tashakkori and Teddlie, 2003; Alise and Teddlie, 2010; Biesta, 2010).

4.5 Research design

This study is a mixed-method research design; hence, it adopted a sequential explanatory design as the research design. Sequential explanatory design is an approach to research that is commonly used by researchers, and it involves gathering and analyzing quantitative data (numbers) and then also qualitative data (personal experience) in two successive stages within one study (Tashakkori and Teddlie, 2003; Ivankova et al., 2006; Creswell, 2013). The sequential explanatory design features are well-defined in the literature and the approach has been applied in several disciplines, including construction management research (Kinnick and Kempner 1988; Ceci 1991; Klassen and Burnaby 1993; Janz et al. 1996; Tashakkori and Teddlie 1998; Creswell 2003; Creswell et al., 2003; Creswell, 2005; Oyewobi, 2014; Adediran

2018). Priority was given to the sequence of quantitative and qualitative data collection and analysis in the study, and the phases in the study process at which the quantitative and qualitative stages are linked, and the results are integrated in line with Morgan (1998), Creswell (2003), and Creswell and Plano Clark (2011). Thus, the qualitative data enriches and enhances the findings, helps to produce new knowledge and its inferences are used to contextualize the quantitative data (Creswell, 2003; Taylor and Trumbull, 2005; Mason, 2006). Therefore, both quantitative and qualitative stages of data collection are linked in the intermediate phase in this research (Subedi, 2016). The explanation for the sequential explanatory design is that by examining the quantitative data, the researcher reaches a broader understanding of the study problem (Rossman and Wilson, 1985; Creswell, 2003), while the qualitative data and its examination enhance and describe those numeric outcomes, by exploring respondents' opinions in depth (Denzin, 1978; Tashakkori and Teddlie 1998; Creswell 2003; Wald, 2014, Lamont et al., 2015; Subedi, 2016).

Furthermore, the merits of a mixed-method sequential explanatory design have been broadly discussed in the literature (Creswell, Goodchild, and Turner, 1996; Green and Caracelli, 1997; Creswell, 2003; Moghaddam, Walker and Harre, 2003). A sequential exploratory design is useful when unanticipated results arise from quantitative research, and it produces more detailed results for the exploration of the quantitative analysis, due to its logical process and opportunities for analysis (Morse 1991). The use of a sequential mixed-method research design that engages both quantitative and qualitative elements is most appropriate to a transformative approach (Hesse-Biber, 2010). Also, this adopted mixed-method system serves as a research foundation to avoid one-sided positivist or constructivist criticism (Subedi, 2016). The reason that several scholars have selected the sequential mixed-method research approach is the prospect of a wider collection of different opinions, examining contradictions and complementariness, and thereby increasing the understanding of the phenomenon (Denzin, 1978; Courtney and McCutcheon, 2010; Lamont et al., 2015; Robinson, David and Hill, 2016). Thus, different findings are valuable, as they result in a re-examination of the conceptual context and the fundamental assumptions of the quantitative and qualitative approaches, respectively (Erzberger and Prein, 1977 as cited in Teddlie and Tashakkari, 2009; Bartholomew and Brown, 2012). Researchers have also regarded the sequential exploratory design as the best mixed-model strategy because it avoids the use of abstract concepts that trigger limitless discussion and argument (Niglas, 2004; Flick, 2006; Teddlie and Tashakkari, 2009; Bryman, 2012; Ritchie and Lewis, 2013; Bowen et al., 2017). Thus, it serves as the best design for construction economics and management research (Oyewobi, 2014; Subedi, 2016; Odediran, 2018; Teddlie and Tashakkari, 2003; Creswell, 2003; Hesse-Biber, 2010; Subedi, 2016).

Therefore, this research was undertaken using a mixed-method sequential explanatory design. This strengthened the study's accuracy and increased its validity, minimized the likely bias and limitations of the study, and generated new knowledge about the phenomenon under investigation (Denzin, 1978; Lincoln and Guba, 1985; Jick, 1979; Orgard, 2005). The use of the mixed-method sequential explanatory design in this study assisted in integrating the robustness of quantitative and qualitative methods, connecting concepts and opinions (Griffin and Ragin, 1994) and relating the results with data from diverse circumstances and times (Alhojailan, 2012). Also, the use of the mixed-method sequential exploratory design in this study supports the validity of the quantitative method as the major or prioritized research method in this study.

4.6 Study population, sample size, and selection techniques

In research, research objectives and research questions are always considered when deciding which sampling frame to employ (for instance, who or what to sample), guiding the researcher to two diverse sampling methods, such as probability and non-probability sampling techniques (Le Compte et al., 1993; Ritchie and Lewis, 2003; Palys, 2008; Yin, 2011). In the current study, purposive sampling was used. This is because the success of purposive sampling rests upon choosing information-rich samples (i.e., from which the scholar may acquire a great deal of knowledge about matters that are significant to the purpose of the study) for in-depth research (Gentle, et al., 2015; Patton, 2015). Researching information-rich studies provides insights and an in-depth understanding of the research (Palys and Atchison, 2008; Corbin and Strauss, 2015; Patton, 2015). The core goal of purposive sampling is to concentrate on specific features of a population that will best allow the researcher to achieve research objectives and answer research questions (Merriam, 2009). The sample being considered is not indicative of the population, but for researchers who want to explore qualitative or mixed-methods research designs, this is not regarded as a deficiency (Teddlie and Yu, 2007). To some extent, it is a deliberate choice with a different purpose.

Consequently, the notion behind purposive sampling is to focus on people with relevant attributes, to support the research with a pertinent focus (Enikan et al., 2016). One of the benefits of purposive sampling methods is that it places the main emphasis on saturation (that is, acquiring an inclusive understanding by unrelenting efforts to sample until no new functional information is attained) (Miles and Huberman, 1994; Gentle, et al., 2015). The sample size in purposive sampling is determined by data saturation and not by the power of statistical analysis (Zhi, 2014). Purposive sampling is less expensive and saves time when some of the units are very important and must be included (Bernard, 2002). Purposive sampling offers further leverage to the scholar to achieve and extract the best data possible from the sample (Tongo, 2005; Enikan et al., 2016).

Therefore, for this study, purposive sampling was adopted, because the study targeted construction companies with high-level business executives and the top-level managers of construction organisations (cidb grade 7-9) who were willing to give the researcher their financial information. This was done because of the need to obtain credible and verifiable financial information. The criteria for verifying the financial credibility of the contractors included availability of financial statements, stamped business bank statements, proof of financial sponsorship, audited financial statements, financial track records, financial history, the financial capability of R40 million and an above, annual turnover of R20 million and above, work capability of R9 million and above, and available capital of R4 million and above. These construction companies were used as the unit of the research analysis and represented the population of this study (see Table 4.1). As revealed in Table 4.1, a total of 504 active e-mail addresses were obtained from the cidb database. This formed the target population for this study. From these, 176 indicated their willingness to complete the questionnaire, representing 35% of the study population. Random selection techniques were adopted to select the 176 respondents that were contacted for this study. With 155 responses received, the current study is therefore based on these 155 responses (sample size) which translate to a response rate of 88%. This represents the largest amount of quantitative data fit for analysis. The rate was considered adequate owing to an earlier assertion by Adafin et al. (2020), and Moser and Kalton (1981) that the result of a survey is considered biased and of little value if the return rate is lower than 40%.

$$\text{Response rate} = \frac{\text{sample size (155)}}{\text{willing participant (176)}} \times 100 = 88\% \quad \textit{Equation 1}$$

The collection and collation of data were carried out between September 2018 and October 2019 (14 months). Though, there were disparities because of missing information that some respondents did not fully complete in the questionnaire on the company profile.

Table 4.1: Study population of the construction organisation.

Grade	Study population and number of construction companies' email addresses received	Number of active email addresses	Sample size (35%)
7	352	319	112
8	150	126	44
9	75	59	20
Total	**577**	**504**	**176**

This study employed the Selective Expert Sampling technique for the qualitative study. As classified by its type of sampling technique, expert sampling calls for professionals in a specific area of specialisation to be the subjects of the purposive selection when the researcher aims to gather knowledge from participants who have specific expertise (Field et al., 2008). This expertise may be needed throughout the investigative stage of the research to assist in highlighting the likely new areas of interest, or introducing such areas to other participants (Yousuf, 2007). The result is that the precise expertise that is being explored may provide the foundation of the study, necessitating an emphasis only on professionals with such expertise (Linstone and Turoff, 1975; Smith, 1983; Yousuf, 2007; Bruce et al., 2008).

Expert sampling is more beneficial when the study is anticipated to take a lengthy period, because it may provide decisive outcomes sooner than predicted, and when there is inadequate experimental corroboration (Dohert, 1994; Sue, 2008; Enikan et al., 2016). Also, expert sampling serves as a better way of building the opinions of participants, who are specialised in a certain field, and it is useful in providing validation to the findings. (Smith, 1983). It is also used when the researcher wants the opinions of professionals with a comparatively high level of skill in the research area (Miller et al., 2010). Therefore, in this study, the researcher searched for those professionals and recognized experts in the field of financial management, within the construction organisations in the South African construction industry. The researcher then collected the required information directly from these individual respondents, who could demonstrate their experience and specialised knowledge of the field. A total number of twenty (20) experts in the field of financial management were approached to participate in the interview, while only five experts eventually agreed and participated. Five (5) interviewees are considered adequate for a qualitative research due to the intrusion limitations observed in the methodological of this study (Vasileious et al., 2018; Morgan, 2021).

4.7 Methods of data collection

4.7.1 Quantitative data collection

The quantitative study, using a questionnaire survey, investigated the common types of payment systems used by different public/private sector construction clients, past project and construction organisation performance, financial management strategies and methods of cash flow administration used by construction companies. The financial performance of the construction companies was obtained by gathering historical information on past projects undertaken within the last five years, payment systems, and financial management strategies adopted by the companies, and project and organisation performance data. A questionnaire survey was conducted to collect quantitative data for this study. The questionnaire survey was internet-based, due to the geographical location of the construction companies identified in the study (Saunders et al., 2009). Next, an invitation letter was sent to the targeted contractors in the selected regions as a means of informing them of the link to the questionnaire and inviting them to participate, with the expectation of getting a higher percentage of responses. The size of the sample was built on non-response bias and by calculating the smallest viable sample size (Ankrah, 2007). There were problems with a low response rate when collecting data through the online survey, as posited by Wiseman (2003) and Archer (2008). In this study, the problem of low response rate was mitigated by sending automated reminders to the participants.

Web-based surveys strengthen the investigative knowledge of both the researcher and the respondents, simplify the administration of questionnaires with reminders, provide wider accessibility of the survey strategy, design, and application tool, are inexpensive, and have established features that make data cleaning much easier (Dillman, Smyth and Christian, 2009; Boyer, Adams and Lucero, 2010; Israel, 2011). Therefore, this study used an online survey platform (Survey Monkey: www.surveymonkey.com) to collect data for the research. Appendices B and C provide detailed information on the consent and questionnaire instrument used. Mostly, this link was sent to the Directors (Founders), company commercial executives, managing directors, and the accounts officers of their construction organisations, who have extensive and sound accounting knowledge and expertise in the financial management of the company based on the list provided by the cidb. The collection and collation of data were carried out between September 2018 and October 2019. The researcher encountered numerous difficulties at the stage of questionnaire administration. Among some of the problems were that some participants' emails bounced back, and some participants chose not to participate by sending abusive emails in reply, asking that the survey should not be sent to them. Several email reminders were sent to the participants, and telephone calls were made weekly, and when they complained, the reminders were reduced to monthly, to try to inspire a good response through both the survey and the interview, as indicated by Blaxter et al. (2006). At the end of the survey, a total of 155 respondents completed the questionnaire survey, while 32 construction organisations provided the information required for the analysis of the companies' financial performance.

4.7.2 Qualitative data collection

Five interviews were conducted with the commercial executives and accounts officers of the construction organisations. There were no restrictions in the interview; this means that the interview questions permitted open-ended responses. In addition, the participant was able to contribute and respond by supplying as much exhaustive data as they desired. This pattern of interviewing, according to Turner (2010), allows the researcher to ask investigative questions as a way of check-and-balance and in order to do a follow-up. Also, the interviews produce dependable and reflective illustrations of phenomena, which enhance the researcher's ability to use the information provided by participants, and reduces the necessity of managing participants, while facilitating the investigation of their knowledge (Polkinghorne, 1994; Creswell, 2007; Knox and Burkard, 2009). The problem of low response rate was mitigated by sending automated reminders to the participants in this study.

The core aim of the interview was to obtain a high quality of information from the different construction organisations, with reference to their project payment systems, financial management strategies, and the financial performance of the identified construction project and their organisation. A structured interview guide comprising well-designed questions was prepared by the interviewer, to ensure that all the interviewees were asked the same questions (see Appendices D and E). Five interviews were conducted, and each took between 22 minutes and 1 hour 15 minutes. The interview protocol comprised of five segments, the first segment being general information about the construction company and the participant. The other segments asked detailed questions on project payment systems, financial management strategies, construction company financial performance indicators, and the relationship between payment systems, financial management strategies, and construction company financial performance.

The opening interview was organised and conducted with the director (founder) of construction organisation A in Gauteng (cidb Grade 7). The second was in Durban (cidb Grade 9) with a commercial executive from the construction organisation B. Construction company C is located in Gauteng (cidb Grade 8), and the interviewee was the commercial executive of the construction organisation. The fourth interview was conducted with the managing director of the construction company D in Gauteng (cidb Grade 9). The last interview was conducted with the managing director of construction company E in Cape Town (cidb Grade 7). The interviews conducted were recorded in audio form with the consent and authorization of the participants, and later transcribed. The key themes and sub-themes common to the transcription from each participant were identified, a codebook was used to guide the researcher through the transcript analysis, and the transcribed interviews were evaluated and examined. Also, a spreadsheet was used to help in coding, connecting, and gathering the like themes and sub-themes from the transcripts.

Table 4.2: Company type, cidb grade, location, and position of the interviewee

Company	cidb Grade	Location	Position of Interviewee
A	7	Gauteng	Director (Founder)
B	9	Durban	Commercial Executive
C	8	Gauteng	Commercial Executive
D	9	Gauteng	Managing Director
E	9	Cape Town	Managing Director

Source: Field survey

4.8 Methods of data analysis

The study made use of descriptive and inferential statistics in analyzing the data collected from the questionnaire survey.

4.8.1 Mean item score

The mean is the most frequently used measure of central tendency. The mean score is an average value of outcomes from an inquiry, of two or more variables in the data set divided by the sum of observations in it or relating it to a precise scale (Rao and Richard, 2006; Manikandan, 2011; Odediran, 2016). The benefit of using the mean is that it employs each value in the data and thus is a good illustration of the data (Dawson and Trapp, 2004; Manikandan, 2011). Sometimes the mean value does not show in the raw data. The mean functions to break down the variation connecting diverse samples (Glaser, 2000). The research variables in this study were measured on a numerical ordinal scale as recommended by Manikandan (2011). The weighted mean is calculated when certain values in a set of data are more significant than others (for instance, when a variable is weighted ($w_{i)}$ and is ascribed a value ($x_{i)}$ to reflect this importance) (Petrie and Sabin, 2009). Therefore, the researcher used mean scores in order to examine and analyze the variables representing the constructs of the study, as well as the background information obtained from the survey of contractors listed in Grades 7 to 9 of the cidb Register of Contractors. Several researchers have used the mean item score in diverse disciplines, including Construction Economics and Management, as a common method of data analysis (see Glaser, 2000; Gravetter and Wallnau, 2000; Manikandan, 2011; Zhang, 2011; Eybpoosh et al., 2011; Abdul-Rahman et al., 2012; Xiaopeng and Pheng, 2013; Odediran, 2016; Adediran, 2018). The researcher also used the mean item score to determine the significance of each variable, using the formula shown in Equation 1.

Mean score = $n_5+n_4+n_3+n_2+n_1$ /5 *Equation 1*
n = number of observations

Where n_{1-5} = number of participants that selected 1, 2….5

In this study, to determine the significance of the variables based on their mean item score, a minimum score of 2.61 was used to represent the score median on the Likert scale and show that the variable was significant (Manikandan, 2011; Xiaopeng and Pheng, 2013). See Table 4.3 below. Respondents given their opinion to this questionnaire provides the scale measured to the property of an intermission scale, that allows the retrieved information appropriate for innumerable statistical analyses.

Table 4.3: Cut off point of significant level.

Range	Level of significant
1.0 – 1.80	Low
1.81 -2.60	Low
2.61 – 3.40	High
3.41 – 4.20	High
4.21 – 5.00	High

Source: Manikandan, 2011; Zhang, 2011; Xiaopeng and Pheng, 2013; Odediran, 2016; Adediran, 2018; Adafin et al., 2020.

Thus, the first objective of this study was to find out the project payment systems used by clients in construction project procurements. To achieve this objective, the respondents were asked to indicate the frequency of use of the identified standard conditions of contracts and payment systems, using a five-point Likert scale. In the Likert scale, *1 = never, 2 = seldom, 3 = sometimes, 4 = frequently, and 5 = always.* The second objective of this study was to establish the performance indicators used by construction companies in assessing an organisation's performance. The respondents were asked to identify the performance indicators used in assessing an organisation's performance by indicating its frequency of use on a scale of 1 – 5. In the scale, *1 represents never, 2 represents seldom, 3 represents sometimes, 4 represents frequently, and 5 represents always*. The likert scale is not used for two dimensional questions, but for a five-point likert scale. (The third and fourth objectives are described in section 4.8.2 below). The fifth objective of this study was to identify the prevalent financial management strategies used by construction organisations in construction project procurement, to achieve organisational performance. The respondents were asked to indicate the level of significance of employing financial management strategies to improve organisation performance using a five-point Likert scale. In the Likert scale, *1* represents *very low, 2* denotes *low, 3* signifies *moderate, 4* denotes *high, and 5* represents *very high*.

4.8.2 Multiple regression analysis

Multiple regression is a process used in analyzing the anticipating powers and that extent of the impacts that independent variables have on the dependent constructs (Oyewobi, 2014; Pallant, 2010; Kerlinger and Lee, 2000). Hair et al. (2010) views that multiple regression investigates the correlations amid a contingent construct on a separate side while a set of independent constructs on the other side. Thus, multiple regression serves as that method that provides for new advanced assessment of simple correlations analysis and the connections between sets of constructs (Gelman and Hill, 2007). Most researchers such as Oyewobi (2014), Nandakumar *et al*. (2010), Wiersema and Bowen (2009), Phua (2006), Kale and Arditi (2003), have used multiple regression analysis as their frequent statistical tool. Regression analysis was used by Nandakumar *et al*. (2010) to investigate the moderating influence of environmental and organizational arrangement of company strategy and their performance. Oyewobi (2014) in the field of construction management, used multiple regression analysis to model differentials performance in large construction firms in South Africa. Also, regression method of analysis was used to predict the influence that the restraints imposed by firms' resources and the rigidity an institutional have on construction organizational performance (Phua, 2006).

These researches investigate and model the interrelationships among the contingent construct and the independent construct which is in line with this study. Thus, to determine regression analysis with many constructs is achieved with the use of multiple regression analysis. Consequently, this study used multiple regression analysis to investigate the relationship between project payment systems used by clients and construction company financial performance, the relationship between financial management strategies and construction company financial performance, the relationship between project payment systems used by clients and financial management strategies, and the multiple regression of the relationship between project payment systems, financial management strategies, and construction company financial performance.

4.8.3 Financial performance of construction organisation analysis

The third objective of this study was to investigate the level of performance of construction organisations within a period. The financial performances of these organisations and projects were determined using the following formula, as described by Mahamid (2012), Moel (2014), Patel (2014), and Sliwoski (2018):

$$Gross\ profit\ margin = \frac{revenue - direct\ cost\ of\ work}{revenue} \quad \text{Equation 2}$$

$$Net\ profit\ magin = \frac{gross\ profit - indirect\ costs}{revenue} \quad \text{Equation 3}$$

$$Cash\ flow = income - expenditures \quad \text{Equation 4}$$

$$Liquidity = \frac{current\ assets}{current\ liabilities} \quad \text{Equation 5}$$

$$Working\ capital\ turnover = \frac{revenue}{current\ assets - current\ liabilities} \quad \text{Equation 6}$$

$$Leverage = \frac{total\ liabilities}{current\ assets} \quad \text{Equation 7}$$

The cost and time performance of these projects were assessed using time overrun and underrun, as well as cost overrun and underrun. The percentages of cost overrun, and time overrun are calculated as follows, using the following formula as described by Meeampol and Ogunlan (2006), Aje et al. (2009), Baloyi and Bekker (2011), Abdul Rahman et al. (2012) and Doloi (2013):

$$Percentage\ of\ cost\ overrun = \frac{estimated\ cost - final\ cost}{estimated\ cost} \times 100 \quad \text{Equation 8}$$

$$Percentage\ of\ time\ overrun = \frac{estimated\ duration - final\ duration}{estimated\ duration} \times 100 \quad \text{Equation 9}$$

4.8.4 Structural equation modelling

Structural equation modelling (SEM) uses many estimation approaches, among which are maximum likelihood estimation (MLE), partial least squares estimation (PLS), and weighted least squares estimation (WLS) (Fan et al., 2016; Davcik, 2014; Hazen et al., 2015; Schreiber et al., 2006; Xing et al., 2015). In several structural equation modelling programs, the estimation of maximum likelihood estimation is a default that assumes that no imbalance or flatness occurs in the joint distribution of constructs (for example, multivariate normality); the latent constructs are constant; and there is an extremely small amount of data unaccounted for (for instance, < 5%) (Kline 2010; Hoyle 2011). Thus, the continuity of the data in this research supports the choice of MLE as the method of estimation for the structural equation models.

Structural equation modelling (SEM) is a multivariate statistical method found in systematic research, to progressively test, appraise, and validate multivariate networks of outcomes concomitantly in causal model relationships, and has been used in previous research works that bore similarities to this study and are in the field of Construction Economics and Management (Lowry and Gaskin, 2014; Oyewobi, 2014; Fan et al., 2016; Adediran, 2018). SEM differs from other modelling methods, because it examines the direct and indirect outcomes or the assumed causal associations (Fan et al., 2016). SEM was established and developed for the inference of causal modelling using path analysis, then transformed to include factor analysis, and later extended its functional development of the structural causal model and the incorporation of modelling (Wright 1921; Pearl, 2003; Lee, 2007; Pearl, 2012). Thus, SEM was used in analyzing the complex networks of causal relationships in this research (Shipley 2002; Grace 2006) and was employed in this study to clarify the logical and methodological relationships between correlation and causation. SEM comprises the measurement model and the structural model components. A measurement model measures and connects the latent or composite variables (Hoyle 1995, 2011; Kline 2010), whereas the structural model tests and relates all the hypothetical dependencies, or the endogenous latent variables, to other latent variables, based on path analysis (Bentler and Chou 1987; Hoyle 1995, 2011; Kline 2010).

SEM is not only a technique that lessens the volume of data, but it also requires the researcher to explain the size and significance of indicators and latent constructs. Consequently, the size and significance of the indicators and latent constructs established in this research were described using relevant theories (Tenenhaus et al., 2005; Fan et al., 2016). The description comprised of the analysis of the size of the latent constructs, indicators, and factor loadings. SEM is a combination of both confirmatory factor analysis and path analysis statistical approaches (Wright, 1921; Fan et al., 2016; Shao et al. 2016). Confirmatory factor analysis is used by SEM to apply estimates of latent variables (Hoyle, 2011). Usually, the latent variable is not in the dataset, as it is a resultant common factor of other constructs that indicate the model's outcome (Hoyle 1995; Grace 2006; Kline 2010; Byrne 2013). Path analysis in SEM aims to find the underlying and connecting relationship between constructs, by generating a path diagram (Wright, 1920; 1921). The elementary usage of SEM in path analysis is done by mediation. The causal relationships include both indirect and direct outcomes, and a mediator interferes with the causal relationships (Shao et al., 2016). One of the main benefits of SEM is that it illustrates data and hypotheses in a graphic model (Fan et al., 2016), and this research took advantage of this. According to Schumacker and Lomax (2004) and Tabachnick and Fidell (2012), SEM permits concurrent modelling of associations between several dependent and independent variables. Also, due to the improved flexibility that the scholar has for the interaction between theory and data, SEM provides highly competent systems (for instance, factor analysis, principal components analysis, discriminant analysis) for confirmatory purposes and model affirmation (Chin, 1998).

An advantage of the structural equation model is that it is free from erroneous measurements, such as instrument misinterpretation and erroneous recording, sequential selection sample gathering divergences, sampling and analytical preconceptions, and lone errors (Schumaker and Lomax, 2004; Tabachnick and Fidell, 2012). Also, in dealing with complex phenomena encountered in research, SEM enables innovative modelling, such as multi-level modelling that is multi-faceted in solving relationships (Lowry and Gaskin, 2014). According to Kline (2010), Hoyle (2011), Byrne (2013) SEM uses five logical stages which are: model identification, model specification, parameter estimation, model modification, and model evaluation.

Model identification is used to investigate whether the model is not well identified, identified as unbiased, or has been over-identified. The model specification thus describes the assumed connections between the constructs in a structural equation model built on knowledge. Parameter estimation refers to model coefficients applied to a model that has been newly identified or over-identified. Also, the model evaluation measures model fits with the quantitative indices computed for the total goodness of fit. Modification corrects the model to enhance model fit, and validation enhances the dependability and stability of the model (Fan et al., 2016). Moreover, empirical, and pragmatic databases in construction economics and management research are often multifaceted, non-randomly distributed, are stringently systematized, and have sequential limitations (such as likely autocorrelations), whereas conforming SEMs exist for a respective category of selected data. MLE-SEM was adopted in this research because the research conceptual framework consists of multiple latent variables and constructs with hypothesized relationships. Also, the use of MLE-SEM was informed by its accuracy and continuity of data which it was anticipated would improve the quality of the results of this study. In interpreting the parameter estimates from the SEM, cut values of 1.96 and 0.05 were used to determine the significance of the z and r values, respectively (Schumacker and Lomax, 2004; Tabachnick and Fidell, 2012; Fan et al., 2016).

4.8.5 Confirmatory factor analysis (CFA)

Confirmatory factor analysis (CFA) was used in this study as a test of discriminant validity and reliability of the measurement model. In SEM, CFA is used in evaluating the latent inner qualities, such as viewpoint, validation, and satisfaction (Pearson and Lee 1903; Spearman 1904; Galton, 1888; Mueller and Hancock, 2001). CFA gives the analysis of fit among observed data and an inferred model, conceptualized, and theoretically grounded, that postulates the hypothesized causal relationships among latent constructs and their observed measured constructs. Population-level equality between the data and the model cannot be verified with sample data. Thus, CFA in this study served as a technique used to measure and extract the latent constructs from other variables and allot the predominant divergence with associated constructs (Hoyle, 1995; Kline, 2010; Hoyle, 2011; Byrne, 2013; Fan et al., 2016). According to Byrne (2013), CFA evaluates the latent constructs built on the correlated differences of the dataset (such as interconnection, causal relationship) and decreases the data sizes, regulates the scale of various indexes, and accounts for the relationships integral to the dataset.

Consequently, in hypothesizing a latent construct in this research, the researcher took into consideration the purpose of using a latent variable. Thus, the confirmatory factor analysis was applied when the indexes for each respective latent construct was stated, according to the correlated theories or previous knowledge (Joreskog, 1969; Brown 2006; Harrington, 2009).

One of the useful tools used in reducing measurement is factor analysis. Thus, in SEM measurement models, the factor analysis is applied to measure the latent construct that requires a theoretical basis (Fan et al., 2016). There are two parts of the prior knowledge of a measurement model as proposed by Bentler and Chou (1987), which include the prior knowledge of indexes for a latent construct, and the associations among the latent constructs and their indicators. For instance, if the assessment of a latent construct is carried out in the absence of prior knowledge, CFA then becomes an approach only for data measurement depletion (Fan et al., 2016).

Structural equation modelling aims to acquire estimations of the parameters of a model, such as the changes and covariance of the factor, the outstanding error variance of the detected constructs and the factor loading, and to measure the fit of the model; for instance, to evaluate whether the model provides a good fit with the data (Hox and Bechger, 2018). Factor loading of more than 0.70, Eigenvalue of more than 1.00, and Average Variance Explained value of more than 0.5 were used in this study as the criteria for validity and reliability of the variables, as given by the results of the CFA (Brown, 2006; Harrington, 2009).

4.9 Validity and reliability of the data

The following statistical methods were employed to confirm the validity and reliability of the data collected.

4.9.1 Cronbach's alpha coefficient

Cronbach's alpha (α) is a statistical coefficient used in measuring and establishing the scale and construct reliability (the internal consistency) of a latent variable. It also serves as a criterion for validity (Isik et al., 2009). Cronbach's alpha was used to observe and examine the internal reliability and the degree of co-variation between the items determining each construct (Chew et al., 2008). The purpose of using Cronbach's alpha to examine the internal reliability of a construct is to understand how each experimental indicator denotes its correspondent latent variable (Isik et al., 2009). Thus, a greater Cronbach's alpha coefficient implies greater dependability of the scale used to determine the latent variable (Cronbach and Meehl, 1955). Reliability in a quantitative study implies that the results and findings received from the respondents are dependable and reliable over a period (Creswell and Plano Clark, 2011). Scholars have indicated and recommended that the threshold of Cronbach's alpha is acceptable at a value of 0.70 (Nunnally, 1978) to achieve scale reliability. In addition, Van de Ven and

Ferry (1979) and Nandakumar (2008) recommended that a Cronbach alpha coefficient of 0.6 or 0.55 could be considered as acceptable, firstly in an investigative study, and to measure broad constructs, such as those in the present research. However, to ensure good reliability of the variables, a Cronbach alpha coefficient of 0.90 and above was adopted in this study, following the recommendations of Isik et al. (2009).

4.9.2 Correlation coefficient

The coefficient of determination assesses the general outcome dimensions and the discrepancy described in the endogenous variable for the structural equation model, and it is thus a measure of the model's predictive power (Hussain et al., 2018). Also, to describe the strength and direction of the linear relationship between two constructs, the researcher applied correlation analysis (Adebakin, 2013). Equally important, Henseler, Ringle and Sinkovics (2009) and Hair, Ringle and Sarstedt (2013) posit that a correlation coefficient of 0.60 is significant, a correlation coefficient of 0.75 is considered highly significant and suitable, and a correlation coefficient of 0.26 is considered insignificant. Furthermore, Pallant (2010) states that correlation coefficients (R) are considered and take on values from -1 to +1. A positive symbol signifies that, if there is a positive correlation with the variable gaining an increment, so does the other increase; on the other hand, a negative correlation, means that as one variable gains an increment, the other declines (Pallant, 2010; Adebakin, 2013). The dimensions of the total value when the sign is ignored indicates the strength of the relationship. Consequently, a perfect correlation of 1 or –1 shows that the value of one construct or variable can be decided accurately by expressing the value on the other construct or variable (Adebakin, 2013; Hussain et al., 2018). In this study, a correlation coefficient of 0.60 was adopted as the cut-off point to determine the discriminant validity of the variables in the measurement model, following the recommendations of Henseler et al. (2009) and Hair et al. (2013).

The correlation coefficient is important in SEM because it assesses the causal relationships in the measurement model. The initial stage of SEM is to identify the causal associations and correlations between the constructs (Shipley, 2002; Bollen and Pearl, 2013; Fan et al, 2016). For example, an assertion that one construct has no causal effect on another construct is a robust assumption determined by situating the coefficient to zero; otherwise, if the researcher presumes that dual interference is uncorrelated, then there is another robust assumption that the covariance equals zero (Fan et al., 2016). Therefore, the hypothesized model of this study is composed of causal association and correlation assumptions, both of which were detailed in the research-based design and conceptual model. According to Fan et al. (2016), computing a non-zero variability improves some of the indices of the model fit.

4.9.3 The Kaiser-Meyer-Olkin test (KMO)

The Kaiser-Meyer-Olkin test (KMO) measures the sampling suitability for each construct in the model and the whole model (Gunzler and Morris, 2016; Sarmento and Costa, 2018). Thus, this statistic serves as a means of calculating the percentage of the variance between constructs that might show frequent variance (Lewis, 2017; Sarmento and Costa, 2017). The KMO investigates whether it is possible to articulate the main constructs effectively (Sarmento and Costa, 2018). Sarmento and Costa (2017a) suggested the following classification of the Kaiser-Meyer-Olkin (KMO) test results: from 0 to 0.49 is unacceptable; 0.50 to 0.59 is miserable; 0.60 to 0.69 is mediocre; 0.70 to 0.79 is middling; 0.80 to 0.89 is meritorious; and 0.90 to 1.00 is marvellous. The Kaiser criterion, according to this rule, is that only factors with Eigenvalues higher than 0.6 should be used in SEM.

4.9.4 Bartlett's test

Bartlett's test has been habitually and successfully applied by numerous experts (see Scheffe,1947; Conover et al., 1981; Lim et al., 1996; Vorapongsathorn et al., 2004; Ott and Longnecker, 2010; Sharma, 2013; Li et al., 2017; Odoi, 2019) to test the homogeneity of differences. Wu and Wong (2003) opine that Bartlett's test is extremely accurate and has the capability to calculate p-values with standard statistical software. When data is conventionally distributed, Bartlett's test serves as the best choice for testing homogeneity of variance, since it is not affected by sample size (Vorapongsathorn et al., 2004).

One of the major difficulties in factual research is to decide whether model variances with a dominant tendency reflect true variance in the parent populations (Vorapongsathorn, Taejaroenkul, and Viwatwongkasem, 2004; Manikandan, 2011; Odoi, Samita, Al-Hassan and Twumasi-Ankrah, 2019). The analysis of fluctuation is the most influential method for testing hypotheses about this phenomenon when the assumptions of familiarity, the similarity of variance, and freedom from error are met (Wu and Wong, 2003; Vorapongsathorn et al., 2004). The assumption of diverse fluctuation across examination clusters might cause serious difficulties if violated in a one-way investigation of variance models (Spence, 2000). As a result, Cochran (1947), Bodhisuwan (1991), and Srisunsanee (1998) argue that a deficiency in any proposition or assumption would invalidate the usefulness of the test, leading to wrong and unacceptable inferences.

Bartlett’s test is the best recognized innovative experimental tool designed for homogeneity of variance if the unknown populations are consistent (for instance, see Nevertheless et al., 1981; Lemeshko, Yu and Mirkin, 2004). Also, Bartlett's test has been in popular use and applied to previous research as a modern test of intensity for the acceptable group homogeneity of variance (Bartlett, 1937; O’Brien, 1978; Legendre et al., 2008; Odoi et al., 2019). It is a test of the proposition that all featured standard deviations (or homogeneous fluctuation) are comparable, in contradiction to the idea that the standard deviations are not all equal (Bartlett, 1937). It was designed to test and check for the fairness of changes across clusters, set against the idea that those variances are usually unequal for at least two clusters (Snedecor and Cochran, 1989; Odoi et al., 2019). According to Odoi et al. (2019), the result should not be lower than three and is usually not bigger than five.

Consequently, Bartlett’s test is dependable, unlike other tests of variance, because it tests the invalid theory that the population variances are equivalent (Brown, 1939; Odoi et al., 2019). It has been confirmed that Bartlett’s test is unbiased and consistent (Brown, 1939; Pitman, 1939). The test group distribution of the Bartlett statistic is the chi-square when the k factor samples are from autonomous usual populations (Box, 1953). In the research carried out by Dyer and Keating (1980) tabulating the precise critical values for Bartlett’s test on the ground of equal sample sizes from various normal populaces, their inference showed that the hypothesis of equal variance was not rejected at a significance level of 0.25 or less. It was also confirmed in the research of Wu and Wong (2003) that Bartlett’s test gives very good approximations, even for very small sample sizes and a great variety of populations and has the same result as Dyer and Keating’s method (Dyer and Keating, 1980). Conversely, Bartlett’s test is moderately accommodating due to its sensitivity to departures from the usual (Box, 1953; Box and Anderson, 1955). Thus, it is suggested for use only when led by a trial test that is built on data and does not discard normality (Container, 1953; Wu and Wong, 2003). However, the reliability of the norm makes Bartlett’s test more powerful than numerous other tests (Gartside, 1972). Despite that, Bartlett’s test statistic does not rely upon the sample mean or the totality; rather, it includes an important and complicated sum, namely, the saddle point method (Wu and Wong, 2003).

4.10 Goodness of Fit Index

The following indices were used to confirm the validity of the structural models that were tested using structural equation modelling.

4.10.1 Standardized Root Mean Square Residual Index (SRMR)

SRMR is similar to the Root Mean Square Error of Approximation (RMSEA) and it should be less than 0.08 for a good model fit (Hu and Bentler 1999). The SRMR is an index of the average of standardized residuals among the detected and the hypothesized covariance arrays (Chen, 2007). The SRMR served as a means of estimated model fit in this study. When SRMR = <0.08, then the research model has a good fit (Hu and Bentler,1998) with a smaller SRMR being a better fit.

4.10.2 Comparative Fit Index (CFI)

The comparative fit index signifies the sum of the variance that has been allowed for in a covariance array. It varies from 0.0 to 1.0. The higher the comparative fit index value, the better a model fit becomes (Fan et al., 2016). This is a review method of normed fit index (NFI) that is extremely sensitive to sample proportions (Bentler 1990), which is why NFI is no longer used to evaluate the model fit (Bentler 1990; Hoyle 2011). CFI relates the fits of an intended model to the fit of an individual or null model. CFI ≥ 0.95 (i.e., CFI could be close to at least 0.95 or higher), thus it is not that much influenced by sample size, unlike the $\chi 2$ test (Fan et al., 1999; Tabachnick and Fidell 2001; Fan et al., 2016).

4.10.3 Root Mean Square Error of Approximation Index (RMSEA)

RMSEA refers to the index of poorness of fit, where 0 shows the best fit and bigger values indicate a deficiency of fit (Brown & Cudeck 1993; Hu and Bentler 1999; Chen et al. 2008). It is suitable for identifying model misapplication and not so susceptible to sample dimensions as the $\chi 2$ test. The goodness of fit index with values closer to 0 denotes a good fit. The suitable RMSEA should be less than 0.06 (Browne and Cudeck 1993; Hu and Bentler 1999; Fan et al., 1999). SEM assessment is based on the fit indices for the test of a path coefficient (for instance, standard error). The complete model fit using RMSEA makes the adaptability of model fit indices flexible (Fan et al., 1999; Chen et al., 2008; Kline, 2010; Hoyle, 2011).

4.10.4 Tucker Lewis Index (TLI)

The Tucker Lewis Index (TLI) is a non-normed fit index (NNFI) that incapacitates the shortcomings of the NFI and recommends a fit index independent of sample size (Bentler and Bonett, 1980; Bentler, 1990). A TLI > 0.90 is considered adequate and signifies that the model under discussion enhances the fit by 90%, comparative to the null model (Hu and Bentler 1999).

4.10.5 Chi-square test statistics

For optimum fit with the selected SEM, the $\chi 2$ test would be best and ideal with a p-value > 0.05, where the model fits perfectly (Bentler and Bonett, 1980; Mulaik et al., 1989; Hu and Bentler, 1999). The $\chi 2$ test is very sensitive to the sample size and SEM (Bentler and Bonett, 1980; Joreskog and Sorbom, 1993; Hu and Bentler, 1999; Curran et al., 2002). Thus, the chi-square test measures the general fit and the inconsistency within the sample and appropriate variable matrices, due to its sensitivity to sample size. The chi-square is used to select suitable variables and models at the initial stage in an SEM application, based on indices of fit, to prevent overfitting (Burnham and Anderson, 2002; Sauerbrei et al., 2007; Murtaugh, 2009; Burnham et al., 2011; Lamb, 2014).

4.11 Thematic analysis

Thematic analysis refers to a method that can be used with most qualitative approaches, where words and expressions are identified and their meanings gathered into themes, from which the data emerge and are developed (Boyatzis, 1998; Braun and Clarke, 2008; Namey, Guest, Thairu and Johnson, 2008). Moreover, thematic analysis is widely used in most disciplines, including Construction Economics and Management **(**Braun and Clarke, 2008; Fellow and Liu, 2008; Blaxter et al., 2006; Bowen et al., 2012; Joffe, 2012). One of the numerous benefits of thematic analysis is that it is flexible and used in diverse settings (Bryman, 2012). It gives a good explanation and interpretation when outlining and organizing results from substantial and big data (Pope et al., 2007). However, a drawback of using thematic analysis is that it does not automatically lead to the creation of theory and could result in finding only what is already evident (Coolican, 2014). Despite this drawback, thematic analysis is appropriate for scholars, who need to engage a comparatively low level of interpretation, compared with grounded theory (Vaismoradi et al., 2013), in which an advanced level of interpretive intricacy is needed. According to Braun and Clark (2014) thematic analysis is frequently used by a pragmatist framework simply to define or review important patterns in data, while Vaismoradi et al. (2013) and Braun and Clark (2013) previously stated that a good thematic analysis comprises more than just reporting what is in the data but includes making a significant interpretive story about the data in relation to a research question. Thus, thematic analysis is an autonomous qualitative descriptive method that is primarily expressed as a system for identifying, analyzing, and reporting themes within data (Braun and Clarke, 2006; Vaismoradi et al., 2013). Therefore, thematic analysis was used in qualitative data analysis in the present research.

Thematic analysis, like other qualitative approaches, was found to be justified and beneficial to the present study because it shares the same purpose of systematic examination of narrative materials from life stories by breaking down the text into comparatively small units of content and processing them into descriptive elements (Sparker, 2005). Besides, it has been proposed that thematic analysis is a flexible and useful study instrument that provides a rich and comprehensive, but complicated, interpretation of the data (Braun and Clarke, 2006). Thematic analysis includes the quest for, and recognition of, common threads that spread across the whole interview or set of interviews (DeSantis and Noel Ugarriza, 2000). The thematic analysis thus provides an exclusively qualitative, detailed and refined account of data, and applies low-level description to data sets, and interprets various aspects of the research topic (Loffe and Yardley, 2004; Ten Have, 2004; Braun and Clarke, 2006). Thematic analysis has features that make it appropriate for qualitative research analysis. Therefore, after transcribing the qualitative interviews, this research used a thematic analysis of six phases, an approach proposed by Boyatzis (1998), Richard (1999), Joffe and Yardley (2004), Blaxter et al. (2006), Braun and Clarke (2006), and Bowen et al. (2012), who describe the processes of the qualitative analysis.

These stages followed by the researcher comprised the following steps. Firstly, the researcher read the transcript several times and became familiar with it and noted down initial ideas and impressions (Maguire and Delahunt, 2017). Then**,** the relevant coding features of the data were coded systematically across the whole data set, and the data were collated in their importance relevant to each code, to generate the initial codes (Krippendorff, 2004; Joffe, 2012). After the general initial coding and familiarization with the data, the researcher explored additional themes. The identified themes were then reviewed, thus, examining whether the themes worked in the way they would be coded to the extracts and the complete data set, producing a thematic record (Braun and Clarke, 2006). The researcher then described and named the themes, following the example of Bowen, Edwards, and Cattell (2012). This phase helped the researcher to refine each theme of the ongoing analysis and a completed story was generated from the analysis, which assisted the researcher in generating clear definitions and names for each theme (Braun and Clarke, 2006). The final stage was the data analysis phase. The researcher made a final analysis of the carefully chosen extracts, then embedded and related the analysis to the research question and literature review. This process allowed the researcher to produce a comprehensive report of the analysis. Thematic analysis was used in analyzing the data, using the method explained by Blaxter et al. (2006). Using the feedback from the top management officers helped in providing adequate information to use in the evaluation of the construction organisations' performance.

4.12 Ethical considerations

At the commencement of the research, the researcher cautiously considered the ethical issues within the planned research process and confirmed that the respondents were satisfactorily informed of the detailed area covered by the research. To guide the code of conduct of the research, the researcher sought ethical clearance from the university's ethics committee (see Appendix A for the approval obtained). Akogun (2000), Jimoh (2012) and Shah (2011) describe ethics as norms and values, and the researcher's classification to distinguish between what is acceptable and unacceptable conduct in research. The ethical considerations in this study consisted of protecting the anonymity of the participants, maintaining the confidentiality of any information provided, and reporting the responses in an aggregated format. The respondents were ensured of voluntary participation; this allowed them the choice to discontinue and withdraw their participation at any time without giving any explanation. Thus, the development and implementation of the research were based on ethical considerations such as trustworthiness, honesty, informed consent, privacy, and caution (Leedy and Ormrod, 2005; Resnik, 2007; Shah, 2011). A letter of invitation (see Appendix A) and reminders were sent to each respondent in the process of gaining their consent.

4.13 Summary of the chapter

This chapter explained the philosophical method adopted and the method used to obtain and analyse data in this research. A sequential mixed-method approach was adopted by this study. Data collation and collection were done through the quantitative questionnaire for the quantitative component of the research, and an interview was conducted for the qualitative part of the research, as a backup for the quantitative approach. The chapter introduced SEM as a means of validating the conceptual model postulated in Chapter Three.

CHAPTER FIVE

DATA PRESENTATION AND ANALYSIS

5.1 Introduction

This chapter presents the descriptive information about the respondents' profile, mean item score analysis, thematic analysis, and the multiple regression analysis of the relationship between the constructs (project payment systems, financial management strategies, and construction organisation and project performance).

5.2 Profile of respondents

Table 5.1 indicates the background information of respondents in terms of education, designation, profession, and work experience. Concerning the educational backgrounds of the respondents, Table 5.1 shows that 54.35% (75) of the respondents had a bachelor's degree, 23.91% (33) had a higher diploma, 15.94% (22) had a diploma with Grade 12, and 5.80% (8) had a N4-6/NTC 4-6 Certificate. Further, Table 5.1 indicate that respondents in the Director cadre have 69.63% (94) of the total respondents. This is closely followed by respondents in the Management cadre, which accounted for 27.41% (37) of the response rate. Only 2.96% (4) of the respondents were in the Technical Officer cadre. About the profession of the respondents, construction managers accounted for 51.85% (56), while engineers, quantity surveyors, and architects have 30.55% (33), 15.74% (17), 1.85% (2) of the total respondents, respectively. Regarding the years of experience of respondents, Table 5.1 shows that 40.56% (58) of the respondents had gathered 11-15 years of working experience, while 34.96% (50) had gathered 16-20 years of working experience, and 24.48% (35) had gathered over 21 years of working experience. Although some study participants did not care to respond to the demographic questions, nevertheless, the demographic information elicited suggests that the participants possess reasonable experience in project development and, therefore, have some knowledge of issues relating to project and organisational performance. This enhances the validity of the survey data.

Table 5.1: Profile of respondents

Answer choices	Response (Frequency)	Responses (Percent)
Educational background of the respondents		
Bachelor's Degree or Higher	75	54.35%
Higher Diploma (Technicon/University of Tech)	33	23.91%
Certificate – Diploma with Grade12	22	15.94%
N4-6/NTC 4-6/Certificate – Diploma with lower than Grade 12	8	5.80%
Total	**138**	**100.00%**
Designation of the respondents		
Director Cadre	94	69.63%
Management Cadre	37	27.41%
Technical Officer Cadre	4	2.96%
Total	**135**	**100.00%**
Profession of the respondents		
Construction Manager	56	51.85%
Engineer	33	30.55%
Quantity Surveyor	17	15.74%
Architect	2	1.85%
Total	**108**	**100.00%**
Years of experience of the respondents		
11 - 15 years	58	40.56%
16 - 20 years	50	34.96%
21 years and above	35	24.48%
Total	**143**	**100.00%**

5.3 Mean item score analysis

The following sub-sections present the mean item score analysis on the project payment system used in project procurement, the standard conditions of contracts used on construction projects, the performance indicators used in assessing construction companies, and the financial management strategies used by construction organisations.

5.3.1 The project payment systems used in construction project procurement

The first objective of this study was to find out the project payment systems used by clients in construction project procurements. In order to achieve this objective, the respondents were asked to indicate the frequency of use of the identified standard conditions of contracts and payment systems, using a five-point Likert scale. Mean item score analysis was conducted on the responses. A cut-off point of 3.41 was adopted in determining the level of significance of the Likert item. As shown in Table 5.2, the most significant standard conditions of contracts used on construction projects were those in *GCC (General Conditions of Contract)* with a mean score of 3.49. *The interim payment system* has a mean score of 4.16, which makes it the only significant project payment system used by clients to pay for construction services (see Table 5.3).

Also, the respondents were asked to indicate the payment systems that positively impact organisation performance. As presented in Table 5.4, *the interim payment system* with a mean score of 4.09, and *advance payment system* with a mean score of 3.67, are the significant payment systems that positively impact organisation performance. Table 5.5 shows the mean item score analysis of the payment systems preferred by construction organisations. According to the table, the highly significant payment system preferred by construction organisations is *payment on completion* (mean score = 3.55). *Milestone payment system* (mean score = 3.01) and *stage payment system* (mean score = 2.90) are also preferred by construction organisations, but with a low level of significance.

Table 5.2: Mean item score of responses on the standard conditions of contracts used on construction projects

Variables		Mean score
1	GCC - (General Conditions of Contract)	3.49
2	JBCC - (Joint Building Contract Committee)	3.32
3	NEC - (New Engineering Contract)	2.62
4	FIDIC - (International Federation of Consulting Engineers)	1.90

Table 5.3: Mean item score of responses on the payment systems used by clients to pay for construction services

Variables		Mean score
1	Interim/Progress payment	4.16
2	Stage payment	2.59
3	Payment on completion	2.58
4	Milestone payment	2.29
5	Advance payment	2.00

Table 5.4: Mean item score of responses on the payment systems impacting positively on organisation performance

Variables		Mean score
1	Interim/Progress payment	4.09
2	Advance payment	3.67
3	Stage payment	2.64
4	Milestone payment	2.60
5	Payment on completion	2.09

Table 5.5: Mean item score of responses on the payment systems preferred by construction organisations

Variables		Mean score
1	Payment on completion	3.55
2	Milestone payment	3.01
3	Stage payment	2.90
4	Interim/Progress payment	2.44
5	Advance payment	2.34

5.3.2 The performance indicators used in assessing construction companies

The second objective of this study was to establish the performance indicators used by construction companies in assessing an organisation's performance. The respondents were asked to identify the performance indicators used in assessing an organisation's performance by indicating its frequency of use on a scale of 1 - 5. In the scale, *1* represents *never*, *2* represents *seldom*, *3* represents *sometimes*, *4* represents *frequently*, and *5* represents *always*. The responses from the respondents were analysed using the mean item score. The significance of performance indicators identified by the respondents was determined based on a cut-off point of 3.41. The mean item score of responses on the performance indicators used in assessing an organisation's performance is presented in Table 5.6. This table reveals the significant performance indicators to include: *profitability – ability to improve cash management and income from other profit centres* (mean score = 4.10), *cash flow – ability to have sufficient cash to meet general expenses* (mean score = 4.02), and *market share – total share of a company out of total segment sales* (mean score = 3.77).

Table 5.6: Mean item score of responses on the performance indicators used in assessing an organisation's performance

Variables		Mean score
1	Profitability (ability to improve cash management and income from other profit centres)	4.10
2	Cash flow (ability to have sufficient cash to meet general expenses)	4.02
3	Market share (total share of a company out of total segment sales)	3.77
4	Liquidity (ability to meet short-term obligations)	3.19
5	Leverage (ability to repay debt)	3.14
6	Order value (at least 1.5 of turnover)	2.40

5.3.3 The financial management strategies used by the construction organisations

The fifth objective of this study was to identify the prevalent financial management strategies used by construction organisations in construction project procurement to achieve organisational performance. Towards achieving this objective, the financial management strategies were conceptualized to comprise of cash flow forecasting, budgeting, creditworthiness, risk management, and review and evaluation strategy. Variables were generated from the literature for each of the categories of financial management strategies.

Table 5.7: Mean item score of responses on the financial management strategies used by the construction organisations

Variables		Mean score
Cash flow forecast/projection strategy		
1	Using technology to shorten the cash conversion cycle, e.g., online platforms	4.07
2	Optimization of financial functions (application of techniques to improve cash management)	3.81
3	Cash flow reporting (cash flow track)	3.56
4	Matching funding to cash flow obligations (match various sources of funding to capital flow)	3.04
5	Automation of the cash management process (instead of ledger)	2.35
Budgeting strategy		
1	Use of automated reporting systems, e.g., Network– to secure valuable information	3.82
2	Track record and costs check	3.73
3	Financial analysis of different capital investments	3.67
4	Costs check	3.57
5	Balance of financial demands within available resources	3.36
6	Continuous re-validation of financial plans	3.03
Creditworthiness strategy		
1	Repayment of debts and interest or zero bad debt	3.87
2	Income statements (publication of financial statements)	3.82
3	Trust fund	3.64
4	Statutory reserves (liquid assets held by firms to remain solvent and partial protection against investment loss)	3.15
5	Growth rate of assets (increase in assets)	2.95
6	Improvement of efficiency in capital management	2.91
7	Risk assessment of the company's prospects	2.87
8	Company's profitability	2.17

Table 5.7: Mean item score of responses on the financial management strategies used by the construction organisations (cont'd)

Variables		Mean score
	Risk management strategy	
1	Risk management policies in practices	3.79
2	Diversification of operation	3.69
3	Risk avoidance	3.58
4	Attainment of project objectives	3.44
5	Risk evaluation	3.37
6	Adaptability to the changing market	3.13
	Review and evaluation strategy	
1	Analysis of asset base	3.79
2	Healthy credit rating	3.69
3	Assessing the company profit ratio on cash returns	3.58
4	Access to finance	3.44
5	Review of corporate objectives	3.44
6	Financial strength	3.37
7	Review of potential financial exposure incurred	3.13
8	Assessment of management plan practices	3.13

The respondents were asked to indicate the level of significance of employing financial management strategies to improve organisation performance using a five-point Likert scale. In the Likert scale, 1 represents very low, 2 denotes low, 3 represents moderate, 4 signifies high, and 5 represents very high. Mean item score analysis was carried out on the responses with a cut-off point of 3.41 as the level of significance.

Table 5.7 (above) shows the mean item score of responses regarding the financial management strategies used by the construction organisations. According to Table 5.7, the significant cash flow forecast/projection strategy is *using technology to shorten the cash conversion cycle* (mean score = 4.07), *optimization of financial functions* (mean score = 3.81), and *cash flow reporting* (mean score = 3.56). The significant budgeting strategies are the *use of automated reporting systems* (mean score = 3.82), *track record and costs check* (mean score = 3.73), *financial analysis of different capital investment* (mean score = 3.67), and *costs check* (mean score = 3.57).

Table 5.7 also reveals the following as the significant creditworthiness strategyies: *repayment of debts and interest* (mean score = 3.87), *income statements* (mean score = 3.82), and *trust fund* (mean score = 3.64). *Risk management policies in practices* (mean score = 3.79), *diversification of operation* (mean score =3 .69), *risk avoidance* (mean score = 3.58), and *attainment of project objectives* (mean score = 3.44) were found to be the significant risk management strategies. The significant review and evaluation strategy are *analysis of asset base* (mean score = 3.79), the *healthy credit rating* (mean score = 3.69), *assessing the company profit ratio on cash returns* (mean score = 3.58), *access to finance* (mean score = 3.44), and *review of corporate objectives* (mean score = 3.44).

5.4 Thematic analysis

Table 5.8 shows the years of experience and designation of the five interviewees selected for the qualitative part of this research. Two of the interviewees (interviewees D and E) were managing directors, while three of the interviewees (interviewees A, B, and C) were commercial executives. Regarding years of experience of the interviewees, interviewee A had ten years of experience, interviewee B had 27 years of experience, while interviewees C, D, and E had 29, 25, and 44 years of experience, respectively. This suggests that the interviewees were qualified and had the necessary experience to provide useful and relevant information for this research.

Table 5.8: Profile of interviewees

S/N	Interviewee	Years of experience	Designation
1	Interviewee A	10 years	Commercial executive
2	Interviewee B	27 years	Commercial executive
3	Interviewee C	29 years	Commercial executive
4	Interviewee D	25 years	Managing director
5	Interviewee E	44 years	Managing director

Structured interviews were carried out with three commercial executives (these are executives who are responsible for developing relationships with corporate clients, preparing contracts, monitoring financial accounting and performance, and promoting the business) and two managing directors to validate the reality of construction organisation financial performance indicators used in assessing project and construction organisational performance, as analysed by using the quantitative approach. As presented in Table 5.9, all five interviewees (interviewees A, B, C, D, and E) agreed that profitability and cash flow are indicators of project and organisational financial performance. Three interviewees (interviewees B, C, and E) indicated that liquidity and leverage are financial performance indicators for project and construction organisations. Interviewees B, D, and E mentioned that order value is also a success factor of the financial performance for project and construction organisations. These results imply that cash flow, profitability, liquidity, leverage, and order value are criteria considered by construction companies to measure the overall financial health of construction organisations over a given period.

Table 5.9: Thematic analysis of interviewees' responses on the financial performance indicators used in assessing organisational performance

Major theme	Sub-theme	Interviewee
Indicators for assessing organisational financial performance	• Profitability • Cash flow • Liquidity • Leverage • Turnover	*Interviewees A, B, C, D, and E.* *Interviewees A, B, C, D, and E.* *Interviewees B, C, and E.* *Interviewees B, C, and E.* *Interviewees B, D, and E.*

The interviewees were asked to give their insights on the impacts of project payment systems on the performance of construction organisations. The results of the thematic analysis of the responses of the interviewees are presented in Table 5.10. The interviewees responded to two sets of questions. First, the interviewees responded regarding the project payment systems employed by the clients. Second, they responded regarding the impacts of project payment systems on organisation performance.

Table 5.10: Thematic analysis of interviewees' responses on the impacts of project payment systems on the performance of construction organisations

Major theme	Sub-theme	Interviewee
Project payment systems employed by the clients	• Interim payment • Progress payment	*Interviewees A, B, C, D, and E* *Interviewees A, B, C, D, and E*
Impacts of project payment systems on organisation performance	• Positively impact cash flow if honoured at the right time by the client	*Interviewees A, B, C, D, and E.*

On the project payment systems employed by the clients, all five interviewees (interviewees A, B, C, D, and E) agreed that the interim (progress) payment system was the project payment system employed by the clients in paying for construction works. All five interviewees (interviewees A, B, C, D, and E) agreed that payment systems positively impact cash flow if honoured at the right time by the client. These results suggest that clients prefer the interim (progress) payment system for construction because of the need to ensure a smooth flow of money into and out of their projects. This might be because of the need to improve time and cost performance of projects.

Table 5.11 presents the thematic analysis of the responses of the interviewees on the financial management strategies used in construction organisations. There was consensus amongst the interviewees (interviewees A, B, C, D, and E) that the common financial management strategies used in construction organisations comprised of cash flow forecasting using cash flow reporting, budgeting strategy by balancing financial demands within available resources, financial analysis of capital investment, and automated reporting systems, and risk management strategy. For risk management strategy, the interviewees agreed that they make use of diversification of operation, risk evaluation, and reporting, as well as risk avoidance and elimination.

Table 5.11: Thematic analysis of interviewees' responses on the financial management strategies used in construction organisations

Major theme	Sub-theme	Interviewee
Financial management strategies used by construction organisations	• Cash flow forecasting using cash flow reporting	*Interviewees A, B, C, D, and E.*
	• Budgeting strategy by balancing financial demands within available resources, financial analysis of capital investment, and use of automated reporting systems	*Interviewees A, B, C, D, and E*
	• Creditworthiness strategy using the company's profitability, growth, the publication of financial statements, and risk assessment of the company's prospects	*Interviewees A, B, and E.*
	• Risk management strategy using diversification of operation, risk evaluation, and reportage, and risk avoidance and elimination	*Interviewees A, B, C, D, and E.*
	• Review and evaluation strategy using potential financial exposure incurred and access to finance, financial strength, and assessing the company profit ratio on cash returns	*Interviewees A, B, C, D, and E.*

The interviewees also agreed that a review and evaluation strategy is a useful financial management strategy for construction organisations. The review and evaluation strategies in use consist of potential financial exposure incurred, access to finance, financial strength, and assessing the company profit ratio on cash returns. Only three of the interviewees (interviewees A, B, and E) agreed that creditworthiness is a financial management strategy. According to the interviewees, the creditworthiness strategies used are the company's profitability, growth assessment, the publication of financial statements, and risk assessment of the company's prospects. This result suggests that the six commonly used strategies for managing the financial performance of construction organisations are cash flow, forecasting, budgeting, creditworthiness, financial review and evaluation, and risk management.

Table 5.12 presents the thematic analysis of the responses of the interviewees on the domino effect of the project payment systems on the financial management strategies used by construction companies, and organisation performance. The results of the thematic analysis show that there was consensus amongst all five interviewees, that the project payment systems used determine the availability of cash flow, the strategic response of the companies, and project completion time/cost. The finding confirms the domino effect of the project payment systems on the financial management strategies used by the companies and organisation performance, in that the choice of appropriate payment systems for construction projects will determine the availability of cash flow.

Table 5.12: Thematic analysis of the responses of the interviewees on the domino effect of the project payment systems

Major theme	Sub-theme	Interviewee
Effect of the project payment systems on the financial management strategies	• Determines the availability of cash flow	*Interviewees A, B, C, D, and E.*
Effect of the project payment systems on the organisation performance	• Determines project completion time/cost	*Interviewees A, B, C, D, and E.*

The smooth flow of cash for the construction projects, will, in turn, determine the timely completion of the projects. However, the interviewees did not agree that the project payment system influenced the cost performance of construction projects. This could be that there are other important determinants of the cost performance of construction projects, or it could be that the interviewees were not conscious of the interplay between time and cost performance.

The interviewees agreed that the timely completion of a project is determined by smooth cash flow; and the need for a smooth cash flow determines the choice of project payment system and strategic response.

5.5 Multiple regression analysis

This sub-section presents the multiple regression analysis of the relationship between project payment systems used by clients and construction company financial performance, the relationship between financial management strategies and construction company financial performance, the relationship between project payment systems used by clients and financial management strategies, and the multiple regression of the relationship between project payment systems, financial management strategies, and construction company financial performance.

5.5.1 Multiple regression analysis for Hypothesis 1

The sixth objective of this study was to determine the relationship between project payment systems, financial management strategies, and construction company performance. This objective was achieved by formulating and testing four hypotheses (Hypothesis 1, Hypothesis 2, Hypothesis 3, and Hypothesis 4). Table 5.13 shows the results of the regression analysis of the relationship between project payment systems used by clients and construction company financial performance (Hypothesis 1). As explained in Chapter Three, Hypothesis 1 has five sub-hypotheses (Hypothesis 1a, Hypothesis 1b, Hypothesis 1c, Hypothesis 1d, and Hypothesis 1e).

Based on the findings in Section 5.3.1, only the interim payment system qualified as a significant project payment system used by clients (mean item score >3.41). This indicates that other project payment systems (advance payment, stage payment, milestone payment, and payment on completion) are not reliable and valid (mean item score <3.41). Therefore, these payment systems were not considered for further analysis, and the hypothesised relationships (Hypothesis 1b, Hypothesis 1c, Hypothesis 1d, and Hypothesis 1e) that relate to these payment systems could not be validated using regression analysis.

The results in Table 5.13 reveal a significant regression equation [F (1, 0.09) =0.05; p=0.00(<0.05)] with an R^2 value of 1.00 for Hypothesis 1. The R^2 value of 1.00 shows that 100% of the variation in the financial performance of construction companies can be explained by the project payment systems used by clients. At a p-value of 0.00, there is significant evidence to suggest that the project payment system used by clients has an impact on the financial performance of construction companies.

However, the regression model is not very clear on the nature and strength of the relationship between the project payment system used by clients and the financial performance of construction companies. This indicates partial support for Hypothesis 1 (*there is a positive and significant relationship between project payment systems used by clients and financial performance of construction organisations*) and Hypothesis 1a (*interim payment system has a positive and significant impact on the financial performance of construction organisations*). It also indicates the need to conduct further analysis to fully validate the hypothesis using structural equation modeling.

Table 5.13: Multiple regression analysis for Hypothesis 1

Relationship $X \rightarrow Y$	**C**	**Df**	**S.S**	**F-value**	**P-value**	**S.E**	R^2	**Related hypothesis**	**Interpretation**
$X \rightarrow Y$	-3.01	1	0.09	0.05	0.00	0.00	1.00	*H1 and H1a*	Partially supported
C= coefficient; Df =degree of freedom S.S= sum of squares; S.E= standard error; R^2***= R squared***									

5.5.2 Multiple regression analysis for hypothesis 2.

Multiple regression analysis was conducted to test Hypothesis 2, which states that there is a positive and significant relationship between financial management strategies (*cash flow forecasting, budgeting, creditworthiness, risk management, and review and evaluation*) and construction company financial performance (*profitability, cash flow, liquidity, leverage and market share*). The results of the multiple regression analysis are shown in Table 5.14. The results in Table 5.14 show that Hypothesis 2 [F (5, 2.11) =0.09; p=0.00(<0.05)] and its sub-hypotheses (Hypothesis 2a, Hypothesis 2b, Hypothesis 2c, Hypothesis 2d, and Hypothesis 2e) are statistically significant.

The statistically significant sub-hypotheses are *H2a: Cash flow strategy has a positive and significant impact on construction company financial performance (p=0.00); H2b: Budgeting strategy has a positive and significant impact on construction company financial performance (p=0.00); H2c: Creditworthiness strategy has a positive and significant impact on construction company financial performance (p=0.00); H2d: Risk management strategy has a positive and significant impact on construction company financial performance (p=0.00);* and *H2e: Review* *and evaluation strategy has a positive and significant impact on construction company financial performance (p=0.00).*

Also, Table 5.14 shows that the regression model has a R^2 value of 1.00. This suggests that 100% of the variation in the financial performance of construction companies can be explained by the financial management strategies in use by the construction companies. The results of the multiple regression analysis partially support Hypothesis 2 and its sub-hypotheses because the nature and strength of the relationship between financial management strategies and construction company financial performance could not be fully established. Hence, the need for a more robust analysis.

Table 5.14: Multiple regression analysis for Hypothesis 2

Relationships *Y→M*		**C**	**Df**	**S.S**	**F-value**	**P-value**	**S.E**	**R^2**	**Related hypothesis**	**Interpretation**
Y	*M1*	-1.47	5	2.11	0.09	0.00	0.00	1.00	*H2a*	Partially supported
	M2	3.16	5	2.11	0.09	0.00	0.00	1.00	*H2b*	Partially supported
	M3	1.85	5	2.11	0.09	0.00	0.00	1.00	*H2c*	Partially supported
	M4	0.45	5	2.11	0.09	0.00	0.00	1.00	*H2d*	Partially supported
	M5	0.40	5	2.11	0.09	0.00	0.00	1.00	*H2e*	Partially supported
Y→M		-12.43	5	2.11	0.09	0.00	2.14	0.99	*H2*	Partially supported
C= coefficient; Df =degree of freedom S.S= sum of squares; S.E= standard error; R^2= R squared										

5.5.3 Multiple regression analysis for Hypothesis 3

Table 5.15 shows the results of the multiple regression analysis of the relationship between project payment systems used by clients and financial management strategies (Hypothesis 3). The results show a significant regression equation [F (5, 0.05) =1.26; p=0.00(<0.05)] for the main hypothesis and sub-hypothesis H3a. The other sub-hypotheses (H3b, H3c, H3d, and H3e) could not be tested because of the insignificant use of the advance payment, stage payment, milestone payment, and payment on completion systems by the clients (see Section 5.3.1).

The R^2 value of 1.00 shows that 100% of the variation in the financial management strategies employed by construction companies can be explained by the project payment systems used by clients. At p-value of 0.00, there is significant evidence to suggest that H3 (*there is a positive and significant relationship between project payment systems used by clients and financial management strategies used by construction companies*) and H3a *(interim payment system has a positive and significant impact on financial management strategies used by construction companies*) are valid. However, the regression model did not provide an adequate explanation of the nature and strength of the relationship between the payment system used by clients and the financial management strategies used by clients. This indicates a partial support for the hypothesis and made it necessary to conduct structural equation modelling for full validation of the hypothesis.

Table 5.15: Multiple regression analysis for Hypothesis 3

Relationships *X→M*	**C**	**Df**	**S.S**	**F-value**	**P-value**	**S.E**	**R^2**	**Related hypothesis**	**Interpretation**
X→M	4.16	5	0.05	1.26	0.00	0.00	1.00	*H3 and H3a*	Partially supported
C= coefficient; Df =degree of freedom S.S= sum of squares; S.E= standard error; R^2= R squared									

5.5.4 Multiple regression analysis for Hypothesis 4

Table 5.16 shows the results of the multiple regression analysis of the relationship between project payment systems, financial management strategies, and construction company financial performance (Hypothesis 4). As shown in Table 5.16, the regression model indicates that financial management strategies can explain 78% (R^2= 0.78) of the interaction between the project payment systems and the financial performance of construction companies. The regression equation for the hypothesis is statistically significant [F (6, 0.97) =1.22; p=0.00(<0.05)]. Although this result suggests statistical significance, it did not provide adequate information that would enable a full determination of the nature and strength of the relationships contained in the hypothesis. Hence, the support for the hypothesis is considered partial and a full validation was sought with structural equation modelling.

Table 5.16: Multiple regression analysis for Hypothesis 4

Relationships *X→Y+M*	**C**	**Df**	**S.S**	**F-value**	**P-value**	**S.E**	**R^2**	**Related hypothesis**	**Interpretation**
X→Y+M	4.16	6	0.97	1.22	0.00	0.00	0.78	*H4*	Partially supported
C= coefficient; Df =degree of freedom; S.S= sum of squares; S. E= standard error; R^2= R squared									

5.6 Performance analysis

This sub-section presents the descriptive information of the details of the respondents' projects, the number of construction projects handled by the respondents' companies in the previous five years (2013-2017), analysis of the level of performance of the construction companies within the five years, analysis of the organisational performance of the construction organisations, analysis of the cost and time performance of projects executed by the construction companies using different payment systems, and the characteristics of projects executed by construction companies using different payment systems.

5.6.1 Analysis of the level of performance of the construction companies within a specific period (2013-2017)

The profile of the organisations where the respondents were employed is analysed and presented in Table 5.17. Profiles, such as the grade of the organisation on the cidb register of contractors, age of the organisation, size of the organisation, location, and the number of projects handled by the company in the previous five years were analysed. It was found that all the companies specialised in either general building construction or civil engineering construction. Of companies that specialised in general building construction, 40.43% (19) were listed on the cidb register on Grade 7, 38.30% (18) on Grade 8, and 21.28% (10) on Grade 9. Of companies that specialised in civil engineering construction, 54.69% (35) were listed on Grade 7, 31.25% (20) on Grade 8, and 14.06% (9) on Grade 9.

With reference to the age of these companies, 6.67% (9) had been in operation for less than 5 years, 11.85% (16) for 6-10 years, 13.33% (18) for 11-15 years, 42.96% (58) for 16-20 years, and 25.19% (34) for 21 years and above. Companies with fewer than 20 employees accounted for 43.61% (58) of the respondents, while those with 20-49 and 50-59 employees accounted for 20.03% (27) and 14.29% (19), respectively. Only 9.02% (12) of the companies had 100-199 employees, and 12.78% (17) had more than 200 employees. Pertaining to the province where the head office is located, most of the companies were located in Gauteng (46.21%: 61), Kwazulu-Natal (21.97%: 29), Western Cape (20.45%: 27), Eastern Cape (12.88%:17), and Limpopo (12.88%: 17). Only 43.33% (52) of these companies had handled projects worth R50M, 32.50% (39) projects worth R50M-R200M, and 24.17% (29) projects worth more than R200M. This result suggests that the companies where the respondents were employed, were viable and capable of providing the respondents with appropriate experience.

Table 5.17: Profile of companies

Answer Choices	Responses (Frequency)	Responses Percentage
Class of work and grade of your company on the cidb Register of Contractors		
General Building Construction (GB)		
Grade 7	19	40.43%

Grade 8	18	38.30%
Grade 9	10	21.28%
Total	**47**	**100.00%**
Civil Engineering Construction (CE)		
Grade 7	35	54.69%
Grade 8	20	31.25%
Grade 9	9	14.06%
Total	**64**	**100.00%**
Contracting Experience of Company		
Less than 5 years	9	6.67%
6 –10 years	16	11.85%
11 – 15 years	18	13.33%
16 – 20 years	58	42.96%
21 years and above	34	25.19%
Total	**135**	**100.00%**
Company Size Defined by the Number of Employees		
Fewer than 20	58	43.61%
20 – 49	27	20.30%
50 – 99	19	14.29%
100 – 199	12	9.02%
More than 200	17	12.78%
Total	**133**	**100.00%**

Province where the Head Office is Located		
Gauteng	61	31.61%
Kwazulu-Natal	29	15.03%
Western Cape	27	13.99%
Eastern Cape	17	8.80%
Limpopo	17	8.80%
Mpumalanga	13	6.74%
North-west	13	6.74%
Northern Cape	9	4.66%
Free State	7	3.63%
Total	**193**	**100.00%**
Number of Construction Projects Handled by the Company in the Last Five Years		
<R50M	52	43.33%
R50M – R200M	39	32.50%
>R200M	29	24.17%
Total	**120**	**100.00%**

The third objective of this study was to investigate the level of performance of construction organisations within a period. The performance of the selected construction organisations was measured using 13 criteria, namely: Total Revenue (TR), Direct Cost of Work (DCW), Total Indirect Costs (TC), Total Income (TI), Total Expenditure (TE), Total Current Assets (TA), Total Liabilities (TL), Gross Profit Margin (GM), Net Profit Margin (NM), Cash Flow (CF), Liquidity (LQ), Leverage (LV), and Working Capital Turnover (WT). Organisations with more than 99 employees were large organisations, those with employees ranging from 50 to 99 were classified as medium organisations, while those with fewer than 49 employees were categorized as small organisations.

The study sought to know the financial performance of the construction organisations in line with the conceptual framework of this research. The financial performance of the construction organisations was distributed according to their class of work (CW), cidb grade (GD), and firm size (FS) (see Table 5.18 below). This categorization enabled in-depth analysis and understanding of the financial performance of the construction organisations. The data presented in Table 5.18 were collected from the respondents by asking them to provide information, such as revenue, direct cost, indirect cost, income, expenditure, current assets, current liability, total liability, order value, book value, and the number of years booked for five years (2017, 2016, 2015, 2014, and 2013). The respondents also provided other information, such as construction company revenue, total revenue, and the period.

Table 5.18 reveals that the construction organisations fell into three categories, namely general building construction (GB), civil engineering construction (CE), and general building and civil engineering construction (GB and CE) and that the construction organisations were listed in three grades (grades 7, 8, and 9) on the cidb Register of Contractors and divided into three firm sizes (small, medium, and large) for a better explanation. A total of 32 construction organisations volunteered adequate information so that their financial performance could be determined.

Among the construction organisations, only one had total revenue of R2.6 billion between 2013 and 2017. This organisation was a large firm, listed in grade 9 of the cidb Register of Contractors (ROC), and specialised in civil engineering construction. Following this organisation, was a large firm listed in grade 9 of the cidb ROC with specialisation in general building construction. This organisation had total revenue of R1.4 billion between 2013 and 2017. Using a cut-off value of R100 million total revenue for the construction organisations, only nine other construction organisations met this criterion, alongside the two previously identified organisations with total revenue in the range of billions of rands. Among these nine construction organisations, four specialised in general building and civil engineering construction (R213 million, medium firm listed in grade 8 of cidb ROC; R188 million, large firm, and grade 9; R423.9 million, large firm and grade 9; and R102.5 million, large firm and grade 9 of cidb ROC). Three of the construction organisations specialised in general building construction (R275 million, small firm and grade 7; R550 million, medium firm and grade 7; and R153 million, large firm and grade 9). Only one of the construction organisations specialised in civil engineering construction and had total revenue of R104 million and was a large firm and listed in grade 8 of cidb ROC.

Six of the construction organisations had a total direct cost of work exceeding R100 million. Three of these organisations specialised in general building construction with a DCW of R189 million, a small firm listed in grade 7 of cidb ROC, R1.2 billion; a large firm listed in grade 9 of cidb ROC; and R153 million, a large firm listed in grade 9 of cidb ROC. Two (2) of these organisations specialised in general building and civil engineering works, and one (1) had a DCW of R172 million, a medium-firm listed in grade 8 of cidb ROC; the other, R311.6 million, a large firm listed in grade 9 of cidb ROC. One of the organisations specialised in civil engineering construction and had a DCW of R100 million, a large firm listed in grade 9 of cidb ROC.

For total indirect costs, only two construction organisations that specialised in general building construction had a total indirect cost in excess of R100 million: R100 million, a large firm listed in grade 9, and R0.2 billion, a large firm listed in grade 9 of cidb ROC.

Table 5.18 shows that seven construction organisations had total income exceeding R100 million. Five of these organisations specialised in general building and civil engineering construction (R1.2 billion, a large firm listed in grade 9 of cidb ROC; R859.1 million, a large firm listed in grade 7; R107 million, a large firm listed in grade 8; R1.4 billion, a medium firm listed in grade 7; and R110 million. a large firm listed in grade 8 of cidb ROC). None of the organisations specialised only in general building construction, while the remaining two organisations specialised in civil engineering construction (R120 million, a large firm listed in grade 8, and R300 million, a small firm and grade 7 of cidb ROC).

Concerning the total expenditure of the construction organisations, Table 5.19 shows that five construction organisations expended above R100 million in the previous five years. Three of these organisations specialised in general building and civil engineering construction (R137 million, a medium firm listed in grade 8 of cidb ROC; R456.1 million, a large firm listed in grade 7; R1.3 billion, a medium firm listed in grade 7 of cidb ROC). The other two specialised in civil engineering construction (R275 million, a small firm listed in Grade 7 of cidb ROC; and R150 million, a large firm listed in Grade 8 of cidb ROC).

As regards the total current assets and total liabilities of the construction organisations, Table 5.19 reveals that three construction organisations had acquired assets more than R100 million, while only one organisation had a total liability of over R100 million. Two of the three construction organisations with total current assets in excess of R100 million specialised in general building and civil engineering construction (R2.7 billion, a large firm and grade 9, and R1.4 billion, a large firm listed in grade 9 of cidb ROC), and the other, in civil engineering construction (R8.6 billion, a large firm listed in grade 9 of cidb ROC). One organisation with specialisation in civil engineering construction (R7.3 billion, a large firm and grade 9) had a total liability over R100 million.

Table 5.18: Analysis of the organisational performance of construction organisations

CW	GD	FS	TR	TD	TC	TI	TE	TA	TL	GM	NM	CF	LQ	LV	WT
CE	7	Large	R124.8M	13.2M	0.1M	12.2M	19.3M	22.7M	26M	0.89	0.01	-7.1	0.87	1.15	-36.71
GB & CE	8	Medium	R213M	172M	35M	15M	137M	8M	2.1M	0.19	-0.16	-122	3.80	0.26	1.65
GB & CE	9	Large	R188M	11M	48.2M	R1.2B	90M	1.2M	1.6 M	0.94	-0.25	1110	0.75	1.33	2.11
CE	8	Medium	R60M	40M	12M	6.7M	3.2M	11.5M	4.2M	0.33	-0.19	3.5	2.73	0.36	-7.22
GB & CE	9	Large	R12M	40M	50M	58.6M	56.4M	10M	15M	-2.33	-4.36	2.2	0.66	1.5	0.25
GB	9	Large	R27M	17M	100M	8M	8M	1.3M	1.5M	0.37	-3.68	0	0.86	1.15	4.02
GB	8	Large	R38.2M	36.1M	0.5M	28.7M	28.2M	13.3M	25.3M	0.05	-0.01	0.5	0.52	1.90	2.56
GB	7	Medium	R33M	25M	5M	4.5M	2.7M	32.9M	29.6M	0.24	-0.14	1.8	1.11	0.89	-1.09
CE	7	Small	R36.5M	4.3M	0	12.5M	6.3M	19M	8M	0.88	0.024	6.2	2.37	0.42	-2.87
CE	7	Small	R6.2M	4.3M	0.3M	300M	275M	6.7M	4.9M	0.30	0.01	25	1.36	0.73	0.023
CE	8	Medium	R57.7M	48.7M	8.9M	22.2M	24.9M	83.3M	64.6M	0.15	-0.15	-2.7	1.28	0.77	-0.98
GB & CE	7	Large	R20M	12M	0.3M	859.1M	456.1M	11.5M	4M	0.40	0.01	403	2.87	0.34	0.04
CE	8	Large	R22M	4M	6M	56.5M	48.9M	8.1M	6.4M	0.81	-0.23	7.6	1.26	0.79	0.53
GB & CE	8	Large	R9.1M	2.7M	2.1M	107M	97M	83.1M	72.1M	0.70	-0.15	10	1.15	0.87	0.65
GB & CE	8	Large	R14M	7M	2M	90.6M	29.5M	29.1M	19M	0.50	-0.11	61.1	1.53	0.65	35
GB	7	Small	R275M	189M	40M	98.9M	78.8M	10M	18M	0.31	-0.14	20.1	0.55	1.8	3.99
CE	9	Large	R2.6B	100M	26M	83.5M	80M	R8.6B	R7.3B	0.96	-0.01	3.5	1.17	0.84	-0.30
GB & CE	7	Medium	R11M	7M	3M	R1.4B	R1.3B	40M	23M	0.36	-0.23	100	1.73	0.57	0.01

GB = general building construction; CE = civil engineering construction; CW = class of work; GD = cidb grade; FS = firm size; TR = total revenue; TD = direct cost of work; TC = total indirect costs; TI = total income; TE = total expenditure; TA = total current assets; TL = total liabilities; GM = gross profit margin; NM = net profit margin; CF = cash flow; LQ = liquidity; LV = leverage; WT = working capital turnover; M = million (Rand); B = billion (Rand).

Table 5.18: Analysis of the organisational performance of construction organisations (cont'd)

CW	GD	FS	TR	TD	TC	TI	TE	TA	TL	GM	NM	CF	LQ	LV	WT
GB & CE	7	Small	56.5M	30.5M	18.4M	44.1M	43.5M	45M	53M	0.46	-0.31	0.6	0.84	1.17	-37.66
GB	7	Medium	67M	48M	11M	65.3M	40.9M	12M	15M	0.28	-0.15	24.4	0.8	1.25	2.31
CE	8	Large	104M	86M	10.5M	120M	150M	17M	11M	0.17	-0.09	-30	1.54	0.64	0.78
GB & CE	8	Large	85M	52M	28M	110.1M	84.5M	75M	24M	0.38	-0.32	25.6	3.125	0.32	8.94
GB	9	Large	R1.4B	R1.2B	R0.2B	95M	80.9M	80M	71M	0.14	-0.14	14.1	1.13	0.89	1555.55
GB	7	Medium	550M	6M	4M	20M	11M	28.5M	17.6M	0.98	-0.01	9	1.61	0.61	-31.42
GB & CE	9	Large	423.9M	311.6M	39.8M	30.2M	9.4M	R2.7B	24.4M	0.26	-0.09	20.8	110.65	0.01	-0.15
GB	9	Large	76M	65.4M	0.8M	22M	20.3M	86.6M	75.3M	0.13	-0.01	1.7	1.15	0.86	-1.14
GB	9	Large	153M	153M	46M	14.4M	10.4M	32.7M	18.4M	0.00	-0.30	4	1.77	0.56	-6.86
GB & CE	7	Medium	49.4M	37.4M	21M	26M	24M	50.6M	26.4M	0.24	-0.42	2	1.91	0.52	-1.85
CE	7	Medium	99M	78.5M	48M	37.4M	22.9M	25.7M	25M	0.20	-0.48	14.5	1.02	0.97	-35.35
CE	8	Large	29.3M	11.4M	4.9M	29.1M	25.2M	25M	28M	0.61	-0.14	3.9	0.89	1.12	146.50
GB & CE	7	Medium	94.6M	78.8M	4.3M	46.3M	27.5M	2.5M	7.1M	0.16	-0.04	18.8	0.35	2.84	3.78
GB & CE	9	Large	102.5M	85.8M	14.8M	85.5M	67.4M	R1.4B	71M	0.16	-0.14	18.1	19.71	0.05	-0.07

GB = general building construction; CE = civil engineering construction; CW = class of work; GD = cidb grade; FS = firm size; TR = total revenue; TD = direct cost of work; TC = total indirect costs; TI = total income; TE = total expenditure; TA = total current assets; TL = total liabilities; GM = gross profit margin; NM = net profit margin; CF = cash flow; LQ = liquidity; LV = leverage; WT = working capital turnover; M = million (Rand); B = billion (Rand).

Table 5.18 reveals that all except one of the 32 construction organisations studied had a positive gross profit margin; that organisation had a negative gross profit margin of -2.33. This organisation was a large firm, listed in grade 9 of cidb ROC, with specialisation in general building and civil engineering construction.

Regarding the net profit margin, only four out of the 32 construction organisations had a positive net profit margin. Three of these organisations specialised in civil engineering construction: one with a net profit margin of 0.01, a large firm listed in grade 9 of cidb ROC; 0.024, a small firm listed in grade 7 of cidb ROC; and 0.01, a small firm listed in grade 7 of cidb ROC), while one organisation, which specialised in general building and civil engineering construction, had a net profit margin of 0.01, a large firm listed in grade 9 of cidb ROC).

On the subject of cash flow, liquidity, and leverage, only four construction organisations had negative cash flow, none had negative liquidity, and none had negative leverage. Among the four construction organisations with negative cash flow, three specialised in civil engineering construction with a negative cash flow of -7.1, a large firm listed in grade 9 of cidb ROC; -2.7, a medium firm listed in grade 8, and -30, a large firm listed in Grade 9 of cidb ROC, while one company specialised in general building and civil engineering construction and had a negative cash flow of -122, a medium-firm listed in Grade 8 of cidb ROC.

Pertaining to the working capital turnover of the construction organisations, 14 of the organisations had negative working capital turnover. Organisations with specialisation in civil engineering construction account for six out of 14, general building construction organisations account for four out of 14, while four specialised in general building and civil engineering construction. Only two of these organisations were small firms, while medium and large firms accounted for six each out of 14.

These results suggest that grade 9 large construction organisations and who specialise in general building construction, and both general building and civil engineering construction, generate higher income from the execution of construction projects. These companies also incur higher costs for personnel, administration, security, and production, such as costs of labour, material, and plant. Furthermore, the results imply that grade 8 large firms, which specialise in general building and civil engineering construction, receive higher financial rewards from their work and investment. They also expend huge amounts of money on their projects. The results also suggest that Grade 9 large construction organisations with specialisation in general building and civil engineering construction have more cash and other assets that can be converted to cash. In addition, construction organisations with specialisation in civil engineering construction have more leverage.

All the construction organisations, irrespective of their area of specialisation, cidb grade, and firm size, were found to have positive gross profit margins. This suggests that all the construction organisations are financially stable, despite their liabilities and direct cost of work. Small construction organisations with specialiszation in civil engineering construction were found to have a positive net profit margin. This suggests that civil engineering construction is more profitable than general building construction because construction organisations specialising in civil engineering construction can extract more profit from their total revenue, compared to those specialising in general building construction. Large construction organisations specialising in civil engineering construction were found to have a higher negative cash flow. This implies that the work of civil engineering affects the liquidity of construction organisations more than other types of projects, because it requires the transfer of huge amounts of money into and out of the construction organisations. These civil engineering organisations were also found to have higher working capital. This means that civil engineering construction requires more money than general building construction, in the day-to-day operations of construction projects and organisations.

5.6.2 Analysis of the cost and time performance of projects using different payment systems

The fourth objective of this study was to establish the cost and time performances of projects executed by construction companies using different payment systems. In order to achieve this objective, the characteristics of projects executed by construction companies using different payment systems from 2013 – 2017 were analysed and presented in Table 5.19 These include the client type, project procurement method used, conditions of the contract, and payment systems used for each project. Table 5.19 shows that, for 47.62% (70) of the projects studied and completed between the years 2013 and 2017, the clients were local government entities, 29.93% (44) were private clients, and 22.45% (33) were national government departments.

More than half of these projects 66.43% (93) were executed under the traditional procurement method, while 17.14% (24) and 16.43% (23) were executed under the management contracting procurement method and integrated (design and build) procurement method, respectively. General Conditions of the contract were found to be the most common (41.46%, 68) conditions of contract used for the projects executed by the construction organisations, followed by Joint

Building Contract Committee (33.54%, 55), New Engineering Contract (15.85%, 26), and International Federation of Consulting Engineers (FIDIC) (9.15%, 15). Although, information gathered on the procurement methods and conditions of contract were only used to characterise the projects executed by the construction companies. They were not part of the core variables for this research. The total number of projects are at variance because of missing information (some of the respondents did not answer the questionnaire fully). The greatest number (63.41%, 104) of the projects identified by the participants were executed using the interim payment system, followed by payment on completion (12.20%, 20), milestone payment system (9.76%, 16), stage payment system (7.93%, 13), and advance payment system (6.70%, 11). This result suggests that the data gathered will provide relevant and practical information for this research.

Table 5.19: Characteristics of projects executed by construction companies using different payment systems

Answer Choices	Response (Frequency)	Responses (%)
Clients for the project		
Local Government	70	47.62%
Private	44	29.93%
National Government	33	22.45%
Total	**147**	**100.00%**
Procurement method used for the project		
Traditional	93	66.43%
Management contracting	24	17.14%
Design and Build/Integrated	23	16.43%
Total	**140**	**100.00%**
Conditions of contract for the project		
GCC - (General Conditions of Contract)	68	41.46%
JBCC - (Joint Building Contract Committee)	55	33.54%
NEC - (New Engineering Contract)	26	15.85%
FIDIC - (International Federation of Consulting Engineers)	15	9.15%
Total	**164**	**100.00%**
Payment system for the project		
Interim/Progress payment	104	63.41%
Payment on completion	20	12.20%
Milestone payment	16	9.76%
Stage payment	13	7.93%
Advance payment	11	6.70%
Total	**164**	**100.00%**

Table 5.20 (see pages 124-130) presents findings on the cost and time performance of projects executed by the participating construction companies, over a 5-year period (2013-2017), using different payment systems.

Information, such as project type, estimated cost, final cost, construction start date, estimated duration, final duration, and payment system used, were elicited from the respondents. A total of 88 projects were analysed for cost and time performance. Seventeen (17) of these projects are of heavy engineering construction works, 20 are commercial buildings, four are industrial buildings, 12 are residential buildings, 13 are highway projects, two are specialised industrial projects, six are building maintenance projects, and 14 are institutional buildings. As highlighted in Table 5.20, the highway maintenance project had the highest percentage of cost underrun (20% cost underrun). The interim project payment system was used on the project. Altogether, 37 projects were found to have cost underrun. Twenty-six (26) of these projects were executed using the interim project payment system. Five of these projects were heavy construction projects, eight were commercial projects, and four, highway projects.

5.6.2.1 Project cost overrun and underrun

The commercial building project was the project with the highest percentage of cost overrun (140% cost overrun). Payment on completion was employed in paying for the project work. In total, 51 projects were found to have a cost overrun. Thirty-five (35) of these project activities were paid for using an interim payment system, while six projects were paid for using the system of payment on completion.

The project with the lowest percentage of cost overrun (1.25%) was a residential building project, paid for using payment on completion, while 21 projects were found to have zero percent cost overrun. Most of these project works (14 in all) were paid for using the interim payment system. The projects with the highest percentage (33.33%) of time underrun were a heavy engineering construction project, paid for using the interim payment system, and a commercial building project (33.33%, paid for using payment on completion). Thirty-three (33) projects had cost underrun, of which 21 were paid for using the interim payment system, five were paid for using payment on completion, six were heavy engineering construction projects, and five were residential building projects.

5.6.2.2 Project time overrun and underrun

Table 5.20 also revealed that heavy construction projects executed with the interim payment system had the highest percentage of time overrun (300%). Forty-five (45) projects in total were found to have had time overrun. Thirty-seven (37) of these projects were paid for by using the interim payment system. Heavy construction engineering projects (ten) were the predominant projects with time overrun. The project with the lowest percentage of time overrun (0.08%) was highway construction paid for by means of the interim payment system. These results imply that it is difficult to determine the impacts of payment systems on cost and time performance of projects, because clients prefer the interim payment system. Heavy engineering construction projects show compatibility with the use of the interim payment system. This further confirms the consideration of the project type in the choice of payment system and the need for further interrogation of the data collected using inferential statistics.

A chi-square test of independence was performed to examine if there are significant differences in the cost and time performance of projects because of different payment systems used (Hypothesis 6a and Hypothesis 6b). The results in Table 5.20 show that the differences in the cost and time performance of projects as a result of the usage of different payment systems were not significant [x^2 (DF=2, N=88) =5.893, $p>0.05$]. The chi-square statistic is 5.893. The p-value is 0.921. The result is not significant at $p<0.05$. These results indicate that Hypothesis 6a and Hypothesis 6b are invalid. The validation test revealed that payment systems used for a project cannot be used to forecast the cost and time performance of projects, and that there are no significant differences in the cost and time performance of projects using different payment systems. Hence, the following hypotheses were rejected:

H6a: *there are significant differences in the cost performance of projects as a result of different payment systems used,* and

H6b: *there are significant differences in the time performance of projects as a result of different payment systems used.*

Table 5.20: Analysis of the cost and time performance of projects executed by construction companies using different payment systems

PROJECT TYPE	ESTIMA-TED COST	FINAL COST	CONSTRUCTION START DATE	ESTIMATED DURATION	FINAL DURATION	PAYMENT SYSTEM USED	% COST OVERRUN/ UNDERRUN	% TIME OVERRUN/ UNDERRUN
Heavy Construction	R15M	R14.4M	2017	6 months	8 months	Interim	4.0	- 33.33
Commercial Building	R90M	R81M	2013	24 months	36 months	Interim	10.0	- 50.0
Industrial building	R88M	R89.5M	Sep 2016	30 months	31 months	Milestone	-1.70	-3.33
Heavy construction	R100M	R111M	May 2016	15 months	16 months	Interim	-11.0	-6.66
Heavy Construction	R160M	R238M	September 2016	18 months	30 months	Interim	-48.75	-66.66
Residential building	R250M	R280M	2016	18 months	22 months	Interim	-12.00	-22.22
Highway	R30M	R31M	25/04/2016	20 months	24 months	Interim	-3.33	-20.0
Heavy construction	R100M	R100M	2014	60 months	60 months	Stage	0	0
Industrial building	R36M	R49M	2016	36 months	36 months	Interim	-36.11	0
Heavy construction	R10M	R10.5M	2014	6 months	6 months	Stage	-5.0	0
Specialised industrial Projects	R23M	R21M	April 2014	12 months	13 months	Completion	8.69	- 8.33
Highway	R50M	R44M	October 2016	20 months	22 months	Milestone	12.0	- 10.0
Heavy construction	R30M	R40M	May 2018	4 months	5 months	Interim	-33.33	-25.0
Specialised Industrial project	R800M	R1.2B	Feb 2013	24 months	27 months	Interim	-50.0	-12.50

Table 5.20: Analysis of the cost and time performance of projects executed by construction companies using different payment systems (cont'd)

PROJECT TYPE	ESTIMA-TED COST	FINAL COST	CONSTRUCTION START DATE	ESTIMATED DURATION	FINAL DURATION	PAYMENT SYSTEM USED	% COST OVERRUN/ UNDERRUN	% TIME OVERRUN/ UNDERRUN
Building Maintenance	R69M	R73M	August 2016	18 months	24 months	Interim	-5.79	-33.33
Heavy construction	R5M	R4.6M	February 2018	6 months	6 months	Interim	8.0	0
Residential building	R8M	R8.1M	November 2017	4 months	4 months	Completion	-1.25	0
Building Maintenance	R2.7M	R2.6M	February 2017	6 months	8 months	Interim	3.70	- 33.33
Highway	R1.61M	R1.68M	June 2013	24 months	26 months	Interim	-4.96	-0.08
Commercial building	R1.9M	R2.4M	August 2014	12 months	12 months	Milestone	-26.32	0
Residential building	R40M	R42M	June 2016	18 months	20 months	Interim	-5.00	-11.11
Heavy construction	R30M	R30M	November 2017	14 months	18 months	Interim	0	-28.57
Institutional building	R1.8M	R2.1M	July 2017	1 month	1 month	Completion	-16.66	0
Residential building	R800M	R750M	June 2014	6 months	6 months	Interim	6.25	0
Commercial Building	R8.9M	R8.2M	November 2017	6 months	6 months	Interim	7.87	0
Heavy Construction Project	R2M	R3.2M	May 2018	6 months	4 months	Interim	-60.0	33.33
Heavy construction project	R6B	R12B	2012	36 months	50 months	Stage	-100.0	-38.88
Heavy construction project	R100M	R120M	2018	2 months	8 months	Interim	-20.0	-300.00

Table 5.20: Analysis of the cost and time performance of projects executed by construction companies using different payment systems (cont'd)

PROJECT TYPE	ESTIMA-TED COST	FINAL COST	CONSTRUCTION START DATE	ESTIMATED DURATION	FINAL DURATION	PAYMENT SYSTEM USED	% COST OVERRUN/ UNDERRUN	% TIME OVERRUN/ UNDERRUN
Commercial Building	R4M	R4.2M	March 2016	8 months	9months	Interim	-5.0	-1.25
Commercial building	R31.3M	R31.2M	31 July 2018	12 months	8 months	Completion	0.32	33.33
Commercial building	R15M	R20M	02/01/2019	8 months	10 months	Advance	-33.33	-25.00
Building maintenance	R10M	R9.46M	28 Feb 2018	10 months	8 months	Interim	5.40	20
Institutional building	R11.5M	R12.2M	07/2016	12 months	14 months	Stage	-6.08	-16.66
Highway	R95M	R120M	June 2013	50 months	62 months	Interim	-26.32	-24.0
Residential Building	R5M	R4.8M	20/07/2017	8 months	12 months	Interim	4.0	- 50.0
Residential Building	R8M	R8M	2013	12 months	24months	Interim	0	-100.0
Highway	R44 M	R39M	October 2015	12 months	18 months	Interim	11.36	- 50.0
Residential, Building	R5M	R5M	2016	12 months	12 months	Interim	0	0
Building maintenance	R12.5M	R12.5M	December 2016	12 months	9 months	Interim	0	25.0
Commercial building	R120M	R128M	January 2017	18 months	18 months	Completion	-6.67	0
Institutional building	R80M	R123M	June 2016	24 months	30 months	Interim	-53.75	-25.0
Heavy construction	R3.5 M	R3.4M	2015	12 months	24 months	Milestone	2.86	- 100.0
Heavy construction	R23M	R27.5M	July 2017	2 months	2 months	Interim	-19.57	0

Table 5.20: Analysis of the cost and time performance of projects executed by construction companies using different payment systems (cont'd)

PROJECT TYPE	ESTIMA-TED COST	FINAL COST	CONSTRUCTION START DATE	ESTIMATED DURATION	FINAL DURATION	PAYMENT SYSTEM USED	% COST OVERRUN/ UNDERRUN	% TIME OVERRUN/ UNDERRUN
Commercial building	R500M	R1.2M	2017	6 months	8 months	Completion	-140.0	-33.33
Industrial building	R500M	R500M	Nov 2013	36 months	36 months	Interim	0	0
Highway	R6M	R6M	December 2016	6 months	6 months	Stage	0	0
Residential building	R8M	R8.5M	02 May 2018	8 months	8 months	Interim	-6.25	0
Institutional building	R160M	R168M	January 2017	14 months	14months	Interim	-5.00	0
Commercial building	R85M	R120M	Jan 2013	18 months	48months	Interim	-41.18	-166.66
Commercial building	R52M	R54M	February 2014	20 months	24 months	Interim	-3.85	-20.0
Commercial building	R10M	R10M	October 2018	6 months	7months	Interim	0	-16.67
Institutional building	R195M	R250M	November 2018	25 months	32months	Interim	-28.21	-28.0
Institutional Building	R25.4M	R25.4M	April 2016	6 months	7.5 months	Interim	0	-25.0
Institutional building	R25M	R31M	January 2017	18 months	20 months	Interim	-24.0	-11.11
Residential building	R10M	R10.5M	March 2017	18 months	26 months	Completion	-5.00	-44.44
Highway	R14.5M	R15.3M	September 2016	12 months	15 months	Milestone	-5.52	-25.0
Institutional building	R23M	R26M	June 2012	30 months	37 months	Interim	-13.04	-23.33
Commercial building	R26M	R28.8M	22 June 2015	26 months	26 months	Interim	-10.76	0

Table 5.20: Analysis of the cost and time performance of projects executed by construction companies using different payment systems (cont'd)

PROJECT TYPE	ESTIMA-TED COST	FINAL COST	CONSTRUCTION START DATE	ESTIMATED DURATION	FINAL DURATION	PAYMENT SYSTEM USED	% COST OVERRUN/ UNDERRUN	% TIME OVERRUN/ UNDERRUN
Institutional Buildings	R100M	R95M	06/06/2018	9 months	12 months	Interim	5.00	- 33.33
Highway	R50M	R51M	Sep 2016	30 months	30 months	Interim	-2.00	0
Residential Building	R20M	R18M	01 July 2016	24 months	24 months	Interim	10	0
Heavy Construction	R390M	R395M	2016	27months	28 months	Interim	-1.28	-3.70
Commercial Building	R4M	R4M	Mid 2017	3 months	3 months	Advance	0	0
Institutional Building	R95.9M	R95.9M	Nov 2015	6 months	9 months	Interim	0	-50.00
Institutional Building	R18M	R18M	Jan 2013	17 months	17 months	Interim	0	0
Building Maintenance	R20M	R25M	16/01/2013	18 months	36 months	Interim	-25.00	-100.00
Residential Building	R12M	R12.6M	2013	14 months	15 months	Interim	-5.00	-7.14
Highway	R109M	R125M	2017/01/15	25 months	27 months	Milestone	-14.68	-8.00
Highway	R130M	R137M	April 2015	18 months	18 months	Completion	-5.38	0
Commercial Building	R2.3M	R2.4M	Jan 2016	3 months	3 months	Interim	-4.35	0
Highway	R81M	R81M	May 2017	10 months	12 months	Interim	0	-20.00
Commercial Building	R150M	R145M	31/1/16	18 months	19 months	Interim	0.03	- 5.56
Institutional Building	R99M	R141M	October 2013	22 months	48 months	Interim	-42.42	-118.18

Table 5.20: Analysis of the cost and time performance of projects executed by construction companies using different payment systems (cont'd)

PROJECT TYPE	ESTIMA-TED COST	FINAL COST	CONSTRUCTION START DATE	ESTIMATED DURATION	FINAL DURATION	PAYMENT SYSTEM USED	% COST OVERRUN/ UNDERUN	% TIME OVERRUN/ UNDERRUN
Heavy Construction	R345M	R360M	June 2014	36 months	38 months	Interim	-4.35	-5.56
Highway maintenance	R50M	R40M	November 2013	12 months	14 months	Interim	20.00	- 16.67
Heavy construction	R80M	R87M	September 2015	36 months	40 months	Milestone	-8.75	-11.11
Commercial building	R1.2B	R1.2B	January 2016	22 months	22 months	Interim	0	0
Commercial building	R18M	R18.5M	2013	16 months	16 months	Interim	-2.78	0
Building maintenance	R5M	R5M	2017	12months	12months	Interim	0	0
Residential building	R8.5M	R10.3M	1/10/2016	12 months	14 months	Interim	-21.18	-16.67
Industrial building	R78M	R82M	November 2015	28 months	36 months	Interim	-5.13	-30.77
Commercial building	R240M	R226M	July 2015	22 months	24 months	Interim	5.83	- 9.09
Institutional building	R10M	R10M	January 2017	10 months	12 months	Interim	0	-20.00
Institutional building	R30M	R30M	October 2013	16 months	54 months	Completion	0	-237.5
Highway	R10M	R10M	November 2011	12 months	11 months	Advance	0	8.33

Table 5.20: Analysis of the cost and time performance of projects executed by construction companies using different payment systems (cont'd)

PROJECT TYPE	ESTIMA-TED COST	FINAL COST	CONSTRUCTION START DATE	ESTIMATED DURATION	FINAL DURATION	PAYMENT SYSTEM USED	% COST overrun/ Underrun	% TIME overrun/ underrun
Heavy construction project	R60M	R63M	June 2015	36 months	24 months	Interim	-5.00	33.33
Commercial building	R200M	R220M	January 2016	24 months	32 months	Advance	-10.0	-33.33
Commercial building	R30M	R30M	1/3/2016	9 months	9 months	Milestone	0	0

Table 5.21: Cross tabulation of the cost and time performance of projects as a result of different payment systems used

Payment system used	Number of projects with cost overrun	Number of projects with cost underrun	Number of projects with time overrun	Number of projects with time underrun
Interim/Progress payment	37	13	38	2
Payment on completion	6	2	4	1
Milestone payment	5	2	6	0
Stage payment	3	0	2	0
Advance payment	2	0	2	1
Chi-square value: 5.893 **p-value: 0.921**				

5.7 Summary of the chapter

This chapter presented the respondents' background information, mean items score, multiple regression of the quantitative analysis, and thematic results of the qualitative analysis on the project payment system used in project procurement. It also identified the standard conditions of contracts used on construction projects, the performance indicators used in assessing construction companies, and the financial management strategies used by construction organisations.

Also, this part of the thesis described the information details of the respondents' projects, the number of construction projects handled by the respondents' companies in the previous five years, provided an analysis of the level of performance of the construction companies within five years, as well as an examination of the organisational performance of construction organisations, and investigated the cost and time performance of projects executed by construction companies using different payment systems. It also described the characteristics of projects executed by construction companies using different payment systems.

Thus, construction firms that depend on proper project advertisement and diversification to boost their construction organisations' financial performance (Neshamba, 2000) are likely to cope with changes and have better chances to counterbalance random losses. However, some empirical studies suggest factors to improve the financial performance of construction firms; for instance, reinvestment of earnings in the enterprise, emphasis on value, adoption of financial management strategies, innovation payment systems and robust orientation in the direction of implementing of strategic thinking and planning mechanisms (Sherif and Kaka, 2003; Calvert et al., 2003; Voulgaries et al., 2003; Beatham et al., 2004; Wong et al., 2006; Motawa and Kaka, 2009; Pervan and Visic, 2012; Haupt and Padayachee, 2016). Hence, construction firms that can employ these aforementioned factors will function in global markets because global construction projects are usually large-scale, and because of the nature and extent of risks in the market when linked to a local market (Gunhan and Arditi, 2005; Jaring, 2005; Loo et al., 2013).

CHAPTER SIX

STRUCTURAL EQUATION MODELS (SEM) RESULTS

6.1 Introduction

This chapter presents the data analysis for the measurement and structural models. It also describes the implications of the results of the data analysis.

6.2 The project payment systems used in construction project procurement

Tables 6.1-6.4 show the result of the analysis of the project payment systems used in construction project procurement. Four sub-constructs and 19 variables were used to measure these constructs. Four variables were used for sub-construct A (standard conditions of contracts), five variables for sub-construct X (payment systems used by clients), five variables for sub-construct K (payment systems impacting positively on organisation performance), and five variables for sub-construct N (payment systems preferred by construction organisations). The respondents were asked to indicate and rate the standard conditions of contracts used on construction projects they were conversant with and commonly used on projects procured by their companies. The payment systems used by clients to pay for construction services, the payment systems impacting positively on organisation performance, and the payment systems preferred by construction organisations were all indicated using a Likert Scale.

On the projects executed by construction companies studied, the General Conditions of Contract (GCC) was the most used, the interim payment system was the most common payment system used by the clients to pay for construction services, while interim/progress and advance payment system were perceived by respondents to have a significant impact on the performance of their construction companies. Also, payment on completion was the key payment system preferred by construction contractors.

The results of the reliability, validity, and consistency tests for sub-construct ‘A’ show that only three measured variables (A1, A2, and A3) are consistent, reliable, and valid. At a cut-off value of 2.61 for mean item score, 0.70 for Cronbach's alpha coefficient, 0.60 for correlation coefficient, 1.0 for Eigenvalue, 0.50 (50%) for average variance explained, and 0.60 for Kaiser-Meyer-Olkin value, variable A4 was found to be insignificant (having 1.90 mean item score, which is below the cut-off value of 2.61). However, measured variables A1, A2, and A3 were found to be significant, valid, and consistent. Although the measured variables explained only

32.24% of the construct (which was not up to the recommended 50%), Bartlett's test of sphericity was significant ($x^2 = 611.49$, $p<0.05$).

For sub-construct X, only one of the measured variables (X1) satisfied the requirements for consistency, reliability, and validity. Also, the measured variables explained 50.43% of the sub-construct and had homogeneity ($x^2 = 165.30$, $p<0.05$).

For sub-construct K, two measured variables (K4 and K5) were eliminated for their lack of consistency and reliability, while three measured variables (K1, K2, and K3) were found to be significant, consistent, and valid. Variable K1 had a mean item score of 4.09, factor loading of 0.76, Cronbach's alpha coefficient of 0.85, correlation coefficient of 0.62, Eigenvalue of 2.07, average variance explained of 51.46%, and Kaiser-Meyer-Olkin value of 0.79. These values indicate compliance with the recommendations for consistency, validity, and reliability. As shown in Table 5.20, measured variables K2 and K3 also show compliance with the recommendations for validity, consistency, and reliability. For sub-construct N, three measured variables (N1, N2, and N3) were found to be significant, reliable, consistent, and valid. This result is presented in Table 5.20. However, the measured variables explained only 43.39% of the sub-construct.

The results shown in Table 5.17-Table 5.20 explained that only sub-constructs X and K adequately explained the variable of the project payment systems used in construction project procurement based on the percentage of the variance explained by these sub-constructs. This means that only sub-constructs X and K have sufficient reliability and validity for structural equation modelling. The results also show that only variable X1 is significant and valid for sub-construct X and only variables K1, K2, and K3 are significant and valid for sub-construct K.

Table 6.1: Measured variables for the standard conditions of contracts used on construction projects

Code	Conditions of contract (A)	X	γ	Φ	Φ	μ	ß	ƛ	ȥ
A1	GCC - (General Conditions of Contract)	3.49	.79	.82	.62	1.29	32.24	.74	Chi-square: 611.49 Significance: 0.004
A2	JBCC - (Joint Building Contract Committee)	3.32	.72	.82	.18	1.29	32.24	.74	
A3	NEC - (New Engineering Contract)	2.62	.70	.82	.32	1.29	32.24	.74	
A4	FIDIC - (International Federation of Consulting Engineers)	1.90	.71	.82	.84	1.29	32.24	.74	

X= mean item score; γ=factor loading; ϕ=Cronbach's alpha coefficient; Φ=correlation coefficient; μ=Eigenvalue; ß=% of variance explained; ƛ=Kaiser-Meyer-Olkin value; ȥ=Bartlett's test

Table 6.2: Measured variables for the payment systems used by clients to pay for construction services

Code	Project payment systems (X)	X	γ	Φ	Φ	μ	ß	ƛ	ȥ
X1	Interim /Progress payment	4.16	.720	.73	.60	2.02	50.43	.87	Chi-square: 165.30 Significance: 0.000
X2	Stage payment	2.59	.785	.73	.51	2.02	50.43	.87	
X3	Payment on Completion	2.58	.690	.73	.16	2.02	50.43	.87	
X4	Milestone payment	2.29	.650	.73	.43	2.02	50.43	.87	
X5	Advance payment	2.00	.538	.73	.64	2.02	50.43	.87	

X= mean item score; γ=factor loading; ϕ=Cronbach's alpha coefficient; Φ=correlation coefficient; μ=Eigenvalue; ß=% of variance explained; ƛ=Kaiser-Meyer-Olkin value; ȥ=Bartlett's test.

Table 6.3: Measured variables for the payment systems impacting on organisation performance

Code	Perception of payment system impacting on organisation performance (K)	X	Γ	ϕ	Φ	μ	ß	ƛ	ɀ
K1	Interim /Progress payment	4.09	.76	.85	.62	2.07	51.46	.79	Chi-square: 183.93 Significance: 0.000
K2	Advance payment	3.67	.76	.85	.62	2.07	51.46	.79	
K3	Stage payment	2.64	.76	.85	.87	2.07	51.46	.79	
K4	Milestone payment	2.60	.80	.85	.86	2.07	51.46	.79	
K5	Payment on Completion	2.09	.44	.85	.61	2.07	51.46	.79	

X= mean item score; γ=factor loading; ϕ=Cronbach's alpha coefficient; Φ=correlation coefficient; μ=Eigenvalue; ß=% of variance explained; ƛ=Kaiser-Meyer-Olkin value; ɀ=Bartlett's test.

Table 6.4: Measured variables for the payment systems preferred by construction organisations

Code	Payment systems preferred by construction organisation (N)	X	Γ	ϕ	Φ	μ	ß	ƛ	ɀ
N1	Payment on Completion	3.55	.71	.75	.66	2.17	43.39	.76	Chi-square: 164.27 Significance: 0.000
N2	Milestone payment	3.01	.86	.75	.93	2.17	43.39	.76	
N3	Stage payment	2.90	.89	.75	.90	2.17	43.39	.76	
N4	Interim/Progress payment	2.44	.76	.75	.08	2.17	43.39	.76	
N5	Advance payment	2.34	.76	.75	.16	2.17	43.39	.76	

X= mean item score; γ=factor loading; ϕ=Cronbach's alpha coefficient; Φ=correlation coefficient; μ=Eigenvalue; ß=% of variance explained; ƛ=Kaiser-Meyer-Olkin value; ɀ=Bartlett's test.

6.3 The financial performance indicators used in assessing construction companies' performance

The financial performance indicators (Y) used in assessing organisation performance, which are profitability (Y1), cash flow (Y2), liquidity (Y3), leverage (Y4), order value (turnover) (Y5), and market value (Y6) were investigated as a construct. These six variables were identified and used to conceptualize this construct as shown in Table 6.5. The respondents for the quantitative part of this research were requested to indicate their level of agreement (on a Likert scale) with the financial performance indicators used in assessing their organisation's performance. As shown in Table 6.5, the reliability and validity analysis show that all the measured variables are significant, valid, consistent, and reliable. Variable Y1 has a mean item score of 4.10, factor loading of 0.72, Cronbach's alpha coefficient of 0.79, and a correlation coefficient of 0.78. Variable Y2 has a mean item score of 4.02, factor loading of 0.78, Cronbach's alpha coefficient of 0.79, and a correlation coefficient of 0.82. Variable Y3 has a mean item score of 3.19, factor loading of 0.75, Cronbach's alpha coefficient of 0.79, and a correlation coefficient of 0.83.

Variable Y4 has a mean item score of 3.14, factor loading of 0.76, Cronbach's alpha coefficient of 0.79, and a correlation coefficient of 0.86. Variable Y5 has a mean item score of 2.40, factor loading of 0.75, Cronbach's alpha coefficient of 0.79, and a correlation coefficient of 0.70. While variable Y6 has a mean item score of 3.77, factor loading of 0.77, Cronbach's alpha coefficient of 0.79, and a correlation coefficient of 0.63. These values indicate that variables Y1, Y2, Y3, Y4, Y5, and Y6 conform to the recommendations for significance and reliability. The Eigenvalue of 2.15, average variance explained of 55.86%, and Kaiser-Meyer-Olkin (KMO) value of 0.63, and significant homogeneity ($x^2 = 103.96$, $p<0.05$) show that the measured variables are valid, consistent, and explain more than 50% of the variance of the performance indicators used in assessing organisation performance. This result suggests that the measured variables are valid enough for structural equation modelling.

Table 6.5: Measured variables for the financial performance indicators used in assessing organisation performance

Code	Performance indicator (Y)	X	Γ	Φ	Φ	µ	ß	ƛ	ȥ
Y1	Profitability (ability to improve cash management and income from other profit centres)	4.10	.72	.79	.78	2.15	55.86	.63	Chi-square: 103.96 Significance: 0.000
Y2	Cash flow (ability to have sufficient cash to meet general expenses)	4.02	.78	.79	.82	2.15	55.86	.63	
Y3	Liquidity (ability to meet short-term obligations)	3.19	.75	.79	.83	2.15	55.86	.63	
Y4	Leverage (ability to repay the debt)	3.14	.76	.79	.86	2.15	55.86	.63	
Y5	Order value (at least 1.5 of turnover)	2.40	.75	.79	.70	2.15	55.86	.63	
Y6	Market Share (total share of a company out of total segment sales)	3.77	.77	.79	.63	2.15	55.86	.63	

X= mean item score; γ=factor loading; ϕ=Cronbach's alpha coefficient; Φ=correlation coefficient; µ=Eigenvalue; ß=% of variance explained; ƛ=Kaiser-Meyer-Olkin value; ȥ=Bartlett's test.

6.4 The financial management strategies used by the construction organisations

Table 6.6 shows the results of the analysis of the measured variables for the financial management strategies used by the construction organisations. Five strategies (cash flow projection strategy, budgeting strategy, creditworthiness strategy, risk management strategy, and review and evaluation strategy) were conceptualized to denote the financial management strategies used by construction organisations. Cash flow projection strategy (M1) has five measured variables, while budgeting strategy (M2) has six, creditworthiness strategy (M3) has eight, risk management strategy (M4) has six, and review and evaluation strategy (M5) has eight measured variables. Using a five-point Likert scale, the respondents were asked to identify and rate the extent of use of the financial management strategies in their company operations.

Table 6.6 presents the results of the reliability, consistency, and validity test for the measured variables. It can be seen from this table that only cash flow projection strategy (M1) and creditworthiness strategy (M3) have one variable each (M15 and M36) that is not significant (that is, mean item score below 2.61) and were eliminated for further analysis. All the other measured variables satisfied the requirements for consistency, reliability, and validity. Table 6.6 shows that the measured variables explained 56.12% of the cash flow projection strategy, while the homogeneity among the measured variables was found to be significant (x^2=2717.59, $p<0.05$). Also, the measured variables explained 56.12% of the creditworthiness strategy. The budgeting strategy (M2), risk management strategy (M4), and review and evaluation strategy (M5) have all their measured variables conforming to the recommended cut-off values for mean item score, factor loading, Cronbach's alpha coefficient, correlation coefficient, Eigenvalue, average variance, and KMO value. This suggests that the measured variables (except M15 and M36) are reliable and valid for structural equation modelling.

Table 6.6: Measured variables for the financial management strategies used by the construction organisations

Code	Variables	X	γ	ϕ	Φ	μ	ß	ƛ	ɀ
M1	***Cash flow forecast/projection strategy***								Chi-square: 2717.59 Significance: 0.000
M11	Using technology to shorten the cash conversion cycle e.g. online platforms	4.07	.80	.95	.75	13.73	56.12	.85	
M12	Optimization of financial functions (application of techniques to improve cash management)	3.81	.80	.95	.83	13.73	56.12	.85	
M13	Cash flow reporting (cash flow track)	3.56	.69	.95	.71	13.73	56.12	.85	
M14	Matching funding to cash flow obligations (match various sources of funding to capital flow)	3.04	.57	.95	.67	13.73	56.12	.85	
M15	Automation of the cash management process (instead of ledger)	2.35	.78	.95	.62	13.73	56.12	.85	
M2	***Budgeting strategy***								
M21	Balance of financial demands within available resources	3.36	.80	.95	.84	13.73	56.12	.85	
M22	Track record and costs check	3.73	.70	.95	.65	13.73	56.12	.85	
M23	Costs check	3.57	.75	.95	.69	13.73	56.12	.85	
M24	Continuous re-validation of financial plans	3.03	.76	.95	.67	13.73	56.12	.85	
M25	Financial analysis of different capital investment	3.67	.75	.95	.62	13.73	56.12	.85	
M26	Use of automated reporting systems e.g. Network– to secure valuable information	3.82	.87	.95	.64	13.73	56.12	.85	
M3	***Creditworthiness strategy***								
M31	Repayment of debts and interest or zero bad debt	3.87	.86	.95	.82	13.73	56.12	.85	
M32	Trust fund	3.64	.74	.95	.66	13.73	56.12	.85	
M33	Statutory reserves (liquid assets held by firms to remain solvent and partial protection against investment loss)	3.15	.78	.95	.65	13.73	56.12	.85	
M34	Growth rate of assets (increase in assets)	2.95	.71	.95	.69	13.73	56.12	.85	
M35	Income statements (publication of financial statements)	3.82	.65	.95	.65	13.73	56.12	.85	
M36	Company's profitability	2.17	.73	.95	.68	13.73	56.12	.85	

X= mean item score; γ=factor loading; ϕ=Cronbach's alpha coefficient; Φ=correlation coefficient; μ=Eigen value; ß=% of variance explained; ƛ=Kaiser-Meyer-Olkin value; ɀ=Bartlett's test.

Table 6.6: Measured variables for the financial management strategies used by the construction organisations (cont'd)

Code	Variables	X	γ	ϕ	Φ	μ	ß	ƛ	ʐ
M37	Improvement of efficiency in capital management	2.91	.71	.95	.68	13.73	56.12	.85	Chi-square: 2717.59 Significance: 0.000
M38	Risk assessment of the company's prospects	2.87	.67	.95	.65	13.73	56.12	.85	
M4	***Risk management strategy***								
M41	Adaptability to the changing market	3.13	.72	.95	.78	13.73	56.12	.85	
M42	Attainment of project objectives	3.44	.77	.95	.67	13.73	56.12	.85	
M43	Risk evaluation	3.37	.72	.95	.63	13.73	56.12	.85	
M44	Risk avoidance	3.58	.80	.95	.66	13.73	56.12	.85	
M45	Diversification of operation	3.69	.81	.95	.20	13.73	56.12	.85	
M46	Risk management policies in practices	3.79	.71	.95	.66	13.73	56.12	.85	
M5	***Review and evaluation strategy***								
M51	Review of potential financial exposure incurred	3.13	.81	.95	.78	13.73	56.12	.85	
M52	Access to finance	3.44	.76	.95	.80	13.73	56.12	.85	
M53	Financial strength	3.37	.45	.95	.62	13.73	56.12	.85	
M54	Assessing the company profit ratio on cash returns	3.58	.68	.95	.70	13.73	56.12	.85	
M55	Healthy credit rating	3.69	.76	.95	.62	13.73	56.12	.85	
M56	Analysis of asset base,	3.79	.79	.95	.65	13.73	56.12	.85	
M57	Assessment of management plan practices	3.13	.88	.95	.61	13.73	56.12	.85	
M58	Review of corporate objectives	3.44	.81	.95	.64	13.73	56.12	.85	

X= mean item score; γ=factor loading; ϕ=Cronbach's alpha coefficient; Φ=correlation coefficient; μ=Eigenvalue; ß=% of variance explained; ƛ=Kaiser-Meyer-Olkin value; ʐ=Bartlett's test.

6.5 Analysis of the structural models

6.5.1 Introduction

This presents the data analysis for the structural models and describes the implications of the results of the data analysis.

6.5.2 Modelling the relationship between project payment systems used by clients and construction company financial performance

A structural equation model was estimated to validate the hypothesized model of the relationship between project payment systems used by clients (X) and construction company financial performance (Y). The model explains the impact of the project payment systems employed by clients on the financial performance of construction companies. The model is represented by the path analysis diagram shown in Figure 6.1. The path diagram shows two constructs (represented by circles) and six measured variables (represented by squares). Construct X was measured only with X1 (interim payment system) because other measured variables were not reliable, valid, and consistent (see Chapter 5 and section 5.3.1). Table 6.7 shows the model estimation for the relationship between X and Y. As outlined in Table 6.7, X has a moderate, positive, and significant relationship with Y ($r = 0.45$, $z = 3.05$).

With regard to the correlation between the constructs and their sub-constructs, X has a weak, positive, and significant correlation with the interim payment system (X1) ($r = 0.19$, $z = 2.61$); Y has a weak, positive but significant association with profitability (Y1) ($r = 0.13$, $z = 4.52$), cash flow (Y2) ($r = 0.09$, $z = 2.91$), and market share (Y6) ($r = 0.32$, $z = 5.21$). Also, Y has a moderately positive and significant relationship with liquidity (Y3) ($r = 0.99$, $z = 4.97$) and a strongly positive and significant relationship with leverage (Y4) ($r = 1.16$, $z = 7.02$). Fit indices for the model of the relationship between X and Y are presented in Table 6.8. This table reveals that the Chi-square test statistics are not significant at 0.05 and that the RMSEA index is below the recommended 0.08. The table also reveals that TL1 and CF1 are above the recommended limit of 0.97, while the SRMR index is not up to the recommended limit of 0.10 [chi-square = 3442.21, df = 41, RMSEA = 0.013, SRMR = 0.06, CF1 = 0.98, TL1 = 0.99]. These results show that the model is acceptable. The results imply that the hypothesized relationship in the model is valid, which means that the project payment system used by clients has a positive and significant impact on the construction company's financial performance.

The interim payment system was the only valid payment system used by clients based on the reliability and validity test that was conducted for the measurement model. Other payment systems were not valid and could not be used in the structural equation modelling estimation. This means that the following hypothesized relationships in Hypothesis One could not be tested: *H1b: The advance payment system has a positive and significant impact on the financial performance of construction organisations; H1c: The stage payment system has a positive and significant impact on the financial performance of construction organisations; H1d:The milestone payment system has a positive and significant impact on the financial performance of construction organisations; and H1e: Payment on completion has a positive and significant impact on the financial performance of construction organisations.*

The results of the structural equation model that was tested as shown, in Figure 6.1, Table 6.7, and Table 6.8, validated *H1* through *H1a (interim payment system has a positive and significant impact on the financial performance of construction organisations)*. Although the impact of the use of the interim payment system on the financial performance of construction organisations was moderately positive, it was significant. Therefore, this study accepted the postulation that there is a positive and significant relationship between project payment systems used by clients and the financial performance of construction organisations.

Table 6.7: Model estimation for the relationship between project payment systems used by clients, and construction company financial performance

Relationship	Estimate	Standard error	Z-value
X->X1	0.19	0.07	2.61
X->Y	0.45	0.14	3.05
Y->Y1	0.13	0.02	4.52
Y->Y2	0.09	0.03	2.91
Y->Y3	0.99	0.19	4.97
Y->Y4	1.16	0.16	7.02
Y->Y6	0.32	0.06	5.21
Key: X (payment system), X1 (interim payment system), Y (financial performance), Y1, Y2, Y3, Y4, Y6 (profitability, cash flow, liquidity, leverage, market share, respectively)			

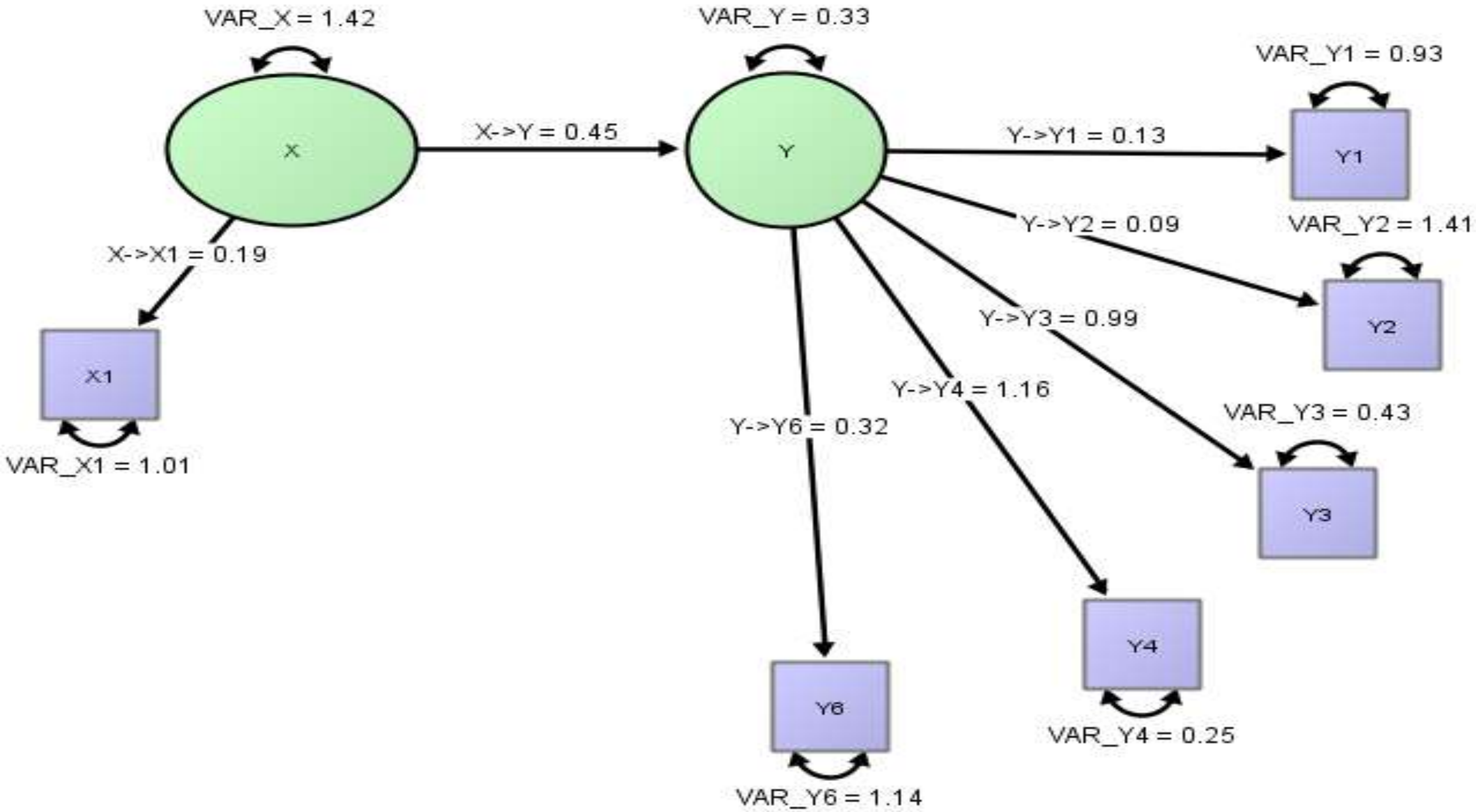

Figure 6.1: The path analysis diagram for the model of Hypothesis 1

[*KEY: X1 = interim payment system, Y1 = profitability, Y2 = cash flow, Y3 = liquidity, Y4 = leverage, and Y6 = market share*

Table 6.8: Fit indices for the model of Hypothesis 1

Fit index	Values
Basic statistics	
Estimated Parameters	25
Observed Statistics	66
Number of Observations	154
Restricted Degrees of Freedom	41
Degrees of Freedom (independent)	55
The goodness of fit index	
Model Chi-Square	3442.21
Chi-square from independent	303.172
RMSEA	0.013
SRMR	0.06
CFI	0.98
TLI	0.99

Key: RMSEA (root mean square error of approximation index), SRMR (standard root mean square residual index), CFI (comparative fit index), TLI (Tucker Lewis index).

6.5.3 Modelling the relationship between financial management strategies and construction company financial performance

A structural equation model was estimated to confirm the hypothesized model of the relationship between financial management strategies (M) and construction company financial performance (Y). The model reveals that the use of financial management strategies by construction companies positively impacts their financial performance. The path diagram shown in Figure 6.2 illustrates the model, which features two main constructs (M and Y), five measured variables for Y (Y1 = profitability, Y2 = cash flow, Y3 = liquidity, Y4 = leverage, and Y5 = turnover) and five sub-constructs (M1=cash flow forecast/projection strategy, M2 = budgeting strategy, M3 = creditworthiness strategy, M4 = risk management strategy, and M5 = review and evaluation strategy). Subconstruct M1 was measured using five variables, namely: using technology to shorten the cash conversion cycle, for example online platforms; optimization of financial functions (application of techniques to improve cash management); cash flow reporting (cash flow track); matching funding to cash flow obligations (match various sources of funding to capital flow); and automation of cash management process (instead of ledger). M2 was measured using six variables, namely: balance of financial demands within available resources, track record and costs check, costs check, continuous re-validation of financial plans, financial analysis of different capital investment, use of automated reporting systems, for example Network, to secure valuable information). M3 was measured using eight variables, namely: repayment of debts and interest or zero bad debt, trust fund, statutory reserves (liquid assets held by firms to remain solvent and partial protection against investment loss), growth rate of assets (increase in assets), income statements (publication of financial statements), company's profitability, improvement of efficiency in capital management, risk assessment of the company's future prospects. M4 was measured using six variables, namely adaptability to the changing market, attainment of project objectives, risk evaluation, risk avoidance, diversification of operation, risk management policies in practices.Similarly, M5 was measured using eight variables, namely review of potential financial exposure incurred, access to finance, financial strength, assessing the company profit ratio on cash returns, healthy credit rating, analysis of asset base, assessment of management plan practices, review of corporate objectives. Table 6.9 presents the model estimation for the relationship between M and Y. The table shows that M has a weak, positive but significant association with Y ($r = 0.23$, $z = 3.71$). As regards the association between the main constructs and their sub-constructs, M has a moderately positive and significant correlation with M1 ($r = 0.69$, $z = 5.74$), M4 ($r = 0.79$, $z = 2.16$), and M5 ($r = 0.68$, $z = 5.50$). The association between M and M2 ($r = 1.16$, $z = 6.55$) as well as M3 ($r = 1.17$, $z = 4.87$) is strongly positive and significant.

Meanwhile, construct Y has a weakly positive but significant relationship with Y1 ($r = 0.11$, $z = 1.18$), Y2 ($r = 0.10$, $z = 6.11$), and Y6 ($r = 0.20$, $z = 1.89$). Y has a moderately positive and significant relationship with Y3 ($r = 0.80$, $z = 3.73$), while the correlation between Y and Y4 is strong, positive, and significant ($r = 1.12$, $z = 1.18$). Table 6.10 presents the fit indices for the estimated model of the relationship between M and Y. The fit indices are within the recommended values [chi-square =3494.28, df =41, RMSEA =0.013, SRMR = 0.014, CF1 = 0.97, TL1 = 0.99]. This result confirms that the model is a good fit because SRMR index is below 0.10, TL1 and CF1 are above 0.97, RMSEA is below 0.08, and chi-square test statistics are not significant at 0.05 significant level. These results validate the model and confirm that the financial management strategies used have a positive and significant impact on the financial performance of the construction companies.

This indicates that the results of the structural equation model validated Hypothesis 2 (*there is a positive and significant relationship between financial management strategies (cash flow forecasting, budgeting, creditworthiness, risk management, and review and evaluation) and construction company financial performance (profitability, cash flow, liquidity, leverage and market share*)) and its hypothesized relationships. Also, the results indicate that the following hypothesized relationships are valid and acceptable: *H2a: cash flow strategy has a positive and significant impact on construction company financial performance; H2b: budgeting strategy has a positive and significant impact on construction company financial performance; H2c: creditworthiness strategy has a positive and significant impact on construction company financial performance; H2d: risk management strategy has a positive and significant impact on construction company financial performance;* and *H2e: review and evaluation strategy has a positive and significant impact on construction company financial performance.*

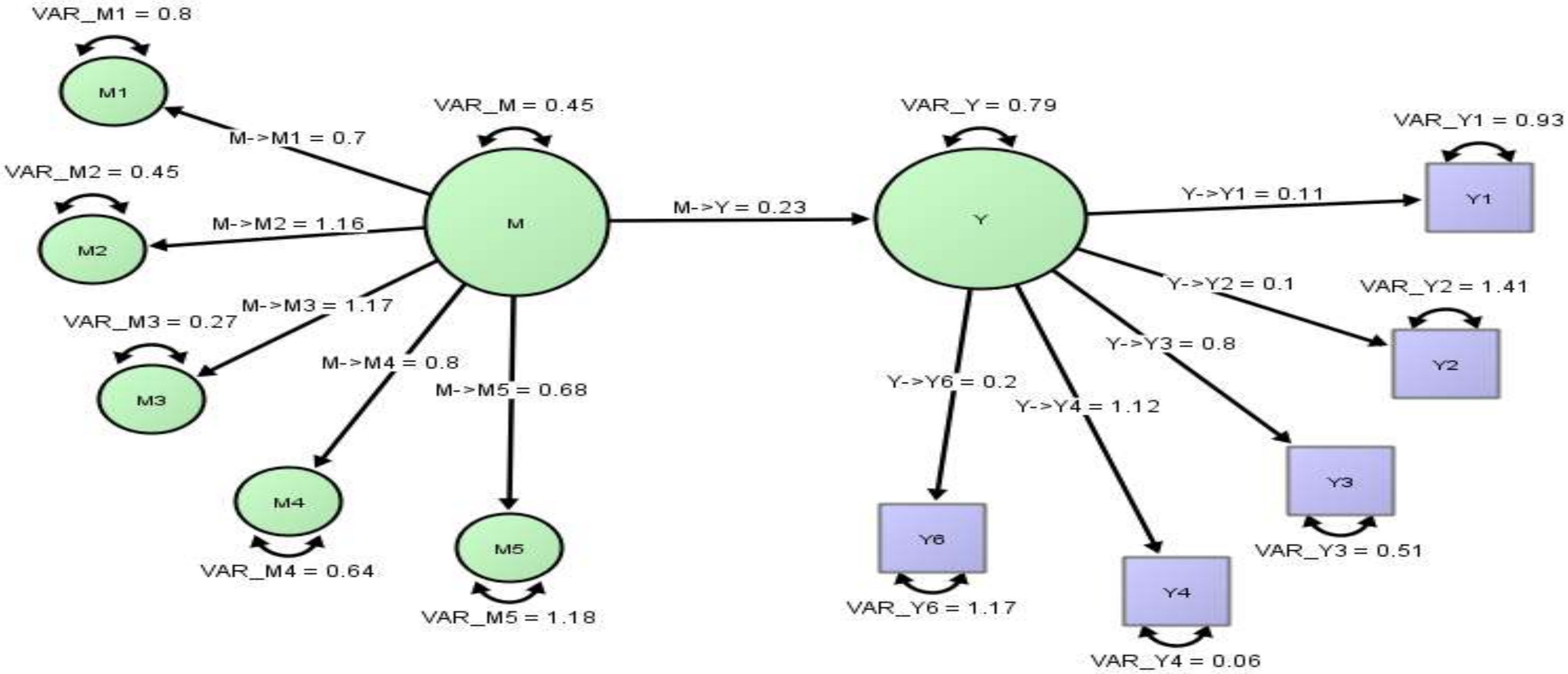

Figure 6.2: The path analysis diagram for the model of Hypothesis 2

[*KEY: M = Financial management strategies, M1 = cash flow forecast/projection strategy, M2 = budgeting strategy, M3 = Creditworthiness strategy, M4 = Risk management strategy, and M5 = Review and evaluation strategy, Y = construction company financial performance, Y1 = profitability, Y2 = cash flow, Y3 = liquidity, Y4 = leverage, and Y6 = market share*]

Table 6.9: Model estimation for Hypothesis 1

Relationship	Estimate	Standard error	Z-value
M->M1	0.69	0.12	5.74
M->M2	1.16	0.17	6.55
M->M3	1.17	0.24	4.87
M->M4	0.79	0.36	2.16
M->M5	0.68	0.19	3.50
M->Y	0.23	0.06	3.71
Y->Y1	0.11	0.09	1.18
Y->Y2	0.10	0.01	6.11
Y->Y3	0.80	0.21	3.73
Y->Y4	1.12	0.94	1.18
Y->Y6	0.20	0.10	1.89
Key: (M=financial management strategies, M1=cash flow forecast/projection strategy, M2=budgeting strategy, M3=creditworthiness strategy, M4=risk management strategy, and M5=review and evaluation strategy); and (Y=construction company financial performance, Y1=profitability, Y2=cash flow, Y3=liquidity, Y4=leverage, and Y6=market share)			

Table 6.10: Fit indices for the estimated model of Hypothesis 2

Fit index	Values
Basic statistics	
Estimated Parameters	25
Observed Statistics	66
Number of Observations	154
Restricted Degrees of Freedom	41
Degrees of Freedom (independent)	55
The goodness of fit index	
Model Chi-Square	3494.28
Chi-Square from Independent	368.933
RMSEA	0.013
SRMR	0.014
CFI	0.97
TLI	0.99
Key: RMSEA (root mean square error of approximation index), SRMR (standard root mean square residual index), CFI (comparative fit index), TLI (Tucker Lewis index)	

6.5.4 Modelling the relationship for Hypothesis 3

Structural equation modelling was conducted to prove the existence of a positive and significant relationship between the project payment systems used by clients (X) and financial management strategies used by construction companies (M). The hypothesis that was tested in this model states that the payment systems used by the clients on construction projects affect the financial management strategies employed by construction companies. Figure 6.3 illustrates the path analysis diagram for the model which reveals two main constructs (X and M), one measured variable progress payment system (X1), and five sub-constructs (M1= cash flow forecast/projection strategy, M2= budgeting strategy, M3= creditworthiness strategy, M4= risk management strategy, and M5= review and evaluation strategy). Table 6.11 presents the results of the model estimation for the relationship between the main constructs, variables, and sub-constructs. As shown in Table 6.11, X has a weak, negative but significant correlation with M ($r = -0.25$, $z = 1.74$).

Regarding the association between the constructs, their variables, and sub-constructs, X has a weakly positive but significant correlation with X1 ($r = 0.34$, $z = 4.11$), while M has a strongly positive and significant association with M2 ($r = 1.08$, $z = 3.81$) and M3 ($r = 1.01$, $z = 4.82$). Table 6.12 presents the fit indices for the estimated model of the relationship between X and M. Table 6.12 shows that the fit indices are within the recommended values [chi-square =3202.68, df =32, RMSEA =0.080, SRMR = 0.01, CF1 = 0.977, TL1 = 0.976]. These results validate the model and confirm the existence of a significant relationship between the project payment systems used by clients and financial management strategies. However, the type of relationship is negative which implies an inverse relationship between the two constructs. This means that the more the clients employ the use of their preferred payment system (interim payment system), the less the strategic actions (financial management strategies) employed by construction companies in mitigating the effects of this payment system. This implies that the interim payment system used by clients frustrates the financial management strategies of the construction companies.

Thus, the hypothesis was not validated by the results of the structural equation model, because the project payment system used by the client (interim payment system) was found to be negatively associated with the financial management strategies used by construction companies. The results in Figure 6.3, Table 6.11, and Table 6.12 indicate that Hypothesis 3 (*there is a positive and significant relationship between project payment systems used by clients and financial management strategies (cash flow forecasting, budgeting, creditworthiness, risk* *management, and review and evaluation) used by construction companies*) is not valid, based on the nature of the relationship between the interim payment system and financial management strategies used by construction companies. Therefore, Hypothesis 3a (*the interim payment system has a positive and significant impact on financial management strategies used by construction companies*) is invalid.

The following hypothesized relationships could not be validated because of the invalidation of advance payment system, stage payment system, milestone payment system, and payment on completion as payment systems used by clients: *H3b: The advance payment system has a positive and significant impact on financial management strategies used by construction companies; H3c: The stage payment system has a positive and significant impact on financial management strategies used by construction companies; H3d: The milestone payment system has a positive and significant impact on financial management strategies used by construction companies; and H3e: Payment on completion has a positive and significant impact on financial management strategies used by construction companies.*

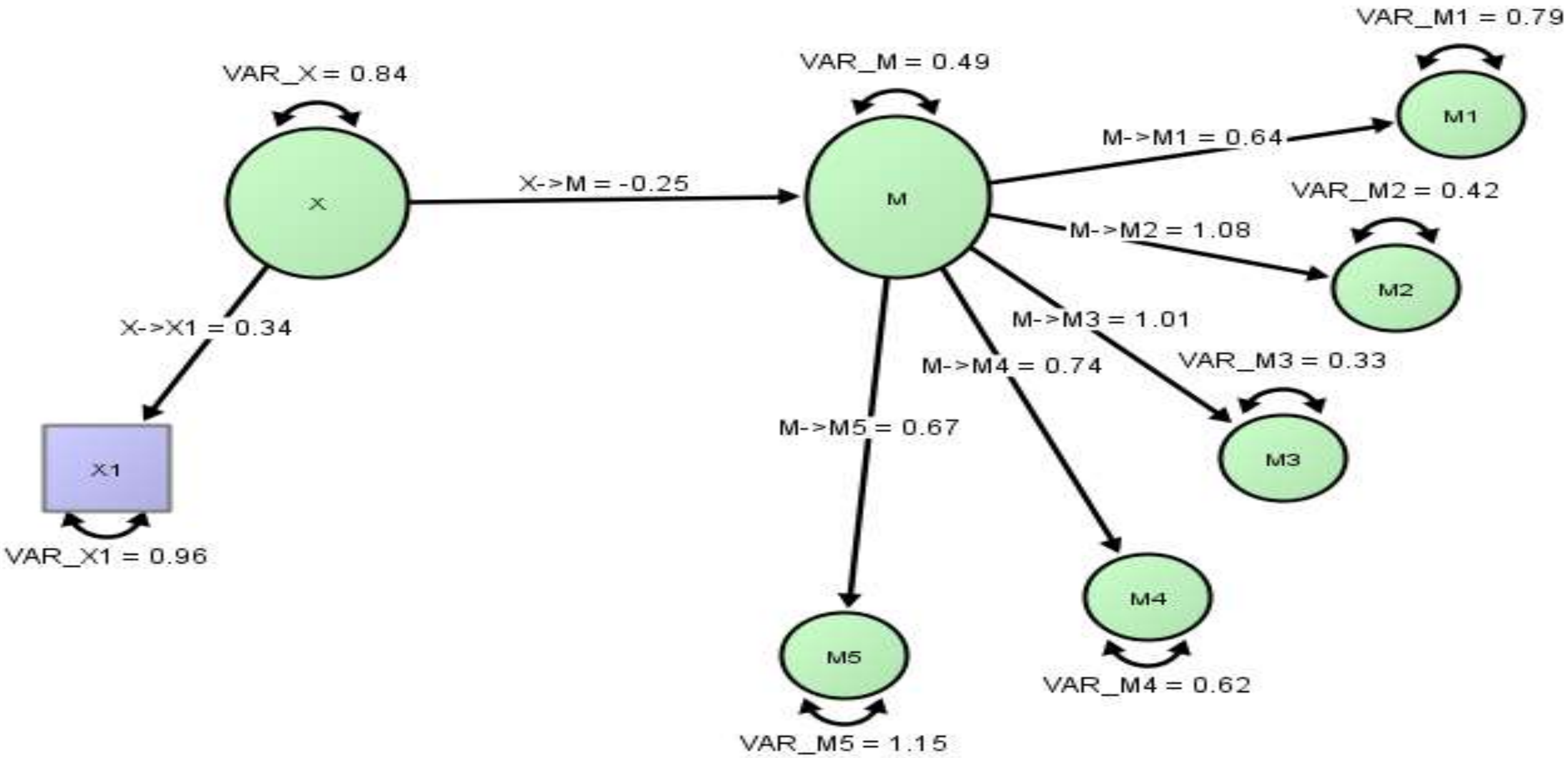

Figure 6.3: The path analysis diagram for the model of Hypothesis 3

[*KEY: X= project payment systems used by clients, and X1= Interim payment system); and (M= financial management strategies, M1= cash flow forecast/projection strategy, M2= budgeting strategy, M3= creditworthiness strategy, M4= risk management strategy, and M5= review and evaluation strategy*]

Table 6.11: Model estimation for Hypothesis 2

Relationship	Estimate	Standard error	Z-value
M->M1	0.64	0.61	1.04
M->M2	1.08	0.28	3.81
M->M3	1.01	0.20	4.82
M->M4	0.74	0.19	3.74
M->M5	0.67	0.19	3.48
X->M	-0.25	0.14	1.74
X->X1	0.34	0.08	4.11

Key: X= project payment systems used by clients, and X1= Interim payment system); and (M= financial management strategies, M1= cash flow forecast/projection strategy, M2= budgeting strategy, M3= creditworthiness strategy, M4= risk management strategy, and M5= review and evaluation strategy.

Table 6.12: Fit indices for the estimated model of Hypothesis 3

Fit index	Values
Basic statistics	
Estimated Parameters	23
Observed Statistics	55
Number of Observations	154
Restricted Degrees of Freedom	32
Degrees of Freedom (independent)	45
The goodness of fit index	
Model Chi-Square	3202.68
Chi-Square from Independent	270.06
RMSEA	0.080
SRMR	0.01
CFI	0.977
TLI	0.976

Key: RMSEA (root mean square error of approximation index), SRMR (standard root mean square residual index), CFI (comparative fit index), TLI (Tucker Lewis index).

6.5.5 The model of the Hypothesis 4

A structural equation model (SEM) was in the confirmation of the hypothesized model of the mediatory role of financial management strategies used by construction companies (M) in the relationship between project payment systems used by clients (X) and construction company financial performance (Y). The conceptual model developed for the research proposes that the use of financial management strategies by construction companies mediates the relationship between the project payment systems used by clients and the financial performance of the construction company. The SEM is illustrated in the path analysis diagram shown in Figure 6.4. The model shows three main constructs (X, M, and Y), six measured variables (X1=interim payment system, Y1=profitability, Y2=cash flow, Y3=liquidity, Y4=leverage, and Y6=market share), and five sub-constructs (M1=cash flow forecast/projection strategy, M2=budgeting strategy, M3=creditworthiness strategy, M4=risk management strategy, and M5=review and evaluation strategy). The estimation results for the model are presented in Table 6.13. The results presented in Table 6.13 show that M has a strong, positive, and significant relationship with Y (r =1.05, z =8.44) and X (r =1.48, z =7.39).

The association between X and Y is also strongly positive and significant (r =1.01, z =3.56). Regarding the correlation between the main constructs, their variables, and their sub-constructs, M has a moderately positive correlation with M1 (r =0.47, z =7.43), M2 (r =0.77, z =4.96), M3 (r =0.77, z =3.56), M4 (r =0.53, z =6.72), and M5 (r =0.45, z =7.39). Construct X has a moderate, positive, and significant relationship with X1(r =0.16, z =7.39). While Y has a weakly positive but significant association with Y1 (r =0.02, z =7.80), Y2 (r =0.03, z =2.22), Y has a moderately positive and significant correlation, and a strongly positive and significant relationship with Y4 (r =1.45, z =0.57). Fit indices for the model of the relationship between X, Y, and M are presented in Table 6.14. The table shows that the chi-square test statistic is not significant at 0.05 and that RMSEA index is below the recommended 0.08.

As revealed by Table 6.14, the Tucker Lewis index (TL1) and comparative fit index (CF1) are above the recommended limit of 0.97, while SRMR index is not up to the recommended limit of 0.10 [chi-square = 3505.54, df = 38, RMSEA = 0.07, SRMR = 0.09, CF1 = 0.97, TL1 = 0.97]. These results validate Hypothesis 4 in the model, which confirms that the financial management strategies adopted by the construction companies enable them to manage the negative impact of the project payment systems used by clients on the companies' financial performance. Hypothesis 4 suggests that financial management strategies play a significant role in ensuring a positive relationship between payment systems used by clients and construction company financial performance. It means that financial management strategies are useful in mitigating the negative impacts of the project payment system used by clients on the financial performance of construction companies.

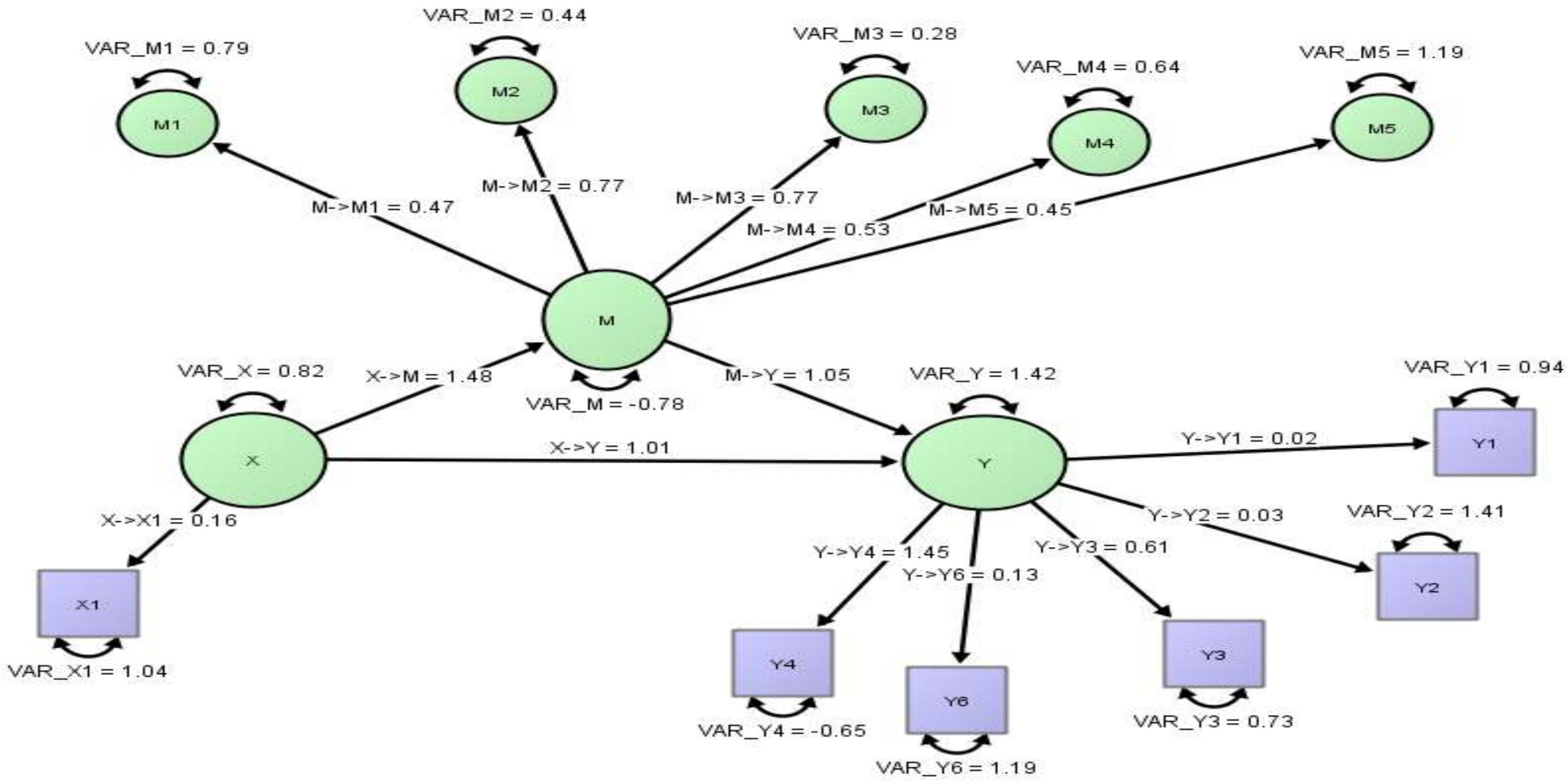

Figure 6.4: The path analysis diagram for the model of Hypothesis 4

[*KEY: X1 = interim payment system, Y1 = profitability, Y2 = cash flow, Y3 = liquidity, Y4 = leverage, and Y6 = market share), and (M1 = cash flow forecast/projection strategy, M2 = budgeting strategy, M3 = creditworthiness strategy, M4 = risk management strategy, and M5 = review and evaluation strategy*]

Table 6.13: Model estimation for Hypothesis 3

Relationship	Estimate	Standard error	Z-value
M->M1	0.47	0.06	7.43
M->M2	0.77	0.15	4.96
M->M3	0.77	0.21	3.56
M->M4	0.53	0.07	6.72
M->M5	0.45	0.06	7.39
M->Y	1.05	0.12	8.44
X->M	1.48	0.20	7.39
X->X1	0.16	1.02	7.39
X->Y	1.01	0.28	3.56
Y->Y1	0.02	0.00	7.80
Y->Y2	0.03	0.00	7.07
Y->Y3	0.61	0.27	2.22
Y->Y4	1.45	2.54	0.57
Y->Y6	0.13	0.01	7.96

Key: (M = financial management strategies, M1 = cash flow forecast/projection strategy, M2 = budgeting strategy, M3 = creditworthiness strategy, M4 = risk management strategy, and M5 = review and evaluation strategy; X =payment systems, X1 = interim payment system; Y = organisation financial performance, Y1 = profitability, Y2 = cash flow, Y3 = liquidity, Y4 = leverage, and Y6 = market share).

Table 6.14: Fit indices for the estimated model of Hypothesis 4

Fit index	Values
Basic statistics	
Estimated Parameters	28
Observed Statistics	66
Number of Observations	154
Restricted Degrees of Freedom	38
Degrees of Freedom (independent)	55
The goodness of fit index	
Model Chi-Square	3505.54
Chi-Square from Independent	357.687
RMSEA	0.07
SRMR	0.09
CFI	0.97
TLI	0.97

Key: RMSEA (root mean square error of approximation index), SRMR (standard root mean square residual index), CFI (comparative fit index), TLI (Tucker Lewis index)

6.5.6 The relationship modelling of Hypothesis 5

Structural equation modelling (SEM) was used in the confirmation of the relationship between project payment systems used by clients (X) and construction company financial performance (Y) when moderated by the interaction between financial management strategies (M) and project payment system impacting organisation performance (K). The hypothesis in the model explains that the use of suitable project payment systems occasionally or based on the request from the companies and the financial management strategies put in place by the companies are responsible for the prevention of the negative impact of the project payment systems used by clients on the financial performance of the companies.

Figure 6.5 illustrates the path analysis diagram for the model which reveals four main constructs (M, K, X, and Y), five sub-constructs (M1= cash flow forecast/projection strategy, M2=budgeting strategy, M3= creditworthiness strategy, M4= risk management strategy, and M5= review and evaluation strategy), and nine measured variables (X1=interim/progress payment,, K1=interim/progress payment, K2= advance payment, K3 =stage payment, Y1= profitability, Y2=cash flow, Y3=liquidity, Y4=leverage, and Y6=market share). The measurement model for the measured variables is as explained in this Chapter. Table 6.15 presents the results of the model estimation for the interactions between M, K, X, and Y. As presented in Table 6.15, there is a strong, positive, and significant relationship between K and Y (r =1.08, z =1.76), X and M (r =1.14, z =4.00), as well as X and Y (r =1.13, z =2.26). The association between M and K is moderately positive but significant (r =0.95, z =1.91). Regarding the correlation between M and its sub-constructs, M has a moderately positive and significant correlation with M1 (r =0.55, z =4.64), M2 (r =0.93, z =4.41), M3 (r =0.91, z =4.18), M4 (r =0.65, z =4.83), and M5 (r =0.56, z =4.29). With X1, X has a weak, positive but significant correlation (r =0.28, z =5.26). With Y3 (r =0.69, z =2.99) and Y4 (r =0.57, z =2.10), Y has a moderately positive and significant correlation. Construct Y has a weakly positive but significant correlation with Y1 (r =0.17, z =2.49), Y2 (r =0.17, z =2.49), and Y6 (r =0.08, z =2.04).

Table 6.16 presents the fit indices for the estimated model of the interaction between M, K, X, and Y. Table 6.16 reveals that the fit indices are within the recommended values [chi-square = 4472.62, df = 69, RMSEA = 0.07, SRMR =0.06, CF1 = 0.97, TL1 = 0.97]. These results validate the model and confirm that a positive and significant relationship between financial management strategies and project payment systems impacting construction organisation performance moderates a positive and significant interaction between project payment systems used by clients and construction companies' financial performance (Hypothesis 5). This means that the impact of project payment systems used by clients on construction company financial performance will fluctuate based on financial management strategies and the use of project payment systems impacting organisational performance.

Table 6.15: Model estimation for Hypothesis 4

Relationship	Estimate	Standard error	Z-value
K->K1	0.42	0.20	2.03
K->K2	0.45	0.18	2.37
K->K3	0.54	0.19	2.77
K->Y	1.08	0.61	1.76
M->K	0.95	0.49	1.91
M->M1	0.55	0.11	4.64
M->M2	0.93	0.21	4.41
M->M3	0.91	0.21	4.18
M->M4	0.65	0.13	4.83
M->M5	0.56	0.13	4.29
X->M	1.14	0.28	4.00
X->X1	0.28	0.05	5.26
X->Y	1.13	0.50	2.26
Y->Y1	0.17	0.06	2.49
Y->Y2	0.17	0.06	2.49
Y->Y3	0.69	0.23	2.99
Y->Y4	0.57	0.27	2.10
Y->Y6	0.08	0.03	2.04

Key: (K =perception of payment system impacting on organisation performance, K1=interim/progress payment, K2=advance payment, K3 =stage payment; Y=organisation financial performance, Y1=profitability, Y2=cash flow, Y3=liquidity, Y4=leverage, and Y6=market share; and M=financial management strategies, M1=cash flow forecast/projection strategy, M2=budgeting strategy, M3=creditworthiness strategy, M4=risk management strategy, and M5=review and evaluation strategy).

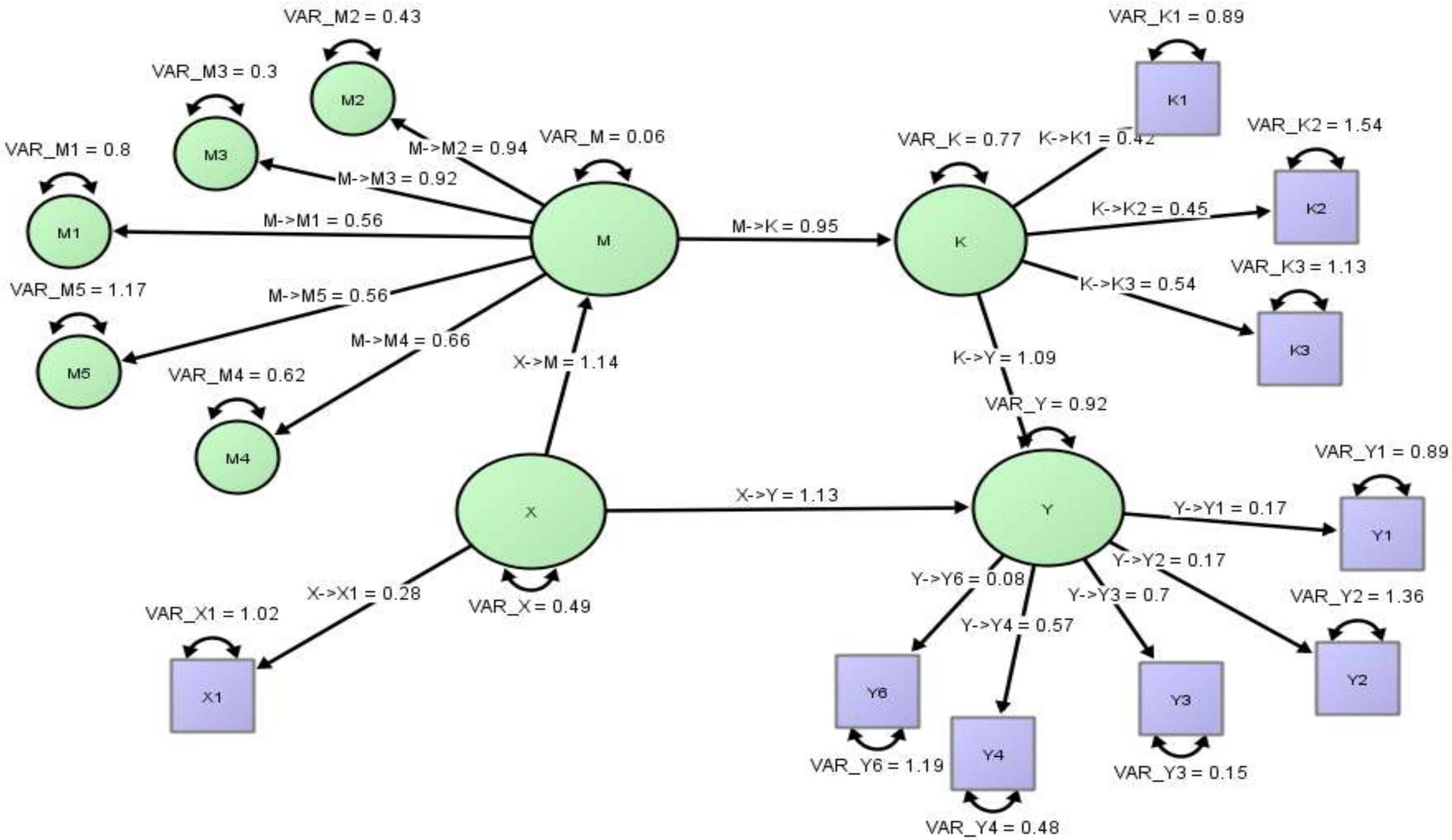

Figure 6.5: The path analysis diagram for the model of hypothesis 5.

Table 6.16: Fit indices for the estimated model of Hypothesis 5

Fit index	Values
Basic statistics	
Estimated Parameters	36
Observed Statistics	105
Number of Observations	154
Restricted Degrees of Freedom	69
Degrees of Freedom (independent)	91
The goodness of fit index	
Model Chi-Square	4472.62
Chi-Square from Independent	538.778
RMSEA	0.07
SRMR	0.06
CFI	0.97
TLI	0.97

Key: RMSEA (root mean square error of approximation index), SRMR (standard root mean square residual index), CFI (comparative fit index), TLI (Tucker Lewis index).

Table 6.17: Threshold for the goodness of fit indices

Fit indices	Range	Threshhold
RMSEA	< 0.06	Yes
SRMR	< 0.08	Yes
CFI	0.0 to 1.0	Yes
TLI	> 0.90	Yes

6.6 Summary of the chapter

This chapter presented the data analysis for the measurement and structural equation models and described the implications of the results of the data analysis. The measurement model described the implications of the results of the data analysis and suggested the measured variables that are reliable and valid enough for structural equation modelling. Thus, a structural equation model was estimated to validate the hypothesized models of the relationships between the constructs (project payment systems used by clients, financial management strategies used by the construction organisation and construction company financial performance). The model explained the impact of the project payment systems employed by clients on the financial performance of construction companies, and the relationship between financial management strategies and construction company financial performance. Also, structural equation modelling was conducted to prove the existence of a positive and significant relationship between the project payment systems used by clients and financial management strategies used by construction companies.

Furthermore, a structural equation model was estimated to confirm the hypothesized model of the role of financial management strategies used by construction companies in the relationship between project payment systems used by clients and construction company financial performance. Structural equation modelling was conducted to prove the interaction between project payment systems used by clients and construction company financial performance as moderated by the relationship between financial management strategies and project payment systems impacting organisational performance. This chapter leads to Chapter Seven where the findings of the analysis of the measurement and structural models will be discussed.

CHAPTER SEVEN

DISCUSSION OF FINDINGS

7.1 Introduction

This chapter presents the interpretation and discussion of findings from the data analysis. It also describes the implications of the results of the data analysis.

7.2 Project payment systems used in construction project procurement

The research investigated the project payment systems used in construction project procurement. The study sought to know the standard conditions of contracts used on construction projects, the payment systems used by clients to pay for construction services rendered by the respondents, the payment systems impacting positively on organisation performance, and the payment systems preferred by construction organisations. The frequency of use of these payment systems and standard conditions of contracts was measured on a Likert scale of 1-5, where 1 = Never, 2 = Seldom, 3 = Sometimes, 4 = Frequently, and 5 = Always. The data was analyzed using the Mean Item Score (see Table 5.2, Table 5.3, Table 5.4, and Table 5.5). It can be seen from the results in these tables that the General Conditions of Contract (GCC) agreement was frequently used on construction projects, the interim payment system was frequently used by the clients to pay for construction services, while construction organisations usually preferred payment on completion. The results show that the use of the interim payment system and advance payment system frequently impact positively on organisation performance. A further examination of the results shows that the Joint Building Contract Committee (JBCC) and the New Engineering Contract (NEC) were sometimes used on construction projects. The use of stage payment systems sometimes impacts positively on organisation performance, while construction organisations sometimes preferred the use of milestone payment and stage payment system by the clients. The most relevant finding was the frequent use of interim payment by the clients, while the construction organisations usually preferred payment on completion. This finding was unexpected because the general expectation was that construction organisations would prefer the use of the advance payment system. The use of an advance payment system enables construction organisations to gain earlier access to project funds, grants protection, or insurance against non-payment by clients, and prevents construction organisations from spending their money on projects. Therefore, it is surprising to find that construction organisations did not prefer the use of the advance payment system by clients. Although the use of an advance payment system lowers the risk of default of the construction organisation, it could tempt the construction organisation to divert the payment for a project to a different one being undertaken. It could be that construction organisations preferred to avoid the temptation of diverting payments for a project.

The decision by clients to use the interim payment system is notable in so many ways. First, the use of an interim payment system by the clients grants protection or insurance against non-performance by the contractors. Second, the use of an interim payment system allows the client to assess the work done for satisfaction and compliance before completing the payment. Lastly, the use of an interim payment system makes project finance easier, safer, and cheaper for clients. An interim payment is part-payment for work to be done by the contractor or construction organisations. The preference for the use of interim payment by the clients and the preference for the use of payment on completion by the construction organisations show a complementary project payment system. They together describe a form of an integrated project payment system in which both the clients and the construction organisations may be satisfied. The best explanation for this arrangement could be that the construction organisations are satisfied with the use of the interim payment system by the clients, but preferred their request for payment to be promptly honoured as soon as they completed the agreed work. The study finding, that the interim payment system is the most common type of project payment system favoured by the client, is aligned with previous studies by Sherif and Kaka (2004), Ansah (2011), and Scott and Mitchell (2017).

Also, the findings of this study show that, apart from the use of General Conditions of Contract, the clients and construction organisations in South Africa also use the New Engineering Contract and Joint Building Contract Committee as the conditions of contract that provide backing for the payment systems used in project procurement. The findings suggest that the construction clients are showing preferences for the condition of contracts that are approved for use by the local, provincial, and national authorities in South Africa.

7.3 Performance indicators used in assessing construction organisations' performance

The financial performance indicators for assessing the performance of construction organisations were investigated quantitatively and qualitatively. The qualitative investigation was a follow up on the quantitative investigation. In the quantitative investigation, the respondents were asked to identify the financial performance indicators used in assessing their organisation's performance by indicating its frequency of use on a Likert scale of 1 to 5. Where 1 = Never, 2 = Seldom, 3 = Sometimes, 4 = Frequently, and 5 = Always. In the qualitative investigation, the interviewees were questioned on the financial performance indicators used in assessing organisational performance. Thematic analysis was used in the analyses of the qualitative data, while the mean item score was used in the analysis of the quantitative data (see Chapter Five and Table 5.6). This table reveals that indicators frequently used by construction organisations in assessing performance are profitability, cash flow, market share, liquidity, and leverage. This suggests that the financial performance of construction organisations seems to depend on their ability to improve cash management and income from other profit centers, to have sufficient cash to meet general expenses, to meet short-term obligations, to repay debt, and the ability to obtain a significant share of the contracts in the construction industry. These financial performance indicators have been established in construction and financial management studies (see Lowe and Moroke, 2010; Norris, 2013; Panigrahi, 2014; Al-Moman and Obeidat, 2017; Seo et al., 2018; Panayiotis, 2018). For example, profitability is a financial performance index that is used to determine whether an organisation can secure finance from financial institutions, and to determine if an organisation is successful. Profitability also enables an organisation to maximise growth and remain in business. The construction industry is a competitive environment; without profitability, it would be difficult for organisations to survive. In the same way, cash flow is important for running a successful organisation because it informs the top management of organisations of the cash positions of the organisations and projects. It also determines cash sufficiency. Liquidity is equally vital in financial management because it determines whether an organisation is bankrupt, and in a position to pay its workers. It also indicates whether an organisation has assets that could be exchanged for cash. Likewise, leverage signifies that an organisation has a variety of financing sources and provides a threshold for business expansion; while market share indicates that an organisation has what it takes to retain its clients/shareholders and obtain new clients.

Based on these benefits of profitability, cash flow, market share, liquidity, and leverage in financial performance management, it is easy to understand why the construction organisations frequently use these as financial performance indicators. However, it is surprising to find that order value was not frequently used by the construction organisations as a financial performance indicator. Order value (turnover) has been identified as an important economic measure. It could be that order value has no significance in the financial management of construction organisations. The nature of the business or the nature of the financial performance of the construction business could be the reason that it is difficult or unnecessary to use order value as a financial performance indicator. The findings of this study are in line with the conclusions by Alfan and Zacharia (2013), Norris (2013), Mazzoli (2014), Seo et al. (2018), Ahmad et al. (2015), Al-Moman and Obeidat (2017), Panigrahi (2014), and Panayiotis (2018). The studies by Alfan and Zacharia (2013) and Norris (2013) concluded that profitability, cash flow, leverage, and liquidity are the major financial performance indicators for construction businesses. Similarly, Mazzoli (2014) reported that profitability is key to decision management and business survival in construction organisations. Caves and Porter (1977) and Porter (1979) also attribute disparities in profitability to construction organisations. Likewise, Gschwandtner (2005) found that profit persistence is associated with the characteristics of firms or organisations. This means that large construction firms have a better operation to generate huge profits and tend to enjoy higher long-term profit rates than smaller construction firms (Ammer et al., 2003). The conclusions by Ahmad et al. (2015) and Al-Moman and Obeidat (2017) indicated that leverage as a financial performance indicator determines the organisational risk profile, ability to repay, and ability to take advantage of new opportunities. Seo et al. (2018) concluded that sufficient cash flow is the lifeblood of a construction business because it is important to meeting financial obligations and nurturing growth. The conclusions of Panigrahi (2014) and Panayiotis (2018) on the importance of liquidity as a financial performance indicator revealed that liquidity is required in meeting short-term debt and operational expenses, and that a shortage of liquidity can lead to the insolvency of construction organisations.

The findings of this study are significant in that they provide information on how to run a successful construction organisation. The findings extend the understanding of financial management in construction organisations. Lastly, the findings provide information on the metrics for the financial performance of construction organisations.

7.4 Level of performance of selected construction companies within a specific period

Table 5.19 shows the results of the investigation into the level of the financial performance of selected construction companies in the five years spanning 2013-2017. The investigation covered the following performance indicators: leverage, liquidity, profitability, and cash flow. The leverage index was determined by comparing total liabilities with the current assets. The liquidity index was determined by comparing current assets with the current liabilities. The cash flow index was determined by deducting total expenditures from total income. The profitability index was estimated in two parts, comprising of gross profit margin and net profit margin. The gross profit margin was determined by deducting the total direct cost of work from the total revenue and calculating the balance as a percentage of the total revenue. The net profit margin was determined by deducting the total indirect costs of work from the total gross profit and calculating the balance as a percentage of the total revenue.

It emerged that large firms with a specialisation in general building and civil engineering construction have higher income, higher positive leverage, and higher positive cash flow. Large firms with a specialisation in civil engineering construction have higher positive liquidity and higher negative cash flow. Small firms with a specialisation in civil engineering construction were found to have higher profitability. It could be inferred from these findings that large firms have higher income, higher positive leverage, higher positive liquidity, and higher positive cash flow, because large firms are more organised, have greater access to funding, and are preferred for large projects that can generate larger profits. Large firms have a structure and staff strength that support the maximization of creativity, efficiency, and productivity. With these attributes of large firms, the collective efforts of the staff members could be pulled and focused on the needs and objectives of the organisation. These findings are aligned to findings of earlier studies by Arafat and Skak (2016), Pervan and Visic (2012), Etale et al. (2016), Rachmawati and Triatmoko (2007), Lee (2009) and Lowe and Moroke (2010), which buttressed this explanation. Arafat and Skak (2016) and Lowe and Moroke (2010) concluded that only large construction organisations have the capital base to execute civil engineering projects. Pervan and Visic (2012), Etale et al. (2016) and Rachmawati and Triatmoko (2007) found that large firms have higher profits and market share, greater access to the capital market, and good cash flow.

Another explanation for the good financial performance of large firms could be that large firms have the financial resources to diversify. Having multiple areas of specialisation or diversification into a new area of specialisation enables better utilization of financial resources. It is a way of surviving and thriving in all manner of market conditions. More importantly, it helps organisations to enhance their competitive advantage and to realize more financial benefits. This explanation is in line with the earlier findings of Oyewobi et al. (2013), Amato and Amato (2014) and Etale et al. (2016).

Regarding the good financial performance of large firms with specialisation in civil engineering construction, the finding suggests that, since civil engineering projects provide infrastructures that trigger economic growth, they have huge financial implications for organisations that specialise in them. This will be the case, most especially if these organisations effectively manage the projects. Effective management of civil engineering projects makes the organisations stand a good chance of deriving huge financial benefits from the projects. This explanation corroborates the conclusion by Tebaldi (2014), which implied that civil engineering construction projects have higher construction costs, require specialist sub-contractors, and require a stable flow of funds because of their numerous activities. It was surprising to find small firms with specialisation in civil engineering construction to have higher profitability. This suggests that small firms have lower expenses as a result of their staff strength and fewer financial obligations. It also means that small firms are more focused on profitability because of the need to grow. It could also be inferred that small firms, which concentrate on civil engineering construction as their sole area of specialisation, have made efforts to explore new possibilities and opportunities for making profits in civil engineering construction. This clarification is in line with the findings of Gathenya (2012), Naikuru et al. (2016), and Pervan and Visic (2012), who pointed out that small firms with good client relations, new expertise, reputation for quality, and diversified investment will experience good financial performance.

This finding highlights the consequences of specialisation of construction organisations on their financial performance. The finding has enabled the understanding of the relation between financial performance and types of construction organisations.

7.5 Cost and time performance of projects executed by construction organisations using different project payment systems.

In order to investigate the cost and time performance of projects executed by construction organisations using different payment systems, the respondents were requested to identify construction projects with which they were conversant, and which had been undertaken by their organisations between 2013 and 2017. The details of these construction projects were used by the respondents to indicate the type of project client, procurement method used. project type, standard condition of contract used, form of project payment used, estimated and final cost, and estimated and final duration for the projects. This information was used to determine the percentage cost overrun, percentage cost underrun, percentage time overrun, and percentage time underrun for these projects (see Table 5.20 and Table 5.21). This was in line with the argument by Nguyen et al. (2004) and Frimpong et al. (2013) that a construction project is successful when it is completed within budgetary cost and schedule. As illustrated in Table 5.13, interviews were conducted to elicit information from the interviewees on the impact of project payment systems on the cost and time performance of projects.

It emerged that clients prefer to use the interim payment system when paying for construction services, which makes it difficult to determine the impact of different payment systems on the cost and time performance of projects. Ansah (2011) concurred that the interim payment system is the most popular payment system employed by clients. This finding provides insight only about the impact of the interim payment system on the cost and time performance of projects. The information on the use of other project payment systems was not enough to provide the basis for comparing the impact of the interim payment system and other types of project payment systems on project performance. A significant number of projects with overrun and underrun of time and cost were found to be executed using the interim payment system. This corresponds with the conclusions by Adjeil et al. (2018), Harris et al. (2019), and Gary et al. (2010), which revealed that cost and time overrun are strongly associated with the use of the interim payment system. It must be noted that time and cost overrun are unavoidable for a certain type of construction project because of its complexities and variations. Therefore, it will be erroneous to conclude that the use of the interim payment system was solely responsible for the time and cost underrun of these projects. Project performance or project success is broader than the determination of time and cost underrun for projects. However, there is an indication that the payment system used is a significant contributor to time overruns and cost underrun on projects.

A valid observation from the findings implies that project type and project expectations must determine the choice of the payment system. This indicates that project performance must be measured by project expectations, and project expectations must be based on project type. Following this strategy, it will be easier to base the choice of the interim payment system on the project type, and easier to evaluate the impact of the interim payment system on project performance.

The use of the interim payment system by clients puts pressure on construction organisations to complete projects within the estimated time and cost, because, if the construction organisations renege on the conditions of the contract, the clients will not complete the payment. This could explain why the interim payment system impacts on the time and cost performance of construction projects.

This finding of the study is important because it extends knowledge on construction project payment systems and how they impact on project performance.

7.6 Differences in the cost and time performance of projects as a result of different payment systems used

The study hypotheses (H6a and H6b), which proposed that there are significant differences in the cost and time performance of projects because of different payment systems used, was tested using the chi-square statistics test. The results show that the differences in the cost and time performance of projects as a result of the use of different payment systems were not significant (see Table 5.21). This suggests that the attributes of the project payment system in use have no visible impacts on the cost and time performance of construction projects. Another explanation for this finding may be that other variables must be considered, before the impacts of the project payment system in cost and time performance of projects could become visible. For example, the size and complexity of construction projects is an important consideration in the cost and time performance of projects. A suitable project payment system could be used on large and highly complex projects to moderate the cost and time performance of projects. This is because large and highly complex construction projects are prone to poor cost and time performance.

Similarly, project duration and type of clients are significant factors that could impact on the cost and time performance of construction projects. Projects with aggressive deadlines might perform well in terms of time, but the acceleration of the activities will impact on the cost performance of the projects (Scott and Mitchell, 2017). This situation provides an opportunity for the use of a payment system that could mitigate the impact of accelerating activities on projects with an aggressive deadline. This explanation is subject to confirmation by future studies. Regardless of the type of project payment system in use, if the clients struggle to meet their financial obligations, projects will perform poorly in terms of time and cost. This research assumes that clients meet their financial obligations on time, which may not be the case in the projects that were surveyed. This explanation is in line with the argument made by Olawale and Sun (2010), Mirza et al. (2013), Handfield et al. (2015), Schoonwinkel et al. (2017) and Mishra and Magar (2017).

7.7 Financial management strategies used by construction organisations

The research investigated the financial management strategies used by the construction organisations by asking the respondents to indicate the level of significance of employing the identified financial management strategies to improve the performance of their organisations towards achieving the overall objectives. The level of significance of these financial management strategies was indicated on a five-point Likert scale where 1 = very low, 2 = low, 3 = moderate, 4 =high, and 5 = very high. The results obtained in this regard are presented in Table 5.7. The results show that five categories of financial management strategies, namely, cash flow forecast strategy, budgeting strategy, creditworthiness strategy, review and evaluation strategy, and risk management strategy, are significantly used by construction organisations in their operations.

Regarding the cash flow forecast strategy, it was found that the use of technology to shorten the cash conversion cycle, optimization of financial functions and cash flow reporting are of high significance to the construction organisations. Track record and costs check, financial analysis of different capital investments, and the use of automated reporting systems are of high significance to the construction organisations as budgeting strategy. Creditworthiness strategies with high significance for financial management used by the construction organisations comprise of repayment of debts and interest or zero bad debt, trust fund, and income statements. Concerning the risk management strategy, the strategies with high significance used by construction organisations are attainment of project objectives, risk avoidance, diversification of operations, and risk management policies and practices. Also, access to finance, assessing the company profit ratio on cash returns, a healthy credit rating, analysis of asset base, review of corporate objectives, and review and evaluation strategy are highly significant and used by construction organisations.

There is enough evidence to suggest that all five categories of financial management strategies (cash flow forecast strategy, budgeting strategy, creditworthiness strategy, review and evaluation strategy, and risk management strategy) are used by the construction organisations. The high significance to these construction organisations of the cash conversion cycle as a cash flow forecast strategy could be because it enables the understanding of where a company's cash is locked away and how better to access the cash. The cash conversion cycle is a significant financial management strategy because it enhances the cash flow of an organisation and it is important to the working capital, liquidity, and operating cycle of an organisation. The high significance of cost checks could be as a result of their usefulness for the calculation of construction costs, for monitoring of underspending or overspending against the cost targets, and for checking the accuracy of the financial accounts in an organisation. Cost checks also provide reliable information for company costs between project phases or periods in the accounting year for an organisation. The explanation for the high significance of financial analysis of different capital investments as a budgeting strategy could be because it provides information on the financial weaknesses and strengths of an organisation, as well as enabling the identification of an impending financial crisis. Financial analysis is used for analysing the assets and liabilities of an organisation because it provides information on the operation effectiveness, efficiency, solvency, profitability, risk, liquidity, and financial position of the organisation. As a budgeting strategy, the use of an automated reporting system is highly significant because it improves the efficiency of an organisation and speeds up the process of gathering financial data.

The impact of bad debt is harmful to business. Therefore, ensuring zero bad debts becomes a significant creditworthiness strategy because it enables construction organisations to favor dispute resolution and define payment terms. The trust fund is also a significant creditworthiness strategy because it helps with the safeguarding of a company's assets. In the same way, the publication of financial statements (income statements) is a highly significant creditworthiness strategy. This is an important financial statement that matches the earned revenue with expenses incurred. It helps to determine the financial health and the financial progress of an organisation.

In financial terms, risk avoidance is a strategy for avoiding any exposures to decisions, events, or an undertaking with negative financial consequences. Similarly, the high significance of risk management policies as a risk management strategy could be because they are useful for setting up risk management procedures, minimizing the impact of risk, and for providing a baseline understanding of risk in an organisation.

Assessing the company profit ratio on cash returns shows the overall performance and efficiency of an organisation and indicates whether it is generating revenues, profits, and cash flows. It also determines if an organisation is able to diversify its business, settle its debts, pay its shareholders, and pay for expenses. This could explain its high significance as a review and evaluation strategy. Also, analysing the asset base serves as collateral and gives value to an organisation; but achieving a healthy credit rating indicates whether an organisation is qualified to secure a bank loan at a lower interest rate and that the organisation can secure a higher loan amount. This could explain its high significance as a review and evaluation strategy. Construction organisations adopt the review of corporate objectives as a review and evaluation strategy because it is a way of monitoring the organisation as a whole and because it enables organisations to set new standards, targets, and objectives. Studies by Odeyinka et al. (2003), Hai and Watanabe (2014), Mohammed et al. (2014), Khosowshahi and Kaka (2007), Harelimana (2017), Egbide (2013), Safi and Lin (2015), Haupt and Padayachee (2016), Sugiharto et al. (2016), Rostami et al. (2014), Alfan and Zacharia (2013) and Adomako and Danso (2014) corroborate the findings of this study. Odeyinka et al. (2003), Hai and Watanabe (2014), Mohammed et al. (2014) and Khosowshahi and Kaka (2007) concluded that cash flow forecast is an important financial management strategy because it is useful for regulating working capital, ascertaining the imminent rate of cash expenses and revenue, and controlling the cost of construction projects. Harelimana (2017) and Egbide (2013) found that budgeting strategy is useful for planning, monitoring, and controlling finances in organisations. In the conclusions of Safi and Lin (2015) and Haupt and Padayachee (2016), it was revealed that creditworthiness is a measure of the value of an organisation. The conclusions by Sugiharto et al. (2016) and Rostami et al. (2014) also revealed that risk management strategy is useful as a financial management strategy for reducing the chances of negative impacts of construction business operations on the organisation's financial performance. Review and evaluation strategy was found by Alfan and Zacharia (2013) and Adomako and Danso (2014) to be a powerful financial management strategy that enables construction organisations to achieve the desired trade-off between profitability, solvency, and liquidity.

These findings are significant because they imply the proactive use of financial management strategies by construction organisations in enhancing cash flow, improving efficiency, monitoring, and controlling finances, and measuring the value of an organisation.

7.8 Relationship between project payment systems used by clients and the financial performance of construction organisations

Structural equation modelling (SEM) and multiple regression analysis were used to test the validity and significance of a hypothesis, which proposes that there is a positive and significant relationship between project payment systems and the financial performance of construction organisations. The results of the multiple regression analysis and structural equation modelling are presented in Figure 6.1, Table 6.7, Table 6.8, and Table 5.13. The path analysis diagram shows five hypothesized relationships in the hypothesized model that was used for structural equation modelling. The predictive power of the model indicates that the hypothesis is valid and significant. The findings show that there is a moderately positive association between the project payment systems used by clients and the financial performance of construction organisations. This suggests that the financial performance of construction organisations could not be reliably controlled using only the payment system used by clients and that the payment system used by clients does not adequately support the financial performance of construction organisations. Another explanation for the mild impact of the payment system used by the clients on the financial performance of construction organisations could be that there is a need for another factor (such as the use of financial management strategies) to moderate the impact of the payment systems used by clients and the financial performance of construction organisations. Figure 6.1 and Table 6.7 show that X1 (an interim payment system) is the only valid variable for the payment systems used by clients that impacts on construction company performance. The use of an interim payment system allows the clients to make a part payment to the construction organisation and complete the payment after the agreed work is completed (Ansah, 2011). This arrangement is not financially beneficial to the construction organisations. The use of the interim payment system eases project financing for the clients, and because the construction organisations will only get the complete payment when the work is done, this means that they are not able to plan their finances properly. An inappropriate financial plan will affect the construction organisation's performance.

Regarding the association between the variables of the financial performance of construction organisations and the payment system used by clients, the findings show that profitability, cash flow, and market share have a weak association with the interim payment system. While liquidity and the interim payment system have a moderate association, company leverage and the interim payment system have a strong association. This suggests that construction organisations use the complete payment expected from clients as a key resource that could be leveraged for a bank loan or procurement of services and materials. It was also found that there is a weak correlation between the use of a payment system, profitability, cash flow, and market share. This suggests that the use of the interim payment system by the clients has little positive impact on the ability of construction organisations to improve their cash management and income and have sufficient cash to meet general expenses. The ability of the construction organisations to meet short-term obligations can be controlled to some degree using an interim payment system. Similar findings are observed in Singh (2003), Scott and Mitchell (2017), Sidney and Mitchell (2007), Oke et al. (2016), Aje et al. (2017), Oke et al. (2013), Motawa and Kaka (2009), Olatunji et al. (2017) and Tran et al. (2019). Singh (2003) found that the use of an interim payment system may cause late payment to the contractor, thereby affecting the contractor's cash flow. Scott and Mitchell (2017) and Sidney and Mitchell (2007) concluded that the interim payment system is filled with financial risks and drawbacks for contractors. Aje et al. (2017), Olatunji et al. (2017) and Tran et al. (2019) pointed out that financial performance is strongly affected by the project payment system because the payment system determines the nature of the cash flow, which, in turn, determines the flow of liquidity and productivity in construction projects and organisational performance.

The validation of the hypothesized model of the relationship between project payment systems used by clients and the financial performance of construction organisations confirms the effect of the use of project payment systems by the clients on the financial performance of construction organisations.

The information from this study will extend the understanding of the relationship between project payment systems and the financial performance of construction organisations.

7.9 Relationship between financial management strategies and the financial performance of construction organisations

A hypothesized model that proposed a positive and significant relationship between financial management strategies and the financial performance of construction organisations was tested using a model that features 25 hypothesized relationships. It emerged that the model and its hypothesized relationships were valid and significant (see Figure 6.2, Table 6.9, Table 6.10, and Table 5.14). The results reveal that there is a weak but positive association between the financial management strategies in use by the construction organisations and their financial performance. This implies that the financial management strategies in use by these construction organisations are more focused on maintaining their financial position rather than on improving their financial performance. It may be that these construction organisations are not prepared to take diversification risks or investment risks. An examination of the financial management strategy variables shows that only budgeting strategy and creditworthiness strategy have a strong association with the financial performance of the construction organisations. On the other hand, the cash flow forecast strategy, risk management strategy, and review and evaluation strategy have a moderate association with the financial performance of the construction organisation.

This finding is important because it implies that balancing financial demands within the available resources, cost checking, and financial analysis of different capital investments are essential to the improved financial performance of an organisation. Also, the finding suggests that repayment of debts, and interest, creating a trust fund, holding liquid assets to remain solvent, increasing assets, improving capital management efficiency, and publishing financial statements are some of the financial plans that could be put in place to improve the financial performance of construction organisations. The moderate association between the financial performance of construction organisations, risk management strategy, cash flow forecast strategy, and review and evaluation strategy agree with the earlier explanation on the preference for the preservation of financial positions by the construction organisations. It shows that risk management strategy is not being deployed as appropriate towards ensuring the improved financial performance of the construction organisations, but for maintaining their financial position.

As regards the association between the variables for financial performance and the financial management strategies in use by the construction organisations, the results show that only leverage has a strong association with financial management strategies. While liquidity has a moderate association with financial management strategies, market share, cash flow, and profitability were found to be weakly associated with financial management strategies. This suggests that the financial management strategies used by the construction organisations impact more on the ability of the construction organisations to repay debt rather than on their ability to have sufficient cash to meet general expenses and to improve cash management. The impact is felt to some degree on the ability of the construction organisations to meet short-term obligations. These results are aligned with the findings of earlier studies by Oke et al. (2016), Akinola (2010), Lowe and Moroke (2010), Haupt and Padayache (2016), Way et al. (2015), Arditi et al. (2017) and Choil and Kim (2014), which suggested that the use of appropriate financial management strategies contributes positively to the performance of construction businesses in terms of increased profitability, liquidity, debt management, stable cash flow, creditworthiness, budgetary plan, and risk management.

7.10 Relationship between project payment systems used by the clients and financial management strategies used by construction organisations

This study tested a hypothesized model with the proposition that there is a positive and significant relationship between project payment systems used by clients and financial management strategies used by construction organisations. The hypothesized model (as shown in Figure 6.3) features five hypothesized relationships. The results of the structural equation modelling for the hypothesized model show that all the hypothesized relationships have an acceptable association and significance, but the hypothesis was not accepted. The results show that there was a significant negative relationship between the payment systems used by the clients and the financial management strategies used by the construction companies. This means an increase in the use of the project payment systems identified will bring about a decrease in the financial management strategies used by construction organisations. Further interrogation of the results (Figure 6.3, Table 6.11, Table 6.12, and Table 5.15) shows that the interim payment system is the only valid payment system in use by clients. This finding implies that the increased use of the interim payment system by the client does not result in increased use of financial management strategies by construction organisations.

Furthermore, the findings show an acceptable association between the sub-constructs for financial management strategies used by construction organisations and the use of the interim payment system by clients. Only the budgeting strategy and creditworthiness strategy were found to have a strong association with the use of the interim payment system. A moderate association was found between the use of the interim payment system, risk management strategy, cash flow forecast strategy, and review and evaluation strategy. This finding implies that the use of the interim payment system will negatively affect balancing of financial demands within available resources, costs checking, increase in assets, and repayment of debts of the construction organisations. The findings imply that the use of interim payment systems by clients limits the need for construction organisations to use the financial management strategies of matching funding to cash flow obligations, cash flow tracking, adaptability to the changing market, risk avoidance, building financial strength and achieving a healthy credit rating. Conversely, the results imply that the use of the interim payment system by clients supports the construction organisation’s financial management strategy to manage risk (such as the temptation to use one project fund for another project or use the project fund for personal or organisational obligations). Also, it could be inferred that the use of the interim payment system by clients may help the construction organisations to forecast their cash flow based on the partial and completed payment dichotomy provided by the interim payment system.

These findings are aligned to previous studies by Oyewobi et al. (2019), Kazimu (2012) and Schulz et al. (2015), which reported that financial management strategies are employed by construction organisations, to survive and mitigate the negative impacts of a project payment system used by clients. These findings of the research provide information on the impact of the use of the interim payment system by clients on the financial management abilities of construction organisations.

7.11 The relationship between project payment systems used by clients and the financial performance of construction organisations as mediated by financial management strategies

A theoretical model hypothesizing that financial management strategies mediate the relationship between project payment systems used by clients and the financial performance of construction organisations was tested, using structural equation modelling. The results of the multiple regression analysis and structural equation modelling as shown in Figure 6.4, Table 6.13, Table 6.14, and Table 5.16 validate the hypothesis. The path analysis shows that there is a strong and positive interconnection between financial management strategies and financial performance, between project payment system and financial management strategies, and between the project payment system and financial performance. It can be inferred from these results that the project payment system impacts the financial performance of construction organisations both indirectly and directly through the influence of financial management strategies. The findings show that the interim payment system was the only valid payment system. This payment system is found to have a weak but positive effect on the financial performance of construction organisations owing to its attributes. However, the results of the path analysis in Figure 6.4 suggest that the intervening variable-financial management strategies produce a strong and positive but indirect association between the use of the interim payment system by the clients and the financial performance of construction organisations. This finding implies that, regardless of the use of the interim payment system by the clients, the financial performance of construction organisations will improve if certain financial management strategies are employed by the construction organisations. According to Oke et al. (2016), Festus and Adeniran (2013), Ali and Ali (2015), Muneer et al. (2017) and Karadag (2015), financial management strategies are useful in dealing with financial risks and threats that come from the use of inappropriate project payment systems or the inappropriate use of appropriate project payment systems. The results in Figure 7.4, Table 7.7 show that all the financial management strategies are moderately useful for creating an improved financial performance where the interim payment system is used by clients on construction projects.

The results show that all the financial management strategies (cash flow forecast strategy, risk budgeting strategy, creditworthiness strategy, risk management strategy, as well as review and evaluation strategy) have a moderately positive association with the constructs in the structural model. Though the impact may not be intense, the use of strategies such as optimization of financial functions, cash flow tracking, cost checking, financial analysis of capital investment, maintaining zero bad debts, attaining project objectives, avoiding risks, and assessing the company's profit ratio on cash returns will moderate the negative impact of the interim payment system on the financial performance of construction organisations. As a result of this interaction, there will be an improvement in the financial performance of construction organisations.

An examination of the path analysis shows that only leverage has a strong correlation with the constructs in the structural model, while liquidity has a moderate correlation with the constructs in the structural model. Market share, cash flow, and profitability have a weak association with the constructs in the structural model. This finding suggests that the intervention of the financial management strategies on the relationship between the interim payment system and the financial performance of construction organisations will significantly result in the improved ability of those organisations to repay debts. It can also be inferred that the construction organisations will be able to meet short-term obligations; but they will hardly be able to improve in their cash management, income, and cash flow. This is because the income or cash that they need for the project or to improve on their financial performance is locked down as the complete payment to be paid by the client after the work is completed. This means that the organisations will incur debts and a negative cash flow pending the completion of the part payment made by the clients and will only be able to repay this debt after the payment is complete, as determined by the conditions of the interim payment system. This argument is aligned with previous studies by Adjeil et al. (2018) and Khosrowshahi and Kaka (2007). Adjeil et al. (2018), Judi et al. (2017) and Khosrowshahi and Kaka (2007) concluded that the use of the interim payment system could lead to project abandonment, cash flow glitches, and project failure, if certain financial management strategies are not utilized.

These findings provide insights into the usefulness of financial management strategies in controlling the impacts of payment systems on projects and the performance of construction organisations.

7.12 Relationship between project payment systems used by clients and the financial performance of construction organisations moderated by the interaction between financial management strategies and project payment systems

The hypothesis that the significant interaction between financial management strategies and project payment systems impacting organisation performance moderates the significant relationship between project payment systems used by clients and financial performance of construction organisations was tested using structural equation modelling. The results of the structural equation model are presented in Figure 6.5, Table 6.15, and Table 6.16. The findings in these results indicate that the interaction between financial management strategies and project payment systems impacting organisation performance brought about a strongly positive and significant relationship between project payment systems used by clients and the financial performance of construction organisations. This means that, as the interplay between financial management strategies and project payment systems increases, the reciprocal influence of project payment systems used by clients on the financial performance of construction organisations will increase. An examination of the variables for the project payment systems impacting organisation performance shows that the interim payment system (with the moderate association), advance payment system (with the moderate association), and stage payment system (with the moderate association) are the valid and significant payment systems that would impact the performance of construction organisations when moderated by the financial management strategies and project payment interaction. This implies that, if the features of the interim payment system could be integrated with the features of the advance payment system and stage payment system, then an integrated payment system would emerge. This integrated payment system would be useful for improving the financial performance of construction organisations. A similar argument was made by Schulz et al. (2015), which stated that there is a need for an innovative project payment system whose features are based on the needs of both the contractors and clients, to increase both clients' and contractors' satisfaction.

The argument for an integrated payment system that will combine the features of the interim payment, advance payment, and stage payment systems is that the interim payment system will positively impact the ability of clients to finance projects. So also, the advance and stage payment systems will positively impact the performance of the organisation. However, since the construction organisations cannot impose their choice of the payment system on the clients, the acceptable solution is to evolve a new payment system that will integrate the features of the different payment systems that are beneficial to both parties. This integrated payment system could be described as a type of payment system that enables the clients to make part-payment of work to be done with some advance, while paying the complete payment in stages. These findings are in line with the conclusions of previous research by Abeysekera (2002), Oke et al. (2013), Li et al. (2015), Scott and Mitchell (2017), Aje et al. (2017) and Adjeil et al. (2018). The advance payment system was argued by Oke et al. (2013) to offer the contractor an interest-free loan with which he can boost his cash flow, while Abeysekera (2002) posited that the advance payment system enables the contractor to finance the contracts without resorting to external borrowing. Oke et al. (2013), Li et al. (2015), Aje et al. (2017) and Scott and Mitchell (2017) concluded that the stage payment and advance payment systems are useful for avoiding project delay and averting cost escalation.

All the financial management strategies (cash flow forecast strategy, budgeting strategy, creditworthiness strategy, review and evaluation strategy, and risk management strategy) are qualified for selection. This is because they all have a moderate association with the other constructs in the structural model (see Figure 7.5 and Table 7.9). The interactions between the payment systems used and financial management strategies deployed are moderately beneficial to liquidity and leverage aspects of financial performance, while profitability, cash flow, and market share will weakly benefit from the interactions between the constructs.

In addition, the findings show that the correlation between project payment systems used by clients (that is, the interim payment system) and financial management strategies is strong and significant. While the correlation between project payment systems impacting organisation performance (interim, advance, and stage payment systems) and the financial performance of construction organisations is strong and significant. The finding suggests that, if the choice of financial management strategies is made based on the attributes of the project payment system, the impact of the use of the payment system by clients on the organisation's performance would be positive. This is because the financial management strategies in use will mitigate the negative impacts and moderate the positive impacts of the use of the payment system. Similarly, the finding suggests that, if the choice of payment system impacting organisation performance is made based on the financial performance needs and requirements, this translates into a financial management strategy that will impact on the financial performance of the construction organisation.

7.13 Summary of the chapter

It can be deduced from the findings that the attributes of the interim payment system, advance payment system, and stage payment system employed on the project, determine the choice of financial management strategies adopted by the contractor.

This finding of the study is significant because of the insights it provides into the need for, and formation of, an integrated payment system. These findings are drawn into conclusions and recommendations in the next chapter, Chapter Eight.

CHAPTER EIGHT

CONCLUSIONS AND RECOMMENDATIONS

8.1 Introduction

This research examined the interactions between project payment systems and financial management strategies of construction companies and whether these mediate the relationship between project payment systems and organisation financial performance. The research reviewed literature within the constructs of project payment systems, and financial management strategies categorizing concepts that are relevant to project and organisation financial performance in the construction industry. The review provided the choice of the appropriate variables, development of research questions, and the study hypotheses about the constructs' interconnection. The research answered the main research questions of "*What project payment systems and financial management strategies result in the better performance of construction companies, and how can the impact of these (payment systems and financial management strategies) on company performance be assessed and modelled?"* The relevant research instruments of quantitative and qualitative approaches were used to answer the research question that determined what motivates construction companies to achieve their better performance in the South African construction industry.

Consequently, this chapter reports the summary of findings, conclusions drawn from the findings, recommendations that resulted from the findings, the contributions to knowledge, and areas for further study.

8.2 Appraisal of the aim and objectives of the research

This research aimed to examine the interactions between project payment systems and financial management strategies of construction companies and whether these mediate the relationship between project payment systems and organisation financial performance. To summarize the findings from this research, the objectives of this research are identified:

SO1. To identify and assess the project payment systems used in construction project procurement

SO2. To identify the financial performance indicators used in assessing construction companies

SO3. To determine the level of performance of selected construction companies within a specific period

SO4. To evaluate the cost and time performances of projects executed by construction companies using different payment systems

SO5. Identify the prevalent financial management strategies used by construction organisations in construction project procurement to achieve organisation financial performance

SO6. To evaluate the relationship between project payment systems, financial management strategies, and construction company financial performance

SO7. To develop a model for the complex interactions between project payment systems, financial management strategies and the financial performance of the construction company

SO8. To validate the model developed to determine its accuracy/reliability and analytical performance

8.3 Summary of findings

This section presents the findings derived from the research objectives. The study sought to achieve the following objectives. Thus, these sub-sections describe how each of the research objectives was met in turn.

8.3.1 Objective one

SO1. To identify and assess the project payment systems used in construction project procurement

It emerged from the study that clients are using an interim payment system because it makes project finance easier, cheaper, and safer. This study found that contractors prefer payment on completion because it guarantees the complete payment for work done.

8.3.2 Objective two

SO2. To identify the financial performance indicators used in assessing construction companies

This study found that the financial performance indicators used in assessing the financial performance of construction organisations entail profitability, cash flow, liquidity, market share, and leverage.

8.3.3 Objective three

SO3. To determine the level of performance of selected construction companies within a specific period

Construction firms with a specialisation in both general building and civil engineering construction were found to have higher income, higher positive leverage, and higher positive cash flow, while the study found firms with a specialisation in civil engineering construction to have higher profitability and higher positive liquidity.

8.3.4 Objective four

SO4. To evaluate the cost and time performances of projects executed by construction companies using different payment systems

It emerged in this study that the interim payment system was used for most of the projects, and that overrun and underrun of time and cost occurred on the projects that were executed using an interim payment system.

8.3.5 Objective five

SO5. Identify the prevalent financial management strategies used by construction organisations in construction project procurement to achieve organisation financial performance

Strategies, such as cash flow forecast, budgeting, creditworthiness, review and evaluation, and risk management, were established as being in use by construction organisations, for financial management.

8.3.6 Objective six

SO6. To evaluate the relationship between project payment systems, financial management strategies, and construction company financial performance

The study found that the project payment system used by the client does not entirely determine the nature of the financial performance of construction organisations. The project payment system used by the client allows the construction organisations to have leverage for the procurement of services, loans, or materials.

8.3.7 Objective seven

SO7. To develop a model for the complex interactions between project payment systems, financial management strategies and the financial performance of the construction company

The research determined that the focus of the financial management strategies in use by construction organisations is to maintain their financial positions. The study deduced that construction organisations were in a good position financially and that the best way to maintain their financial positions was to balance their financial demands within the available resources, checklists, and analyze their capital investments. Emerging from this study is a significant finding that an increase in the use of the interim payment system by clients will cause a decrease in the strategic reaction to the payment system by construction organisations. The study also established that financial management strategies will indirectly cause an interim payment system to have a positive impact on the financial performance of construction organisations.

8.3.8 Objective eight

SO8. To validate the model developed to determine its accuracy/reliability and analytical performance.

This study validated and established that the interaction between the interim payment system used by clients and financial management strategies moderates the relationship between payment systems and the financial performance of construction organisations. Lastly, this study found that the impact of the use of interim payment systems by clients on the financial performance of construction organisations would be positive, if the choice of financial management strategies were made based on the attributes of the project payment system impacting organisational performance.

8.4 Conclusions

Based on the findings, the study makes the following conclusions:

This study showed that clients want to have insurance against non-performance by the contractors and want the opportunity to assess the work done by contractors for compliance and satisfaction; hence, their preference for the interim payment system. In contrast, contractors want their payments as soon as they have completed the agreed work. This study concludes that the cash position of the organisations, the ability of construction organisations to secure financing from financial institutions, the ability of construction organisations to pay their workers, the ability of construction organisations to keep their clients and obtain new clients, and the ability of construction organisations to have a variety of financing sources are useful in assessing their financial performance.

It can be concluded that construction organisations with a strong structure, multiple areas of specialisation, creative and efficient staff members, and access to funding, have a great chance of experiencing higher income, higher positive leverage, higher positive liquidity, and higher positive cash flow. Similarly, construction organisations with specialisation in civil engineering construction and project management skills will experience higher positive liquidity and higher profitability. The occurrence of overrun and underrun of time and cost on the projects executed using the interim payment system cannot be attributed to the use of the interim payment system on those projects. Although the interim payment system could be used to put pressure on construction organisations to complete projects to time and within the estimated cost, project types and expectations must be used to determine the choice of the payment system.

The financial management strategies in use by the construction organisations are implemented to enhance their cash flow, monitor underspending or overspending against project cost targets, ensure accurate financial accounts, determine adequate information on their financial strength and weakness, safeguard the company's assets, determine the financial progress of the organisation, and determine the overall performance and efficiency of the organisation. Also, it was established that the financial performance of construction organisations is not adequately supported by the project payment system used by clients and that the characteristics of the project payment system used by clients are not financially beneficial to the construction organisations, mostly because they do not allow them to plan their finances effectively and properly.

Furthermore, this study concludes that construction organisations which do not maintain their financial positions by repaying their debts and interest or hold liquid assets to remain solvent and improve capital management efficiency, will perform poorly. Construction organisations are satisfied with their abilities to meet short term obligations and repay debts. Also, the study concludes that the continuous use of the interim payment system will negatively affect the ability of construction organisations to increase their assets, repay debts, and balance financial demands within available resources.

The study concludes that the financial management strategies that will bring about an improvement in the financial performance of construction organisations, regardless of the use of the interim payment system, are cash flow tracking, optimization of financial functions, cost checking, maintaining zero bad debts, financial analysis of capital investment, assessing the company's profit ration on cash returns, and risk avoidance.

The extent to which the outcomes of the findings can be generalised was limited by the choice of the professionals and contractors listed in Grades 7 to 9 of the cidb register. Mixed methods require considerable time frame which was not enough during this research as the programme is time bound. Unwillingness of the professionals and registered contractors to avail financial information about their construction organisations especially, the Privacy Acts in operation within the industry limited the generalisation of the research findings.

8.5 Recommendations

Recommendations are made based on the research findings and conclusions for and to the government agencies, particularly the committee set up for the construction industry (cidb), which is responsible for South African construction industry performance policymaking, formulation, and implementations, and construction project managers, construction executives, and professionals.

The following recommendations are made in line with the findings and conclusions of the study:

- A payment system that integrates the preferences and requirements of both clients and contractors must be developed. Such a system should combine the positive characteristics of the interim payment system, stage payment system, and advance payment system. It is important that this new payment system must be formulated by the government agency (cidb), which is responsible for South African construction industry policymaking, formulation, and implementation, to cater for, and integrate, the needs of clients and contractors.
- Construction organisations with huge financial resources should diversify into a new area of specialisation to realise more financial benefits and to better utilize their financial resources.

- Construction organisations with limited financial resources should make efforts to perfect their project management skills and explore opportunities for maximizing financial benefits in their area of specialisation.
- Workshops on the use and importance of financial management strategies in ensuring the better performance of construction organisations should be regularly organised in the construction industry.
- A financial plan to be developed by the client quantity surveyor (Professional) for projects, which should be based on the project payment system to be used by clients.
- Construction organisations should make efforts to improve their cash management skills and improve the impacts of financial management strategies on their financial performance beyond their current situation.
- Conditions of contracts should be developed in such a way as to provide modifications that will moderate the negative impacts of the interim payment system on the financial management strategies and financial performance of construction organisations.
- Construction organisations should select financial management strategies in response to common payment systems used on the project to positively impact their financial performance.

8.6.1 Contributions to knowledge

8.6.2.1 Critical contributions to knowledge

Critically, the study contributes to the knowledge of payment systems and construction company performance, and the implications of the payment systems for the operations and performance of construction firms.

Also, in terms of the theoretical issues in the Resource-based Theory and Domino Theory, the study has critically shown that the most important contributing factor of financial performance is the financial management strategies employed by the construction organisations, and that the domino effect of preferred payment system and financial management strategies results in a healthy financial performance.

Finally, this study contributes to the existing knowledge in the innovative opportunities in the project payment system and provides information on the important role of the project payment system in financial management. Likewise, the research provides information on assessing the technical and financial efficiency of the project payment system.

8.6.2.2 General contributions to knowledge

Generally, this study extends the knowledge of how the interactions of financial management strategies and payment systems impact company performance. This research is useful to the construction stakeholders involved in the payment for work, especially the client, professionals, and contractors, by highlighting channels of improving project payment systems and construction organisation performance in the construction industry, and by recommending appropriate methods that suit the project environment.

8.6.3.3 Scholar contributions to knowledge

The study established and modelled the relationships between project payment systems, financial management strategies, and construction organisation performance, and developed a model to show how financial management strategies mediate the relationship between project payment systems and company performance. The model shows the preferred payment system for the execution of construction projects from the perspectives of both clients and contractors. The study enables the identification of strategies and measures that can be used by both constructors and clients, such as conditions relating to payment and usage of the funds in the contract, so that payment can be made effectively, and construction company performance problems in projects will be reduced to the barest minimum.

8.7 Areas for further research

Due to the findings from this study, the following areas for further research were identified:

- A further study is required to develop and establish an integrated project payment system that will address the requirements of both clients and construction organisations.
- There is a need to understand the nature of the financial performance of the construction business. The insights to be provided by this work will extend the understanding of the financial performance indicators in use by construction organisations.
- Future studies should investigate the financial performance of construction organisations over ten to 20 years. This will provide more reliable information on the financial performance of construction organisations.

- Future studies on the impact of project payment systems on project performance should be tailored to the characteristics of different project payment systems. This should be linked to project expectations and characteristics. This will provide insights into how to match project payment systems with different projects.
- Future studies should focus on the relationships between the different categories of financial management strategies.
- Future research on the conditions of contract in the use of the interim payment system and its impact on the financial performance of construction organisations at various project stages can be undertaken. It is important to investigate the financial performance at the start and the end of a project, and the beginning and end of each project phase.
- A further study is required to understand the modifications that are required for the interim payment system to moderate its impact on the financial management abilities and strategies of construction organisations. Since clients prefer the use of the interim payment system, the insights on the modifications that are required will make the use of the interim payment system for projects beneficial to construction organisations.
- Further studies are required to investigate the specific attributes of different project payment systems and the applicable strategies for mitigating their impacts on projects and construction organisation financial performance.
- Further research is needed to conceptualize the features of an integrated project payment system and to establish their applicability.
- Further study is needed to know whether payment systems vary with procurement methods, and project types.

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APPENDIX A

ETHICS APPROVAL

Application for Approval of Ethics in Research (EiR) Projects
Faculty of Engineering and the Built Environment, University of Cape Town

APPLICATION FORM

Please Note:
Any person planning to undertake research in the Faculty of Engineering and the Built Environment (EBE) at the University of Cape Town is required to complete this form before collecting or analysing data. The objective of submitting this application *prior* to embarking on research is to ensure that the highest ethical standards in research, conducted under the auspices of the EBE Faculty, are met. Please ensure that you have read, and understood the EBE Ethics in Research Handbook (available from the UCT EBE, Research Ethics website) prior to completing this application form: http://www.ebe.uct.ac.za/ebe/research/ethics1

APPLICANT'S DETAILS		
Name of principal researcher, student or external applicant		Emmanuel Dele Omopariola
Department		Construction Economics and Management
Preferred email address of applicant		OMPEMM002@myuct.ac.za
If Student	Your Degree: e.g., MSc, PhD, etc.	PhD
	Credit Value of Research: e.g., 60/120/180/360 etc.	360
	Name of Supervisor (if supervised):	A/Professor Abimbola Olukemi Windapo
If this is a researchcontract, indicate the source of funding/sponsorship		N/A
Project Title		Modelling the Relationship Between Project Payment Systems, Financial Management Strategies and Construction Organization Performance.

I hereby undertake to carry out my research in such a way that:

- there is no apparent legal objection to the nature or the method of research; and
- the research will not compromise staff or students or the other responsibilities of the University;
- the stated objective will be achieved, and the findings will have a high degree of validity;
- limitations and alternative interpretations will be considered;
- the findings could be subject to peer review and publicly available; and
- I will comply with the conventions of copyright and avoid any practice that would constitute plagiarism.

SIGNED BY	Full name	Signature	Date
Principal Researcher/ Student/External applicant	Emmanuel Dele Omopariola		13 Mar 2018

APPLICATION APPROVED BY	Full name	Signa...	Date
Supervisor (where applicable)	A/Prof. Abimbola Olukemi Windapo		13 Mar 2018
HOD (or delegated nominee) Final authority for all applicants who have answered NO to all questions in Section1; and for all Undergraduateresearch (Including Honours).	NGEN TSU TUAN		11 May 2018
Chair : Faculty EIR Committee For applicants other than undergraduate students who have answered YES to any of the above questions.	R Behrens		15 May 18

Page 1 of 2

Signatures Removed

APPENDIX B

CONSENT FORM

UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

Department of Construction Economics and Management
Faculty of Engineering and the Built Environment
University of Cape Town, Snape Building,
Upper Campus, Rondebosch, 7701, Cape Town

Dear prospective participant,

Re: Modelling the Relationship between Project Payment Systems, Financial Management Strategies and Construction Organisation Performance

You are hereby invited to participate in an ongoing PhD (Construction Economics and Management) research project aimed at examining the interactions between project payment systems and financial management strategies/methods of cash flow administration of construction companies and moderating roles between project payment systems and organisation performance.

This is a research being undertaken by Emmanuel Dele Omopariola, a PhD student under the supervision of Associate Professor Abimbola Olukemi Windapo of the University of Cape Town. The outcome of the study will be presented in the Department of Construction Economics and Management in fulfilment of the requirement for the award of a Doctor of Philosophy Degree (PhD) in Construction Economics and Management.

This research process will identify specific payment systems influencing construction companies' performance and the financial management strategies that moderate the relationship between project payment systems and construction companies' performance in South Africa. The questionnaire can be completed in approximately 15minutes. All useful comments that will aid the researcher in carrying out the study are welcome. All subjects of this research and any information that you shall provide will be protected with unreserved confidentiality.

Should you have any queries or questions for clarification purposes about the study, do not hesitate to contact me on 0767697765 or OMPEMM002@myuct.ac.za. Your timely response will be appreciated.

Thank you for your assistance.

Mr. Emmanuel Dele Omopariola A/Prof. Abimbola Olukemi Windapo
(PhD Candidate/Principal Researcher) (Supervisor)

APPENDIX C

QUESTIONNAIRE

Survey on the analysis of the relationship between project payment systems, financial management strategies and construction organisation performance within the South African construction industry (April, 2018)

PART 1 SECTION A: GENERAL INFORMATION

SECTION A: GENERAL INFORMATION

INSTRUCTION: Please tick "√" in the boxes with most appropriate or fill the blank spaces where necessary.

SECTION A:

1. Name of Respondent/Firm (Optional)? ……………………

2. Educational Background of the Respondent?

Bachelor's Degree or Higher (NQF Level 7) ☐ Higher Diploma (Technikon/University of Tech) (NQF Level 6) ☐ Certificate – Diploma with Grade12(NQF Level 4) ☐ 3 N4-6/NTC 4-6/Certificate – Diploma with Less than Grade 12 (NQF Level less than 4) ☐

3. Designation of Respondent

Director Cadre 1 ☐ Management Cadre 2 ☐ Technical Officer 3 ☐ Other ☐

(Please specify)

4. Profession of Respondent

Architect 1 ☐ Quantity surveyor 2 ☐ Engineer 3 ☐ Others (Please specify) ☐

5. Year …………. Month(s)…………… of experience of Respondent

6. Kindly indicate your grade on CIDB register and class of works: (Tick all that is applicable)

Class of works/ CIDB grade	**9**	**8**	**7**
General Building Construction (GB)			
Civil Engineering Construction (CE)			

7. Years since establishment? ………………………….

8. What is the size of the firm? Define by number of ……………….employees

9. Kindly indicate the province where your company head office is located. (Please, tick all that is applicable)

Province Region	Tick "√"
Eastern Cape	
Western Cape	
Free State	
Gauteng	
Limpopo	
Mpumalanga	
Northern Cape	
North – West	
Kwazulu Natal	

10. Number of construction projects handled by your firm in the last five (5) years (2013 – 2017)

>R200M (e.g. 5No)………………………………..

R50M – 200M (e.g. 5No)………………………...

<50M (4No) ……………………………………

SECTION B: PROJECT PAYMENT SYSTEMS

11.1. Kindly identify the standard conditions of contracts used on your construction projects in the last five years, indicating the frequency on a scale of 1 – 5.(where 1 = Never and 5 = Always)

Standard Condition of Contract	Never	Seldom	Sometimes	Frequently	Always
GCC - (General Conditions of Contract)					
JBCC - (Joint Building Contract Committee)					
NEC - (New Engineering Contract)					
FIDIC - (International Federation of Consulting Engineers)					
ICE - (Institution of Civil Engineers)					
RIBA – (Royal Institute of British Architect)					
JCT - (Joint Contract Tribunal)					
OTHER (Please Specify)...					

11.2. Identify the payment systems used by clients to pay for construction services rendered by your company in the last five years, indicating the frequency of use on a scale of 1-5. (where 1 = Never and 5 = Always)

PROJECT PAYMENT SYSTEMS	Never	Seldom	Some-times	Frequently	Always
Interim /Progress payment					
Advance payment					
Stage payment					
Milestone payment					
Payment on Completion					
Other (please specify)					

11.3.(A) Using your construction company experience, please, indicate your assessment on a scale of 1-5 (where 1 is very low and 5 is very high) the positive impact of the identified payment systems on organisation performance.

PROJECT PAYMENT SYSTEMS	Very Low	Low	Moderate	High	Very High
Interim /Progress payment					
Advance payment					
Stage payment					
Milestone payment					
Payment on Completion					
Other (Please Specify)...........................					

11.3.(B) Using your construction company experience, please, indicate your assessment on a scale of 1-5 (where 1 is very low and 5 is very high) the negative impact of the identified payment systems on organisation performance.

PROJECT PAYMENT SYSTEMS	Very Low	Low	Moderate	High	Very High
Interim /Progress payment					
Advance payment					
Stage payment					
Milestone payment					
Payment on Completion					
Other (Please Specify)...........................					

11.4. Please rate your preference for the following systems used in payment by clients by indicating its satisfaction of use on a scale of 1 - 5. (where 1 = Very Unsatisfactory and 5 = Very Unsatisfactory)

Payment systems	**Very Unsatisfactory**	**Unsatisfactory**	**Neutral**	**Satisfactory**	**Very Satisfact-ory**
Interim/Progress payment					
Advance payment					
Stage payment					
Milestone payment					
Payment on Completion					
Other (please specify).......................					

SECTION C: PERFORMANCE INDICATORS

Sec.C.1. Kindly identify the performance indicators used in assessing your organisation's performance by indicating its frequency of use on a scale of 1 – 5. (1 = Never and 5 = Always)

Performance Indicators	**Never**	**Seldom**	**Sometimes**	**Frequently**	**Always**
Profitability (ability to improve cash management and income from other profit centres)					
Cash flow (ability to have sufficient cash to meet general expenses)					
Liquidity (ability to meet short term obligations)					
Leverage (ability to repay debt)					
Order value (at least 1.5 of your turnover)					
Market Share (total share of a company out of total segment sales)					

Section D: COST AND TIME PERFORMANCE OF PROJECTS

1: Please use a construction project undertaken by your company between the years of 2013 – 2017 that you are very familiar with in answering the following questions. (Please Tick **"√"**)

D.1 Client

Private ☐ Local Government☐ National Government☐ International Organisation☐ Other ☐ (please specify)……………..

D.2 Sector

Private Public ☐ Private/Public ☐ Other ☐ (please specify) ……………..

D.3 Procurement Method Used

Traditional ☐ Management Design and Build/Integrated ☐ Other ☐ (please specify)……………..

D.4 Please, specify the project type (e.g. Residential, Building, Institutional, Commercial, Industrial, Specialised industrial, Highway, Heavy Construction Project, etc.)
…………………………………………………….

D.5 Standard Condition of Contract used
GCC - (General Conditions of Contract) ☐ JBCC - (Joint Building Contract Committee) ☐ NEC - (New Engineering Contract) ☐
FIDIC - (International Federation of Consulting Engineers) ☐
ICE - (Institution of Civil Engineers) ☐ RIBA – (Royal Institute of British Architects) ☐
JCT- (Joint Contract Tribunal) ☐ OTHER (please specify).. ☐ ....

D.6 Payment Systems used
Interim/Progress Payment ☐ Advance Payment ☐ Stage Payment ☐
Milestone Payment ☐ Payment on Completion ☐
Other (please specify) ☐ ………………………………

D.7 Estimated Cost ………………………………………..

D.8 Final Cost ……………………………………………..

D.9 Construction Start Date……………………………….

D.10 Estimated Duration ……………………………………

D.11 Final Duration ………………………………………….

SECTION F: FINANCIAL MANAGEMENT STRATEGIES

1. Based on your experience, kindly indicates the level of significance of employing the following strategies to improve the performance of your organisation to achieve the overall objectives using the scale below.

CashFlow Forecast/Projection Strategy	**Very Low**	**Low**	**Moderate**	**High**	**Very High**
Using technology to shorten the cash conversion cycle e.g. online platforms					
Optimization of financial functions (application of techniques to improve cash management)					
Cash flow reporting (cash flow track)					
Matching funding to cash flow obligations (match various sources of funding to capital flow)					
Automation of cash management process (instead of ledger)					
Budgeting Strategy					
Balance of financial demands within available resources					
Track record and costs check					
Costs check					
Continuous revalidation of financial plans					

CashFlow Forecast/Projection Strategy	Very Low	Low	Moderate	High	Very High
Financial analysis of different capital investment					
Use of automated reporting systems e.g. Network- to secure valuable information					

Creditworthiness Strategy	Very Low	Low	Moderate	High	Very High
Repayment of debts and interest or Zero bad debt					
Trust fund					
statutory reserves (liquid assets hold by firms to remain solvent and partial protection against investment loss)					
Grow rate of assets (increase in asset)					
Income statements (publication of financial statements)					
Company's profitability					
Improvement of efficiency in capital management					
Risk assessment of the company's future prospects					
Risk Management Strategy					
Adaptability to the changing market					
Attainment of project objectives					
Risk evaluation					
Risk avoidance					
Diversification of operation					
Risk management policies in practices					
Review and Evaluation Strategy					
Review of potential financial exposure incurred					
Access to finance					
Financial Strength					
Assessing the company profit ratio on cash returns					
Healthy credit rating					
Analysis of asset base,					
Assessment of management plan practices					
Review of corporate objectives					
Weighting rate of return on capital and income					

Evaluate your organisation’s overall performance with respect to the effect of the “strategies adopted”.	**Overall Significance Level**				
	Very Low	**Low**	**Moderate**	**High**	**Very High**

C.2.Kindly provide the following information on your company over five years

(A) A copy of your abridged audited financial statement from 2013 to 2017.

(B) Annual reports over the last five years to complete the below tables.

C2.1 – PROFITABILITY PARAMETERS

Year	Revenue	Direct Cost of Work	Indirect Costs (Overhead)
2013			
2014			
2015			
2016			
2017			

C2.2 – CASH FLOW PARAMETERS

Year	Income	Expenditure
2013		
2014		
2015		
2016		
2017		

C2.3. – LIQUIDITY PARAMETERS

Year	Current Assets	Current Liabilities
2013		
2014		
2015		
2016		
2017		

C2.4 – LEVERAGE PARAMETERS

Year	Total Liabilities
2013	
2014	
2015	
2016	
2017	

C2.5 – ORDER VALUE PARAMETERS

Year	Order	Book Value	Number of years booked
2013			
2014			
2015			
2016			
2017			

C2.6 – MARKET SHARE PARAMETERS

Year	Company Sales	Total Sales	Period of Time
2013			
2014			
2015			
2016			
2017			

NOTE:

Please provide contact details so that the researcher can follow up personally to collect missing information.

Email	
Phone Number	

APPENDIX D

STRUCTURED INTERVIEWS

CONSTRUCTION ECONOMICS AND MANAGEMENT DEPARTMENT

Research Title : Modeling the Relationship between Project Payment Systems, Financial Management

Strategies and Construction Organisational Performance.

GENERAL INFORMATION ABOUT THE CONSTRUCTION COMPANY AND THE RESPONDING OFFICER

Date :

Respondent Name (Optional):

Respondent Position in the Construction Company:

Region or Province of the Respondent Construction Company:

Time Used :

INTERVIEW FOR MY RESEARCH

SECTION A:

DEMOGRAPICS

a. How many years have you worked in the construction company?
b. Give an indication of the number of permanent employees working for your company over the past five years
   2013………..
   2014………..
   2015………..
   2016……….
   2017………..
c. Year of inception of your construction company
d. State your construction company grade on the cidb Register of contractors and its class of works.
e. What was your cidb grade 5years ago and has it changed?

SECTION B:

PROJECT PAYMENT SYSTEMS

1. What are the usual project payment systems employed by your Client for reimbursement of construction services provided?
   Such project payment systems like: Interim payment, Advance payment, Stage payment, Milestone payment, Payment on Completion.
2. In your view what impact does these project payment systems have on the construction organisation performance they were used?

SECTION C:

FINANCIAL MANAGEMENT STRATEGIES

1. Do you make use of financial management strategies in your organisation?Such as:
   a) Cash flow forecasting strategy
   b) Budgeting strategy
   c) Creditworthiness strategy
   d) Risk management strategy
   e) Review and evaluation strategies
   Other (Please Specify)
2. Are these financial management strategies parts of company policies or are they based on adhoc ideas?
3. What financial management strategies used by your construction company to measure the performance of your organisation to achieve the overall objectives?
   i) Cash flow forecasting strategy
   ii) Budgeting strategy
   iii) Creditworthiness strategy
   iv) Risk management strategy
   v) Review and evaluation strategies
   vi) Other (Please Specify)……………..

1. **What are the cash flow forecasting strategies used in your company and why?**
   Using technology to shorten the cash conversion cycle e.g. online platforms
   Optimization of financial functions (application of techniques to improve cash management)
   Cash flow reporting (cash flow track)
   Matching funding to cash flow obligations (match various sources of funding to capital flow)
   Automation of cash management process (instead of ledger)

2. **What are the budgeting strategies used in your company and why?**
   Balance of financial demands within available resources
   Track record and costs check
   Continuous revalidation of financial plans
   Financial analysis of different capital investment
   Use of automated reporting systems e.g. Network- to secure valuable information

3. **What are the creditworthiness strategies used in your company and why?**
   Repayment of debts and interest or Zero bad debt

Trust fund and statutory reserves (liquid assets hold by firms to remain solvent and partial protection against investment loss)
Grow rate of assets (increase in asset)
Income statements (publication of financial statements)
Company's profitability and growth
Improvement of efficiency in capital management
Risk assessment of the company's future prospects

4. **What are the risk management strategies used in your company and why?**

Adaptability to the changing market
Attainment of project objectives
Risk evaluation and reportage
Risk avoidance and elimination
Diversification of operation
Risk management policies and practices

5. **What are the review and evaluation strategies used in your company and why?**

Review of potential financial exposure incurred and assess to finance
Financial Strength
Assessing the company profit ratio on cash returns
Healthy credit rating
Analysis and assessment of asset base, management practices and plan
Assessment and review of corporate objectives
Weighting rate of return on capital and income

SECTION D:

CONSTRUCTION COMPANY PERFORMANCE INDICATORS

What are the indicators among the below lists that you normally make use of to measure the performance of your company?

a. Profitability
b. Cash flow
c. Liquidity
d. Leverage
e. Order value
f. Market share

SECTION E

RELATIONSHIP BETWEEN PAYMENT SYSTEMS, FINANCIAL MANAGEMENT STRATEGIES AND CONSTRUCTION ORGANISATION PERFORMANCE

Do the payment systems use impact on your project and does it have a knock on effect (domino) on your organisation performance?

Do you have financial management strategies in place that helps you in counteracting the forms of payment systems in used?

APPENDIX E

INTERVIEW TRANSCRIPT

INTERVIEW 1

Research Title : Modelling the Relationship between Project Payment Systems, Financial Management Strategies and Construction Organisational Performance.

GENERAL INFORMATION ABOUT THE CONSTRUCTION COMPANY AND THE RESPONDING OFFICER

Date : 16 March 2019

Respondent Name (Optional): N/A

Respondent Position in the Construction Company: Managing Director

Region or Province of the Respondent Construction Company: Gauteng

Time Used:

INTERVIEW GUIDE FOR MY RESEARCH

SECTION A:

DEMOGRAPICS

A. How many years have you worked in the construction company? 25

B. Give an indication of the number of permanent employees working for your company over the past five years

2013………..312
2014………..311
2015………..225
2016……….191
2017………..185

C. Kindly provide a copy of your financial statement for 2013 – 2017 N/A

D. Year of inception of your construction company 1951

E. State your construction company grade on the cidb Register of contractors and its class of works. Level 9

F. What was your cidb grade 5years ago and has it changed? Level 9

SECTION B:

PROJECT PAYMENT SYSTEMS

What are the usual project payment systems employed by your Client for reimbursement of construction services provided? Such project payment systems like: Interim payment, Advance payment, Stage payment, Milestone payment, Payment on Completion. Progress payments with payment terms 21 to 30 days from submittal of claim, Advance payments only when required for long lead equipment but is allays accompanied by an Advance Payment guarantee as required by the Client.

In your view what impact does these project payment systems have on the construction organisation performance they were used? The are of critical importance, what ever option is chosen they must be consistent in order for a Contractor to be able to manage his cash flow.

SECTION C:

FINANCIAL MANAGEMENT STRATEGIES

Do you make use of financial management strategies in your organisation?

Such as:

A. Cash flow forecasting strategy Yes
B. Budgeting strategy Yes
C. Creditworthiness strategy N/A
D. Risk management strategy Yes
E. Review and evaluation strategies N/A

Other (Please Specify)

Are these financial management strategies parts of company policies or are they based on adhoc ideas? Company policy

What financial management strategies used by your construction company to measure the performance of your organisation to achieve the overall objectives? We have weekly commercial meetings to manage individual contract budgets and accounts. We then consolidate these into monthly meetings to manage budgets using detailed cost reports. We then have high level meetings to review cost of Contracts, Management accounts as well as actual bank statement to manage bottom line cash flow. No particular strategy required, you need accurate accounting which has to be reviewed senior management with a hands on approach so you can make proper informed decisions about you budget targets, shortfalls and overruns.

a. Cash flow forecasting strategy Yes, to ensure that the company has sufficient working capital to operate optimally
b. Budgeting strategy Margins on contracts are agreed upfront and monitored throughout the contract, whereby the aim is to better these upfront margins
c. Creditworthiness strategy Only will enter into contracts with reputable developers, eliminating the risk of payment
d. Risk management strategy Negotiate contracts with decent margins in this difficult environment
e. Review and evaluation strategies Continuous assessment of macro and micro environment.
f. Other (Please Specify)……………..

What are the cash flow forecasting strategies used in your company and why?

Using technology to shorten the cash conversion cycle e.g. online platforms

Optimization of financial functions (application of techniques to improve cash management)

Cash flow reporting (cash flow track)Our cash flow is directly impacted by work done, certification and conversion to cash is regulated the JBCC contract.

Matching funding to cash flow obligations (match various sources of funding to capital flow) We don't use funding to augment our cash flow, all contract specific flows
Automation of cash management process (instead of ledger) Not a major item as cash flow, debtors directly related to contracts in place.

What are the budgeting strategies used in your company and why? Overall philosophy is, set a budget upfront and mange this carefully actual to budget
Balance of financial demands within available resources
Track record and costs check
Continuous revalidation of financial plans
Financial analysis of different capital investment
Use of automated reporting systems e.g. Network- to secure valuable information

What are the creditworthiness strategies used in your company and why?
Repayment of debts and interest or Zero bad debt No
Trust fund and statutory reserves (liquid assets hold by firms to remain solvent and partial protection against investment loss)Create a "war chest" in good times to be able to carry you through the bad times. No pressure to pay out excess capital. Shareholders are all aligned.
Grow rate of assets (increase in asset) n/a
Income statements (publication of financial statements)
Company's profitability and growthProfitabiloity and growth enables the company to better source facilities, mainly guarantee facilities from banks at better rates.
Improvement of efficiency in capital management n/a
Risk assessment of the company's future prospects n/a

What are the risk management strategies used in your company and why? Construction industry is managed on a simple basis. You need to generate enough revenue with a decent margin to ensure your fixed costs are properly serviced. This fixed cost is the biggest threat to the company as you need to retain the services of the scarce skilled employees.
Adaptability to the changing market Yes
Attainment of project objectives Absolutely
Risk evaluation and reportage Ongoing
Risk avoidance and elimination Ongoing
Diversification of operation One way of managing risk
Risk management policies and practices Culture of the organisation

What are the review and evaluation strategies used in your company and why? Overall a simple exercise, contracts are managed on a hands on basis. We count the nuts and bolts on site so to speak. We know that we can only control what is under our control- which is mainly internal factors.

Review of potential financial exposure incurred and assess to finance
Financial Strength Ongoing- working capital exercise

Assessing the company profit ratio on cash returns Fundamental to our company .
Healthy credit rating
Analysis and assessment of asset base, management practices and plan
Assessment and review of corporate objectives Yes
Weighting rate of return on capital and income. Yes

SECTION D: CONSTRUCTION COMPANY PERFORMANCE INDICATORS

What are the indicators that you normally make use of to measure the performance of your company?

a. Profitability Yes
b. Cash flow Yes
c. Liquidity Not so much
d. Leverage Not so much
e. Order value Yes
f. Market share N/A

SECTION E

RELATIONSHIP BETWEEN PAYMENT SYSTEMS, FINANCIAL MANAGEMENT STRATEGIES AND CONSTRUCTION ORGANISATION PERFORMANCE

Do the payment systems use impact on your project and does it have a knock on effect (domino) on your organisation performance? No, our system is designed to play a significant supporting role in our organisation.

Do you have financial management strategies in place that helps you in counteracting the forms of payment systems in used? Yes, we do have systems in place to counteract this.

CONSTRUCTION ECONOMICS AND MANAGEMENT DEPARTMENT

INTERVIEW 2

Research Title : Modeling the Relationship between Project Payment Systems, Financial Management Strategies and Construction Organisational Performance.

GENERAL INFORMATION ABOUT THE CONSTRUCTION COMPANY AND THE RESPONDING OFFICER

Date : 27 May 2019

Respondent Name (Optional): N/A

Respondent Position in the Construction Company: Director (Founder)

Region or Province of the Respondent Construction Company: Gauteng

Time Used : 1hr:05m

INTERVIEW FOR MY RESEARCH

SECTION A:

DEMOGRAPICS

f. How many years have you worked in the construction company? Over 10 years
g. Give an indication of the number of permanent employees working for your company over the past five years
   2013……11 employees
   2014……15 employees
   2015……15 employees
   2016……33 employees
   2017……33 employees
h. Kindly provide a copy of your financial statement for 2013 – 2017 to be attached
i. Year of inception of your construction company…Year 2008
j. State your construction company grade on the cidb Register of contractors and its class of works. Grade 7GB, Grade 3CE
k. What was your cidb grade 5years ago and has it changed? Grade 3ME

SECTION B:

PROJECT PAYMENT SYSTEMS

What are the usual project payment systems employed by your Client for reimbursement of construction services provided?

Such project payment systems like: Interim payment, Advance payment, Stage payment, Milestone payment, Payment on Completion. Progress Payment and Interim Payment (Monthly for multi year project)

In your view what impact does these project payment systems have on the construction organisation performance they were used? They have positive impact on the cash-flow of the business, although in practice, payments hardly come through timeously as agreed. Especially when client is government.

SECTION C:

FINANCIAL MANAGEMENT STRATEGIES

Do you make use of financial management strategies in your organisation?

Such as:

Cash flow forecasting strategy (with small business, cash-flow is key. It is difficult to rely on budgeting strategy when dealing with government as client. Rate or frequency of payments forces one to scrap proper budgeting to cover immediete cashflow needs.)

Budgeting strategy

Creditworthiness strategy

Risk management strategy

Review and evaluation strategies

Other (Please Specify)

Are these financial management strategies parts of company policies or are they based on adhoc ideas? They are mainly on adhoc basis. It is not practical to stick on policies when payments are processed as agreed. One need to improvise more often, and that shift compliance to your own policies.

What financial management strategies used by your construction company to measure the performance of your organisation to achieve the overall objectives?

i. Cash flow forecasting strategy. Like mentioned earlier, cash-flow is key. The performance is measured by being able to pay salaries in time, able to finance new projects, able to fund search for new projects and able to pay basics & necessities for working tools and space. All these needs rely on availability of cash-flow.
ii. Budgeting strategy
iii. Creditworthiness strategy. Like any other business owner/shareholder, access to credit or enabler to purchasing power plays a critical role on determining if the organisation is successful or not. Being able to access certain level of livelihood comfortable, demonstrate level of sustainability in the business space. Sustaining for a period, reflects positive performance of the organisation for such period.

iv. Risk management strategy
v. Review and evaluation strategies
vi. Other (Please Specify)……………..

What are the cash flow forecasting strategies used in your company and why?

Using technology to shorten the cash conversion cycle e.g. online platforms

Optimization of financial functions (application of techniques to improve cash management)

Cash flow reporting (cash flow track). The reporting model we apply, is guided by the cash-flow patterns of the organisation. That guides us on forecasting and managing any possible fruitless expenditure.

Matching funding to cash flow obligations (match various sources of funding to capital flow). The is always a need for more services within the company, but the cash input determines what can be done and what can be cut-off. The strategy starts with cash obligations, and prioritizing them. Then put versus availability of funding, if the funding is lower than obligation, then the prioritizing approach kicks in.

Automation of cash management process (instead of ledger)

What are the budgeting strategies used in your company and why?

Balance of financial demands within available resources. (as much as we track cost, available resources must be able to cover demands. But bare in mind that, demands are categorized with priorities, and that determine which demands are of critical nature or which can be deferred to later stage.)

Track record and costs check. (the reporting of expenditure assist us on tracking if our model is feasible and effective. That assist us knowing where can we cut costs or do some adjustments when required)

Continuous revalidation of financial plans

Financial analysis of different capital investment

Use of automated reporting systems e.g. Network- to secure valuable information

What are the creditworthiness strategies used in your company and why?

Repayment of debts and interest or Zero bad debt

Trust fund and statutory reserves (liquid assets hold by firms to remain solvent and partial protection against investment loss)

Grow rate of assets (increase in asset)

Income statements (publication of financial statements)

Company’s profitability and growth. (Profitability, covers both work demands and interests of shareholders. If the organisation can demonstrate creditworthiness in being able to cover organisation demands and fulfill shareholder needs, then the company if doing fairly well. The profitability allows company to embark on savings, to cover growth prospects which requires more personnel and more cash-flow for new projects)

Improvement of efficiency in capital management

Risk assessment of the company’s future prospects

What are the risk management strategies used in your company and why?

Adaptability to the changing market

Attainment of project objectives

Risk evaluation and reportage
Risk avoidance and elimination
Diversification of operation. (doing work with government, being small company in construction and from HDI grouping in the industry is risky by nature. Organisation survival relies on various techniques that will minimize exposure to such disadvantages. Getting work is not as easy for Big construction companies, which are always preferred by the system. UMS talk decision to diversify operation, by introducing supply of mechanical equipment and allowing both Professional Services and actual construction to co-exist in the company. That increase possibilities rather focusing on construction only.)
Risk management policies and practices

What are the review and evaluation strategies used in your company and why?

Review of potential financial exposure incurred and access to finance. (weighing demands and what is available as cash-flow)
Financial Strength
Assessing the company profit ratio on cash returns
Healthy credit rating
Analysis and assessment of asset base, management practices and plan
Assessment and review of corporate objectives
Weighting rate of return on capital and income

SECTION D:

CONSTRUCTION COMPANY PERFORMANCE INDICATORS

What are the indicators among the below lists that you normally make use of to measure the performance of your company?

a. Profitability
b. Cash flow
c. Liquidity
d. Leverage
e. Order value
f. Market share

SECTION E

RELATIONSHIP BETWEEN PAYMENT SYSTEMS, FINANCIAL MANAGEMENT STRATEGIES AND CONSTRUCTION ORGANISATION PERFORMANCE

Do the payment systems use impact on your project and does it have a knock on effect (domino) on your organisation performance? Definitely, the payment system has an effect. The payment system determines access or availability of cash-flow in the organisation. At times, completion of project relies on availability of cash-flow, that can only be sources from client payment. Delays in payments from clients, dictated that we cant use budget for something else on the project, because it might take months for payements and that will have negative impact on the organisation cash-flow. For example, one cannot take salaries budget and use it for project, since clients are not reliable on payment periods. Instead, we rather can the project until the client pays as agreed on progress payments. That is one of the main reasons why the projects go beyond planned period of construction.

Do you have financial management strategies in place that helps you in counteracting the forms of payment systems in used? Not really, other than restricting the project cash-flow needs within its planned allocated budget, which is highly dependent on the client payment method. At initial stages, we progress without payment received, but after milestone of progress the project requires the client to effect payment.

INTERVIEW 3 1HR:15MINUTES

Research Title: **Modeling the Relationship between Project Payment Systems, Financial Management Strategies and Construction Organisational Performance.**

GENERAL INFORMATION ABOUT THE CONSTRUCTION COMPANY AND THE RESPONDING OFFICER

Emmanuel: Good morning sir,

Contractor: Thank you. Emmanuel!

Contractor: Okay, so are you ready for the conversation?

Emmanuel: Okay, am ready for the conversation sir

Emmanuel: Okay sir, these Emmanuel from University of Cape Town from the Department of construction Economics and Management. As regards to my interview, it is all about modelling the relationship between project payment systems, financial management strategies and construction organisational performance in South Africa Construction industry. Using the case study of contractor's firms in the nine provinces of South Africa. So, in respect to that sir, wherever you reach, and you feel you cannot answer that you just please let me know, whatever we are discussing is anonymous.

Contractor: Okay.

Emmanuel: I will start, the research is into three stages. The first stage has to do with the general information about the construction company and the respondent officer (Demographic).

Emmanuel: Please sir, what is your position in the construction company?

Contractor: I am the company commercial executive.

Emmanuel: Okay, sir. Thank you, sir. And then what region are your firms situated at? Your region or province?

Contractor: We have Office in Durban but working over the entire South African provinces.

Emmanuel: And I don't know, the respondent name is optional. Maybe we should live that, or I don't know if you are free given me the name?

Contractor: For security purpose, you can skip that.

Emmanuel: Okay. Thank you, sir. We are done with the general information. We are going to section A of the interview.

Contractor: Right.

SECTION A: DEMOGRAPICS

Emmanuel: The first one is all about the demographics of your company. How many years have you worked in the construction company Sir?

Contractor: In this company have worked 2 years

Emmanuel: Okay, but all together how many years have you worked?

Contractor: For me personally, in the construction industry, so after tertiary education have worked 27 years.

Emmanuel: Okay, so, can you give an indication of the number of permanent employees working for your company over the past five years? For example, 2013 to 2017

Contractor: You mean company percentage.

Emmanuel: No, I mean the number of permanent employees.

Contractor: Okay, 2013 = 120, 2014 =127, 2015 = 140 rounds about and 2016 it was around Hundred and forty-two (142), 2017=120.

Emmanuel: Then when do your company commence, as in the inception of your construction company?

Contractor: 1974

Emmanuel: Okay, what grade is your firm is in the South African construction industry of contractors and its class of work?

Contractor: 9CE.

Contractor: currently we are okay, it's Civil Engineering

Contractor: and Grade 8 CE for the last five seven years

SECTION B: PROJECT PAYMENT SYSTEMS

Emmanuel: Now we'll move to section B of part of the interview which is all about project payment systems. What are the usual project payment systems employed by your client for reimbursement of construction services rendered by your company?

Contractor: Ninety nine percent of the time, we use interim payment systems

Emmanuel: And in your view, what impact does this project payment systems have on the construction company organisation? As in what impact does this interim payment system if it were used to pay you, does it really have an impact on your organisation performance?

Contractor: It does impact our organisation performance if manage properly. More also, if client pay on time it has positive effect on both our project and organisation performance. If honoured at right time by client.

SECTION C: FINANCIAL MANAGEMENT STRATEGIES

Emmanuel: Now moving to **section C** sir, it's all about financial management strategies, do you make use of financial management strategies in your organisation?

Contractor: Yes,

Emmanuel: so, then what are those financial management strategies you make use in your construction organisation?

Contractor: We make use of newer systems, but the most common one's use are; **cbcrr** meaning: cash flow forecasting, budgeting strategy, credit worthiness strategy, risk management strategy, and review and evaluation strategy.

Emmanuel: okay, so, then are these financial management strategies part of your company policies? Or are they based on actual ideas of how companies focus and why is it part of your company policies? I don't know if you have a special reason for that?

Contractor: Is part of our company policy, reason been to have consistency in managing our cash administration and in our risk exposure.

Emmanuel: Going to the number **(3) three of section C; What financial management strategies used among the stated ones in section C number 1 by your construction company to measure the performance of your construction organisation?** You've stated five (5), you stated cash flow forecasting strategy, budgeting strategy, Creditworthiness strategy, risk management strategy, and you stated review and evaluation strategies. Now sir, among these ones that you've stated, which one do you use to measure the performance of your organisation to achieve the overall objectives?

Contractor: We use all the strategies: cash flow forecasting strategy, budgeting strategy, creditworthiness strategy, risk management strategy, and review and evaluation strategies. Because, they all serve specific purpose.

Emmanuel: What is the purpose they served?

Contractor: Basically, to manage our cash flow requirement number one, number two our forecast of forecast profitability and Our risk exposure and the general/actual performance of our project relative to what project we carryout. That is to manage the actual performance of our project. And the last one, we like to manage projects specifically what our project form would be or base on its own.

SECTION C 3i:

Emmanuel: what are the cash flow forecasting strategies used in your company to impact performance and why?

Contractor: we use:

a) optimization of financial functions that is applying techniques to improve cash management; This it is to guide big project in other to work out exactly how to maximise our financial position on a big project.
b) And we have cash flow reporting, which is all about tracking your cash flow; The reason for that, is to know exactly when our cash coming in and why our cash go out, in other to manage requirements for cash.
c) And, we have matching funding to cash flow obligations as matching various sources of funding to capital flow. Looking at an event our cash flow is not positive, from whatever actions we are using, again, trying to fund a project with different sources of funding. That's why the three of them are using the same events is somehow to each other supporting our cash flow management strategy.

SECTION C 3ii:

Emmanuel: what are the budgeting strategies in your company to impact performance and why?

Contractor: we use:

a) balance of financial demands within available resources; Reason been that we want to see if financial demand on the company can be supported by our external resources before we go for external funding.
b) Also, we are using track record and costs check. The reason is that**,** we want to see if the amount of money we forecast and the cost of incurring for those construction activities are very close to each other to improve our bottom line. That is, cash record and cost check are used for the following reasons; to manage our costs data allowable processing and to make sure that our costs to work do not exceed our allowable budget.
c) Also, and the third one we are using continuous revalidation of financial plan. Reason of using that is that, we continuing to review the status of our projects in our business to see whatever changes that occur in the first two items above (i.e balance of financial demands within available resources; and track record and costs check) and its impact on our future financial plan.
d) we do use the financial analysis for our capital investment. For that reason, we want to see if whatever we invested in our capital in delivering what we forecast that we base our project on.
e) We are using automated reporting systems such as network to secure valuable information. Now that there is new electronic use to get new idea and use of computer makes work gets more accurate faster to closing any updating information for reporting purposes using a different plat form excel work and other automated reporting systems.

SECTION C 3iii:

Emmanuel: what are the creditworthiness strategies in your company that impact your project and organisation performance and why?

Contractor: we use:

- **a)** income statements (publication or financial statements). Reason been that Information generated investigated by third party to external auditors use to be more reliable than any other public information available.
- **b)** We also use company's profitability and growth because we would like to see the historic profitability of a company, and the historic on growth, so that we can work out what the profitability is going to make in the future, and through getting the potential growth for using the entity.
- **c)** also use risk assessment of the company's future prospects. The reason why we use it is to manage our risk on future project and prospects to make sure that any event or incidence do not materialize that might have impact on our creditworthiness or on future event.

SECTION C 3iv:

Emmanuel: what are the risk management strategies in your company that impact your project and organisation performance and why?

Contractor: we use:

a) we use adaptability to the changing markets. This is because we would like to be in the front of the competitive market knowing the market and adopt our strategy in our practices. So, we can equally arrive well in the market.

b) we're also using attainment of project objectives. The reason why we use it is that if we could not know what our project objective is on a project, we cannot know what our risk needs to achieve those objectives. Important to know your objective to manage your risk.

c) we also use risk evaluation and reportage. We like to evaluate our risk to understand it, and its potential impact if any on the goodness. So, probably covered with it would like to say it is important or the evaluation of our reports to understand the exposure that we might face entity in the future.

d) we're also using risk avoidance and elimination. That goes hand in hand with the evaluation. if the risk becomes too high for which might have a major impact on our business. We try to avoid this risk if we cannot avoid it, we try to eliminate it by applying different methodologies to achieve it.

Emmanuel: okay, but what kind of methodologies do you use?

Contractor: it either will transfer the risk to whatever/whosoever is best equal to manage the risk. Or we contract out the risk to either insurance or partners that know better how to manage those risks. Or We don’t take the project on or we don’t take the risk on if we feel we do not have the ability to avoid or minimize the risk of its high nature.

e) We also use diversification of operation**.** We like to have a stretch/straight of our operation**.** Methodology bearing and not to focus everything in one specific basket, in the event, that one basket that you might find yourself who might come to stain them. Then a good example in 2007, 2008, 2009 when financial market crashed where by a lot of companies were operating in specific field, when the financial crash that took place originate from the American housing market and a lot of company pull/push back on funding with a lot of other businesses who relying on a funding from a specific market in a big team where down to one individuals' companies that were executing projects from mining houses on the African continent whose firms originate from North America have to hold back on high expenditure to start a new project. All arranging funding for a specific project. That is why would like to have our operation in a very huge market to cover more than one specific field of project so that if we are to suffer, it might only be to one part of the business and not the entire business.

f) The last one, we are using Risk management policies and practices. The reason why we use it, is that it will be easier for our junior guys who enter our operation to gain, understand and manage our risk for which they are responsible for. It been given to them to manage on their field and we don't have to worry about the risk at the lower level or sub small level and they can also learn how to become a risk manager and to manage the risk.

SECTION C 3iv:

Emmanuel: what are the review and evaluation strategies in your company that impact your project and organisation performance and why?

Contractor: we use:

a) We are using a review of potential financial exposure incurred and assess to finance. The reason why we use it, if we already find an exit, we somehow exposed financially of the exit for the project not in return or providing a return on investment that is planned. So, we use it there to ensure whatever we invest on a project or exit that we are attract return that exit should provide us.
b) We also use financial strength. So, we need to understand what our overall financial position for the business, but also what of overall financial is for each of the top section of projects of the business. The information it is running itself up from a group from an individual exit who is a group of exits, to overall people and we like to manage each one of them individually and run the figure up to the overall one.
c) We also using the assessing the company profit ratio on cash returns. The reason we are using that, we want to see the cash that we invested or using fund/for a specific project on specific **exit** if it is generating positive return for all can use the cash somewhere that can turn 90 percent's specifically around cash. We all know how important cash management is for any business.
d) Then, we also using assessment and review of our corporate objectives. Reason is that, we like to compare of what our set out objective is going to be and where it's currently stable and if we achieve our objective.
e) The last one we use is **w**eighting rate of return on capital and income. Reason why we use it, is to see what return we getting on the capital employed and income to make sure in future we fund project which is best suited for the project either for the cash flow on the project or on the completion and what income relatively related to the completion of project because we like to really make sure our cash is well use between the chain until we sure we get best out of our completed project.

SECTION D: CONSTRUCTION COMPANY PERFORMANCE INDICATORS

Emmanuel: So, thank you sir. On the section D what are the performance indicators that you normally make use of to measure the performance of your company and why?

Contractor: We have

- profitability;
- cash flow;
- liquidity;
- leverage;
- order value.

Contractor: We use **profitability**. Because would like to see when we complete the project if a project executed will be profitable for us. Profitability does not mean we are to gain or make profit in income alone. It's got what we call a positive internal return. Means, on the books we might use cash a lot, but in return, we might own other completion of subsection of the return that out weights the negative, for us/other to be used that knowledge in future for other projects. We are using profitability, but also look at it in more detail than it needed. An example, a project might be intended to make 5% profit and it actually make a 10 % loss. But when analyzing, it could have made 15% profit, but only one thing impacted without and it's mostly with the movement of the rand dollar or the rand to other currencies. So operational wise, we could have made profit but because it has been impacted by forth of movement in the rand dollar or the rand Euro exchange rate the project doesn’t show the profits and we need profitability or is does not dispute in the end or determine if the project or the company perform well.

Contractor: The second one is **cash flow**. So, it is very important for us to make sure that any project or part of the project contribute positively to our cash flow. It either by cash withdrawn, or it must be minimum, and it cannot exceed 5% of our/us determine for having cash negative and anything cash positive or cash flow positive it is a plus for the business. But we make sure we look at what cash flow on the project of the past project could generate in the biggest scheme of things.

Contractor: We use **liquidity**, specifically around and when we can convert certain documents or information into cash and what impact or what once can get documents point mentioned to you either positive or negative on our cash flow and on our leverage. So, in the construction industry, when we receive a certificate it is good as cash you might not get cash immediately, but with a legal document we then we work out what our liquidity means on specific project or for the activity.

Contractor: We also use **leverage** to measure our company performance. Because we want to see between our different methods of funding of our operations, to know which is the best suited for our business, and how to go about it and which to use. Either to go for debt, to go for a cash debt over activity, repay debts and take advantage of new opportunities, to go for bond, do we go for written out some of our completed project as to get some cash out to kinds of calculate determine what debt to leverage are, we required.

Contractor: The last one of the performance indicators we use is of less significantly important particularly is to determine our value order which is **order value**. Therefore, we use our order value to know where the company is going to be in a couple of months' time or a couple of years' times will be short or we see/be and how will the company perform based on historical performance will record the future order value that will have or get in the business.

SECTION E: RELATIONSHIP BETWEEN PAYMENT SYSTEMS, FINANCIAL MANAGEMENT STRATEGIES AND CONSTRUCTION ORGANISATION PERFORMANCE.

Emmanuel: Do the payment systems use impact on your project performance and does it have a knock-on effect (domino) on your organisation performance?

Contractor: The project payment system (Interim payment system) have impact on the project and the organisation performance. Because if the payment delays it might negatively impact on the project and definitely impacts on the organisation performance. Without payment there will not be progress in undertaken construction operations. So, we will need to arrange alternative funding, specifically, for our wages and salaries which cannot stand over until we see cash and to arrange also cash to pay our colleagues and usual obligations like an authority.

Also, it has knock on effect on our organisation performance. Most notably one can choose overdraft funding from other sources of funding because the tickets arrive early. You don't have your overdraft or your finances and cash flow you've got to pay to find other social organisation to form the financial performance.

Emmanuel: Do you have financial management strategies in place that helps you in counteracting the forms of payment systems in used?

Contractor: Yes, we do have. We do have a cash management system in place (Cash flow projection/ forecasting strategy). Reason been that, we do forecast for like seven days, the next two weeks, next one month and in the next three months of what cash we are expected to pay out and then work out our shortfalls on cash, and how we gonna fund that shortage on a cash. Specifically, would first determine what our expected cash is going to be. What our cash out is going to be, then we work out what our cash requirement and obligations would be by getting to manage the business.

Emmanuel: Sir, is it possible if there's any way you can supply me the financial statement for the year 2013 to 2017.

Contractor: Unfortunately, Emmanuel, I cannot provide, and I can tell you why I can't provide it. Reason is that the company is just taking over about two years ago by WHO construction company. The printing of the financial statement for the year 2016, 2017 and 2018 are kind of okay but we are not obliged to published without signed off by our auditors. While for the years 2013, 2014 2015 the previous owner that included in this industry is none of those will be published for any reason whatsoever. So fortunately, we cannot introduce you to this.

Emmanuel: Thank you for the assistant in granting my interview. God bless you.

Contractor: One more thing, I will appreciate to see what the results of your research will be. Specifically, how payment systems and financial management strategies impact our oganisation performance. And both their (Payment systems and financial management strategies) usage.

Emmanuel: Okay and thank you, sir. Thank you very much. Once again, I'm very grateful.

INTERVIEW 4

UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

CONSTRUCTION ECONOMICS AND MANAGEMENT DEPARTMENT

Emmanuel Dele Omopariola
Principal Researcher

Associate Professor Abimbola Windapo
Supervisor

INTERVIEWS

Research Title: Modeling the Relationship between Project Payment Systems, Financial Management Strategies and Construction Organizational Performance.

GENERAL INFORMATION ABOUT THE CONSTRUCTION COMPANY AND THE RESPONDING OFFICER

Date :

Respondent Name (Optional): Neville Tooi

Respondent Position in the Construction Company: COMMERCIAL EXECUTIVE

Region or Province of the Respondent Construction Company: GAUTENG

Time Used : 30 minutes

INTERVIEW GUIDE FOR MY RESEARCH

SECTION A:

DEMOGRAPICS

a. How many years have you worked in the construction company? 29 Years
b. Give an indication of the number of permanent employees working for your company over the past five years
   2013.......... ± 120
   2014.......... ± 120
   2015.......... ± 120
   2016.......... ± 120

2017. ± 120

c. Year of inception of your construction company 1964

d. State your construction company grade on the cidb Register of contractors and its class of works. 8 | 9

e. What was your cidb grade 5years ago and has it changed? 8 | 9

SECTION B:

PROJECT PAYMENT SYSTEMS

1. What are the usual project payment systems employed by your Client for reimbursement of construction services provided?

   Such project payment systems like:

   (i) Interim payment, (ii) Advance payment, (iii) Stage payment, (iv) Milestone payment, (v) Payment on Completion.

2. In your view what impact does these project payment systems have on the construction organization performance they were used?

   Payment System: No Impact
   Payment Period !

SECTION C:

FINANCIAL MANAGEMENT STRATEGIES

1. Do you make use of financial management strategies in your organization? YES OR NO.

   Such as: YES

   a) Cash flow forecasting strategy
   b) Budgeting strategy
   c) Creditworthiness strategy
   d) Risk management strategy
   e) Review and evaluation strategies

   Other (Please Specify)

2. Are these financial management strategies parts of company policies or are they based on adhoc ideas?

   Part of Company Policy

3. What financial management strategies used **among the below stated** by your construction company to measure the performance of your organization to achieve the overall objectives?

   i) Cash flow forecasting strategy

ii) Budgeting strategy
iii) Creditworthiness strategy
iv) Risk management strategy
v) Review and evaluation strategies
vi) Other (Please Specify)……………..

1. **What are the cash flow forecasting strategies used among the below stated in your company and why?**
   Using technology to shorten the cash conversion cycle e.g. online platforms
   Optimization of financial functions (application of techniques to improve cash management)
   Cash flow reporting (cash flow track)
   Matching funding to cash flow obligations (match various sources of funding to capital flow)
   Automation of cash management process (instead of ledger)

2. **What are the budgeting strategies used among the below stated in your company and why?**
   Balance of financial demands within available resources
   Track record and costs check
   Continuous revalidation of financial plans
   Financial analysis of different capital investment
   Use of automated reporting systems e.g. Network- to secure valuable information

3. **What are the creditworthiness strategies used among the below stated in your company and why?**
   Repayment of debts and interest or Zero bad debt
   Trust fund and statutory reserves (liquid assets hold by firms to remain solvent and partial protection against investment loss)
   Grow rate of assets (increase in asset)
   Income statements (publication of financial statements)
   Company's profitability and growth
   Improvement of efficiency in capital management
   Risk assessment of the company's future prospects

4. **What are the risk management strategies used among the below stated in your company and why?**
   Adaptability to the changing market
   Attainment of project objectives
   Risk evaluation and reportage
   Risk avoidance and elimination
   Diversification of operation
   Risk management policies and practices

5. **What are the review and evaluation strategies used among the below stated in your company and why?**

- Review of potential financial exposure incurred and assess to finance
- Financial Strength
- Assessing the company profit ratio on cash returns
- Healthy credit rating
- Analysis and assessment of asset base, management practices and plan
- Assessment and review of corporate objectives
- Weighting rate of return on capital and income

SECTION D:

CONSTRUCTION COMPANY PERFORMANCE INDICATORS

What are the indicators among the below lists that you normally make use of to measure the performance of your company and why?

a. Profitability
b. Cash flow
c. Liquidity
d. Leverage
e. Order value
f. Market share

SECTION E

RELATIONSHIP BETWEEN PAYMENT SYSTEMS, FINANCIAL MANAGEMENT STRATEGIES AND CONSTRUCTION ORGANIZATION PERFORMANCE

Do the payment systems use impact on your project and does it have a knock on effect (domino) on your organization performance? Yes

Do you have financial management strategies in place that helps you in counteracting the forms of payment systems in used? Yes

SECTION F

Kindly provide the following financial statement for the year 2013 – 2017 to complete

Financial Statement	Year (2017)	Year (2016)	Year (2015)	Year (2014)	Year (2013)
Revenue					
Direct Cost					
Indirect Cost					
Income					
Expenditure					
Current Assets					
Current Liability					
Total Liability					
Order					

Book Value					
Number of years booked					
Company Sales					
Total Sales					
Period of Time					

INTERVIEW 5

INTERVIEWS

Research Title : Modeling the Relationship between Project Payment Systems, Financial Management Strategies and Construction Organisational Performance.

GENERAL INFORMATION ABOUT THE CONSTRUCTION COMPANY AND THE RESPONDING OFFICER

Date : 21 August 2019

Respondent Name (Optional): N/A

Respondent Position in the Construction Company: Managing Director

Region or Province of the Respondent Construction Company: Cape Town

Time Used : 24minutes:23seconds

SECTION A: DEMOGRAPHY

Emmanuel: Good morning Sir

Contractor: Good morning Emmanuel

Emmanuel: How is your family

Contractor: They are well and are very good. Thank you!

Emmanuel: Thank you so much for helping me for everything and accept to me to answer my interviews and both my survey sir, I'm very grateful sir.

Contractor: It is a Pleasure.

Emmanuel: Please Sir, are you set for the interview?

Contractor: Yes, you can start.

Emmanuel: Okay. On the first part of the interview, is the demographics. How many years have you worked in the construction companies?

Contractor: 44 years.

Emmanuel: Can you please give an indication of the number of permanent employees working for your company over the past five years

2013…40
2014…60
2015…60
2016…50
2017…45

Emmanuel: When was the year of inception of your construction company?

Contractor: 1996.

Emmanuel: What is your construction company grade on the cidb Register of contractors and its class of works?

Contractor: 7CE

Emmanuel: Then, can you please state? What was your CIDB grades? In five years ago?

Contractor: It was six 6 HJ.

SECTION B: PROJECT PAYMENT SYSTEMS

Emmanuel: This section has to do with the project payment systems. What are the usual project payment systems employed by your Client for reimbursement of construction services provided?

Contractor: We normally get paid 30 days after completion.

Emmanuel: Then the number two of that section B. In your view what impact does these project payment systems have on the construction organisation performance they were used?

Contractor: Well, it's normal for us to get paid 30 days after completion as I said earlier. So, we plan accordingly. So, it's normal and have no specific impact. So, we are used with the payment been paid 30 days after completion. Therefore, we manage our business like that, and help us to manage our cash flow better.

SECTION C: FINANCIAL MANAGEMENT STRATEGIES

Emmanuel: This section B part of it has to do with financial management strategies. Do you make use of any financial management strategies in your organisation?

Contractor: Well, we do use our cash flow forecasting strategy. And we have got a very good track record on one payment. But the biggest risk lies in getting enough work, because you can strategize as much as you want, but if you don't get Contract work then the strategy is worthless.

Emmanuel: As you said that, the major thing is to get work. Then, you will know which to the strategy to use or apply. But most of the time when you get work which one of these strategies do you make use? Say, maybe when you get one of those works? Which of these strategies do you use?

Contractor: Basically, my firm use all of them. Because, you have to plan your cash flow forecast, you got to make sure that you get creditworthiness. So that you can borrow money if need be, because sometimes the job doesn't go like as planned, and you need to make sure the supplier supply on time.

Emmanuel: Then, as you said, if really you plan your work, which is mainly the review and evaluation strategies. Because, if you plan your work when you have the contract, then you have a plan and in the process of planning, you must evaluate or review the same plan you are doing. Also, you can say you have budgets the same time to plan for. Going by that, as in the plan strategies.

Emmanuel: Can we say, the plan strategy is a financial management strategy that is part of your company policies or are they based on adhoc ideas?

Contractor: Well, the strategy changes basically, as you get work, or you don't get work. So, one can not say that one applies all the time. Depends on like I said, the work you got. I don’t think, you can say that any one of them apply or all of them applied all the time it depends on the circumstance at a time.

Emmanuel: Then, do you use any of these strategies to measure the performance of your organisation to achieve the overall objectives?

Contractor: Well, like what?

Emmanuel: Like the financial management strategies, I don't know if you use anyone to measure the performance of your organisation to achieve the overall objectives?

Contractor: We use them. Well, creditworthiness is not a strategy, creditworthiness is something that you work on over a long period of time. If you have creditworthy, then obviously you can get clear, if you're not creditworthiness, then you won't get credit. Is not something that you work on and you stop, you must work on it for a long time. And if it works for you, then you must use it.

Emmanuel: Thank you, sir. Under that same financial management strategies, 1. What are the cash flow forecasting strategies used in your company and why?

Contractor: We make use of Cash flow reporting. This has to do with tracking our cash flow. This is because cash flow is very important and need to be manage all the time. Also, cash flow impacted our work when there is availability of cash.

Emmanuel: What are the budgeting strategies used in your company and why?

Contractor: We use Continuous revalidation of financial plans**.** This is because financial plan over time assist in managing our cash all the time. We strategize to make sure that we have got good creditworthiness.

Also, we use automated reporting systems such as network in order to secure valuable information. Well automated in the sense that we use the spreadsheet quite exclusively and we do the calculations accordingly and we do the forecast accordingly.

Emmanuel: Under the creditworthiness sir, which of the strategies do your company use and why?

Contractor: The company use repayment of debts and interest or Zero bad debt. We use that all the time. Because, when you got cash flow, you repay your debt if you got a good cashflow, the best thing is to try and minimize your debt.

The company also use Trust fund and statutory reserves as it serves as the liquid assets hold by our firms to remain solvent and partial protection against investment loss. Well, you got a fund from time to time and that's what creditworthiness is all about. You need to increase the loan, then you must be able to do that as it helps the company to stand firm and remain solvent as it assist to carry the company through the bad time.

The grow rate of assets is been used because this helps to increase our asset. Reason been that, if you got to pay cash, you will increase your assets by acquiring more assets if you need to. Though, in this time, at the moment where there's not a lot of work it is a bit difficult. I don't think it's a wise thing to increase our assets.

Why the use of company's profitability and growth doesn't mean good in the last couple years because there's no enough work.

An improvement of efficiency and Capital Management. Like I said earlier, you have to manage your cash all the time.

When using the risk assessment of the company's future prospects, it is difficult in this environment to predict what your cash flow is going to be we obviously do that projected as well as we can, but as things change you got to change your focus.

Emmanuel: This now led us to Risk management strategy. Sir, what are the risk management strategies used in your company and why?

Contractor: The company do adapt to the changing market. Very much like us because at this moment there's not a lot of work and you have to adapt to it.

And the attainment of projects objectives remains out target as that is the primary project goal. Though, like I've also said earlier, you're gonna cut most of the company activities as there is not work in order to make sure that you can pay your debt to achieve project objectives. That's why we reduce stuff so drastically over the last couple of years.

More also, we try to avoid and eliminate risk. Well, very important for me to avoid risk as much as one can.

Also, we evaluate and report risk all the time.

While in terms of diversification of operation, it's very difficult to diversify. I wouldn't like to diversify into something that I don't know anything about. So, in the main time we don't diversify much now. Though, it is a better way to manage risk practices.

The company make use of Risk management policies and practices as the main culture of the construction organisation.

Emmanuel: Now to the last part of section C which is about the review and evaluation strategies. What are the review and evaluation strategies used in your company and why?

Contractor: One of the strategies used here is to review our potential financial exposure incurred and assess to finance. Though, openness required and meditates on what type of work again, but It will go along with what type of resources you got and if you haven't got the resources to do something specifically you gotta re-evaluate it. That means you can either hire in or if you can't hire in you gotta buy in.

The company use the financial strength as a means of review and evaluation strategies as at times been positive and a means of ongoing working capital that keep the firm on track.

The company profit ratio on cash returns is also vital as it is a basis of our company.

We also use healthy credit rating.

Analysis and assessment of asset base, management practices and plan serve as part of the strategies we use in the company. Though, openness is required, and I don't do it every week or every month or every year I do it as often as it required which have good effect on our construction organisation performance. So, it is very good strategy.

The firm also use Assessment and review of corporate objectives as part of review and evaluation strategy. Again, you can plan as much as you want, but you don't know what's coming and you have to change things as the environment changes.

SECTION D: CONSTRUCTION COMPANY PERFORMANCE INDICATORS

Emmanuel. Sir, what are the indicators that you normally make use to measure the performance of your company?

Contractor: Our company use the following performance indicators to measure the construction project and the organisation performance:

- profitability
- cash flow
- liquidity,
- leverage
- order value and
- market share.

SECTION E: RELATIONSHIP BETWEEN PAYMENT SYSTEMS, FINANCIAL MANAGEMENT STRATEGIES AND CONSTRUCTION ORGANISATION PERFORMANCE

Emmanuel: On the last section or last set of the interview sir.

Do the payment systems use impact on your project, and does it have a knock-on effect (domino) on your organisation performance?

Contractor: Yes, it impacts. Reason been that, if you don't get paid on time at the end of contract then obviously you got to borrow money, so the payment will affect the project and organisation performance if you don't get paid. So, Yes.

Emmanuel: Then, do you have financial management strategies in place that helps you in counteracting the forms of payment systems in used?

Contractor: Yes, there is. Here's like as I was trying to explain if you haven't got cash, you got to borrow. Therefore, we do have cash flow forecasting strategy in place.

Emmanuel: Thank you, sir. This is the end of the interview sir and I'm grateful. Thanks for your time giving to me.

Contractor: You are welcome. I would appreciate if I can get the report after you might finish getting your findings possibly through my email or you can send me a link since it can be access through the University of Cape Town Library.

Emmanuel: I will do just any of them.

Contractor: Very good.

Emmanuel: Bye Sir!

Contractor: Bye!