

Formulating programs of large scale development projects in Saudi Arabia

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Abstract

The aim of this paper is to develop a model for formulation of programs for large scale development projects in Saudi Arabia. This will help developers of these projects to better understand the requirements for formulation of project programs along with the steps to be followed. Due to current focus on large scale development projects in Saudi Arabia; this issue is of particular importance in this context. Three case studies, in each of which a different process for formulation of project program was followed, were selected. Through analyses of these case studies, a model for formulation process of project programs was developed.

Key words: large scale projects, project program, project management, Saudi Arabia.

Introduction

During the last two decades, the development sector was booming worldwide, especially within developing countries that are rich in natural resources. This boom increased pressure on governments to develop large scale urban projects that can contain the newly emerging developments (Sagalyn 2007). The purpose of these projects is to divide large land areas into smaller parcels that meet demand requirements while providing necessary infrastructure for these parcels. In order to secure success of urban development projects, it is essential to develop project programs that are in line with market requirements and regulatory framework while providing a competitive edge that could help the project to prevail over current and projected competition (Kyvelou and Karaiskou 2006).

The definition of a "large scale project" differs from one reference to another. Some references consider the cost to be the indicator of the project's scale (Verveniotis 2008). Other references define large scale projects as the projects that have a social, economic and ecological impact on its context (Alastair et al. 2005). For the purpose of this paper, the later definition will be adopted as the relevance of the development cost varies upon the economic status of the country and the time, during which the project was executed as time is related to inflation.

Saudi Arabia is known to have one of the strongest economies in Gulf Council Countries (GCC) due to its richness in natural resources in general and oil in particular. For the purpose of using its revenues to boost local economy, Saudi Arabia is investing heavily in large scale development projects. Therefore, investigating processes to be followed for formulation of programs for large scale projects within this context is highly relevant. Three case studies were selected within this context in order to analyze the processes that were followed for development of its programs and answer the following research question: 'how to formulate programs of large scale development projects in Saudi Arabia?'. This question is significant as it will help developers of large scale projects to better formulate programs of their projects and make it in line with the market dynamics, regulations and technical requirements.

1. Research methodology

As the main question of this research is a 'how' question, this research falls under the category of qualitative research (Royce and Bruce 1999; Yin 2009). This research is a qualitative case study research as it does not require control over behavioral events (Yin 2009). Multiple case studies were used in order to formulate a 'cross-case' research conclusion.

Literature was reviewed in order to identify factors that might affect large scale projects. The list of these factors was used as a framework to develop a guide for interviews with managers and assistant managers of selected projects and allowed for a consistent research methodology that enforced the research reliability (Yin 2009). The purpose of interviews was to identify the factors within large scale projects that might affect formulation of project programs. Collected information were analyzed to identify patterns, based on which a model for identified factors affecting formulation of project programs was developed along with the nature of impact for each of these factors. Data was analyzed till saturation of different investigation issues. This technique is called theoretical saturation and is convenient for research of complex business environments. Results of interviews were complemented by personal observations and progress reports of selected projects.

The case studies were selected based on their scale and international recognition. In addition, in each of the selected projects a different process for formulation of project program was followed. The selected case studies are: Al Shamiyah project in Makkah, Saudi Arabia (1,380,000 square meters project with a construction cost of around 2,000,000,000 USD), Darb Al Khalil project in Makkah, Saudi Arabia (1,150,000 square meters project), and Al Dariyah project (600,000 square meters project with a construction cost of around 600,000,000 USD).

2. Literature review

As no references discussing the process to be followed for formulation of programs for large scale projects, other complementary bodies of literature were investigated, namely, risks and opportunities of large scale projects, private-public partnerships (PPP) and sustainability, which is the most comprehensive theme of urban planning nowadays. It discusses mainly the impact of urban projects on its social, economic and ecological environments. In addition, literature on PPP was investigated as large scale development projects cannot take place without some kind of partnership between the private and the public sector. From literature review, list of factors related to large scale development projects was identified. The identified list was organized along the three identified levels that were found to be applicable in the context of large scale development projects, namely, project environment, external environment and institutional arrangement.

Factors at the project environment level include market, financial, technological, management, technical and operational factors (Datta and Mukherjee 2001; Dey 2009; Gil 2009; Perera, Dhanasinghe and Rameezdeen 2009; Siebert 1987). Market factors basically relay to large margin of error associated with projecting cost and revenue over long periods, which is usually the case in large scale, long term projects (Dey 2009). Financial factors essentially relate to high level of capital loss or gain due to high level of uncertainty associated with the type of projects under discussion. The size of loss or gain will be proportionate to the size of invested capital (Dey 2009; Gil 2009; Perera, Dhanasinghe and Rameezdeen 2009). Technological factors principally convey to use of new technologies that might be neither fully tested nor available, like using new construction materials or techniques or using a new transportation system (Datta and Mukherjee 2001; Dey 2009; Siebert 1987). Management factors are related to managing the large number of parties involved (public agencies, consultants, contractors, operators, local communities and end-users) and their interdependence for the success of the project (Datta and Mukherjee 2001; Perera, Dhanasinghe and Rameezdeen 2009). Technical factors mainly relay to level of information provided in the preliminaries bill, tentative drawings and scope change (Dey 2009; Perera, Dhanasinghe and Rameezdeen 2009; Siebert 1987). Finally, operational factors are related to functionality of the project, like satisfaction of end-users, proper accessibility and durability of finishing (Dey 2009).

At the level of the external environment, the factors are political, social, environmental and economic factors (Datta and Mukherjee 2001; Dey 2009; Gil 2009; Lehtonen 2004; Perera, Dhanasinghe and Rameezdeen 2009; Siebert 1987; Lehtonen 2004; Senge et al. 2007). Political factors are primarily related to political stability that might affect the development right over the project. Social factors basically convey to acceptance of local communities of the project, which might heavily impact the project especially if local communities have tendency towards violent reactions against projects that do not meet their expectations (Siebert 1987; Lehtonen 2004; Senge et al. 2007; Senge and Carstedt 2001). Environmental factors primarily relay to the level of environmental

regulations that might lead to substantial increase or decrease in project cost (Dey 2009; Siebert 1987; Lehtonen 2004; Senge et al. 2007; Senge and Carstedt 2001). Economic factors are related to unexpected changes in economic indicators and assumptions that might affect the project cost like changes in wages, taxes or inflation (Datta and Mukherjee 2001; Dey 2009; Perera, Dhanasinghe and Rameezdeen 2009; Lehtonen 2004; Senge et al. 2007; Senge and Carstedt 2001).

Factors at the institutional arrangement level include opposition of interest, multidisciplinary nature of projects under discussion, political conflicts, lack of approvals facilitation and over optimism. Opposition of interest between the private sector and the public sector is caused by the fact that private sector is always looking for short term benefits to maximize return on investment, while the public sector looks for long term benefits like achieving sustainability (Koppenjan and Enserink 2009). Large scale projects are multidisciplinary and require diversified expertise to cover its aspects, which might not be available in the public sector. Despite such expertise being usually provided by the private sector, the public sector still needs to have a fair understanding of these disciplines to structure the deal properly (Sagalyn 2007). Political conflicts are present in contexts where conflicting political parties have decision making power. Such conflicts can lead to either project delay or suspension (Sagalyn 2007). Lack of approvals is mainly found where bureaucracy has a long history: Public authorities who do not benefit directly from the project do not facilitate approvals (Vanmarrewijk et al. 2008). Over optimism is caused by over sighted announcements of the public parties that are involved in the project, in terms of time and budget. This might endanger the project, especially in terms of public acceptance in case of delays.

Through analysis of case studies, the aforementioned factors were studied in order to identify those with direct impact on the formulation process of programs for large scale development projects.

3. The case studies

As per collected data, technical, market, financial and regulations factors are the ones to have a direct impact on the formulation of project program for large scale development projects. In the following we will go through a description of each of the selected case studies along with the processes that were followed in order to develop the respective project programs and the role of each of the identified factors in these processes.

3.1. Al-Shamiyah Project

The project aims at the redevelopment of a 1.38 square kilometers hilly site - the Shamiyah District – facing the northern edge of the Haram Al-Shareef (the great mosque) in Makkah. The project is composed of three zones. A southern zone of 35,000 square meters is dedicated to the expansion of the northern piazza of the

Haram; a middle zone of 980,000 square meters geared towards total redevelopment; the eastern and western zones of 464,000 square meters assigned to rehabilitation.

The formulation process of the project program focused on maximizing capitalization on allowable built-up area while running in parallel the market study that was used to test the business logic of the project (Figure 1). This is due to the fact that demand in Makkah on accommodations in general and hotels is particular is extremely high because of the increase in number of visitors each year and the obvious lack of competition as Makkah is the only pilgrimage destination for the Muslims.

This high demand encouraged the developer to initiate design studies to investigate possible options without waiting for results of the market study. The scope of the market study was basically to identify high level economic indicators and cost and revenue assumptions. The high level economic indicators helped in analyzing profile of users in order to accommodate for their needs in the master plan. Despite the fact that the uses were set based on regulations, the typologies of units for each use were defined based on the outcome of the market study.

In addition, the cost and revenue assumptions were investigated to provide necessary assumptions for the feasibility study that helped in optimizing the return rates of the project and assessing the feasibility of the developed design schemes. Furthermore, the feasibility study helped in confirming that the formulated project program based on the maximum allowable built-up area was financially feasible. Based on the outcome of the technical assessment for design solutions and the preliminary feasibility study, one design solution was formulated. Furthermore, a final feasibility was prepared based on the assumptions set earlier in order to identify the expected return on investment for the final design.

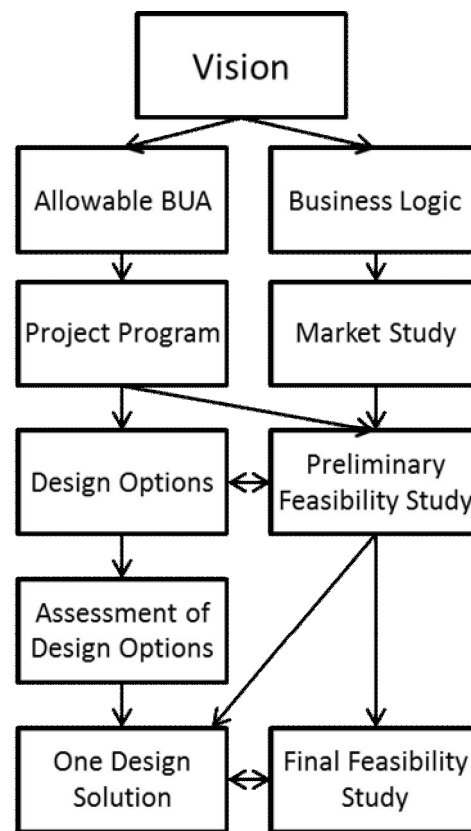


Figure 1: program formulation process of Al-Shamiyah project

3.2. Darb Al-Khalil Project

Darb Al-Khalil, is the urban development of Al-Haram Al-Shareef Southern Gateway. The site is strategically located, within Makkah Central District, few hundred meters away from the southern edge of Al-Haram Al-Shareef. Darb Al-Khalil's site occupies the southern section of Wadi Ibrahim (known as Mesfalah) between the first and the second ring road. Considered one of the world's largest single urban developments, Darb Al-Khalil features 1,150,000 square meters of mixed-use facilities including a multi-storey shopping and parking podium towered by a series of high-rise hotels and furnished apartments.

Based on the vision of the developer, regulations of public authorities were investigated in order to identify the maximum allowable built-up area (Figure 2). As this is a redevelopment project that accommodates highly occupied hotels and services apartments, the preliminary assessment raised a question mark on the financial feasibility of the project in light of built-up area ceiling that is imposed by regulations. Therefore, the market study was intended to mainly identify gaps between supply and demand, profile of users, spatial typologies for each use and cost and revenue assumptions. These findings were fed into the preliminary feasibility study that

was helped in identifying the project program that makes the project feasible. The spatial manifestation of the program was tested in three different options. These design alternatives were used as the basis of negotiations with public authorities in order to prove that the additional built-up area can fold into quality designs. In addition, engaging the public authorities in selecting the design option to be developed helped in gaining their support as they felt to be more in control as opposed to approving increase of built-up area without knowing how it will be manifested. After approval of additional built-up area, the selected design alternative was developed. Furthermore, a final feasibility was prepared based on the assumptions set earlier in order to identify the expected return on investment for the final design.

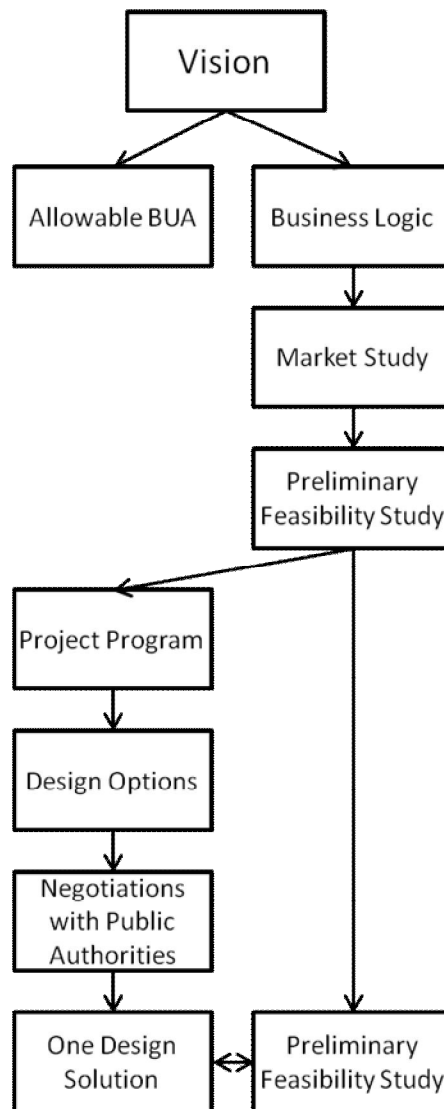


Figure 2: program formulation process of Darb Al-Khalil project

3.3. Al-Dariyah Project

Al Dariyah Project is located east of Salboukh highway, to the north of Riyadh. The area of the site is 477,648 square meters and it is 673 m above sea Level. The topography of the site is relatively gentle with maximum of 17.5 m height difference between its extremities. The site is currently used by Saudi Oger as its main operational camp; containing temporary residential structures for the company's employees, and warehouses for construction materials and equipments. Saudi Oger will relocate the camp to another site to make way for the development of the Diriyah residential project. The project is expected to be the largest residential compound in Riyadh.

The development of the Diriyah Project has been instigated by the huge gap in the supply of residential units in the city of Riyadh associated with the increasing yearly influx of high-level expatriates in Riyadh. Consequently, there is a particular demand for high-end residential compounds that offer a distinct living environment for the expatriates. Within the highly secured gated premises, the compounds provide the expatriate's communities a socially relaxed life style with a variety of entertainment options as compared to the rather restrictive social life in Riyadh's public space.

Based on the vision of the developer and similarly to the previous case, regulations of public authorities were investigated in order to identify the maximum allowable built-up area. In addition, this vision was translated into a business logic that was the basis for the market study. The market study was intended to mainly identify gaps between supply and demand, profile of users, spatial typologies for each use and cost and revenue assumptions. These findings were fed into the preliminary feasibility study that was intended to identify the project program that makes the project feasible. The feasibility study confirmed using the maximum allowable built-up area due to high demand on residential compounds in Riyadh, and the spatial manifestation of the program was tested in three different options.

After completion, the design schemes were assessed from a technical and from a financial perspective and it was found that the project program is problematic. The use of maximum allowable built-up area left the site congested with little room for open spaces that constitute the edge of competition for residential compounds in Riyadh. Accordingly, the projected returns were found to be unachievable in light of current program. Therefore, the project program was revisited in order to reduce built-up area for the purpose of achieving a quality project while claiming the rates identified in the market study. This program was used in order to develop a new design alternative. Furthermore, a final feasibility was prepared based on the assumptions set earlier in order to identify the expected return on investment for the final design.

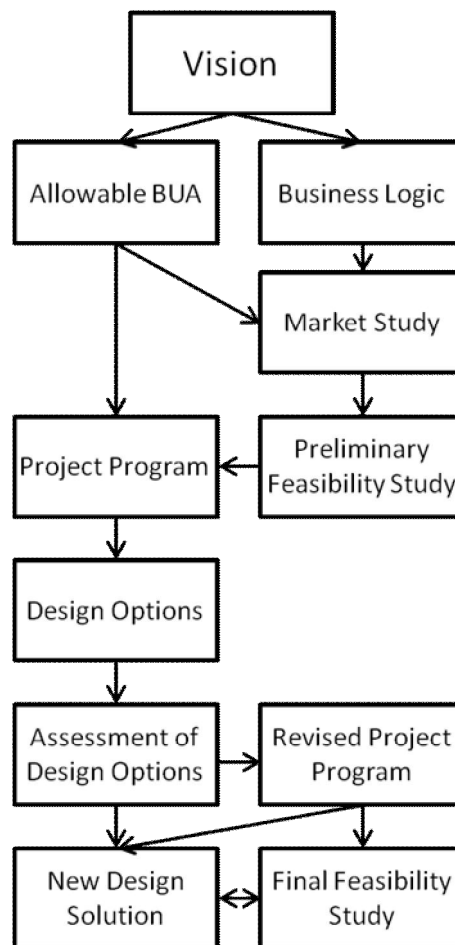


Figure 3: program formulation process of Al-Dariyah project

4. The suggested model for program formulation

The aforementioned processes for program formulation were analyzed in order to identify the options that could be followed for each step of the program formulation process. In the following, we will discuss each of these steps.

After formulation of the vision, it shall be the basis for the business logic of the project. In addition, the maximum allowable built-up area as per regulations shall be identified. If the development is taking place within an area with very high demand, the project program could be directly formulated based on the maximum allowable built-up area. Otherwise, the maximum allowable built-up area shall be investigated through a market study that shall identify if this built-up area is compatible with existing market gaps, especially if the demand in the tackled market is not very high or if exceptions on regulations are necessary to make the project financially feasible. This market study shall formulate the basis for a preliminary feasibility study that shall test the financial

viability of balance between uses, built-up area of each use and the project return on investment. Based the results of this study, the project program shall be consolidated.

The spatial manifestation of the consolidated project program shall tested by preparing more than a design alternative. In case exceptions on regulations are necessary, these design alternatives shall be used for negotiations with relevant public authorities. If consensus is reached, a single deign scheme shall be developed based on the approved exceptions; otherwise, the project program shall be revisited till the developer and the public authorities reach an agreement. If no exceptions are required, the design schemes shall be revised from technical and financial perspectives. If original program proved to be unfeasible based the results of the assessment, the program shall be revised. Afterwards, a single design solution shall be developed. Furthermore, a final feasibility shall be prepared based on the assumptions set earlier in the market study in order to identify the expected return on investment for the final design.

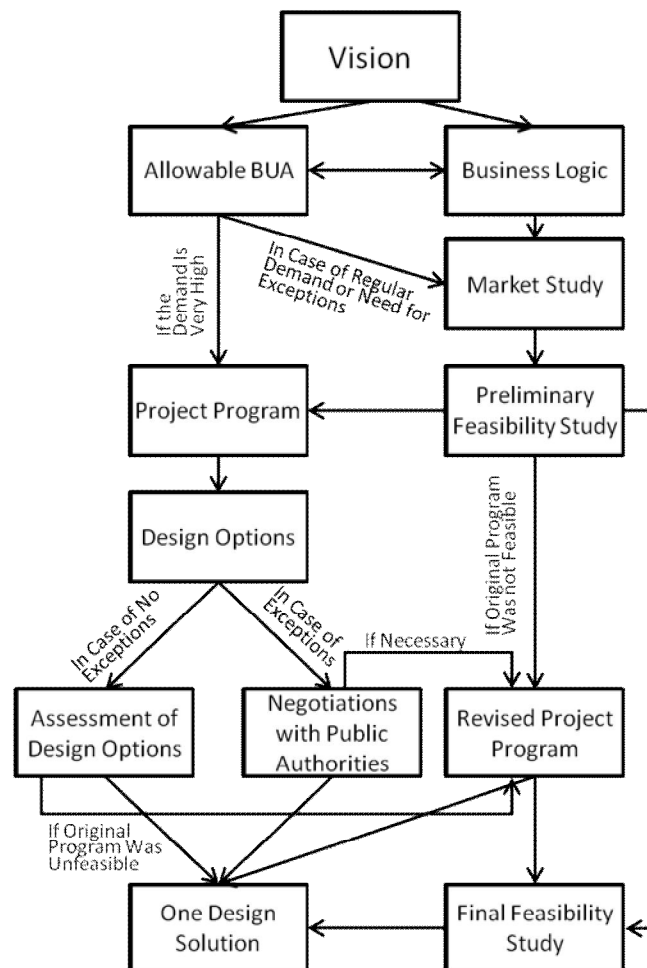


Figure 4: the suggested model for program formulation

Conclusion

Based on the above, we can conclude that no blueprint shall be adopted for formulation of programs for large scale development projects. The analyzed case studies showed that different processes were followed depending on the context and the nature of the project. In Al-Shamiyah project, the focus was on using the maximum allowable built-up area as the demand on accommodations is very high in Makkah. In Darb Al-Khalil project, the developer relied on the feasibility study to formulate the project program while using design options as a mean of negotiation with public authorities. In Al-Dariyah project, the project program was formulated based on the outcome of the market and feasibility studies. Nevertheless, the program was revised as the technical and financial assessment of the design alternatives proved this step to be necessary.

Based on analyses of case studies, a model for formulation of programs for large scale development projects was identified. This model contributes to the literature related to management of large scale development projects as it brings a new perspective on specific factors to be considered when formulating programs of projects under discussion, more so since current literature does not account for this particular relation.

Rather than being considered a blueprint, the proposed model should be perceived as a flexible road map that will help developers to understand the factors of impact on program formulation for large scale development projects and make decisions that can enhance the chances of their projects to match the needs of users and second layer of investors.

Like any research work, this paper has limitations. As this is a case study research, its results are based on analyses of a limited number of cases; hence, when analyzing dissimilar cases, results may vary. Though observations and progress reports were used, interviews were the main source of data. In addition, interviewed managers had to rely on their memory to answer questions. Therefore, they may have forgotten some events; hence, these were not included in collected data.

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