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Buildings and their Integration in Communities: Case study of a Parking Plaza

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Abstract

The development of projects in isolation and such treatment by urban development authorities can lead to socioeconomic success or failure in projects. This dilemma has its roots in poor initial planning both at the level of individual project, and that of community and neighborhoods. Although the facts like project success or failure are readily determinable in case of socioeconomic sustainability, it is difficult to determine how various variables interact in determining project success. This research is aimed at using system dynamics for investigating the phenomenon of unpopularity of building projects within the urban fabric. An attempt is made to discuss the case study of a parking plaza in its context and for detailed investigation of this building, systems thinking methodology is employed. The research has highlighted various variables that have a role to play in making the case study project an example of success or failure in terms of sustainability. The practice of using systems thinking in case of deeply rooted sustainability analysis has brought some new insight which seems to have a promising role to play.

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1. Introduction

With increasing urban expansion, it is estimated that 70% of global population will live in cities by 2050 [1]. Providing inhabitants with a good quality of life in their cities has become a huge challenge for governments. Sustainable urban development plans have been developed by many cities worldwide to lead their urbanization process [2]. Sustainable development in case of buildings only provides a partial image. For a complete picture, buildings need to be considered in their context i.e. communities or neighborhoods, not in isolation. Developing

structures within the urban areas require thorough feasibility studies to match the needs of present as well as the future demands. Feasibility study is the first and foremost activity before undertaking project design and construction leading to project success. Conventionally project client or consultant works out project feasibility study by taking into consideration financial issues including market demand and supply, return of investment as well as risk analysis of market conditions [3, 4]. It is realized that project feasibility study is one of the most easily misunderstood aspects in developing a project. Nevertheless, it is the most important stage, since errors in this stage can impair the project's performance for good. An effective and appropriate feasibility study is hence more than just a set of financial projections that can turn into a market-driven strategic plan as well as a road map for all forthcoming decisions [4].

The purpose of this research is to see if the failure of a building project resulting from poor feasibility studies can be investigated with the perspectives of sustainable development and systems thinking. A case study of parking plaza is developed to observe its footprint on sustainable development. The effort will demonstrate how important it is to integrate built environment within existing communities in order for the new and old structures to share values with the most important ones lying under the umbrella of socioeconomic sustainability.

2. Literature Review

2.1. Sustainability

Being a multi-dimensional concept sustainability is found to take into consideration different elements of territorial development including wellbeing of population, economic growth, environmental quality, etc. [5]. Sustainable development assessment by making use of specific indicators has been worked upon since early 90s by many nations as well as international organizations [6-9]. For the purpose of assessing and understanding sustainability in built environment, sustainability dimensions are divided into indicators which are further divided into parameters. Indicator approach is of much use in giving information relating sustainability condition of systems under examination particularly in reference to urban areas. It is also useful to make provisions about future sustainability trends [9-12]. Some indicators and parameters related with socioeconomic sustainability in buildings are shown in Table 1. This hierarchy has resulted from many conclusive studies from which an important one is that of Shen et al. [13] in which construction projects were considered for their entire life cycles starting from inception and terminating at demolition. Some key performance indicators (KPIs) used by AlWaer and Clements-Croome [14] for assessment of sustainable buildings are also included in the compilation owing to their role in whole life cycle.

Table 1. Dimensions, Indicators and Parameters of Sustainability

Dimension	ECONOMIC SUSTAINABILITY		SOCIAL SUSTAINABILITY	
Indicator	LCC values	Affordability, Manageability & Adaptability	User comfort and safety	Functional, Aesthetic & Innovative design approach
Parameter	Capital Cost	Adaptability & flexibility of building	Indoor environmental quality	Usability, functionality & aesthetic aspects
			Health and well being	Innovation & design process
	Safety			
	Life Cycle Cost	Affordability and economic performance	Open space availability	Architectural considerations, integration of cultural heritage & compatibility with local heritage values
			No. of facility users	
		Manageability aspects of building	Community amenities provision	
		Accessibility		

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