Evaluating Financial Feasibility Studies Based on Real Estate Developers' Requirements

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A financial feasibility study has been identified as a 'critical success factor' of construction projects that can cause these projects to fail, if not executed or communicated correctly. Yet, research indicates that the aforementioned feasibilities are not executed well, inconsistent, neglected, and problematic. They greatly lack best practice items. An audience analysis was conducted through semi-structured interviews with 23 real estate developers in the private sector. This analysis presented the developers' needs and requirements for the documents. A total of 23 requirements were identified. From these requirements, an evaluation tool was created and 18 financial feasibility studies were evaluated. The average score of all 18 feasibilities is 62%. Three feasibilities achieved a below-average score in both categories. Six (33.33%) of the feasibilities managed to score above average in both categories, while the average of the respective categories are 68% and 50%. The data indicates that an audience analyses lacks in the industry, leading to poor communication that does not fulfil the needs of real estate developers.

Keywords: construction cost, financial feasibility studies, quantity surveying, real estate development

INTRODUCTION

Firstly, there is a distinction between overall feasibility studies and financial feasibility studies (Costello and Preller, 2010). An overall feasibility study encompasses various aspects including technical feasibility, legal feasibility, operational feasibility, scheduling feasibility and the financial feasibility (Mukherjee and Roy, 2017). The latter is to evaluate if a proposed project would adhere to the financial requirements of the developer. It provides clarity on whether the investment will generate enough cash flow to counter the debt service and provide an acceptable return to the investors (Costello and Preller, 2010). A financial feasibility (Willemse, 2019) is also referred to as an economic feasibility (Mukherjee and Roy, 2017).

The quantity surveyor (QS), also known as cost engineer (Cruywagen and Llale, 2017), is the professional that primarily manages construction costs and is the financial consultant in the real estate development industry who advises clients on the optimal expenditure of capital (Cruywagen and Llale, 2017). Among the core duties of a QS is to prepare, compile and communicate financial feasibility studies of potential construction projects to real estate developers (Maritz and Siglé, 2016).

The aim of a financial feasibility study is to present correct and reliable financial data to support informed investment decision-making within the real-estate development context (Basak, 2006). While,

developers in the private sector are driven by commercial success, aiming for financial feasibility and benefits, the public sector is motivated by success in development while aiming for social benefits (Rwelamila and Ogunlana, 2015). Therefore, this study will focus on the private sector that utilises financial feasibility studies for private investments.

A financial feasibility study has been identified as a 'critical success factor' of construction projects that cause projects to fail, if not executed or communicated correctly (Mudi, 2016; Mukherjee and Roy, 2017). Yet, research indicates that the aforementioned feasibilities are not executed well and do require enhancement (Hyari and Kandil, 2009). There is concern that financial reports like feasibilities (a core cost management service) are becoming more complex and less comprehensible to investors (Xu, Fernando and Tam, 2018). Moreover, feasibilities are inconsistent (Shen, Tam, Tam and Ji, 2010), neglected, problematic (Mohammed, Naji and Ali, 2019) and often incorrect in the estimation of the income (Ramawela, 2017; Kgaka, 2018), total capital outlay (Kwaku Osei, 2016; Dandan, Sweis, Sukkari and Sweis, 2019) and return (Huxham, 2010). In a study conducted in Iceland, current feasibility study practices were compared against theoretical 'best practices'. It was found that in the private sector in Iceland, only 40% fully adheres; 24% partially adheres and 36% does not adhere at all to these practices (Stefánsdóttir, 2015). These are disappointing results, given that feasibilities have been identified as a critical success factor in real estate development.

In the context of this study, the quantity surveyor prepares and communicates financial feasibility studies to real estate developers, who make the investment decision based on this communication. Therefore, the real estate developers are the audience that needs to interpret these feasibilities.

A BRIEF DEPICTION OF THE COMPONENTS OF A FINACIAL FEASIBILIY STUDY

In summary, according to literature, the main components of a feasibility are: duration and mile stones (Willemse, 2019), total capital outlay, total project income, cash flow projection (Lock, 2020), profitability indicators (Stefánsdóttir, 2015), sensitivity analysis (Karas, 2017), the life cycle costing (Heralova, 2017) and recommendations towards the investment decision (Stefánsdóttir, 2015).

Total capital outlay includes land costs, construction costs escalated, professional fees, finance costs, and other development costs (Cloete, 2006). The total project income requires the calculation of the gross income, net income, and interim income (income prior to opening date) (Huxham, 2010). The net income is calculated by deducting the operational costs form the gross income (Stefánsdóttir, 2015). Furthermore, there are various profitability indicators, however most indicators require the total capital outlay and the net income to calculate the profitability (Cloete, 2006). Hence, to provide an accurate profitability indicator, all projects costs need to be accounted for in the total capital outlay, as well as the operational costs in the net income calculation.

None of these studies, however, presented findings of the requirements of private real estate developers (the audience) in terms of financial feasibility studies. An audience analysis is a vital part in any communication process (Callison and Lamb, 2004). An audience analysis calls for a needs (requirements) assessment (Callison and Lamb, 2004).

METHODOLOGY

Given that the developers' requirements regarding feasibilities are central to this study as well as the feasibility documents, a mixed method research approach was followed. Semi-structured in-depth interviews were conducted with 23 developers and a document analysis with 18 financial feasibility study documents followed.

The criteria for the developers to be deemed adequate for this research included private developers investing in the commercial, retail, industrial and residential sector with the main goal of generating a profit. A total of 46 developers were approached using a combination of the purposive sampling method and snowballing. The initial participants were found through a thorough search on the internet for development

companies in South Africa specialising in the aforementioned sectors. In the quest, 23 developers agreed to be interviewed, ending with a 50% success rate.

Prior to the interviews and document analysis, an ethical clearance certificate (H200217) was obtained from the University of the Witwatersrand Ethics Committee. The data collection protocol included an information sheet about the study and consent form for participants to sign. The participants were approached via email or phone and when voluntarily agreed to participate, permission was gained to record the interview. The recordings obtained from these interviews, were transcribed.

The interviews were recorded, then transcribed verbatim using Otter.ai. In the interviews, no personal identification questions were asked and the recorded files were saved under a pseudonym. The uploaded file to Otter.ai had thus no personal information, while the login details to Otter.ai remained confidential, ensuring the protection of the participants' identity.

The second research technique of importance is document analysis. In the context of this study, the financial feasibility study report is the document to be analysed. Importantly, since the actual artefact is being analysed, the data collected is deemed to be qualitative data. The analysis of documents, however, was quantitative in nature (Rose, Spinks and Canhoto, 2015).

Qualitative data can be analysed quantitatively through a conceptual content analysis, which determines the existence and/or frequency of identified concepts. These frequencies can then be statistically analysed. The quantitative analysis should be done systematically and objectively, therefore a codebook is necessary (Bjorklund and Audunson, 2021). The identified requirements from the interviews were coded and recorded in a codebook, to determine the existence of the required elements across the documents.

DATA ANALYSIS

During the interviews, the developers' were asked what they require/need from a feasibility. Additionally, they were asked: what are the first item/s they look at when a feasibility is presented to them. The interviews yielded the requirements presented in Table 1. This table was also utilised as the codebook for the document analysis.

TABLE 1
REQUIREMENTS OF FEASIBILITIES ACCORDING TO DEVELOPERS

Items to be present in the executive summary	**Note: The section does not explicitly have to read 'executive summary'; it can be summary or similar. If the item occurred elsewhere in the document and not in the executive summary (or similar), this should be noted as such**
Spatial allocation	The total areas allocated to certain types of space should appear in the executive summary
GBA vs GLA	The gross building area to gross lettable area should appear in the executive summary
GBA vs GLA ratio	The gross building area to gross lettable area ratio should appear in the executive summary
Construction cost	The total construction cost should appear in the executive summary
Construction cost/m²	The total construction cost per square meter should appear in the executive summary
P&G	The preliminaries and general of the main contractor should appear in the executive summary

Contingency	The contingency for the construction work should appear in the executive summary
Escalation	The amount allowed for the escalation of the construction cost should appear in the executive summary
Professional fees	The amount allowed for the professional fees should appear in the executive summary
Professional fees (%)	The percentage used for the professional fees' calculation should appear in the executive summary
Land cost	The amount allowed for the land cost should appear in the executive summary
Interest	The amount allowed for the capitalised interest for the project costs should appear in the executive summary
Total capital outlay	The total capital outlay should appear in the executive summary
Percentages	Percentage allocation of the entire total capital outlay per element should appear in the executive summary
Cost per unit	Total cost per unit (i.e., cost per office/cost per flat) should appear in the executive summary
Total income	The total expected amount for income should appear in the executive summary
Op cost	The total operational costs (per annum) should appear in the executive summary (Not applicable to pure sales schemes.)
Op cost/m^2	The total operational costs per square metre should appear in the executive summary (Not applicable to pure sales schemes.)
Performance indicator	The performance indicator (yield) should appear in the executive summary
Items to be present somewhere in the document	
Sub-contractors	The totals allowed for each sub-contractor should appear somewhere in the document
TI	The allowances of the tenant installations should appear somewhere in the document
Assumptions	Clarity on the assumptions should be provided somewhere in the document
Time and programme	The time allocation and programme should appear somewhere in the document
Cash flow	The estimated cash flow should appear somewhere in the document
Sensitivity analysis	A sensitivity analysis should appear somewhere in the document
Value engineering	Value engineering suggestions should appear somewhere in the document

The Evaluation Tool

The evaluation tool is set out in Table 2. The evaluation consists of two categories: (i) the occurrence of items in the executive summary as per the audience analysis; (ii) and the occurrence of best practice items in the overall document. The codebook (Table 1) was used to develop the evaluation tool. Each item that is present in the document is allocated one point, if the item occurred somewhat but not fully as per the requirements, half a point is allocated. If an item occurred elsewhere in the document when the requirement was to be in the executive summary, half a point was also allocated.

Category (i) has a maximum total of sixteen points, and category (ii) has a maximum of seven. The overall total is a maximum of 23 points.

TABLE 2
TOOL TO EVALUATE THE QUALITY OF FEASIBILITIES

Element	Category	Points
Executive Summary (16)		
Spatial allocation	Yes	1
Spatial allocation	Elsewhere	01-Feb
GBA vs GLA	Ratio	1
GBA vs GLA	Only quantities/elsewhere	01-Feb
Total construction cost	Yes	1
Total construction cost	Elsewhere	01-Feb
Construction cost/m²	Yes	1
Construction cost/m²	Elsewhere	01-Feb
Preliminaries	Yes	1
Preliminaries	Elsewhere	01-Feb
Contingency	Yes	1
Contingency	Elsewhere	01-Feb
Escalation	Yes	1
Escalation	Elsewhere	01-Feb
Professional fees %	Yes	1
Professional fees %	Elsewhere/Amount only	01-Feb
Land cost	Yes	1
Land cost	Elsewhere	01-Feb
Interest	Yes	1
Interest	Elsewhere	01-Feb
Total capital outlay	Yes	1
Total capital outlay	Elsewhere	01-Feb
% of elements	Yes	1

% of elements	Elsewhere	01-Feb
Cost per unit	Yes	1
Cost per unit	Elsewhere	01-Feb
Total income	Yes	1
Total income	Elsewhere	01-Feb
Operation cost/m²	Yes	1
Operation cost/m²	Amount only/Elsewhere	01-Feb
Performance indicator	Yes	1
Performance indicator	Elsewhere	01-Feb
Best practice (7)		
Sub-contractors	Yes	1
Tenant installations	Yes	1
Assumptions	Yes	1
Programme	Yes	1
Cash Flow	Yes	1
Sensitivity analysis	Yes	1
Value engineering	Yes	1
Maximum points: 23		

Evaluating the Financial Feasibility Studies

Table 3 is a matrix that presents the raw data of the evaluation process and lists the elements applicable to the evaluation process; the scores of each feasibility per element; the totals achieved for each element, as well as the overall totals for each feasibility.

These scores are based on the evaluation tool (Table 2) and codebook (Table 1). The totals for the feasibilities are generally out of 23; however, some of the elements are not applicable (N/A) to all feasibilities, resulting in a total out of either 21 or 22. The average score of the 18 feasibilities is 62%.

Table 4 presents the scores of each feasibility per category in points and percentage. The percentage calculation takes the number of applicable elements into account. The average of each category is calculated to provide a benchmark for below and above average. The scores of the feasibilities that are above average are highlighted in green.

TABLE 3
EVALUATION OF FEASIBILITIES

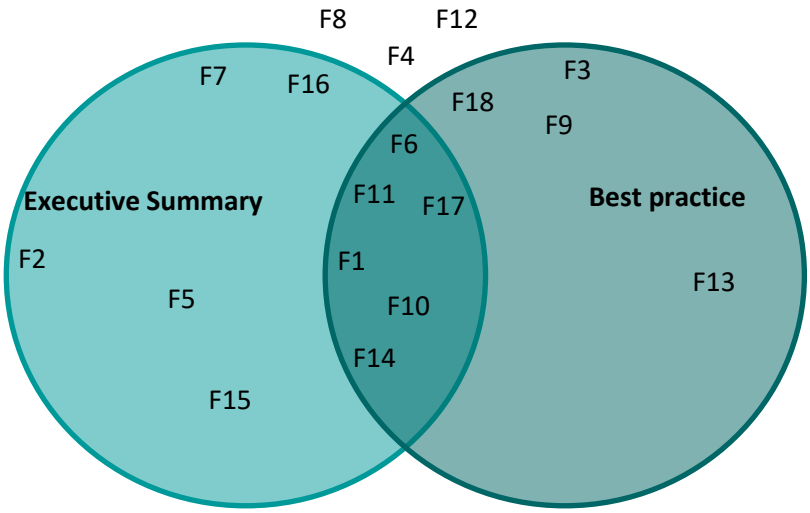
	Feasibilities																		
Elements	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17	F18	**Totals**
Spatial allocation	0.5	0.5	0.5	0	0.5	1	0.5	0	1	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0	**9**
GBA vs GLA	0	0.5	0.5	0	0.5	0.5	0.5	0	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0	0	**7**
Construction cost	1	1	0.5	1	1	0.5	1	0.5	0.5	1	1	1	1	1	1	1	1	0.5	**15.5**
Construction cost/m²	1	1	0.5	0.5	1	0.5	1	0	0.5	1	1	1	1	1	1	0.5	1	0.5	**14**
Preliminaries	0	1	0.5	0	1	0.5	0.5	0	0.5	0.5	0.5	1	0	0.5	1	1	0.5	0	**9**
Contingency	1	1	0.5	1	1	0.5	1	0.5	0.5	1	0.5	1	0.5	1	1	1	1	0.5	**14.5**
Escalation	1	1	0.5	1	1	0.5	1	0	0.5	1	0.5	1	0	1	1	1	1	0.5	**13.5**
Professional fees	1	1	0.5	0.5	1	0.5	1	0	0.5	0.5	1	1	0.5	1	1	0.5	1	0.5	**13**
Land cost	1	0.5	0.5	1	1	0.5	1	0.5	0.5	1	1	0.5	1	1	1	1	1	0.5	**14.5**
Interest	1	0.5	0.5	1	1	1	1	0.5	0.5	1	1	0.5	0.5	1	1	1	1	0.5	**14.5**
Capital outlay	1	1	0.5	1	1	1	1	1	1	1	1	0.5	1	1	1	1	1	0.5	**16.5**
% of elements	0	1	0	0	0	0.5	1	0	0.5	0	0.5	0	0	0	0	0	0	0	**3.5**
Cost per unit	1	0.5	0.5	1	1	1	1	1	1	1	0.5	0.5	0.5	1	1	1	1	0.5	**15**
Total income	0.5	0.5	0.5	0.5	0.5	1	1	0.5	0.5	1	1	0.5	1	0.5	0.5	1	0.5	1	**12.5**
Operational costs/m²	0.5	n/a	0.5	0.5	0	0.5	0.5	0.5	0.5	1	0.5	0	n/a	0.5	n/a	n/a	n/a	0.5	**6**
Performance	0.5	0.5	0.5	0.5	0.5	1	1	0.5	1	1	1	0.5	1	1	0.5	1	0.5	1	**13.5**
Sub-contractors	0	1	0	1	1	0	1	0	1	0	0	0	0	1	0	1	1	0	**8**
TI	n/a	n/a	n/a	0	n/a	0	0	n/a	n/a	1	1	n/a	1	1	1	n/a	n/a	n/a	**5**
Assumptions	1	0	1	1	0	1	0	0	1	1	1	1	1	1	0	0	1	1	**12**
Program	1	0	1	0	0	1	1	0	1	1	1	1	1	1	0	1	1	1	**13**
Cash Flow	1	0	1	1	0	1	0	1	1	0	1	0	1	1	1	0	1	1	**12**
Sensitivity analysis	0	1	1	0	0	1	0	0	1	1	0	0	1	0	0	0	1	0	**7**
Value engineering	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**
Totals	**14**	**14**	**12**	**13**	**13**	**15**	**16**	**6.5**	**16**	**17**	**17**	**12**	**14**	**18**	**15**	**14**	**16**	**10**	**13.86**

TABLE 4
FEASIBILITY SCORES PER GATEGORY

Totals and sub-totals	**Feasibilities**																		**Ave**
	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17	F18	
Executive summary sub-total	11	11.5	7.5	9.5	12	11	14	5.5	10	13	12.5	10	9	12.5	12.5	12	11	7	10.64
% of sub-total	69%	77%	47%	59%	75%	69%	88%	34%	63%	81%	78%	63%	60%	78%	83%	80%	73%	44%	68%
Best practice sub-total	3	2	4	3	1	4	2	1	6	4	4	2	5	5	2	2	5	3	3.22
% of sub-total	50%	33%	67%	43%	17%	57%	29%	17%	100%	57%	57%	33%	71%	71%	29%	33%	83%	50%	50%
Totals	14	13.5	11.5	12.5	13	15	16	6.5	16	17	16.5	12	14	17.5	14.5	14	16	10	13.86
% of totals	64%	64%	52%	54%	59%	65%	70%	30%	73%	74%	72%	55%	64%	76%	66%	67%	76%	45%	**62%**

The Venn diagram in Figure 1 illustrates the distribution of the feasibility scores per category. If the feasibility's score of a category is above average, it is included in the circle. If a feasibility has an above-average score in both categories, it is included in the overlap of the two circles. Three did not make it into any of the circles. Six of the feasibilities managed to score above average in both of the categories. Therefore, only 33.33% of the feasibilities are deemed adequate.

FIGURE 1
DISTRIBUTION OF FEASIBILITIES ACCORDING TO SCORES AND CATEGORIES



CONCLUSION AND RECOMMENDATION

An evaluation tool was created based on an audience analysis, consisting of two categories: executive summary and best practice. The evaluation test totalled 23, if all the elements were applicable to the feasibility. The average score of all 18 feasibilities is 62%. Three feasibilities achieved a below-average score in both categories. Six (33.33%) of the feasibilities managed to score above average in both categories. While the average of the respective categories are 68% and 50%, it is quite low for a document that is deemed a critical success factor to a real estate development. The data indicates that an audience analyses lacks in the industry, leading to poor communication and communication that does not fulfil the needs of real estate developers. While the quantity surveyor/cost engineer is the communicator in this instance, it is recommended that quantity surveyors should follow the audience analysis presented. For future research, an in depth audience analysis should be conducted that cover all aspects of an audience analysis including the knowledge level of the audience.

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