

# ACTANTS INFLUENCING THE SUCCESSFUL COMPILATION OF ECONOMIC FEASIBILITY STUDIES: THE DEVELOPERS' PERSPECTIVE

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The purpose of this study is to identify and model actants that influence the successful compilation and usage of economic feasibility studies. This study investigates the elements in the feasibility process and the expectations thereof, from the perspectives of property developers. These feasibilities were found to be inconsistent in content, neglected, lack standards, and creates confusion in practice, leading to unsustainable investment decisions. A systematic literature review was conducted in addition to 23 interviews with property developers in South Africa. The literature review maps an understanding of the components in the feasibility process and the nature and occurrence of feasibilities. Using the Actor-Network Theory (ANT) as an analytical framework along with the data from the review and interviews, this study found ten main categories of actants that influence the successful compilation and usage of these feasibilities: knowledge and level of expertise; external uncertainties; the developers' perception of a successful feasibility; dependencies; various usages; the underlying meaning of feasibility studies to developers; the developers' relationship with the QS and professional consulting team; the developer's expectation of feasibility indicators; the impact the feasibility has on investment-decisions; and the process. Some of these categories are further unboxed. Feasibilities involves various actants that influence the success of the document, investment decision and construction project. With a deepening understanding of the actants in the feasibility process, the compilation and usage of economic feasibility studies, for private commercial developments where profitability is key, could be enhanced globally by: improved understanding, careful compilation and successful investment decision-making.

*Keywords:* ANT, Investment decisions, Quantity surveyors, Construction projects.

## 1 INTRODUCTION

The quantity surveyor (QS) is identified as the professional that predominantly manages costs of construction projects and is the financial consultant in the construction and property development industries who advises their clients (developers) on the optimum use of capital (Ismail *et al.* 2016, Cruywagen and Llale (2017), The Association of South African Quantity Surveyors 2020). The aim of an economic feasibility study (from herein referred to as feasibility/s), being one of the responsibilities of the QS, is a document that provides financial information, which supports informed investment decision-making concerning the development of a construction project (Basak

2006). Therefore, the key stakeholders surrounding the compilation and usage of a feasibility is the QS and the developer, where this study's stance is from the developers' perspective.

Furthermore, private developers are concerned with commercial success and aims for economic feasibility and benefits, where the public sector is concerned with developmental success and aims for social benefits (Rwelamila and Ogunlana 2015). It was found that feasibilities are inconsistent (Shen *et al.* 2010), neglected and problematic (Mohammed *et al.* 2019), possibly due to a lack of standards (Sullivan 2017). Given the above, this study will focus on the private sector that utilizes feasibilities for private investments in building projects (commercial, retail, industrial and residential sector). Due to the role played by the feasibility to justify investment decisions and the issues associated with it, the feasibility needs to be understood more comprehensively. Therefore, this study's aim is to identify and model actants that influence the successful compilation and usage of feasibilities. Actants include both human and non-human influencers that take their agency and qualities as a result of their relations with other actants in a network, which is further discussed in the methodology section.

## 2 REVIEW ON ECONOMIC FEASIBILITY STUDIES

The goal of the review is to map an understanding of the components of the feasibility and the nature and occurrence of the same, to enable the identification of underlying actants.

### 2.1 Methodology of the Review

A systematic literature review was applied by including feasibility study/s or viability study/s, quantity surveyor/s or cost engineer/s, and investment decision/s simultaneously as key phrases in Google Scholar search. Google Scholar was used due to it being a large and multidisciplinary database that helps identify the most relevant literature. The search presented 100 articles. The timeline chosen for the search was 2016 – 2020 in order to make use of the most recent and relevant literature. The titles, abstracts and conclusions of the 100 articles were reviewed. Articles were eliminated if: it was not relevant to the goal of the review; it was not peer reviewed; the studies were not conducted in the construction industry, and not feasibility and investment-decision related. After elimination, 20 articles remained. The full articles were then thoroughly reviewed. A few more sources were identified by investigating the references of the remaining articles.

### 2.2 The QS, Feasibilities and Usage Thereof

As the industry evolved, more value added services were expected from QSs which widened the scope of cost and commercial management services. Therefore, the traditional role of a QS has changed immensely and now includes the responsibility for achieving the long-term vision of building projects, assessing alternative options and providing clients with valuable information to make informed investment decisions and sustainable developments. They are increasingly developing better client focus to be aware of the ways in which a particular client perceives or even measures value (Perera *et al.* 2016). Furthermore, feasibilities have been identified as a critical success factor to construction projects (Mudi 2016) and a core cost management service (Perera *et al.* 2016). Additionally, Seghezzi (2018) found that some consultancy companies are appointed for the sole purpose of compiling a feasibility for the project.

Feasibilities usually constitutes the beginning of large capital investments like construction projects. The feasibility however, can take multiple years to be developed to a point where a final investment decision can be made. The final decision based on the study is not necessarily just to proceed or not, but could also be on how to proceed (Lock 2020). The feasibility stage is an

extremely vital stage, or even the most important stage, of the development process as it directs the making of decisions by the developer throughout the project (Kimaru 2018, Dagne 2019) where incorrect decisions cause a loss of substantial funds (Alao *et al.* 2019). Additionally, feasibilities are used for macro-strategies and to set a preliminary budget. Equally important, the feasibility becomes a basis for negotiations and acquiring financing by means of debt or equity Kimaru (2018).

Important aspects that should be taken into account when compiling a feasibility: is the total capital outlay, income and operating costs (Karas 2017, Lock 2020), duration of the project (pre-construction and construction), cash flows, the reputation of contractors who might be involved (Lock 2020), debt financing, a sensitivity analysis (Karas 2017), escalation, volatility of the market, interest on debt, and the volatility of the exchange rate (Okereke *et al.* 2020). Ultimately the expected rate of return on investment (IRR) can be calculated (Karas 2017, Lock 2020). The latter is the indicator whether a project is feasible or not, however it is not the only indicator. The Net Present Value (NPV) and Payback Period (PP) serve the same purpose. As indicated by Sudhana (2016), hotels are deemed feasible/viable if the NPV is larger than zero, the PP is shorter than ten years and the IRR is higher than interest provided by banks.

Another valuable aspect that forms part of the success of feasibilities is value engineering (Kwaku Osei 2016, Schmidt 2017). It is noted that the effect of having a cost saving culture within a project team is not easily quantifiable but should nevertheless not be underestimated (Schmidt 2017). The professional team must work aligned to the same vision, respecting the guidelines and assumptions set out in the feasibility, to an acceptable error of 4% (Bettini *et al.* 2016).

### 2.3 The Nature and Occurrence of Feasibilities

Among other factors, inadequate feasibilities are a main cause of time overruns (Oso Sunday 2020) and hinder the success of housing projects as recorded in Tanzania (Kavishe *et al.* 2018). It is seen as complex with noted problems and there is a need to explore the quality of feasibilities (Terblanche *et al.* 2019). Furthermore, feasibilities are inconsistent (Shen *et al.* 2010), neglected and problematic (Mohammed *et al.* 2019). Currently, the mining industry does not perform well in its capability to carry out projects according to the economic and corporate parameters forecasted in the feasibility process. This leads to cost overruns attributed to overly-optimistic feasibilities and poor cost estimation. The concluding remark on the study is to develop a standardized approach in the compilation of feasibilities (Kwaku Osei 2016).

A study on feasibilities on hotels in Johannesburg found that QSs give misleading advice by manipulating the expected income to falsely present a viable project. Additionally, the consultants lack the applicable knowledge (Ramawela 2017). Likewise, Kgaka (2018) found that feasibilities in South Africa are prone to overestimate the forecasted income by applying the same escalation to forecasted expenses and income. Moreover, the study found that inefficient municipalities cause further delays in plan approvals and in turn affects feasibilities unfavorably, rendering it dated and of little relevance, especially due to rapid marked changes and escalation Kgaka (2018). Additionally, lack of trust between the developer and the professional team causes poor investment decisions that can break rather than make a project (Al-Hawsah 2020). A feasibility may forecast certain rental income, however, lack of tenants could make the entire project unviable (Karas 2017).

In South Africa, there is a need for a defined “front-end” process. It is in this process where feasibilities are compiled. There is no common understanding of the design and construction process among consulting professionals in South Africa beyond the six stages articulated by the professional councils. Likewise, there is no uniform and consistent application apart from the purpose of determining fees. Details within the stages are not the same across the disciplines and

there is inconsistency in terminologies used (Simango 2017). Therefore, the ambiguity in this phase compounds the problem of consistency in feasibilities in the South African context.

### 3 METHODOLOGY

This study adopted an interpretivist view. Qualitative data was gathered by means of in-depth, semi-structured interviews with property developers. The methodological choice rested on the need to find the perceptions of property developers as a key stakeholder in the usage of feasibilities. 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 specializing in the aforementioned sectors. In the quest, 23 developers agreed to be interviewed, ending with a 50% success rate.

The interviews were recorded, then transcribed using Otter.ai transcriptions as a basis followed by a content analysis via Nvivo. Using the Actor-Network Theory (ANT) as an analytical framework, this study reports on the identified actants influencing the successful compilation and usage of feasibilities. ANT assigns agency to both human and non-human actors. A central concept in ANT is that of translations, which is defined as the processes that generates ordering effects, i.e. forms the actor-network (Law 1992). In ANT, actants take their agency and qualities as a result of their relations with other actants in a network (Wong 2016). It is on this basis that the influencers (actants) and relations (network) are analyzed and modeled.

### 4 ANALYSIS

The participants were asked to explain what they expect from a feasibility. It varied among the participants, but in summary they mentioned: at least some return; that the estimated budget and return was achieved at the end of the project (or varied 5% either way); the feasibility needs to be all-inclusive with relevant, up to date and accurate data, compiled with logic; with the necessary detailed backing; value engineering already applied; and clear communication in the document.

Additionally, the participants were asked to elaborate on all the involvements when their feasibilities are being compiled and the process around it. Drawn from the analysis, various actants were identified: level of knowledge, this includes the developer's knowledge as well as the level of expertise of the QS; dependencies including financiers, investors, joint venture partners, tenants, municipalities and the reputation of the contractor; relationship with the QS/team, especially trust; the feasibility process which includes various reiterations of the study while the QS and team are doing risk work; expectation of the feasibility indicator; impact on the investment decision; the underlying meaning of the feasibility to developers; external uncertainties involving the volatility of the market and operational costs.

Finally, the participants also elaborated on the various usages of the feasibilities: a feasibility is an encompassing tool that forms the basis for initial investment decision-making, continues decision-making, negotiations, value engineering, the budget, cost reporting and cost controlling, progress measurement, performance tracking; to acquire financing; to determine the debt amount and the accompanying risk; when acquiring land, to determine the maximum cost for the land that makes economic sense.

Extracted from the interviews and review, Figure 1 illustrates the identified actants that influence and form part of the feasibility network and the successful compilation thereof. The influencers are grouped into ten main categories: knowledge and level of expertise; external uncertainties; the developers' perception of a successful feasibility; dependencies; various usages;

the underlying meaning of feasibility studies to developers; the developers' relationship with the QS and professional consulting team; the developer's expectation of feasibility indicators; the impact the feasibility has on investment-decisions; and the process.

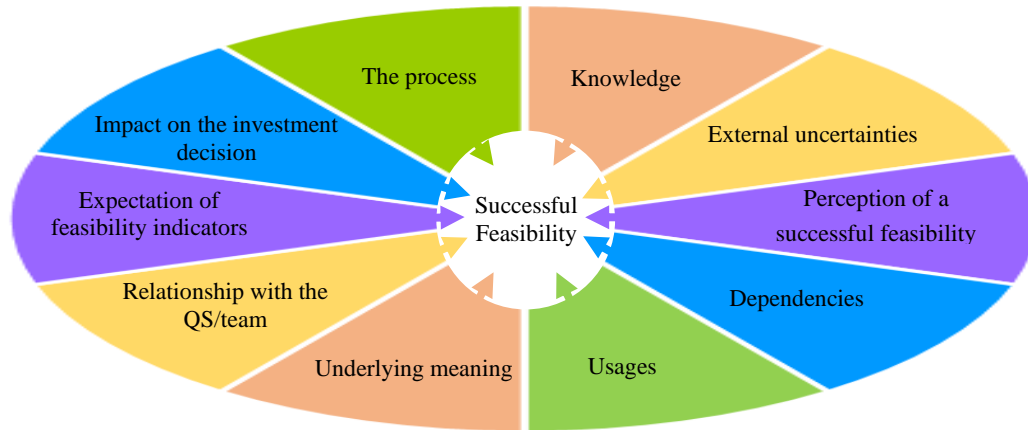


Figure 1. Actants influencing the successful compilation and usage of feasibilities.

The ten categories are created to simplify the illustration, however each category is deemed a “black box” that can be further expanded into more actants and a greater network with further relations.

## 5 CONCLUSIONS AND RECOMMENDATIONS

The economic feasibility study is a complex document that involves a substantial amount of actants that influence the success of the document, investment decision and construction project. The feasibility is faulty with various problems in practice. With a deepening understanding of the actants in the feasibility process, the compilation and usage of economic feasibility studies, for private commercial developments where profitability is key, could be enhanced globally by: improved understanding, careful compilation and successful investment decision-making.

This study is limited by the perceptions of a small sample of South African developers. Therefore, further studies including the QS perspective and the feasibility document as an artifact could be further explored, as well as including international perspectives and/or larger sample sizes by means of quantitative data. The identified actants could be further explored and unboxed.

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