

Project close-out report: Emerging contractors' state of compliance

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Abstract:

A project close-out report summarises the completed project, compares baseline plans and actual performance, and compiles project metrics, lessons learned and input from stakeholders. All these contribute to the success of the construction project. Following the numerous complaints of emerging contractors in Kwazulu-Natal, South Africa underperforming. Various academics have stated that practitioners disregard project close-out reports, considering them to be overburdening and useless. To this end, a quantitative research was carried out amongst selected emerging contractors in Kwazulu-Natal, South Africa, to determine the state of compliance to this exercise. Notably, the study revealed that most elements were not always practised such as the degree to which the original objectives have been met, comparison between original (budgeted) cost and actual final cost and major changes incorporated due to internal modifications were occasionally practised. Elements such as the degree to which the original key performance indicators (KPIs) had been achieved, compliance with the project brief (business case) and performance of contractors, subcontractors, and suppliers were rarely practised amongst the participants. These findings have implications on emerging contractors, providing evidence suggesting a dearth in their quest to enhance contractors' competitiveness and overall sustainability.

Keywords:

Close-out, contractor, construction, emerging, performance

1 Introduction

The building industry has a long history of contributing significantly to economic progress. Globally, the construction industry accounts for around 10% of GDP, with rich countries accounting for 7–10% of GDP and developing countries accounting for 3–6% of GDP (Murie, 2007; Giang and Pheng, 2011; Osei, 2013). The construction industry in South Africa contributes roughly 4% to GDP (Statistics South Africa, 2018a) and employs about 8% of the total workforce (Statistics South Africa, 2018b). A well-functioning construction sector is essential for the growth of any civilisation since the quality of buildings and infrastructure directly impacts people's lives. The building industry in South Africa has been chastised in recent years. Close-out of projects is at the top of the problem hierarchy (Kwazulu-natal Department of Human Settlement, 2011). According to Gilliand (2019), construction project close-out is the final phase of a construction project and an important aspect of construction management processes. According to Gillian (2019), this phase occurs after the physical

construction is completed but before the project is handed over to the owner. Close-out of a construction project is a complicated procedure requiring a step back to analyse construction projects in general. According to Aziz (2015), many practitioners in the industry disregard the project close-out report because the fulfilment of deliverables characterises a successful project according to the project's schedule, quality, and cost objectives. They see project close-out reports as an unnecessary burden and effort to meet organisational obligations, often of little value (Aziz, 2015). The final duty in project integration management is project close-out. Each project activity must be completed, and all completed or cancelled work must be documented and communicated to all relevant parties and stakeholders. Furthermore, closing out a project entails bringing the project to an orderly conclusion as well as checking that all deliverables have been completed (KNDH, 2011). This applies to projects that have achieved the completion stage and those that have been terminated before they have reached the completion stage, since it will allow you to reflect on what you've learned to enhance future initiatives (KNDH, 2011).

Poor contractor capacities are a typical challenge for emerging construction enterprises in South Africa (Department of Public Works South Africa, 2019). The high failure rate of emerging contractors in South Africa (Muzondo and Mc-Cutcheon, 2018) is cause for concern, as is their tiny profit margin, which is jeopardised by the failure to evaluate numerous elements such as project close-out reports. However, several researches looking into the financial viability and longevity of emergent contractors have overlooked this gap. These issues also hamper project performance measurement and improvement.

2 Literature Review

In the context of the research, construction project performance measurement is the process of establishing how effective a project has been in meeting its initial set of objectives in terms of time, expected costs, and quality criteria (Okorafor and Aiyetan, 2020). Performance measurement's goal is to offer quick and accurate feedback on operations' efficiency and effectiveness and to emphasise ongoing development (Ankrah and Proverbs, 2012). In terms of CPPM, the Department of Human Settlements in KZN has had a close-out checklist in place since June 1999, which was developed for project monitors to use (KNDH, 2011). Unfortunately, this was not universally adopted by all regions, and therefore its use was halted.

The construction business is generally dynamic due to rising client demands, technological advances, schedule and budget restrictions, and process development (Chan Scott and Chan 2004) and Sanvido (1988). Construction projects go through several phases in real time, each characterised by a variety of tasks aimed at identifying, planning, designing, and building the proposed facility (Shenhar, Dvir, Levy, and Maltz, 2001) and (Phiri and Haddon, 2016). One of the most crucial project phases is project close-out. Close-out takes place after all obligations have been fulfilled and the required documents have been executed. Various authors have suggested that this phase is the most demanding for the project manager throughout the project life cycle, including Shenhar et al. (2001), Gilliland (2019) and Aziz (2015). Various problems are inherent during the close-out phase, according to Heerkens (2001); Bryde and Robinson (2005); Lim and Mohamed (1999); and Milosevic and Patanakul (2005). This covers technical difficulties, project team difficulties, and client difficulties. With

this in mind, the authors identified technical hurdles such as start-up issues with new projects or new designs; complete identification and agreement on all remaining deliverables; loss of project control; and difficulties obtaining meaningful project historical data. Heerkens (2001) posited challenges such as loss of team functionality, loss of interest in tasks such as documentation, diverted attention as members transition into new projects or other work, and fear of no future work in the category of project team challenges. In terms of customer challenges, Lim and Mohamed (1999) and Milosevic and Patanakul (2005) emphasise that agreement on outstanding commitments, the lack of a clear hand-off strategy, the change of responsible personnel at critical transition points, and the unavailability of key personnel are major issues.

3 Research Methodology

For this activity, the study used a quantitative method, with a questionnaire survey administered to a select group of participants. According to Creswell (2013) and Gray (2014), a questionnaire survey is a good way to get the opinions of various project participants in a short amount of time. A questionnaire is a group of questions that has been formalised to gather information from respondents (Creswell, 2013; Gray, 2014). This study's questionnaire aims to translate the researcher's information requirements into a series of specific questions that respondents are willing and able to answer. The questionnaire allows for the collection of quantitative data in a standardised manner, resulting in data that is internally consistent and coherent for analysis (Brace, 2013 and Malhotra, 2006). The questionnaire employed in this study had two sections: the first was to gather information on the respondents' personal data to portray their profile, and the second focused on experience with construction project close-out issues.

According to the Small Contractors Association of South Africa, 173 active contractors in Kwazulu Natal are classified as small contractors. The researchers utilised Slovin's formula with a margin of error of 5% to obtain a sufficient number of samples based on the target population, as mentioned above:

$$n = \frac{N}{1 + N(e^2)}$$

Where n = sample size, N = number of target population, e² = margin of error. Based on the above formula, therefore the population is:

$$n = \frac{173}{1 + 173(0.05^2)}$$

$$n = 120.7$$

A total of 120 questionnaires were distributed, with a total of 69 questionnaires received from emerging contractors in Kwazulu Natal, South Africa. Sixty-three (63) responses were judged to be satisfactory after cleaning the data and were used for analysis. The data was analysed with descriptive statistics, namely the mean percentage and mean item score (MIS).

4 Findings and Discussion

In the project close-out report, the respondents' opinions were measured using a Likert scale to determine contractor compliance. For this goal, the writers gathered information from the literature (Lester, 2017). Given its resemblance to response rates associated with comparable surveys conducted in the same geographical and industry/sectoral context, the response rate is deemed appropriate (Okorafor, Thalukhaba and Okumbe, 2015; Okorie, Emuze and Smallwood, 2015). According to Sutrisna (2009) and Dainty (2008), doing a statistical analysis in a survey with a response rate equal to or above the thirty (30) percent criteria is permissible. As a result, the survey's 53 percent response rate provides sufficient data for analysis. The collected data was analysed using mean percentage and mean item score (MIS).

The contractors' experience in the building sector is also crucial in comprehending the project close-out report. The responders have an average of 15 years of work experience. Table 1 shows that most of the respondents had sufficient industry experience to contribute successfully to the study; 89 percent of the respondents had worked in the construction business for more than 5 years, and 27% had worked in the industry for more than 15 years.

Table 1: Work experience of the respondents

Years of experience	Frequency	percentage
0<5	7	11%
6<10	19	30%
11<15	20	32%
16<20	13	21%
>25	4	6%

(Source: Author Fieldwork, 2021)

This section assesses the respondents' levels of compliance. On a five-point scale, participants were asked to rate their level of compliance with the parts of the project close-out report, with 1 (never), 2 (rarely), 3 (sometimes), 4 (often), and 5 (always) (always). The five-point scale was translated to mean percentages (MPs) and mean scores (MS) for each of the aspects rated by the respondents. The results of these measures are shown in Table 2. The scores allowed for recognising the relative importance of the various components as indicated by the respondents. The data collected from the questionnaires was then decoded using this method. The data was used to calculate the numerical results of the relative MS. This was based on the premise that respondents' scores on all of the selected elements, taken as a whole, represent the observationally determined findings of relative importance.

The sum of the respondents' true ratings supplied by each respondent as a small percentage of the aggregate of all the most extreme imaginable ratings on the five-point scale that each respondent might provide for that particular criterion is the MS record of that specific aspect. Every response was given a number ranging from 1 to 5, with 1 being the lowest and 5 being the highest. It is mathematically expressed below. The mean score (MS) was calculated for each aspect as follows: $\text{*mean score} = (5 \cdot n_5 + 4 \cdot n_4 + 3 \cdot n_3 + 2 \cdot n_2 + 1 \cdot n_1) / (5 + 4 + 3 + 2 + 1)$, where n_5 and n_4 are corresponding responses relating to 5, 4, etc.

Table 2 below shows the results for these measurements and their rankings. The table indicates the level of compliance among 20 identified elements of project close-out report in terms of percentage responses on a scale of 1 (never) to 5 (always) and a mean score (MS) between 1.00 and 5.00.

Table 2: The level of compliance in the project close-out report

No.	Item	Scale (%)					Ms	Rank
		5	4	3	2	1		
1	Degree to which the original objectives have been met	24.00	18.00	43.00	13.00	2.00	3.49	1
2	Comparison between original (budgeted) cost and actual final cost	23.00	17.00	44.00	15.00	1.00	3.46	2
3	Major changes incorporated due to internal modifications caused by errors or omissions	17.00	18.00	52.00	13.00	0.00	3.39	3
4	Major changes incorporated due to client's approved requirements	17.00	18.00	52.00	12.00	1.00	3.39	4
5	Major changes incorporated due to other possible reasons (statutory, environmental, legal, health, and safety, etc.)	14.00	23.00	54.00	5.00	4.00	3.38	5
6	Comparison between original project time and actual total time expended	12.00	24.00	50.00	7.00	7.00	3.27	6
7	Reasons for time overruns or under-runs	12.00	22.00	49.00	6.00	11.00	3.18	7
8	Special actions taken to reduce or mitigate particular delays	12.00	22.00	48.00	7.00	11.00	3.10	8
9	Major delays and the causes of these delays	13.00	17.00	44.00	12.00	14.00	3.03	9
10	Reasons for cost overruns (if any)	10.00	19.00	44.00	16.00	11.00	3.01	10
11	Important or interesting or novel methods adopted to improve performance	10.00	19.00	44.00	15.00	12.00	3.00	11
12	Recommendations for future documentation to close loopholes	9.00	19.00	43.00	17.00	12.00	2.96	12
13	Recommendations for actions on future similar projects	9.00	18.00	44.00	14.00	15.00	2.92	13
14	Degree to which the original KPIs have been achieved	9.00	18.00	44.00	14.00	15.00	2.92	14
15	Degree of compliance with the project brief (business case)	8.00	11.00	37.00	27.00	17.00	2.77	15
16	Level of satisfaction expressed by client or sponsor	7.00	14.00	43.00	18.00	18.00	2.74	16
17	Comments on the effectiveness of the contract documents	7.00	11.00	40.00	27.00	15.00	2.68	17
18	Performance and attitude of project team members in general and some in particular	4.00	8.00	39.00	23.00	26.00	2.57	18
19	Comments on the clarity or otherwise of specifications, data sheets, or other	4.00	10.00	43.00	20.00	23.00	2.52	19
20	Performance of contractors, subcontractors, and suppliers	4.00	10.00	40.00	20.00	26.00	2.26	20

Notably, 0 percent of the element contains MS of $\geq 3.50 \leq 5.00$, which is concerning and implies that they were not practiced in general. The remaining 45 percent of the elements have MS of $\geq 2.26 \leq 2.96$ and can thus be regarded as rarely performed within the study population,

while 55 percent of the elements have MS of $\geq 3.00 \leq 3.49$, and can thus be regarded as infrequently practised.

Table 2 shows that the following elements are at the top of the list: degree to which the original objectives have been met; comparison between original (budgeted) cost and actual final cost; major changes incorporated due to internal modifications caused by errors or omissions; major changes incorporated due to client's approved requirements; major changes incorporated due to other possible reasons (statutory, environmental, legal, health, and safety, etc.) with mean score of 3.49, 3.46, 3.39, 3.39 and 3.38 respectively. These findings are consistent with Aziz's (2015) opinion that project close-out reports are overburdening and work done to meet organisational needs, and in many cases of little consequence, resulting in the maximum mean score of 3.49. Furthermore, according to Lester (2017), project close-out reports are frequently seen by practitioners as a time-consuming burden, and as a result, carelessness is unavoidable. This means that benefits acquired in a valid project close-out report, such as completing a successful construction project where lessons learned are used to improve the delivery of a new project, will be disallowed, putting emerging contractors' sustainability in jeopardy.

Further findings in this reportage reveal that the majority of the elements have mean scores of 3.27, 3.18, 3.10, 3.03, and 3.01, respectively, for comparison between original project time and actual total time expended; reasons for time overruns or under runs; special actions taken to reduce or mitigate particular delays; major delays and the causes of these delays; and reasons for cost overruns (if any). This also implies that the person isn't paying enough attention to the practice. This could be related to some of the issues raised by authors such as Heerkens (2001), Bryde and Robinson (2005), Lim and Mohamed (1999), and Milosevic and Patanakul (2005) concerning the inherent problems faced by practitioners during construction projects.

It is worth mentioning that 45% of the identified element has a below-average MS of $\geq 2.26 \leq 2.96$ which can also be interpreted as rarely practiced within the study population. For example, recommendations for future documentation to close loopholes has a MS of 2.96; recommendations for actions on future similar projects has a MS of 2.92; degree to which the original KPIs have been achieved has a MS of 2.92; degree of compliance with the project brief (business case) has a MS of 2.77; level of satisfaction expressed by client or sponsor with MS of 2.74; comments on the effectiveness of the contract documents with MS of 2.68 whereas at the bottom of the table, elements such as; performance and attitude of project team members in general and some in particular has MS of 2.57; comments on the clarity or otherwise of specifications, data sheets, or other has a MS of 2.52 and performance of contractors, subcontractors, and suppliers has a MS of 2.26. Following the analysis from the table, the study suggests that the elements identified are under-practised within the study population and have the propensity to hinder the sustainability of emerging contractors. In responding to this findings, the KNDH (2011) asserts that compilation of close out report will help in ensuring performance improvement in the future delivery process which will serve as a guide for innovation and a proactive tool to attain efficiency in the delivery of projects among emerging contractors.

5 Conclusion and Further Research

Completing project close-out reports has numerous advantages for individuals, organisations, and the construction industry in pursuit of sustainably built environments. However, as the survey reveals, project close-out reports remain difficult for contractors. The project's close-out phase should be given as much project management attention as any other phase. Bringing a project to a successful finish necessitates carefully considering various managerial duties. More than any other phase of the project, project close-out necessitates a wide range of technical, organisational, and leadership abilities.

In order to further the study, it is necessary to identify the underlying elements that prevent under-reporting. Examining these variables will add to overall project performance in enhancing emerging contractor's competitiveness. This study will likely spark much-needed discussion about the variables obstructing this practice. This will bring about enthronelement of best practices across board which will engender sustainable built environments, especially the emerging contractors. The limitation of the study is relatively due to the smaller sample adopted; therefore, the study recommends a wider sample that will cut across all contractors. This study has practical implications for emerging contractors as it provides information on their delays in delivering projects.

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