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Declaration

All papers in this publication have been through a review process involving a review of abstracts, peer review of full papers by at least two referees, reporting of comments to authors, revision of papers by authors and re-evaluation of the revised papers to ensure quality of content.

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PERCEPTIONS OF TENDER DOCUMENT QUALITY AND ITS IMPACT ON CONSTRUCTION ESTIMATES

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Construction experts have noted the persistent concern about the quality of tender documents and its impact on the construction sector. Poor specification writing continues to be a weak link in the information chain that degrades the quality of tender documents and causes disputes, particularly in a competitive market where construction professionals strictly interpret the documents to prepare a competitive bid. The impact of tender document quality on the accuracy of project estimates is assessed to determine the determinants of good tender-quality documents. Additionally, interventions that can be implemented to improve tender document quality and the implications of poor tender document quality were also analyzed. Qualitative data was collected from construction professionals using an interview. Data was analyzed by Atlas-ti using thematic analysis where six key themes were extracted. The study concluded that poor-quality tender documents compromise the accuracy of project estimates and delivery of projects within the South African construction industry. The consequences of poor tender document quality included reduced project profitability, incomplete projects, project termination due to funding issues, misunderstanding of boundaries, misalignment of the programme, increased costs and a negative impact on construction estimates.

Keywords: construction professionals, project estimates, project quality, project schedule, tender documents

INTRODUCTION

According to Mohammed, Ibrahim, & El-Malt (2019), the quality of the tender documents determines the outcome of any tender. The crucial link between design and construction is the documentation (Brook, 2004). As part of the procurement process, tender documents are created and submitted to potential tenderers to request bids. According to Buchan, Fleming, and Grant (2012) and Cook (1991), they frequently include documents like bill of quantities or schedules of rates, drawings, instructions to tenderers, specifications, forms of contracts, conditions of contracts, and lists of enclosures. High-quality tender documents are crucial in construction projects as they allow contractors to develop infrastructure efficiently without substantial delays and unwanted additional expenditure (Andi & Minato, 2003; Philips-Ryder et al., 2013).

The quality of tender documents was assessed by the literature considering accuracy, clarity, completeness, timeliness, relevance, consistency, standardization, certainty, conformity and presentation (Aluko et al., 2021; Tan, 2012; Lam, 2016; Andi & Minato, 2003). There is a

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consensus that a combination of these attributes can be used to measure documentation quality (Akampurira & Windapo, 2019). Furthermore, Zaneldin (2020) and Philips-Ryder et al. (2013) indicated that document registers with multiple revisions and alterations in addition to a high frequency of requests for information are indicative of potentially poor-quality documentation.

Concerns about the quality of tender documents created by construction professionals have recently been raised in the literature (Tuhacek & Svoboda, 2019). Several researchers including (Govender et al., 2022) noted that the quality of tender documents was a concern in the construction industry however, the indicators to assess the quality of tender documents was not clearly articulated in the literature. Researchers have also attempted to classify the causes of poor-quality tender documentation by attributing factors to different parties in the tender process. This involves identifying factors that can be ascribed to clients, managers, and consultants (Shoar & Payan, 2021). Past studies including (Tuhacek & Svoboda, 2019; Fatawu, 2016; Philips-Ryder, Zuo & Jin, 2013; Slater & Radford, 2012) have highlighted the impacts of project documentation quality on construction estimates and this has been a global phenomenon. The quality of tender documents is frequently unsatisfactory in practice (Fang et al., 2002; Liu and Ling, 2005).

Considering all the above factors that may contribute to poor quality tender documents in the construction sector, this study aims to assess the quality of tender documents and its impact on construction estimates in South Africa. With this in mind, the study explores the relationship between tender document quality and the quality of project estimates. In addition, key indicators of the quality of tender documents are also identified. Lastly, the paper analyses the perception of construction professionals on tender document quality and its impact on project delivery in South Africa. The paper attempts to answer the question, how is the quality of tender documents perceived in South Africa, and what impact does the quality of tender documents have on construction estimates?

LITERATURE REVIEW

Impact of tender document quality on quality of project estimates

According to Mohammed, Ibrahim, & El-Malt (2019), the effectiveness and efficiency of construction projects as a whole are significantly impacted by the design and documentation quality. In practice, poor design documentation plagued by ambiguous, inconsistent, and insufficient information results in inaccurate cost estimates and increases project cost markups (Laryea, 2011). Samuel (2017) found that inaccurate and unclear project specifications, engineering drawings, and bills of quantities had a detrimental effect on the effectiveness and efficiency of the tendering process in the UK construction industry. Inadequacies in construction design documents have been identified as adversely affecting the implementation of construction projects globally (Aluko et al, 2021). It was also found that poor design documentation is a major cause of project delays, cost overruns, and poor quality (Fatawu, 2016). Malinda (2017) revealed a relationship between effective project documentation and successful project outcomes. In addition to other inefficiencies in construction projects, several South African-focused studies have found that inadequate design documentation causes rework, project delays, cost overruns, and low productivity (Bierman et al. 2016; Emuze 2012).

Table 1: Key Attributes of tender document quality

Authors	Attributes
McFallan and Tilley (2000b), Laryea (2011), Philips-Ryder, Zuo, & Jin, (2013), Slater & Radford, (2012)	Completeness, Relevance, Clarity, Timeliness, Correctness, Coordination, Final Checking, Certainty, Standardization of Documentation, Conformity.

Tilley, McFallan & Sinclair, (2002), Chua et al. (1999), Yong & Mustaffa (2011), Wahedi (2016), Emmitt (2007), Sunday & Afolarin (2013).	Coordinating design Documentation, Independent reviews, Setting standards for documentation quality control and service, Educating designers on constructability and Holding tender experts accountable for their work.

Implications of poor tender document quality

Shoar and Payan. (2021) argued that poor-quality tender documents can result in erroneous estimates, greater margins in bids, claims, and conflicts. Abdallah, Assaf & Hassanain (2018) found that the completeness of tender documents was a significant factor in determining mark-ups. Project delays, poor project quality, and cost increases are the effects of poor documentation quality on project delivery (Tuhacek & Svoboda, 2019). Poor design documentation quality has a significant impact on how construction projects are delivered and frequently leads to disputes, claims, and litigation (Lopez, Love, Edwards & Davis, 2010; Philips-Ryder, Zuo & Jin, 2013). Inaccurate cost estimates, greater margins in bids, project cost overruns, and project delays are all caused by poor design documentation quality (Laryea, 2011). Furthermore, Queensland (2005) noted that 60 to 90% of all deviations in the building industry are the result of inadequate bids and design documentation. In a similar vein, Kikwasi (2013) pointed out that design modifications are the main reason for delays and obstructions in the completion of projects in developing nations.

RESEARCH DESIGN AND METHODS

Saunders et al. (2016) clearly defined research philosophy as a system of assumptions and beliefs about how knowledge is developed. Considering the research onion from Saunders, Lewis and Thornhill (2007), this study applied an interpretivism research philosophy and inductive reasoning. Additionally, a survey research strategy was used. Following the rationale of interpretive research and inductive reasoning, a qualitative approach is the most appropriate methodological choice for this research. Qualitative primary data was collected and analyzed by Atlas-ti using thematic analysis upon which themes were extracted. In-depth interviews were used to collect the primary qualitative data.

Data collection

This study utilized the survey strategy, using interviews to collect qualitative data. The interviews were conducted with 20 people. A non-probabilistic sampling technique was used on construction firms that are active members of the South African Construction Industry Development Board (CIDB). An interview guide was used to structure the interviews. Participants to contributed to surveys anonymously.

ANALYSIS AND RESULTS

Demographic information of participants

15% of the participants were in the age group of 18 to 30 years while 70% were in the age group of 31 to 45 years. About 15% were in the age group of above 45 years. Additionally, 30% of participants were female and 70% of the participants were male. Considering this demographic relationship, it can be noted that the gender of participants was biased towards males in this study. Furthermore, 35% of the participants had work experience between 0 to 10 years while 65% of the same participants had work experience above 10 years. Lastly, 20% of the participants were diploma holders and 35% were degree holders. In the study 30% of its participants were honours degree holders, 15% of them were master's degree holders and there were no PhD holders.

Data analysis – (thematic analysis)
Since this study is mostly qualitative in nature, thematic analysis was selected (Thomas, 2006). Interview transcripts were employed to facilitate thematic analysis. Microsoft Excel and Word were used for the analysis. Each participant's response was typed into a Word document, and each line was numbered for easy identification and reference. Text in a Word document was accessed using its line number in Microsoft Excel, and then its content was examined to find a code and the primary topic. After that, the study adhered to three main thematic analysis procedures as stated by Attride-Stirling (2001). After the 20th participant, the data gathering reached saturation, and the study's themes were developed.

Objective 1: Explores the relationship between tender document quality and project estimates
Considering the first theme (the quality of tender documents in the construction industry) construction professionals noted that, the better the quality of the tender documents the better the outcome of the projects. The second theme (the impact of the tender document quality on project estimates) argued that indeed there is a direct impact between the tender document quality on project estimates in South Africa. The third theme (the effects of tender document quality on project delivery) of the study highlighted that the project will be successfully delivered and completed in time if good quality tender documents are used.

Objective 2: Factors influencing the quality of tender documents
Under the fourth theme (the determinants of good quality tender documents) it was argued that continuous training as well as key information sharing, and asymmetry remains a major ingredient of success in this case.

Objective 3: Identifying interventions to improve tender document quality
The fifth theme (interventions to improve tender document quality) found that training and development of the estimators was considered a key aspect that would assist and improve tender document quality in South Africa. Additionally, respondents also noted that there has to be the implementation of computer software such as Candy during the pricing stage of tenders. Furthermore, regarding the sixth theme (mechanisms to enhance tender document quality), the study found that respondents strongly support the standard practice of tender document procedure.

DISCUSSION OF FINDINGS

Perception of construction professionals on tender document quality
The findings were supported by the existing literature from Baloyi & Bekker (2011); Ramabodu & Verster, (2013), and Abolnour (1994). The study found out that, when design fees are lowered below the optimal level, project expenses related to design flaws increase dramatically. This implies that projects are still affected by the cost and schedule overrun in South Africa. Additionally, project estimates are therefore overshadowed and distracted by poor-quality tender documents in South Africa.

Impact of tender document quality on the project's estimates
The research corroborated the findings of Assaf and Al-Hejji, (2006), Hwang et al., (2009) Josephson et al., (2002). It implies that the impact that poor quality tender documents have on project estimates is not only relevant in the context of South Africa. It is concerning that, in South Africa, projects can be abandoned, or their delivery jeopardized due to poor-quality tender documents. A possible solution is the communication of a standard tender template that can be used across the industry.

Effects of tender document quality on project delivery
The existing literature including Laryea (2011), and Fatawu (2016) has also supported that project delivery is determined by the quality of tender documents involved in South Africa. According to the construction professional's perception, poor delivery of projects has been a result of poor tender document quality in South Africa. Although this is the case, it is also important to note that poor delivery of projects is not only caused by poor tender document quality.

Key factors influencing document quality
The construction professionals emphasized much on continuous training as well as key information sharing and asymmetry. Well-researched market prices make the contractors not to lose any money during execution. Additionally, the execution of projects in South Africa will be easy if there are written and non-ambiguous tender documents that are easy to read.

Measures used to improve tender document quality
The perception of construction professionals rested on training and development as a key ingredient in the improvement of tender document quality in South Africa. The findings of this theme also corroborate with the findings of Ramabodu and Verster (2013). Ramabodu and Verster (2013) found that inaccuracies and omissions in the bill of quantities, incomplete designs and specifications, and a lack of clarity and consistency between the drawings and the project specifications led to poor tender document quality.

Ways to enhance tender document quality
The key perception that was forwarded by construction professionals was that of the standard practice of tender documents during preparation. The findings of this study were similar to the findings of Minato (2003) and Tribelsky & Sacks (2011). In a different study, insufficient design drawings were shown to be a reason why building projects in the Western Cape Province required variation orders (Ndihokubwayo & Haupt, 2009).

CONCLUSION

The study concluded that tender document quality has an impact on the quality of project estimates. Standard practice, accuracy, knowledge and action, standard norms and guidelines, and available resources were some of the ways to improve tender document quality according to construction professionals. Training and development, compliance with specifications, well-researched market prices, minimal tender queries, reliability of estimates, clearly written and non-ambiguous tender documents, contract specifications, adequate site information, and detailed as well as sufficient time were some of the discussed determinants in this paper. Lastly, the study found that consequences of poor tender document quality included reduced project probability, non-completed projects, project termination due to funding issues, misunderstanding of boundaries, misalignment of the program and increased costs.

RECOMMENDATIONS

Based on the study's findings, it is highly recommended to conduct training and development of the professionals. This training and development of the construction professionals will enhance their knowledge regarding the preparation and the quality of the tender document quality is concerned. Additionally, due to discrepancies and variations concerning tender document processing, the study highly recommends a standard practice of tender document processing in the construction sector. The construction sector should ensure there is a basic practice to make use of standardized templates of tender documents. Furthermore, the study

recommends the construction sector and its regulatory bodies implement computer software that includes Candy during the pricing stage of the tenders. This software will assist with developing an appropriate price hence reducing the problems associated with under or overpricing.

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