

## The Effect of Participation in Design and Implementation Works on User's Satisfaction in Multi-Storey Housing Projects in Gaza, Palestine

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**Abstract:** Participation in design and implementation works is the right of all citizens. Accordingly, this study aimed to evaluate the effect of residents' participation in design and implementation works on their satisfaction about the quality of the apartments in multi-storey housing projects in Gaza, Palestine. The data were obtained from random samples of 525-residents living in two multi-storey housing projects. Descriptive analysis and bivariate correlation were applied to the data. This study highlights the importance of residents' participation as a variable affecting residents' satisfaction to housing authorities and designers. The findings of the analysis show a significant positive correlation between the level of the residents' participation in architectural design and implementation works and their satisfaction about their houses. This emphasizes the importance of residents' participation in this field.

**Key words:** User participation • Design problem • Evaluation • Process • Householders

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### INTRODUCTION

Historically, private sector used to be the leader in providing the local market with housing in the Gaza Strip. Before 1990, many high-income or even middle-income households built their own houses progressively over long periods as long as ten to fifteen years. They bought land from saving or on payments, then asked an engineering office to prepare the required drawings. After getting the municipality approval, the construction works begin and remain for many years. However, the high-income householders can construct their houses over a shorter period. Most of the houses were less than four storeys.

After the withdrawal of Israel forces from Gaza Strip and the establishment of the Palestinian National Authority in 1994, the construction of multi-storey residential buildings increased and became predominant [1, 2]. Alsousi [2] stated that the construction of such buildings was a new experience for both architects and residents. It was a different experience for responsible authorities also. The use of multi-storey residential buildings is related to several factors; such as the limitation of land and high price of the real estate, the massive increase in population, the desire to decrease the

consumption of land, the technological progress in the construction industry, the invention of vertical lifts and the new generation trends towards living far from the family's house after marriage. There were no regulations for multi-storey residential buildings in 1994. A steering committee have been formed as an emergency action to control the irregular construction of high-rise buildings in Gaza by setting up regulations [2].

Users' participation in design process and implementation affects its features. User's participation consumed time and money but it ensured customer's satisfaction with the product [3]. Accordingly, users' participation in the design process affects their satisfaction about the houses. There are few studies that correlated users' participation with their satisfaction and there is no such study about multi-storey housing projects in Gaza. This study tries to fill the gap.

The purpose of this paper is to investigate the effect of users' participation, in design and implementation works on their satisfaction about the quality of two governmental multi-storey housing projects. It will highlight the levels of users' participation and satisfaction in these projects. In addition, it will be a reference for those who are concerned about the housing sector, especially in the field of users' participation in design and

implementation. Furthermore, policy makers can consider this type of evaluation in the future as a strategy to achieve the best for satisfying residents' needs and aspirations. This paper is a part of a research that aimed to assess the effect of users' participation on their satisfaction in three types of participation: in design and implementation works, in management and maintenance works and in social relations activities.

The study will first review theories and concepts of users' participation in design and implementation works to form the framework of the study, followed by methodology, results and discussion and ended with recommendations for better quality of houses.

### **Theoretical Framework**

**The Definition and Importance of Participation:** Users' participation in design and implementation is a major concept that worth investigating for several reasons. Users' participation is a good way to improve the quality of residents' life but it needs willingness and ability to participate [4]. It is essential to find residents who are willing to offer time and effort to participate [5]. Residents should be encouraged and not forced to participate. Creating the enthusiasm and motivation of residents to participate is difficult while it is easy to kill it [6]. Residents who participate in the design process will not obstruct the implementation but they may participate voluntarily in implementation process and maintenance works in the future [6]. When a user participated, he carried the responsibility with the architect and cannot blame him for any design problems [7]. Moreover, the user will defend about the design in front of others. Participation is the right of users as they support the construction costs [5]. The owners should participate in the design process to achieve a sustainable design which meets the users' needs and desire [8]. Participation is the residents' right since its outcome will affect their life after residing [9].

Participation has its roots in the Latin words "pars" and "capere" which mean "part" and "to take." The meanings of the word in English dictionaries often include the following; partaking in something, association with others in a relationship, social interaction in a group and taking part with others in an activity [10]. Fredrik [11] defined participation as a general concept covering different forms of decision making by a number of involved parties. It can be active or passive depending on the level of residents' involvements. In this study, users' participation means taking part with others, mainly the designers to get a proper quality of houses.

**Benefits Versus Challenges:** Community participation involves costs and benefits. The costs may include efficiency and technical assistance [6]. The costs include three main challenges of users' participation. The first is time, money and effort as the developer claimed that involving users in development consumes time and money and it is not valuable [3, 12]. Geary [4] agreed with Leung [3] that it consumes time and energy and sometimes causes frustration for management members. The second is the lack of users' training in housing development or management [3]. The third is limited options due to economics, especially for low-income residents [3]. On the other hand, there are many benefits from users' participation such as ensuring their satisfaction with the product, increasing community knowledge about the design process and community association which can give residents the power for making requests and action from policy makers [6]. The users' participation in the design process contributes to educate the public how to participate in the society and share the responsibilities [13]. In addition, participation in design will minimize the need for modification or mobility in the future. If the house was not desirable, it could only be used as a result of a negative selection when there was no financial potentials [14] or alternative choice and with a feeling of depression [15].

**Participation Between the Supporting and Rejecting Opinions:** Many scholars support the concept of participation in their studies. Coit [5] encouraged community participation saying that people should have confidence in their traditional forms and in their ability to build. He assured the importance of cooperation among community, professionals and the administration to exchange information about what users need to and what can be done with available resources. The householders should not be beneficiaries or recipients to what the architect decides; they can make the right decisions for themselves better than any professional can [12]. Therefore, the designer should make alternative choices to meet the different needs of many residents. The dissatisfaction with the newly built housing areas forced architects to consider the demands and preferences of the permanent residents and the idea of citizen participation [5]. Sanoff [16] discussed a wider vision about community participation, which included involving users in social development such as: a design decision, making process, improve plans and promote a sense of community. There is no best solution to a design problem and each design

problem has a number of solutions. Users' participation is needed as they can identify the problem better and the designers can solve these problems [12]. Fredrik [11] referred to the difference between the buildings completely controlled by architects and the traditional buildings which meet the residents need in the past. To minimize the difference he suggested either to return to what he called the traditional self-architecture, or to allow the users to participate in the planning and designing process. In the same context, Coit [5] demonstrated that the industrial countries in the twentieth century agreed to consult and include the users in the design process if the time and money are available while the poor people in the developing countries cannot find a government that cares to supply houses for them. He demonstrated that developing countries lost users' participation in the design and building of their homes by imitating the developed world and concealing the traditional methods of organizing and constructing housing by local builders and mutual self-help.

Reich *et al.* argued that participation is mostly avoided; the users' needs are neglected by the designer and the manufacturer or seller in turn neglected the designers' response and the result is a house that requires the user to acclimatize it to his particular needs [9]. The design concept is a result of participation between the expert or the designer and the non-expert or the user. They expressed hesitation in using the terms of expert and non-expert because the term non-expert does not accurately describe the effective participation from users [9]. To avoid this noticeable conflict, it can be said that the designer is an expert in architecture science while the user is an expert in defining his needs This was agreed by Bowen [17] who argued that in participatory design, designers and users collaborate to explore possibilities for the design depending on their knowledge and experiences to achieve an applicable solution to users and this solution could be an innovative solution. However, the lay people, even without training in architecture can read and evaluate three-dimensional models better than two dimensional graphic [18]. A cooperation between the client and the architect is important and includes different building processes: programming, developing design sketches, assessing alternative design solutions, ranking and weighting alternative design solutions, combining sub-solutions and making final decisions [19]. The client uses his experience of the solutions known to him and compares them to his needs. The architect also makes use of his experience gained from earlier or similar projects.

The designer has a scientific background and experience that guide and control the user needs and thought, which must be on the top priority of the architect interests [7]. Public should not be asked to choose from predetermined alternative plans or models for houses but they should be encouraged in formulating the principles for plans and to discuss them with the architect [20]. This enhanced that self-design from the user is better and has a higher level than selecting a plan from alternatives.

The users can contribute at the different stages of the design process development through various kinds of design aids such as questionnaires, illustrations and models [20]. The resident has a role in making a balance between a complex interplay of factors when choosing the house [21]. These factors may include the arrangement of the spaces inside the dwelling, the orientation, the area, the natural lighting and ventilation, the location and others.

However, There are opposing opinions against users' participation, for example, Lizarralde and Massyn [22] who confirmed that users can make bad decisions that negatively affect themselves. Development experts dominated decision-making and manipulated development processes as they think that they know best and therefore, they transfer knowledge to communities. Therefore, participation processes often begin after projects have already been designed [23]. Difference in opinions calls for more studies to investigate the issue of users' participation as a variable affecting their satisfaction.

In sum, although user's participation consumes time, effort and money, nevertheless it ensures satisfaction. The other scenario of non-participation can save time, money and effort at the design and implementation process but later, when the resident is not satisfied with the housing, he may modify or change the housing features which will also consume considerable time, effort and money. Alternatively, if he cannot afford modifications because of financial reasons, he may be frustrated and unhappy.

**Levels of Participation:** Arnstein defined eight levels in the ladder of citizen participation illustrating examples from the federal social programs: manipulation, therapy, informing, consultations, placation, partnership, delegation, citizen control [24]. Fredrik defined seven forms and levels of participation in design [11]. An explanation of the seven methods is in figure 1.

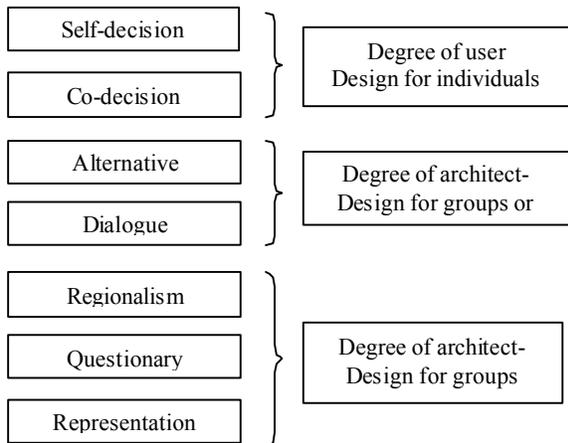


Fig. 1: Seven levels of participation between the architect and user.  
Adapted from [11]

Representation is used when the user is unknown to the architect as in town planning. Some clients prefer this way as they have low architectural awareness and prefer not to bother themselves. The users' requirements are investigated depending on the philosophy of what many people have in common is accepted by all in the questionnaire technique. Regionalism is needed to achieve local architecture where the specific and cultural heritage within a geographically limited area can be understood and expressed by the architect [11]. Saleh stated that the architect applied what he called the image of the region that included consideration of the site, environment and the context [7]. Dialogue level occurs when informal conversations between the architect and the local residents happen and the final decision is for the architect. Alternative level means giving the user the choice from several alternatives and if the plans affect a large number of people then a majority decision can be acceptable [11]. In multi-storey residential building, participation by voting can be used. Sampling method is similar to alternative method but includes discussion between the designer and the user to modify one of the alternatives to reach the best solution [7]. Co-decision which is a balance decision between the architect and the user and self-decision is made by the citizens themselves and the architect can be engaged as a consultant on questions [11]. Reinhard stated that when the final decision making is for residents, the agencies and technicians have an advisory role [6]. However, Fredrik indicated that the first and the last levels of participation may not appear mostly at present in their pure forms [11].

Clearly, the levels of [11, 24] have the same beginning and end poles, but the middle levels are diverse. This is because the former addressed users' participation in the design process while the later addressed citizen participation in community. Collecting information by the designer about residents' values and choices to achieve the acceptance of the whole inhabitants was assured by [20].

Wandersman proposed five levels of participation in the design process which were: creation of the plan from the user without restrictions from the designer, self-planning from the user while getting consultation from the designer, choice of the plan by the user from alternatives given from the designer, feedback from the user about a plan and the designer take the decision and no participation from the user and the plan is completely from the designer [25]. These levels are part of the seven levels defined by [11]. Roderick refuted the first stage defined by Wandersman "creation of the plan from the user" stating that the creativity of the architect is necessary [20]. He believed that the best design solution can be achieved through collaboration and negotiation between the citizen and professional designer. Another different method of users' participation was called incompleteness used in West Bank, Palestine [7]. In this method, the architect proposed a design for the apartment but, in the construction stage, the distribution of the interior walls is decided by the user to make whatever suits him. The same method is familiar in the Gaza Strip, which is the area of this research. Representation and incompleteness were the forms of participation use in the Alawdah case study while Alternative and co-decision levels were the forms that were used in Talalhawa case study of this study. Public participation in development planning is a complex concept. Participation of one person in the design of his dwelling is an easy mission but participation of many people in the planning of a large area is not easy; their opinions can contradict with each other [26]. The same concept exists in multi-storey residential buildings where all users supposed to participate and affect the final solution of the design.

In sum, the reasons of contradiction in reporting the importance of users' participation among positive, negligible, or no significant effects were explained by [9]. Participant without technical knowledge is useless when technical knowledge is required, participation in a housing project may be initiated by the sponsor to gain political acceptance and not for the benefit of the users and not all the users will choose to participate when they are given the opportunity to share.

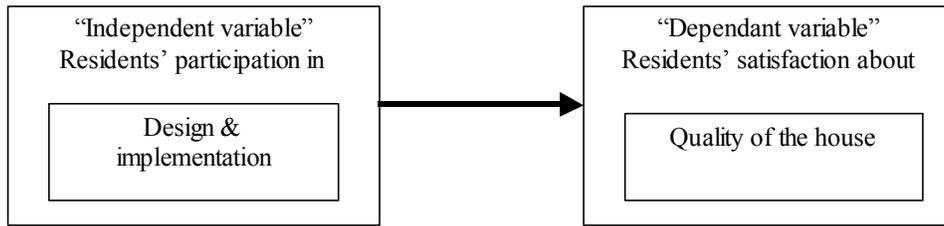


Fig. 1: The framework of the study

**Participation and Residents' Satisfaction:** Users' participation in decision making regarding their houses can create: a sense of responsibility towards their community, a feeling of satisfaction and a better quality of life [27]. Satisfaction's feeling is not only a result of achieving the requirements, but also related to the feeling of affecting the decisions [27]. Leung demonstrated that users' participation is an ongoing process and users must be aware about their rights, roles and responsibilities [3]. He added that users' participation ensures his satisfaction with the product. For example, his participation in choosing paint color, design and room layout and building materials will minimize the need for modification. In general, most of the literature about residential satisfaction dealt with the residents as a recipient or as a target. A few of these studies exposed to the users' participation in design and implementation process and to correlate this participation with users' satisfaction about the quality of the house. The framework of this study is adapted from [28] study which uses row housing. This study will investigate the effect of participation in design and implementation as an "independent variable", on users' satisfaction about the quality of the apartment as a "dependent variable" in two of the multi-storey residential buildings in the Gaza Strip. It is important to conduct such studies to any housing areas and to repeat such studies over time [28].

**Methodology:** Questionnaire as a technique to measure residents' satisfaction was widely used by scholars [28-34]. This study used a questionnaire derived from literature and observation from the study area to achieve the objectives. In this study, stratified random sampling was used. The formula to calculate the samples size is derived from [35] which was used by [31]. Sampling techniques included several stages. At the first stage, the population, which is the governmental housing projects, was divided into two strata depending on the concept of participating in design and implementation works. In the second stage, one project from each stratum was chosen

randomly using a simple random sampling. In the third stage, some buildings were chosen randomly and some apartments from these buildings were chosen randomly also.

As a result, two housing projects were chosen. The first is the Tal Alhawa project with about 1802 apartments and the targeted group is the limited income groups from employees in different organizations and associations in the society. This project was established based on the concept of housing associations which involves the participation from first owners in the first stage of choosing the designer until residing. The second is the Alawdah project with about 362 apartments implemented until now and this project did not address any specific groups. The residents bought their apartments after it was partially or completely constructed. They could change the position of the inner walls. The respondent of the questionnaire should be the head of the family either male or female. He or she can be an owner or renter of the apartment.

The questionnaire was distributed to householders on their houses. Face to face interview was used when possible. Most of the items in the questionnaire were adapted from earlier studies to suit the study objectives and area of study. The sample size was 525 questionnaires; 331 from Talalhawa project and 194 from Alawdah project. The questionnaire was administered and collected from the beginning of March 2012 until the end of April 2012. The levels of participation were measured in a five point Likert scale ranging from "1" for strongly disagree to "5" for strongly agree. The levels of satisfaction were measured in the same scale ranging from "1" for very unsatisfied to "5" for very satisfied.

Descriptive analysis was used to define the levels of residents' participation and satisfaction. Bivariate correlation was used to achieve the study aim which is to investigate the effect of the residents' participation in design and implementation works on their satisfaction about the quality of the house.

**RESULTS AND DISCUSSION**

In this section, the data are analyzed and discussed to achieve the aim of the study. The analysis begins with descriptive analysis for the variables that measure the levels of residents’ participation and satisfaction, followed by Bivariate correlation. T-test was used for differences between the two projects.

**Levels of Users’ Participation:** This section defines and investigates the levels of users’ participation in multi-storey residential buildings in the Gaza Strip. The mean scores of the total users’ participation in design and implementation works was 2.69. The mean scores of the users’ participation for Talalhawa project was 2.65 and for Alawdah project was 2.76. However, the differences between the two projects were not significant.

The levels of participation in the design stage were five: “no participation from the resident”, “I made modifications in wall’s distribution in my apartment”, “I chose the plan from alternatives given from the designer or I discussed my needs and gave feedback about the plan to the designer who took the decision”, “equal participation between the user and the designer” and the last one was “a creation of the plan from the user without restrictions from the designer.” The percentages of these levels were: 51.6%, 26.9%, 15.4%, 6.1 % and 0% respectively. The higher percentage was the residents who did not participate and these include householders who bought completely finished apartments. Actually, no one choose the last choice which was a complete creation of the plan from the resident. This is normal as the housing type is multi-storey buildings and this support [20] perspective. However, design is a complex process

involving difficult choices and resolving multiple issues at the same time such as function, orientation, area, dimensions, surroundings, user’s needs, regulations, budget and others. The concept of creation of the plan from the user is not easy and it becomes more difficult in multi-storey residential building.

The results of analysis showed that, the lower mean scores for residents’ participation for both projects were for items asking about levels of users’ participation in the design stage and the opportunity to choose the contractor before the finishing stage. In fact, 24% of the respondent shared in a housing project from its beginning. 31.2% of residents bought their apartments before they were completely finished, 34.1% bought their apartments after they were finished and 10.5% were renters. The higher mean scores of Talalhawa project were for items asking about following up the construction work and sharing in choosing the finishing material with mean scores of 3.10, 3.11 respectively. The higher mean scores in Alawdah project were for items asking about choosing the apartment orientation and choosing the floor level with mean scores of 3.66 and 3.69 respectively (Table 1). The first project is based on the principle of housing associations, so the level of participation in earlier design and implementation stage was expected but it is still low. This can be attributed to selling the apartments by many of the original owners.

**Levels of residents’ Satisfaction:** The mean score of users’ satisfaction about the quality of apartment design and construction works was 4.0. This was not in parallel with the findings of [15, 31]. The mean scores of the residents’ satisfaction for the Talalhawa and Alawdah projects were 3.8 and 4.4 respectively.

Table 1 level of residents’ participation in design and implementation

project name	Descriptive Statistics				
	Talhawa		Alawdah		Total
	Mean	SD	Mean	SD	Mean
level of participation in the design stage	1.83	1.002	1.64	.770	1.76
I had the opportunity to choose my neighbours	2.39	1.292	2.18	.884	2.24
I chose the apartment orientation	3.02	1.468	3.66	1.330	3.25
I chose the apartment area	2.78	1.316	2.94	1.302	2.84
I chose floor level	2.94	1.411	3.69	1.387	3.22
I had the opportunity to choose the contractor before the finishing stage	1.85	1.150	1.59	1.341	1.75
I had the opportunity to choose the contractor during the finishing stage	2.59	1.487	2.63	1.678	2.60
I followed up the construction work	3.10	1.565	2.90	1.729	3.03
I shared in choosing the finishing material	3.11	1.620	2.99	1.732	3.07

Table 2: level of residents' satisfaction about different variables

Items	Talhawa		Alawdah		Total
	Mean	S. D	Mean	S D	Mean
Apartment arrangement	3.94	.836	4.27	.865	4.06
Area of the apartment	3.82	.894	4.10	1.099	3.93
Privacy	3.58	1.02	4.43	.832	3.89
Orientation	3.91	.855	4.24	.896	4.03
Adequacy of daylight	3.83	.954	4.65	.603	4.13
Adequacy of natural ventilation	3.89	.913	4.73	.491	4.20
Finishing of the apartment	3.82	.994	3.90	1.302	3.85
I made modifications in the apartment arrangement	3.45	1.410	3.45	1.457	3.45
I made modifications in the apartment finishing	2.82	1.435	2.64	1.594	2.74
Quietness in the building	3.55	1.087	4.45	.888	3.88
Safety level in the building	3.85	.932	4.43	.856	4.06

The differences between the two projects were significant. In general, the mean of the level of participation was lower than the mean of the level of satisfaction. This can be attributed to the realization of the local architects to the users' needs and culture. This means that they achieved the level of regionalism defined by [11].

The lower level of satisfaction for both projects was for the item asking about applying any modifications in the apartment finishing with mean score of 2.74. The higher mean scores of the Talhawa project were for items asking about apartment arrangement and apartment orientation which were 3.94, 3.91 respectively. For the second project, the higher mean scores were for items asking about the adequacy of natural ventilation and the adequacy of daylight with mean scores of 4.73 and 4.65 respectively. These were higher than their corresponding in the Talhawa project which were 3.83, 3.89 respectively (Table 2). This is attributed to narrower setbacks between buildings in Talhawa project than Alawdah project. The wider the setbacks distance, the more the natural ventilation and daylight. In addition, each building in Talhawa project has three to four apartments per floor, while each one has one to three apartments per floor in the second project. It is easier for architects to design a building from three or fewer apartments per floor with natural lighting and ventilation and without using an inner courtyard, which gives a low level of natural lighting and ventilation, than a building with four apartments per floor. The situation in the Talhawa project is in parallel with a study conducted about Nablus in Palestine by Dawoud [36].

Lack of privacy was more problematic in the Talhawa project with mean score of satisfaction 3.58 while it was 4.43 in the second project. This is also a result of the differences in the setbacks between buildings. The

same problem was reported by [29, 37]. Residents in Yemen had overcome this problem by erecting high screens of corrugated plastic sheeting on top of the courtyard walls [29]. The same solution was used for some windows in the Talhawa project. The users' satisfaction about the area of the apartment in Alawdah project was 4.1 and it is higher than its corresponding in Talhawa project which was 3.82 (Table 2).

In general, the percentage of satisfaction about the quality of the apartments design and implementation was 80%. In a study conducted about multi-storey housing in Nablus in Palestine, 43% of the residents were satisfied [36]. Satisfaction was a result of thinking that the existence of this type of buildings gave residents the opportunity to be owners while the dissatisfaction resulted from problems such as lack of privacy, playing area for children, lack of quietness and lack of other choices for residents. Some users thought about the positive sides while others focused on the negative sides.

**Correlation Between the Level of Residents' Participation and Their Satisfaction:**

The correlation between users' participation in design and implementation and their satisfaction regarding the quality of the apartment design was significant and weak ( $r = 0.252$ ) at the 0.01 level. The higher the uses' participation was, the higher their satisfaction. This is in parallel with [28] results which evaluated residents' satisfaction with the temporary row houses shelter after an earthquake. This study dealt with a different environment of multi-storey housing.

Generally, the residents had a lower level of participation than satisfaction. The users had particularly the lowest level of participation in the design process. This increases the need to support the concept of users'

participation in design process as well as the implementation process from the housing authorities and designers. However, the level of satisfaction was higher in Alawdah housing project as they were more satisfied about the natural ventilation, natural daylight and privacy. There is a need to pay attention to proper setbacks in multi-storey buildings to get better natural lighting and ventilation as well as privacy. Additionally, the findings revealed a positive correlation between users' participation in design and implementation and their satisfaction. Therefore, users' participation in the design process with the designer is important to achieve higher level of satisfaction and to minimize the need for making modifications or changing the house.

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