



World Multidisciplinary Civil Engineering-Architecture-Urban Planning Symposium 2016,
WMCAUS 2016

How The Residents Are Affected from Construction Operations Conducted in Residential Areas

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Abstract

The construction projects have adverse impacts on the residents who live at a neighborhood of a construction project. In the literature, these adverse impacts are identified and the social cost of these adverse impacts are formalized. However, in all these studies, all adverse impacts are assumed to create nuisance at the same level, whereas the residents are more sensitive to some of these nuisances, on the other hand some of the nuisances which are considered in the social cost studies can be overlooked by the residents, and therefore this can cause misleading calculations of social cost. In order to overcome shortcoming of social cost studies, a study, which aims to identify the level of effects of each nuisance on the residents, is conducted by performing a questionnaire survey. 266 respondents are obtained at the end of the study, and the data obtained by questionnaire survey is analyzed by using descriptive analysis. According to this analysis, loss of peace and quietude of the neighborhood, cleanliness of the house, and degradation of ambient conditions are identified as the most disturbing nuisances. In addition, the country conditions and culture of the region is considered as important factors that play an important role in the intensity of adverse impacts.

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Peer-review under responsibility of the organizing committee of WMCAUS 2016

Keywords: Adverse Impacts, Stakeholder Management, Criticality Index

1. Introduction

The construction industry plays an important role to satisfy human needs, therefore the construction activities cannot be evaded [1]. In addition, most of these activities should be performed in the urban areas, so these activities

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are impossible to be expelled from city centers. However, the construction projects are acknowledged as one of the important sources of nuisances emerged in the urban areas. In other words, the ecological, sociological and economical systems placed at the surrounding of the construction projects can be impacted adversely by construction activities [2, 3]. However, one of misleading behaviors of project teams is the propensity of ignorance of adverse impacts of construction projects on external stakeholders during the management process [4], since the external stakeholders who experience these adverse can develop resistance against the construction projects. In addition, the tendency for external groups to influence the construction projects can be observed due to NIMBY (not in my backyard) syndrome [5, 6]. For instance, they can protest, take legal actions against the project and repress governmental agencies, which in turn lead to delay in projects, budget extensions and charges. Therefore, the nuisances emerged due to adverse impacts of construction projects should be managed by the project management teams in order to avoid conflicts between the environment and project team. However, most of the project teams can inadvertently escalate these conflicts instead of eliminate and mitigate them due to the lack of guiding theoretical frameworks [4]. [1] state that 'construction impact assessment' can be used for protecting the natural and built environment and identify the first step of this model as identification of relevant adverse impacts. In their study, they identified a number of adverse impacts, in addition a few studies, especially studies related to social costs and environmental impact assessment, are conducted for identification of adverse impacts of construction projects. The deficiency of the studies related to social cost is that all adverse impacts are assumed to cause same level of negative nuisances to the neighboring community and the findings are proposed based on this assumption. Whereas, the effects of each adverse impacts on the neighboring community can be different, therefore allocating resources for elimination of all adverse impacts is not a good management practice. On the other hand, the environmental impact assessment studies develop models to identify major environmental impact factors, however they overlook the perception of the neighboring community who are affected by the construction projects to these adverse impacts. However, the most disturbing adverse impacts should be identified by considering the views of neighboring community, thus the precious resources used for elimination or mitigation of adverse impacts can be allocated effectively. Consequently, in this study a model which consists of adverse impacts of construction projects is developed. Based on this model, a questionnaire is developed and these adverse impacts are ranked by analyzing the data obtained at the end of the questionnaire study by using descriptive analysis and criticality index. According to the findings of these analyses, a roadmap which can be used for managing the neighboring community is developed for the construction projects.

2. Potential Adverse Impacts of Construction Projects

The initial stage of the developed framework is the identification of the potential adverse impacts of construction projects. For that purpose, a literature survey is conducted. According to the literature, two types of studies where the adverse impacts of construction projects are identified are available in the literature, first one is related to the quantification of social costs and the other one is about environment impact assessment. [1] mention about four categories of adverse impacts of construction projects in urban environments. These are traffic, economic activities, pollution and ecological/social/health, and they state nine adverse impacts, namely prolonged closure of road safety, detours, utility cuts, noise, dust, vibration, air/water pollution, surface/subsurface disruption and damage to recreational facilities under these four categories. [7] develop a bid evaluation method by including the social cost of infrastructure projects in urban areas. According to them, adverse impacts of the construction projects should be considered under four categories, namely "natural environment", "public property", "local economy" and "human society". [8] use the similar categorization of adverse impacts with [7] in their study which is about quantification of social cost of construction projects performed in cosmopolitan centers. They identify a total of twelve subcategories. [9] classify the adverse impacts of the construction projects in four main categories for residential building constructions, namely impact on the community, impact on the economy, impact on the environment and public property. [10] develop an environmental impact assessment model for construction processes and categorize adverse impacts of construction projects into three categories, namely resource depletion, health damage and ecosystem damage. [11] use four main categories, namely physical/chemical, biological/ecological, sociological/cultural and economic/operational, and 26 subcategories in their environmental assessment model. By considering all these studies, 4 adverse impact categories are identified for construction projects, namely damage to nature and built environment, pollution, traffic and human society. When compared to the models proposed in other studies and this study, the main

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