

Conceptual research methodology to investigate the relationship between fees and quality of professional service outputs

Conceptual
research
methodology

1185

Neil Govender, Samuel Laryea and Ron Watermeyer
*School of Construction Economics and Management, Faculty of Engineering and
the Built Environment, University of the Witwatersrand,
Johannesburg, South Africa*

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Abstract

Purpose – Construction projects require a range of documents (e.g. drawings and specifications) prepared by built environment professionals. In recent years, there has been a perception amongst professionals that quality of documentation has declined. “Low” professional fees were cited as one of the reasons for poor quality documentation. However, most studies on the topic contained inappropriate methodologies. Therefore, the purpose of this paper was to develop a conceptual methodology to comprehensively examine the relationship between fees and professional service output quality.

Design/methodology/approach – A systematic literature review (SLR) was conducted to evaluate the limitations of previous methodologies and identify variables in the relationship between fees and quality of professional service outputs. Findings from the SLR were used to develop a conceptual methodology to investigate the relationship between fees and quality of professional service outputs.

Findings – Based on a frequency analysis of factors in the construction literature, the three main variables influencing professional service output quality were fees, coordination and amount of time available for project tasks. The SLR and shortcomings in previous studies informed the development of a conceptual methodology to examine the relationship between fees and professional service output quality.

Practical implications – The conceptual methodology will assist in comprehensively investigating the effect of fees on the quality of professional service outputs. This is particularly relevant in countries where clients procure built environment professional services based on the lowest fee tendered but are concerned about quality. The methodology can establish how and to what extent “low” fees impact on professional service output quality. Industry professionals can also use variables identified in this paper to mitigate quality-related risks when producing professional service outputs.

Originality/value – This paper adds to the body of knowledge by identifying variables in the relationship between fees and professional service output quality. The identified variables can be monitored and controlled by researchers during future investigations. Additionally, a conceptual methodology was proposed to assist researchers to determine the effect of fees on professional service output quality. The flexibility of the conceptual methodology enables it to comprehensively investigate other key variables (apart from fees) impacting on professional service output quality.

Keywords Fees, Professional services, Quality, Construction industry

Paper type Research paper



Introduction

Construction projects require a range of documents (e.g. drawings and specifications) for construction works to be effectively executed by contractors. These documents are often prepared

by built environment professionals as part of their professional services. The range of documents prepared by built environment professionals for construction projects can be referred to as professional service outputs. The influence of fees on quality of professional services (and by extension professional service outputs) is an important issue because poor quality professional services can negatively impact project outcomes such as duration and construction costs (Burati *et al.*, 1992; Andi and Minato, 2003; Love *et al.*, 2006). Several studies using a range of methods have been published since the late 1980s on the relationship between fees and quality of professional services (Parks and McBride, 1987; DeFraités, 1989; Bubshait *et al.*, 1998; Shrestha and Mani, 2014; Okonkwo and Wium, 2018). However, there is still uncertainty regarding the effect of fees on quality of professional services because of diverse viewpoints in the literature.

This paper used a systematic literature review (SLR) to identify variables in the relationship between fees and professional service output quality. This is important for researchers, as the paper provides variables that must be monitored as part of studies on this topic. This paper also examined the methods used in previous studies, including their limitations, to develop a conceptual methodology that can comprehensively investigate the relationship between fees and quality of professional service outputs. The methodology can be used to establish how and to what extent “low” fees impact on professional service output quality. This is particularly relevant in countries where clients procure built environment professional services based on the lowest fee tendered but are concerned about quality.

Background to the study

Several studies investigating the quality of professional services in the construction industry converge on the notion that there may be a direct relationship between level of fees and quality of professional services. Some studies indicate that professional fees are one of the primary determinants of quality of professional services (Parks and McBride, 1987; DeFraités, 1989; Bubshait *et al.*, 1998; Akampurira and Windapo, 2018; Assaf *et al.*, 2018; and Ali and Au-Yong, 2021). However, other studies (Hoxley, 2000; Andi and Minato, 2004; Phua, 2005; Hoxley, 2007; Wimalasiri *et al.*, 2010; Awolesi and Ayedun, 2012; Lam, 2012; Philips-Ryder *et al.*, 2013; Laryea *et al.*, 2021) reject that notion and assert that other factors apart from fees influence quality.

Despite evidence in the construction literature, few papers directly investigated the relationship between fees and quality of professional services. Instead, many papers broadly assessed factors influencing quality of outputs (e.g. design and documentation), performance, risk or success on projects and identified “low” fees as one of the contributing factors. A comprehensive study using an appropriate methodology to investigate the relationship between fees and quality of professional service outputs was absent from the literature. Furthermore, the range of variables in the relationship between fees and professional service output quality were not identified and carefully monitored during previous investigations. Therefore, this paper addressed this gap in knowledge by identifying variables and developing an appropriate methodology to comprehensively investigate the relationship between fees and professional service output quality.

Methodology

Stage 1 – systematic literature review

A SLR was used to evaluate methodologies and their limitations in previous studies investigating the relationship between fees and professional service output quality. Variables influencing the relationship between fees and professional service output quality

were also identified during the SLR. SLRs have been frequently used as a research method in several recent publications (Radzi *et al.*, 2021; Tijani *et al.*, 2021). The SLR process used in this study is described below:

- *Sourcing relevant literature.* Torraco (2005) asserted that when writing a SLR paper, authors must describe their “strategy for selecting literature to be included in the study”. Torraco (2005) further explained that sufficient details about the method undertaken to complete the review must be provided to enable other researchers to repeat the study. Therefore, this section comprehensively outlines the strategy used to select literature for this paper.

The four phases used to select relevant literature included identification, screening, eligibility and inclusion. Only peer-reviewed journal papers were considered for inclusion in the SLR because they undergo a rigorous review process and are considered “certified knowledge” in academia (Ramos-Rodríguez and Ruiz-Navarro, 2004).

- *Phase 1 – identification.* The first phase in the methodology entailed identifying relevant literature on the relationship between fees and the quality of professional services in the construction industry. This process involved searching different academic databases that included Scopus, Taylor and Francis, Wiley, Emerald, Web of Science, American Society of Civil Engineers (ASCE) and Institution of Civil Engineers (ICE). Only databases containing literature from construction-related journals on the topic being investigated were searched. Since several prominent construction-related journals are published by Taylor and Francis, Emerald, ASCE and ICE, they were all included in the databases that were searched. A combination of keywords was used to search the title, abstract and keywords in research papers.

As literature was sourced from some databases that contained papers on a broad range of topics, the keyword combination included the term CONSTRUCTION to ensure that papers appearing in the search results were relevant to the construction industry. However, when searching the ASCE and ICE databases, the term CONSTRUCTION was omitted as those databases contain literature that are specific to the construction and civil engineering industry. The Boolean operator AND was used to connect FEES AND QUALITY. FEES AND QUALITY were searched jointly to identify literature specific to the relationship between fees and quality of professional services. Using the two terms with an OR statement would have yielded copious literature that was too broad. The terms CONSTRUCTION OR ENGINEER OR ARCHITECT OR PROFESSIONAL SERVICE were combined with FEES AND QUALITY using an AND Boolean connector. An OR Boolean connector was used in the first statement to gather as much information on fees and quality within the construction and built environment professional service industry. The term PROFESSIONAL SERVICE was included because it encompasses an array of professional services in the construction industry (e.g. engineering and architectural). Due to the vast amounts of papers identified on the Web of Science database, which were related to the health sector, the Boolean connector NOT HEALTH was included to ensure that papers related to the health industry were excluded from the search. An unlimited time range was used when searching for literature in all databases.

- *Phase 2 – screening.* An initial screening exercise was conducted to identify unique papers and remove any duplicate papers identified across different academic databases. Thereafter, a text analysis was conducted on the title and abstract of unique papers to determine whether they were suitable for further consideration. The inclusion and exclusion criteria for papers are provided below.

Inclusion criteria

- Papers must be published in English.
- Papers must reside in peer-reviewed journal publications.

- Papers must contain searched keywords in the article.
- Papers must focus on professional services in the construction industry.
- Papers must contain some relevance to the relationship between fees and quality of professional services in the construction industry.

Exclusion criteria

- Papers that focused on professional service industries that were unrelated to the construction industry.
- Papers that broadly assessed quality in the construction industry.
- Papers that did not satisfy all the inclusion criteria.

Although many papers were identified from the various databases, most of them were not shortlisted for further evaluation because they were not relevant to the topic being investigated. The main shortcoming in papers that were discarded included investigating quality in different service industries which were not relevant to the construction industry, broadly focusing on quality systems in construction or consulting firms without including the relationship with fees and focusing on construction quality but neglecting professional services. Papers that were not relevant to the topic were discarded while relevant papers were shortlisted for further evaluation. The screening process highlighted the dearth of relevant literature in this area of study.

- *Phase 3 – eligibility.* Since only 40 papers were shortlisted for further evaluation, a “snowballing” approach was used to examine the references in shortlisted papers and determine whether any additional literature was relevant to the topic. The titles of the references in the shortlisted articles were assessed, if titles were relevant, an analysis of the abstract was conducted to determine whether the paper should be shortlisted for further evaluation. Only three additional papers were identified from this process and added to the 40 papers shortlisted for evaluation.

A full-text analysis was then conducted on the 43 papers shortlisted for evaluation. A total of 11 papers were removed during this process because they were too broad and did not contain sufficient detail on the relationship between fees and quality of professional services.

- *Phase 4 – inclusion.* A total of 32 papers were included for final analysis as part of the SLR. A flowchart illustrating the process to identify relevant papers for the SLR is provided in [Figure 1](#).

A summary of the relevant literature and their respective journals is provided in [Table 1](#).

Stage 2 – descriptive analysis of literature

Descriptive analysis in research is a form of analysis that is used to simplify data and identify patterns and emerging trends ([Loeb et al., 2017](#)). It provides value during SLRs when trying to isolate specific information from large amounts of data.

A descriptive analysis was used during the SLR to critically evaluate previous methods and identify variables and their frequency of occurrence in studies investigating the relationship between fees and professional service output quality.

The descriptive analysis informed the design of the conceptual methodology.

Stage 3 – development of conceptual methodology

The conceptual methodology was developed to address the following primary research question:

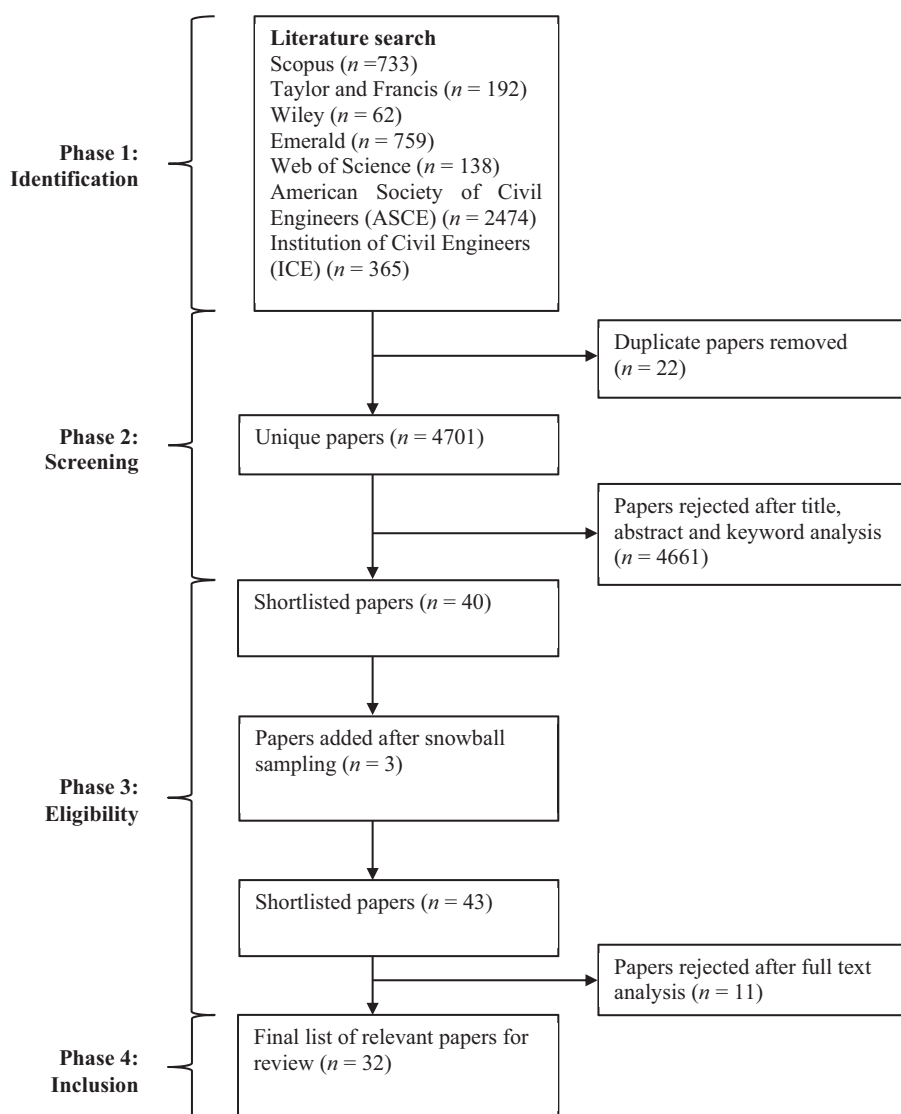


Figure 1.
SLR flowchart used
to identify relevant
papers

RQ1. What are the key determinants of professional service output quality in the South African construction industry and how, and to what extent, is quality specifically influenced by the level of fees charged by built environment professionals?

Methods that were considered for inclusion in the conceptual methodology had to contain mechanisms to comprehensively answer the primary research question. Previous methods in the construction literature that were used to successfully answer similar research questions

Table 1.
Summary of relevant
literature

Name of journal	No. of papers	References
<i>Construction Management and Economics</i>	6	Love et al. (1999) , Love et al. (2000) , Hoxley (2000) , Andi and Minato (2004) , Phua (2005) , Mbachu and Nkado (2007)
<i>Journal of Civil Engineering Education (Formerly Journal of Professional Issues in Engineering Education and Practice)</i>	3	Parks and McBride (1987) , DeFraités (1989) , Ling (2004)
<i>Construction Economics and Building (formerly Australasian Journal of Construction Economics and Building)</i>	2	Slater and Radford (2012) , Marisa and Yusof (2020)
<i>Journal of Building Pathology and Adaption</i>	2	Assaf et al. (2018) , Ali and Au-Yong (2021)
<i>Journal of Leadership and Management in Engineering</i>	2	Forbes (2002) , Horns and Jenkins (2011)
<i>Journal of South African Institution of Civil Engineering</i>	2	Akampurira and Windapo (2018) , Okonkwo and Wium (2018)
<i>Property Management</i>	2	Hoxley (2007) , Lam (2012)
<i>Architectural Engineering and Design Management</i>	1	Love et al. (2006)
<i>Ethiopian Journal of Environmental Studies and Management</i>	1	Dosumu and Iyagba (2013)
<i>International Journal of Construction Management</i>	1	Philips-Ryder et al. (2013)
<i>International Journal of Project Management</i>	1	Andi and Minato (2003)
<i>Journal of Architectural Engineering</i>	1	Bubshait et al. (1998)
<i>Journal of Construction Engineering and Management</i>	1	Gransberg et al. (2007)
<i>Journal of Engineering Design</i>	1	Wimalasiri et al., 2010
<i>Journal of Engineering, Design and Technology</i>	1	Koutsikouri et al. (2008)
<i>Journal of Legal Affairs and Dispute Resolution in Engineering and Construction</i>	1	Quapp and Holschemacher (2021)
<i>Journal of Management in Engineering</i>	1	Shrestha and Mani (2014)
<i>Journal of Performance of Constructed Facilities</i>	1	Lopez et al. (2010)
<i>Mediterranean Journal of Social Sciences</i>	1	Awolesi and Ayedun (2012)
<i>Proceedings of the Institution of Civil Engineers – Management, Procurement and Law</i>	1	Laryea et al. (2021)
Total	32	

(i.e. A “what” question to determine key factors and A “how” question to deeply explore a phenomenon) were identified. Once precedent for using a particular method (for a similar type of research question) was established, the method was evaluated for appropriateness before inclusion in the conceptual methodology. The conceptual methodology was cognisant of

methodological shortcomings in previous studies investigating the relationship between fees and quality of professional service outputs.

Variables in the relationship between fees and quality of professional service outputs

Table 2 shows independent variables (identified from the literature) that influence the quality of professional service outputs. The three most cited variables were fees, coordination and time available for project tasks. Importantly, apart from the top three variables, there were a range of other variables cited in the construction literature, that influence the quality of professional service outputs. None of the studies conducted a comprehensive investigation that highlighted the key variables in the relationship between fees and quality of professional service outputs.

Since a range of variables influence the quality of professional service outputs, key variables should be identified as the first part of any study investigating the relationship between fees and professional service output quality. Key variables can then be monitored and examined during further in-depth investigations into the relationship between fees and professional service output quality.

Evaluation of previous methodological approaches used to investigate the relationship between fees and quality of professional service outputs

A review of published construction literature was conducted to critically appraise methodological approaches used to investigate the relationship between fees and professional service output quality. Table 3 provides a breakdown of the methodologies used in previous studies.

Previous methodologies did not comprehensively examine the relationship between fees and professional service output quality. Many of the studies (Hoxley, 2000; Phua, 2005; Love *et al.*, 2006; Hoxley, 2007; Wimalasiri *et al.*, 2010; Awolesi and Ayedun, 2012; Dosumu and Iyagba, 2013; Philips-Ryder *et al.*, 2013; Assaf *et al.*, 2018; Okonkwo and Wium, 2018; Akampurira and Windapo, 2018; Marisa and Yusof, 2020) identified determinants of professional service output quality but did not specifically examine the relationship between fees and quality of professional service outputs. The studies simply identified “low” fees as a factor influencing design/documentation quality, project performance or project risks. However, they did not include an additional stage in the research design to validate findings. Most of the studies also did not pay careful attention to sampling, this resulted in several participants not having requisite experience or knowledge but providing feedback. Studies that contained participants without adequate experience were concerning because participants would not have knowledge about the full range of factors influencing the quality of professional service outputs. Studies with deficient samples may have skewed results which cast doubt around the validity and reliability of those studies. Some studies such as Lopez *et al.* (2010) used a systematic literature review to identify factors that cause design errors. The study was purely theoretical and did not include any empirical investigation. Several other theoretical studies (Parks and McBride, 1987; DeFraithe, 1989; Forbes, 2002; Horns and Jenkins, 2011; Quapp and Holschemacher, 2021) were conducted on the topic however; those studies also did not contain any empirical evidence to support claims that were made.

Other studies used case study research strategies. Some of the studies that used case studies (Bubshait *et al.*, 1998; Gransberg *et al.*, 2007; Shrestha and Mani, 2014) directly assessed the influence of fees on quality without first identifying key determinants of professional service output quality. Bubshait *et al.* (1998), Gransberg *et al.* (2007) and Shrestha and Mani (2014) used

Table 2.
Independent
variables influencing
quality of
professional service
outputs

Independent variables influencing quality	References	Frequency
Fees	Parks and McBride (1987), DeFraitess (1989), Bubshait <i>et al.</i> (1998), Love <i>et al.</i> (1999), Love <i>et al.</i> (2000), Andi and Minato (2003), Ling (2004), Love <i>et al.</i> (2006), Gransberg <i>et al.</i> (2007), Mbachu and Nkado (2007), Koutsikouri <i>et al.</i> (2008), Lopez <i>et al.</i> (2010), Horns and Jenkins (2011), Slater and Radford (2012), Dosumu and Iyagba (2013), Shrestha and Mani (2014), Akampurira and Windapo (2018), Assaf <i>et al.</i> (2018), Okonkwo and Wium (2018), Ali and Au-Yong (2021), Quapp and Holschemacher (2021)	21
Coordination	Love <i>et al.</i> (1999), Love <i>et al.</i> (2000), Andi and Minato (2003), Andi and Minato (2004), Love <i>et al.</i> (2006), Philips-Ryder <i>et al.</i> (2013), Lopez <i>et al.</i> (2010), Wimalasiri <i>et al.</i> (2010), Slater and Radford (2012), Dosumu and Iyagba (2013), Akampurira and Windapo (2018), Assaf <i>et al.</i> (2018), Marisa and Yusof (2020)	13
Time	Love <i>et al.</i> (2000), Andi and Minato (2003), Andi and Minato (2004), Ling (2004), Love <i>et al.</i> (2006), Koutsikouri <i>et al.</i> (2008), Lopez <i>et al.</i> (2010), Slater and Radford (2012), Akampurira and Windapo (2018), Assaf <i>et al.</i> (2018), Ali and Au-Yong (2021)	11
Experience	DeFraitess (1989), Andi and Minato (2004), Ling (2004), Lopez <i>et al.</i> (2010), Wimalasiri <i>et al.</i> (2010), Dosumu and Iyagba (2013), Akampurira and Windapo (2018), Assaf <i>et al.</i> (2018)	8
Quality assurance practices	Forbes (2002), Andi and Minato (2003), Andi and Minato (2004), Love <i>et al.</i> (2006), Lopez <i>et al.</i> (2010), Dosumu and Iyagba (2013), Akampurira and Windapo (2018), Assaf <i>et al.</i> (2018)	8
Inadequate use of IT or software	Andi and Minato (2003), Andi and Minato (2004), Love <i>et al.</i> (2006), Lopez <i>et al.</i> (2010), Slater and Radford (2012), Assaf <i>et al.</i> (2018), Akampurira and Windapo (2018)	7
Competence	DeFraitess (1989), Andi and Minato (2003), Mbachu and Nkado (2007), Koutsikouri <i>et al.</i> (2008), Wimalasiri <i>et al.</i> (2010), Dosumu and Iyagba (2013)	6
Training	Andi and Minato (2003), Andi and Minato (2004), Lopez <i>et al.</i> (2010), Wimalasiri <i>et al.</i> (2010), Akampurira and Windapo (2018), Assaf <i>et al.</i> (2018)	6
Communication	Andi and Minato (2004), Wimalasiri <i>et al.</i> (2010), Dosumu and Iyagba (2013), Akampurira and Windapo (2018), Assaf <i>et al.</i> (2018)	5
Quality of project brief	Love <i>et al.</i> (1999), Andi and Minato (2003), Love <i>et al.</i> (2006), Akampurira and Windapo (2018)	4
Availability of information	Andi and Minato (2004), Dosumu and Iyagba (2013), Akampurira and Windapo (2018)	3
Client skill and experience	Akampurira and Windapo (2018), Assaf <i>et al.</i> (2018), Ali and Au-Yong (2021)	3
Competitive nature of the industry	Andi and Minato (2003), Slater and Radford (2012), Akampurira and Windapo (2018)	3

(continued)

Independent variables influencing quality	References	Frequency
Integration	Love <i>et al.</i> (1999), Lopez <i>et al.</i> (2010), Marisa and Yusof (2020)	3
Lack of due diligence	Andi and Minato (2004), Dosumu and Iyagba (2013), Akampurira and Windapo (2018)	3
Organisational support	Forbes (2002), Andi and Minato (2004), Marisa and Yusof (2020)	3
Professional team lack of understanding	Andi and Minato (2003), Akampurira and Windapo (2018), Assaf <i>et al.</i> (2018)	3
Motivation	Love <i>et al.</i> (2000), Forbes (2002), Ling (2004)	3
Resources	Love <i>et al.</i> (1999), Mbachu and Nkado (2007), Koutsikouri <i>et al.</i> (2008)	3
Staff retention and utilisation	Love <i>et al.</i> (2006), Akampurira and Windapo (2018), Assaf <i>et al.</i> (2018)	3
Unrealistic client expectations	Andi and Minato (2003), Akampurira and Windapo (2018), Assaf <i>et al.</i> (2018)	3
Workload	Love <i>et al.</i> (2006), Akampurira and Windapo (2018), Assaf <i>et al.</i> (2018)	3
Delays in decision-making	Andi and Minato (2003), Akampurira and Windapo (2018)	2
Moving to tender stage with incomplete design	Love <i>et al.</i> (2006) Akampurira and Windapo (2018)	2
Planning	Love <i>et al.</i> (2006), Dosumu and Iyagba (2013)	2
Professionalism	Hoxley (2000), Akampurira and Windapo (2018)	2
Unstable client requirements	Andi and Minato (2003), Akampurira and Windapo (2018)	2
Delay in payment of professional fees	Akampurira and Windapo (2018)	1
Project type	Ali and Au-Yong (2021)	1
Supervision and mentorship of staff	Akampurira and Windapo (2018)	1

Note: IT = Information technology

Table 2.

quantitative methods and an increase in project costs as a proxy to determine quality of professional services. However, quantitative methods did not allow for a deep understanding of the relationship between fees and quality to be established. Furthermore, extraneous variables (e.g. unforeseen project changes and client requests) that may have been responsible for an increase in project costs were not adequately considered. The quantitative studies also failed to conduct a direct assessment on the quality of outputs, by objectively assessing outputs against a set of quality criteria. Two of the case studies used small sample sizes which cast doubt on whether findings were statistically generalisable – both Bubshait *et al.* (1998) and Gransberg *et al.* (2007) had relatively small sample sizes of 58 and 31, respectively. The other few studies that used case study research strategies (Love *et al.*, 1999; Andi and Minato, 2004; Lam, 2012) did not solely focus on the relationship between fees and quality of professional service outputs. However, the studies provided important guidance of how in-depth data collection is an essential component of effective case studies.

A recent study by Laryea *et al.* (2021) looked at how fees influence quality of professional services. Laryea *et al.* (2021) used two newly constructed universities in

Table 3.
Evaluation of
methodologies used
to investigate the
relationship between
fees and quality of
professional service
outputs

Research methods	References	No. of papers	(%)
Case study (mixed methods)	Bubshait <i>et al.</i> (1998), Love <i>et al.</i> (1999), Andi and Minato (2004), Gransberg <i>et al.</i> (2007), Lam (2012), Shrestha and Mani (2014), Laryea <i>et al.</i> (2021)	7	28
Survey	Hoxley (2000), Phua (2005), Love <i>et al.</i> (2006), Hoxley (2007), Awolesi and Ayedun (2012), Dosumu and Iyagba (2013), Philips-Ryder <i>et al.</i> (2013), Assaf <i>et al.</i> (2018), Okonkwo and Wium (2018), Akampurira and Windapo (2018), Marisa and Yusof (2020)	11	44
Interviews	Ling (2004), Wimalasiri <i>et al.</i> (2010)	2	8
Survey and interviews	Andi and Minato (2003), Mbachu and Nkado (2007), Koutsikouri <i>et al.</i> (2008), Slater and Radford (2012), Ali and Au-Yong (2021)	5	20
<i>Theoretical papers</i>	Parks and McBride (1987), DeFraitres (1989), Love <i>et al.</i> (2000), Forbes (2002), Lopez <i>et al.</i> (2010), Horns and Jenkins (2011), Quapp and Holschemacher (2021)	7	N/A

South Africa as case studies to examine quality of multi-disciplinary professional services. The main shortcoming in the methodology was that it did not specifically assess professional service output quality. Instead, project outcomes associated with the constructed infrastructure (e.g. time, cost and quality during construction) were used as a proxy to assess professional service output quality. The approach by Laryea *et al.* (2021) provides a cursory insight into the relationship between fees and quality of professional service outputs; however, further investigation is required as successful project outcomes may be due to a range of factors. Those factors influencing professional service output quality need to be clearly understood as part of any study investigating the relationship between fees and professional service output quality. Although case studies provide some insight into the relationship between fees and quality of professional service outputs, they cannot be used as a standalone research method to investigate this complex topic. Additional methods should be incorporated to triangulate findings and improve validity.

A major shortcoming in previous methods investigating the relationship between fees and professional service output quality was the lack of a mechanism to measure professional service output quality. Without measuring quality, there is no way to objectively argue that quality has improved or declined. Furthermore, without measuring quality, benchmarking and comparisons of professional service output quality among projects cannot be undertaken. Various indicators can be used to measure professional service output quality. Some authors provide guidance on different indicators that

contribute to professional service output quality such as completeness, clarity and relevance. However, studies fail to break down quality into indicators for assessment. It is essential that any study investigating the relationship between fees and professional service output quality has a mechanism to measure quality.

Table 4 provides a comparison of different methodological approaches used in literature to investigate the relationship between fees and professional service output quality. The table illustrates the sensitivity of methods to capture variables influencing quality and the quality variable itself.

The methodological appraisal exposed deficiencies in previous methodologies and demonstrated that the relationship between fees and professional service output quality has not been comprehensively investigated. A rigorous methodology that can capture and monitor key variables is needed to systematically examine the relationship between fees and professional service output quality.

Research strategy	Sensitivity for capturing variables (including fees) that influence quality, i.e. capturing the different factors that affect professional service output quality	Sensitivity for assessing the quality variable, i.e. understanding how professional service output quality varies according to the level of fees
Survey and interview	Surveys use a cross-sectional approach to develop an understanding about a particular topic from a sample of participants. Surveys can be an effective tool to capture variables that influence professional service output quality, provided that the sample of participants have experience and knowledge to provide credible feedback.	The validity of a survey is dependent on participants accurately recounting events that have transpired. In the context of capturing the quality variable, participants will need to rate quality of professional service outputs on specific projects. Participants forming part of the sample should have relevant experience and knowledge to provide credible feedback.
Case study	Case studies entail an in-depth examination of actual cases/ scenarios. Case studies can be conducted using a longitudinal or cross-sectional approach and may use a range of research methods. The flexibility of using several research methods may allow case studies to capture variables influencing professional service output quality and also facilitate an in-depth observation of the variables.	The flexibility of case studies enables the quality variable to be measured using a range of research methods. A case study can be used to isolate the fees variable and determine its specific influence on quality using an in-depth case investigation.
Systematic literature review	Systematic literature reviews are limited to a review of existing relevant literature on topics. The limitations in the literature may result in the complete range of variables influencing professional service output quality not being captured.	A systematic literature review is unable to measure the variation in quality due to the level of fees. Measuring variation in quality will require data collection from participants which a systematic literature review does not offer.

Table 4.
Methodological
approaches used in
previous studies to
investigate the
relationship between
fees and quality of
professional service
outputs

Considerations when examining the relationship between fees and quality of professional service outputs

A few critical aspects influencing the relationship between fees and quality of professional service outputs must be considered when investigating this topic. Firstly, there are several determinants (or variables) of professional service output quality with varying impact on the relationship between fees and quality that are not fully defined or understood. The key determinants of professional service output quality must be defined and understood including the interrelationship between determinants. Secondly, several factors influence the level of fees charged by built environment professionals. It is essential that these factors are considered when determining or benchmarking professional fees. These factors can then be considered when evaluating the relationship between fees and quality. Thirdly, from a social science perspective, low fees (or lack of financial incentives) and its influence on the performance of professionals has not been thoroughly investigated in the construction literature. It is imperative to understand the relationship between fees and professional service output quality from a social science perspective by determining whether a lack of financial incentives negatively influence the performance of professionals in the construction industry. Fourthly, since professional service outputs are prepared by built environment professionals, the relationship between fees and professional service output quality needs to be evaluated within the context of professionalism theory. In terms of professionalism theory, a true professional should provide a minimum level of acceptable quality of work regardless of the remuneration (Hughes and Hughes, 2013). Therefore, any study on fees and quality should incorporate the concept of professionalism. Fifthly, since the focus of the relationship between fees and professional service output quality in this paper is specific to the construction industry, the methodology must account for the cyclical nature of the construction industry and fluctuations in workload. Lastly, a credible study on the relationship between fees and professional service output quality requires an appropriate mechanism to measure, benchmark and compare professional service output quality across projects.

It is evident from the complexities set out above, that the relationship between fees and professional service output quality is a multi-layered problem that requires a comprehensive methodology to enable a thorough investigation to be conducted.

Development of a conceptual methodology to examine the relationship between fees and quality of professional service outputs

Scientific research design

Considering the nature of the primary research question, a mixed method approach was deemed to be the most appropriate methodology to comprehensively answer the primary research question.

A two-stage research design using a combination of survey and case study research strategies has been proposed. The two-stage research design enables a broad evaluation of key determinants (or variables) of professional service output quality amongst knowledgeable built environment professionals to be undertaken as part of the first stage of the research design, whereas the second stage entails an in-depth examination of the relationship between fees and professional service output quality using several completed projects as case studies.

The rationale for the two-stage research design was to rectify methodological shortcomings in previous studies that investigated the factors influencing professional service output quality using a single research method (primarily surveys), with no additional stage in the research design to validate findings. Aldridge and Levine (2001) and

Saunders *et al.* (2019) both state that to derive the maximum benefit from a survey, it should be used as part of a multi-method approach. The multi-method approach allows data to be collected using different research methods which enables the findings from the survey to be triangulated. The use of case studies during the second stage of the research design enables data to be triangulated and a deep understanding about the relationship between fees and professional service output quality to be developed.

The two-stage research design is outlined below:

Stage 1 – industry wide survey

An industry wide survey will be used during the first stage of the research design to elicit feedback from registered built environment professionals regarding the first part of the primary research question, namely, what are the key determinants of professional service output quality in the South African construction industry?

Surveys have been used successfully in several studies in the construction literature (Nani *et al.*, 2017). They offer a high degree of population validity and allow many respondents to provide feedback in a timely and cost-effective manner (Fellows and Liu, 2015). Gill and Johnson (2002) posit that a survey is effective at describing “characteristics of a specific population at a specific point in time”. Therefore, an industry wide survey was chosen as the first stage of the research design because it allows a broad section of built environment professionals to provide input into the study. Built environment professionals are producers of professional service outputs; therefore, they should have first-hand knowledge about the factors (or variables) influencing quality of professional service outputs. The survey also enables extraneous variables influencing the relationship between fees and quality to be identified upfront so they are accounted for during the second stage of the research design.

Surveys rely on respondents having requisite knowledge to provide credible feedback into the study. This highlights the importance of carefully selecting participants to ensure that only those with appropriate knowledge participate in the study. Therefore, purposive sampling will be used to select registered built environment professionals (e.g. engineers, architects, quantity surveyors and project managers). Only registered professionals will be allowed to contribute to the survey as they should have well-developed insights about factors influencing the quality of professional service outputs.

Previous studies that investigated factors influencing professional service output quality in the construction industry all used questionnaires as the primary data collection technique (Andi and Minato, 2003; Akampurira and Windapo, 2018; Okonkwo and Wium, 2018; Marisa and Yusof, 2020). Therefore, a questionnaire will be used for data collection during the survey.

Variables highlighted in this paper that influence professional service output quality will be used in the questionnaire. Participants will be given an opportunity to rate the level of importance of factors (or variables) using a five-point Likert scale. The scale will be categorised in accordance with the following ratings: 5 = very important; 4 = important; 3 = medium importance; 2 = low importance; and 1 = very low importance. Once the surveys have been completed and returned by participants, factor analysis will be used to condense the number of factors (independent variables) assessed during the survey. Factor analysis is a statistical technique that reduces the overall number of factors by identifying relationships among various interrelated factors (Chan, 2004).

Factor analysis does not contain any predictive power (Doloi *et al.*, 2012); therefore, further analysis of the factors will be undertaken using a stepwise multiple regression model. A stepwise multiple regression model can predict factors (independent variables)

that influence quality (dependent variable) of professional service outputs and the extent of their influence. [Pinto and Prescott \(1988\)](#) examined variations in critical success factors over project stages in construction projects and asserted that a stepwise multiple regression model is an appropriate technique to identify the key factors in a study. Therefore, a stepwise multiple regression model will be used to determine key determinants of professional service output quality. The regression model to measure quality of professional service outputs can be expressed as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \dots + \beta_n X_n + \varepsilon$$

where Y is quality of professional service outputs (i.e. the dependent variable); β_0 is a constant; β_1 to β_n are regression co-efficients; X_1 to X_n are factors influencing quality of professional service outputs (i.e. independent variables) and ε is the error term.

Factor analysis followed by a stepwise multiple regression model has been used by several researchers ([Chan et al., 2004](#); [Doloi et al., 2012](#); [Sinesilassie et al., 2017](#)) to identify key factors related to different aspects of the construction industry. Therefore, a similar process has been described during the first stage (i.e. the survey) of the proposed research design which seeks to identify key determinants of professional service output quality. An illustration of the process to analyse data from the survey is provided in [Figure 2](#).

The main weaknesses of surveys are that they offer poor ecological validity ([Gill and Johnson, 2002](#)) and in most instances do not provide rich in-depth data. The use of case studies during the second stage of the research design will assist in compensating for those weaknesses. The findings from the survey (including the identification of potential extraneous variables) will inform the execution of the case studies.

Stage 2 – case studies

The second stage of the research design entails using a case study research strategy. Case studies have been an effective research strategy in the construction literature ([Haupt and Pillay, 2016](#); [Amoah and Pretorius, 2020](#)). The purpose of using case studies in the proposed methodology is to answer the second part of the primary research question, namely, how, and to what extent, is quality specifically influenced by the level of fees charged by built environment professionals? The case studies will also be used to interrogate the validity of the findings from the industry wide survey by eliciting rich in-depth data from the field.

Purposive sampling will be used to identify built environment consulting companies. Companies from each of the built environment disciplines (e.g. engineers, architects, quantity surveyors and project managers) will be selected for different case studies. The number of companies selected, will be based on findings during the first stage of the



Figure 2.
Process to analyse
survey data

Source: Adapted Chan *et al.* (2004)

research design. However, it is anticipated that a combination of small and large size companies will be selected to account for nuances in factors influencing the quality of professional service outputs arising from the different sizes and operational philosophies in small and large companies. The classification of small and large companies will be based on the number of employees.

Once different built environment consulting companies have been selected, a pool of projects that have been completed by the companies will be evaluated in terms of the quality of professional service outputs. A quality rating instrument will be developed to assess the quality on each of the projects. The quality rating instrument will be sent to clients and contractors who were involved in the various projects, to rate the quality of professional service outputs and provide feedback regarding factors influencing the quality of professional service outputs on those specific projects. This is an important part of the methodology because the quality rating instrument will measure quality for benchmarking and comparison purposes. This was not performed during any of the previous studies.

Built environment professionals who worked on the projects will also have an opportunity to provide their input regarding factors influencing professional service output quality on those specific projects. The client and project manager (from the consultant) will be requested to provide specific feedback regarding the influence of fees on quality of professional service outputs during the various projects. Understanding key factors (or variables) from the first stage of the research design will ensure that those variables and their influence on quality can be monitored when analysing feedback during the case studies. Feedback from producers (built environment professionals) and consumers (clients and contractors) of professional service outputs will assist in minimising bias in the study. Furthermore, rating the quality of professional service outputs on each project and then critically investigating how the various factors influenced quality of the specific projects, will result in rich in-depth data that is essential when developing a deep understanding of how professional service output quality is specifically influenced by fees.

Data collection will be undertaken using semi-structured interviews with participants (clients, contractors and built environment professionals). Semi-structured interviews with management in various consulting companies will also be undertaken to develop an understanding of tendering approaches and project implementation procedures amongst the different companies. This is primarily to ascertain whether there are differences in tendering and project implementation approaches amongst different sizes of organisations, and whether these differences significantly influence the quality of service provided.

Literature on research methodology asserts that qualitative data (e.g. the data that will be derived during the semi-structured interviews) is generally analysed using some form of coding and categorisation of data (Maxwell, 2013; Leedy and Ormrod, 2015). Therefore, thematic analysis will be used to analyse data from the semi-structured interviews. The purpose of using thematic analysis is to identify common themes that are prevalent on projects where fees influence professional service output quality. Themes from interviews in the different case studies will be interpreted and assist in the development of new theory.

Poor generalisability is one of the major criticisms of the case study research strategy (Yin, 2009). Yin (2009) suggests that evaluating more cases should be undertaken to improve the analytic generalisation of case studies. Therefore, the process of undertaking new case studies will continue until a point of theoretical saturation is achieved.

Documentary analysis will be conducted during each case study. Bowen (2009) asserts that during documentary analysis, researchers should determine the relevance of each document and its significance to the topic being investigated. Bowen (2009) further states that documentary analysis should be used in conjunction with other methods to triangulate

the findings. Therefore, documentary analysis will be used as one of the research methods during the case studies. Documentary analysis has been proposed for two reasons. Firstly, to get an understanding of the quality of professional service outputs (e.g. reports and drawings) on selected projects by conducting a review of documentation. This will mitigate against any bias or validity issues arising from clients or contractors who may have incorrectly rated the quality of outputs on projects. Secondly, to assess the approach of tendering and implementation of projects within different companies, by reviewing documentation such as quality control systems, project management protocols, operational procedures and business development procedures. This assessment is required to identify commonalities in the tendering and implementation approaches amongst companies and their influence on professional service output quality. Where possible, the professional fee offered on each of the projects being assessed will be sourced. This will assist in examining how the level of professional fees influences quality on the various projects.

Project outcomes (e.g. time and cost of the construction project) may also be included as part of the case studies to provide further evidence regarding the impact of professional service output quality on the construction process. This approach was used in previous methodologies on the topic.

The time horizon for the case studies will be longitudinal to enable the cyclical nature of the construction industry to be considered and a critical assessment of professional service outputs rendered at different stages of projects to be conducted. It will also allow the interrelatedness of factors influencing the professional service output quality over a prolonged duration to be adequately understood and incorporated into the study.

Figure 3 provides an illustration of the proposed research design.

Discussion

This paper used an SLR to examine previous methodologies investigating the relationship between fees and professional service output quality and evaluate their limitations. Methods used in previous studies were not designed to rigorously interrogate the influence of fees on professional service output quality, primarily because many of the studies did not specifically investigate the relationship between fees and professional service output quality. Many of the studies (Hoxley, 2000; Phua, 2005; Love *et al.*, 2006; Hoxley, 2007; Wimalasiri *et al.*, 2010; Awolesi and Ayedun, 2012; Dosumu and Iyagba, 2013; Philips-Ryder *et al.*, 2013; Assaf *et al.*, 2018; Okonkwo and Wium, 2018; Akampurira and Windapo, 2018; Marisa and Yusof, 2020) simply identified “low” fees was one of the factors influencing design/documentation quality, project performance or project risks. However, the studies did not include an additional stage in the research design to validate findings. Other studies that investigated the relationship between fees and professional service output quality failed to account for extraneous variables and include a mechanism to measure quality and sensitivity thereof (Bubshait *et al.*, 1998; Gransberg *et al.*, 2007; Shrestha and Mani, 2014; Okonkwo and Wium, 2018; Laryea *et al.*, 2021). Being unable to measure quality makes benchmarking and comparison of quality amongst projects difficult. Furthermore, without an empirical measurement of quality, there is no way of objectively arguing that quality on projects has improved or declined.

A SLR was used to identify variables that influence the relationship between fees and professional service output quality. There was no consensus in previous studies regarding key variables that influence professional service output quality. Based on a frequency analysis of factors in the construction literature, the three main factors influencing professional service output quality were fees, coordination and amount of time available for project tasks. However, several other variables also clearly influence quality. The range of variables need to be understood and monitored as part of any methodology examining the

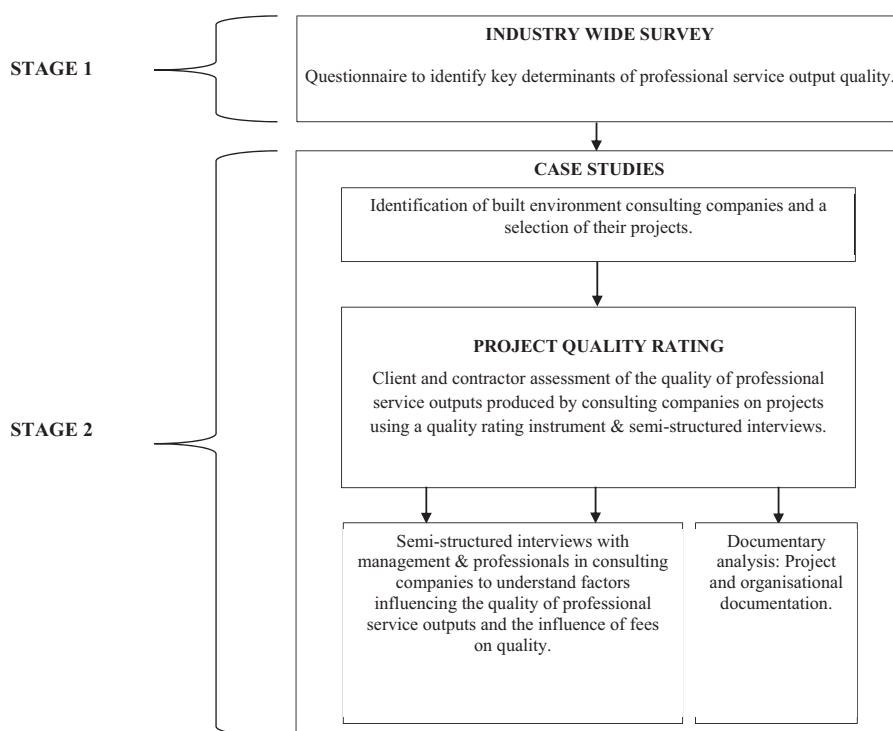


Figure 3.
Illustration of
conceptual
methodology to
investigate the
relationship between
fees and quality of
professional service
outputs in the
construction industry

relationship between fees and quality of professional service outputs. This was not conducted appropriately in previous studies.

This paper proposed a conceptual methodology using a two-stage research design with a combination of subjective and non-subjective methods to remedy shortcomings in previous methodologies. The use of a two-stage research design to validate findings is an improvement to previous methodologies that used single-stage research designs and did not undertake sufficient data validation. The first stage of the conceptual methodology included a survey to identify key determinants of professional service output quality. This is an improvement from previous studies where factors influencing professional service output quality were identified but key factors were not recorded. The key factors identified during the survey will be validated using case studies during the second stage of the research design. Understanding key factors (or variables) as part of the first stage of the research design will ensure that those variables can be monitored during the case studies (i.e. the second stage of the research design).

The case studies include assessing professional service output quality from a pool of projects using a quality rating instrument. The quality rating instrument is an improvement from previous studies as it provides a formal measurement of professional service output quality. Previous studies on the topic failed to assess professional service output quality. The measurement of quality in the methodology will assist academics to benchmark and compare professional service output quality on various projects. This will provide a more accurate account of professional service output quality on projects and sensitivity thereof.

The semi-structured interviews with professionals during the case studies will also address the aspect of motivation and how it affects the quality of professional service outputs. This was not comprehensively addressed in previous methodologies.

The conceptual methodology has not yet been implemented in any research, which may be a limitation to the study. Potential shortcomings that are not highlighted in this paper may only become evident when the conceptual methodology is used in research. Another limitation of the conceptual methodology is the heavy reliance of the quality rating instrument on feedback of consumers (e.g. clients and contractors) of professional service outputs. This may adversely affect validity if consumers are not knowledgeable about the quality of professional service outputs provided. To minimise this risk, the researcher will also evaluate the quality of professional service outputs to determine validity of the consumers' ratings. Bias was a concern in previous studies and has been minimised in the conceptual methodology by introducing a combination of non-subjective and subjective research methods.

This paper is significant because it provides researchers with a rigorous methodology to determine the extent to which fees influences the quality of professional service outputs. Clients in many countries procure built environment professional services based on the lowest tendered fee which may adversely affect professional service output quality. Therefore, the conceptual methodology is useful to investigate the impact of "low" fees on professional service output quality.

Conclusion

This paper proposed a conceptual methodology to comprehensively examine the relationship between fees and quality of professional service outputs in the construction industry. A SLR highlighted that previous methods examining the topic did not use rigorous approaches. The SLR also found that a range of variables influence professional service output quality. Those variables need to be understood and monitored as part of any study examining the relationship between fees and professional service output quality. The conceptual methodology proposed in this paper used a two-stage research design. The first stage involved identification of key determinants (or variables) of professional service output quality. The second stage used case studies to conduct in-depth investigations to examine how, and to what extent quality is specifically influenced by fees. The flexibility of the proposed methodology ensures that it can be used to investigate issues pertaining to other key variables (apart from fees) that impact professional service output quality.

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Corresponding author

Neil Govender can be contacted at: govneil01@gmail.com