Evaluation of User Satisfaction in Public Residential Housing - A Case Study in the Outskirts of Naples, Italy

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Abstract. Nowadays the quality of homes and social life are two closely interacting categories which require a more careful interpretation of the users’ needs. Their opinions, expectations and “desires” have to be incorporated into both the design and evaluation processes. With specific reference to the experiences of public housing, the practice of “user satisfaction” should be increasingly incorporated during the ex-post (or monitoring) evaluation in order to verify the quality and validity of the service offered, thus activating a real co-participation of the user in the creation and improvement of the housing service. It is well-known that the principle of customer satisfaction derives from the field of marketing as a tool to evaluate how and how much the products/services offered meet the needs of the consumers. In the field of the construction industry, customer satisfaction has been incorporated into the “Post-Occupation Evaluation”, an evaluation tool of the performance of the building “in use” through the combination of objective and subjective variables expressed by the occupiers. Widely used since the 1970s in Anglo-Saxon countries, Italy is still struggling to find a systematic implementation. In this perspective, the article presents an application of the customer satisfaction method for the identification of some interventions aimed at improving the quality of a complex of public residential housing localized in Ponticelli, the second most populated district in the outskirts of the metropolitan city of Naples, in the Campania Region (Italy). Following a synthetic introduction of the theme and the explanation of the object of evaluation, the article discusses the methodology and the results, focalizing on some intervention hypotheses verified in terms of economic sustainability1.

1. Introduction

“Demand”, in economics, is understood as the quantity of goods or services that consumers are able and willing to buy at a given price at a particular time; the concept of demand exceeds the common idea of desire or need: if the desire is not made effective by the capabilities and availabilities to pay a corresponding price, the demand, in an economic sense, does not exists.

However, given this common meaning, «the desire is a substantial element of demand, in the sense that the demand does not reveal itself if not in presence of the desire…. As each desire is explainable as the awareness and, usually, the successive expression of a need, this is why a preventive analysis of the needs seems to be necessary» [1].

1 The paragraphs 1 and 2 have been written by Forte F.; the paragraphs 3 and 4 have been written by Russo Y.
Nowadays, the analysis and interpretation of the new needs expressed by the several “end users” of public housing (or Social Housing) is complex, mainly because the values system of each users category is more complex than in the past (low-income nuclear families, including single-parent or single-income families, low-income young couples, elderly in disadvantaged social or economic conditions, students living away from home, persons subjected to eviction enforcement proceedings, immigrants, etc.). At the same time, the quality of homes and social life have become closely interacting categories which require, from public housing programs, a more careful interpretation of the users’ needs. Their opinions, expectations and “desires” must be incorporated into both architectural design and evaluation processes. This because the end users of public housing are now on average more “informed”, more attentive to innovation, more aware of instances of environmental sustainability and, in general, more attentive to quality. They are being given greater “personalization” of their living space in an attempt to represent and transmit the signs of identity.

The design of the structure, not only physical and functional, but also symbolic, where different types of users will reside, together with the budget constraints, is a complex operation, of great responsibility, which obliges the designer to interact with the several specialized knowledge together with elaborate all the possible alternative hypothesis, to be analyzed and submitted to a continuous and systematic evaluation process, in order to achieve the set objectives, [2].

In this perspective, in order to understand and evaluate the “quality” of a building or a project and take into account the different stakeholders (customers, investors, users, designers, entrepreneurs, etc.), there are currently numerous multi-criteria evaluation and decision-making support tools that operate in a multidimensional approach, [3]. They are mainly models of considerable formal elegance, which not always match the complexity as above. Some of these methods have been patented and distributed widely, academically and professionally, setting special attention to the quality of the building rather than to the “perception” of end users.

However, it is especially the instance of the energetic and environmental sustainability, incorporated in the latest procedures and regulations, which has led to the development of evaluation tools that use many criteria and indicators for the pursuit of quality in the urban interventions of residential housing, such as in the Protocol Ithaca, also adopted in the context of several Italian regional social housing programmes.

This instrument consists of a series of performance contents aimed at defining the quality of the overall architectural design and urban planning proposals in order to assess the impact of each of them, in relation to four specific categories: environmental, settlement, functional and fruition quality. With reference to the more purely cultural, aesthetic and symbolic aspects, i.e. the “perceptual” quality, this instrument remains, essentially, neutral, [4].

Since the way in which the users transmit their own way of being and “self-representation”, through the consumption choices of the living space and its environment, has profoundly changed, only by making the analysis in the context of the “housing market” more detailed with the contribution of other specialized knowledge (sociology, anthropology, psychographics, etc..) and the support of appropriate evaluation tools, will it be possible to interpret and implement, in the architectural design of public housing, the housing needs of a large and diverse segment of users.

2. User satisfaction in public housing
Interpreting public housing essentially as a “service of general economic interest” (as recognized at European Union level) from an evaluation point of view, more appropriate assessment tools are required to deepen the relationship between the house and the user, also enhancing the implementation of social marketing tools.

In this perspective should be re-considered “segmentation” techniques, able in capturing the plurality of the demand functions expressed by different groups of users, through approaches that effectively meet each target, identified not only on the basis of demographic and socio-economic variables, traditionally used in the procedures of housing allocation made by governments and local
municipalities, but also, and increasingly, based on the “psychographic” variables (values, attitudes, interests, lifestyles, cultural orientations, etc.). These variables have been used in marketing for a long time, in which the choices of use/consumption are also determined by non-functional factors, such as the need to adapt to reference groups or cultural models, the need to belong, the search for the intangible values, etc. (the so-called AIO - Activities, Interests, and Opinions - variables).

Simultaneously, and with reference to realized interventions of public and/or social housing, the implementation of “user satisfaction” should be increasingly incorporated in the ex-post evaluations process (or monitoring) in order to verify the quality and validity of the service offered, thus activating a real co-participation of the users in the improvement of the housing service.

Existing literature suggest that housing satisfaction is a function of a whole series of factors related to the occupant’s dwelling, services within the dwelling area, relationship with neighbours and the location of the dwelling unit [5]; it is a “multidimensional” concept. As it is well-known, the principle of Customer Satisfaction (CS) comes from the field of marketing as a tool to evaluate how and how much the products/services offered meet the needs of consumers [6]. It expresses the degree of overlap between the perceived and expected quality; any deviations - the gap - express levels of non-quality.

In this way operates the model Servqual, assessing the gaps for quantify the differences among customers’ expectations and perceptions of the service offered, [7]. Generally, there are different types of customer satisfaction measurement and interpretation models, direct and indirect, (focus groups, questionnaires, etc.).

In the field of housing, “user satisfaction” is used for measuring the difference between users desired needs and the actual housing situation. In accordance with Preiser [8] “building performance” historically has been evaluated in an informal manner and the lessons learned have been applied in the next building.

In the construction industry, customer satisfaction has been incorporated into the “Post-Occupation Evaluation” (POE), an analysis and evaluation tool of the performance of the building “in use” through the combination of objective and subjective variables expressed by the occupiers. From the early 1970s the tool of POE became more relevant to public housing and several studies have been conducted in this field. Successively, the Building Performance Evaluation framework was developed in order to broaden the basis for POE feedback to include a wide range of stakeholders and decision makers who influence buildings [8].

Widely used since the 1970s in Anglo-Saxon countries, Italy is still struggling to find a systematic application, although since 2004 the Ministry of Public Administration has introduced customer satisfaction as a tool for quality evaluation in public services [9].

In Italy, as in other countries, the public housing services consists in offering a housing to subjects with low income and this service includes also maintenance and improvement interventions. In this context, customer satisfaction represents an effective tool to facilitate the identification of “implicit, explicit and latent” needs of housing users (as in Figure 1), starting from the comparison between the expected quality and that perceived by the user. Feedback becomes a valuable element when assessing the validity and quality of the service and/or policy adopted in order to redefine and improve subsequent intervention strategies.

In this perspective has been conceived the case study presented in the next paragraphs. It concerns the application of the customer satisfaction method for the identification of some interventions aimed at improving the quality of a complex of public residential housing localized in Ponticelli, the second most populated district in the outskirts of the metropolitan city of Naples, in the Campania Region

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2 The case study is part of the degree thesis in Architecture of Yvonne Russo, titled: “Valutazione economica e qualitativa del progetto. Dall’ascolto dell’utenza ai costi di intervento”, Department of Architecture and Industrial Design, University of Campania “Luigi Vanvitelli”, a. y. 2015-2016.
(Italy). Following the explanation of the object of evaluation, the article discusses the methodology and results, focalizing on some intervention hypotheses verified in terms of economic sustainability.

![User satisfaction model](image)

**Figure 1.** User satisfaction model

3. **The object of the evaluation**

The object of analysis and evaluation is a public housing complex, located in Ponticelli, a suburban and very problematic neighbourhood of Naples. The territory, where the building is located, is primarily intended for residential use and since 1962 has been part of Zonal Plans for Economic Public Housing (Law 167/1962).

![The Ponticelli neighbourhood in the city of Naples and the public housing complex](image)

**Figure 2.** The Ponticelli neighbourhood in the city of Naples and the public housing complex

The complex analyzed was built in the early 1990s, according to the provisions of the “PSER” (Extraordinary Program of Residential Construction in Naples of 1980-1985), to deal with the housing emergency as a result of the 1980 earthquake, with the dwellings being assigned in 1997. To date, the owner of the entire complex as well as the land is the Naples City Council.

The housing development consists of four buildings. Three of the residential buildings, all the same height, are arranged according to straight perpendicular axes, visually creating the effect of an open courtyard on one side. The fourth building, which is taller, is in an orthogonal direction to the larger courtyard. Every building consists of four modules, which are easily identifiable due to a single stair-
lift shaft. There are two dwellings per floor, which is repeated systematically. Finally, the complex has 160 dwellings, for approximately 800 people.

Figure 3. The plants of the public housing complex

Since 2015, following an idea of the association Artetêca and thanks to the “Inward” project, there is an observatory on urban creativity, with the residential park having become an urban canvas, known as the famous “Park of the murals”.
The social importance of the huge paintings that illuminate the facades, along with the strong identity that the artists have returned to the complex, has attracted the curiosity of passers-by and journalists. In addition, the strategic location, which is less than 1 km from the new hospital complex, Ospedale del Mare, could help to make the residential complex more attractive, thus urging an improvement and upgrading of the entire urban context, which is currently degraded like other peripheral Neapolitan contexts.

Figure 4: the new murals in the public housing complex

3.1 Goals, methodology and results

The goals have the common theme of “improving the quality of living” through the use of the Customer Satisfaction method through which the evaluation assumes a participatory perspective. In other words, the methodology uses the end user’s point of view, intended as the final consumer of a service, who is called upon to express his opinion on the expected quality, and therefore the expectations, as well as the perceived quality, intended as the interpretation of the lived experience so as to establish a level of overall satisfaction and identify any critical points that cause a state of dissatisfaction of the expressed or latent needs.
For the case under study, the customer satisfaction survey was structured in terms of a probabilistic representative sample of 80 people, about 10% of the total number of users, with questionnaires being administered through direct interviews. The average percentage of “expected quality” and “perceived quality” were defined separately for each survey specific aspect, and from the difference of the two values, the average gap was obtained, the deviation. Clearly, the smaller the difference between the two percentages, the greater the level of satisfaction is.

To determine the importance of the specific issues, it was appropriate to identify three different thematic areas, which set out the factors that predominantly influence living quality.

To each thematic area has been assigned a specific weight, established according to the importance assigned by the user and in relation to a scale of priorities. Multiplying the average gap obtained for the respective specific weights, the Customer Overall Satisfaction Index for each area has been obtained (as in the following table1).

**Table 1**: evaluation process of CSI for each thematic area

| Thematic Area 1: Quality of the outdoor community spaces | Weight to Thematic area (%) | Importance of each thematic area (%) | Expected quality (%) | Perceived quality (%) | Average gap (%) | Average weighted gap (%) | CSI (%) |
|--------------------------------------------------------|-----------------------------|-------------------------------------|----------------------|----------------------|-----------------|--------------------------|--------|
| Protection from theft and intrusion                    | 12                          | 40%                                 | 90                   | 89                   | 1.08            | 58.84                    | 6      |
| Equipped green area                                    | 18                          |                                     | 95                   | 92                   | 3.4             | 59.64                    | 4      |
| Access to the building                                 | 11                          |                                     | 83                   | 71                   | 12              | 88.88                    | 8      |
| Public transport efficiency                            | 30                          |                                     | 87                   | 8                    | 99              | 11                      |       |
| Pedestrians safety                                     | 17                          |                                     | 92                   | 86                   | 6               | 34.34                    | 11     |
| Privacy systems                                        | 12                          |                                     | 81                   | 63                   | 18              | 82.16                    | 12     |
| Total/Average                                          | 100                         |                                     | 88                   | 48.5                 | 41.73           | 52.56                    | 6      |

| Thematic Area 2: Quality of the internal common spaces | Weight to Thematic area (%) | Importance of each thematic area (%) | Expected quality (%) | Perceived quality (%) | Average gap (%) | Average weighted gap (%) | CSI (%) |
|-------------------------------------------------------|-----------------------------|-------------------------------------|----------------------|----------------------|-----------------|--------------------------|--------|
| Equipment and condition of lobby                      | 15                          |                                     | 87                   | 23                   | 64              | 9.68                     | 36     |
| Usability of access for disabled users                | 25                          |                                     | 95                   | 6                    | 92              | 23                       | 8      |
| Equipment and usability of flat roof                  | 11                          |                                     | 72                   | 36                   | 16              | 2.08                     | 84     |
| Accessibility to the green areas for disabled users   | 22                          |                                     | 96                   | 71                   | 25              | 5.55                     | 75     |
| Identification and number of parking spaces           | 7                           |                                     | 68                   | 57                   | 11              | 7.7                      | 89     |
| Artifice lighting                                     | 18                          |                                     | 92                   | 53                   | 39              | 10.62                    | 41     |
| Total/Average                                          | 100                         |                                     | 85.5                 | 44.5                 | 44.73           | 35.9                     | 58.84  |

| Thematic Area 3: Quality of dwellings                 | Weight to Thematic area (%) | Importance of each thematic area (%) | Expected quality (%) | Perceived quality (%) | Average gap (%) | Average weighted gap (%) | CSI (%) |
|-------------------------------------------------------|-----------------------------|-------------------------------------|----------------------|----------------------|-----------------|--------------------------|--------|
| Soundproofing                                          | 23                          |                                     | 77                   | 51                   | 26              | 6.95                     | 74     |
| Living areas                                           | 20                          |                                     | 92                   | 84                   | 8               | 1.62                     | 92     |
| Sleeping areas                                         | 15                          |                                     | 85                   | 76                   | 9               | 1.35                     | 91     |
| Services areas                                         | 13                          |                                     | 74                   | 61                   | 13              | 1.69                     | 87     |
| Private outdoor spaces                                 | 9                           |                                     | 42                   | 36                   | 6               | 0.84                     | 94     |
| Community areas inside the building                    | 20                          |                                     | 91                   | 67                   | 24              | 4.8                      | 76     |
| Total/Average                                          | 100                         |                                     | 76.84                | 62.5                 | 14.34           | 15.96                    | 85.67  |

In the first thematic area, aimed at assessing the quality of the external collective spaces of the residential module, there was a substantial gap (41.17%) between the expectations and perceptions of the residents, with a CSI (Customer Satisfaction Index) equal to 58.84%. The satisfaction level is lowered mainly by the poor equipment of the green areas of the complex and the low level of safety offered to pedestrians in the distribution spaces, with there being a very large gap (66%) of the factor related to “pedestrian safety”, due to the fact that since there are no safety systems, cars in the area of the complex and near the entrance do not respect the speed limits, putting the user’s safety at risk.

For the second thematic area, relating to the assessment of the quality of the common areas of the residential module, the summary of the results shows a large gap (equal to 44.50%) with a partial ICS equal to 55.5%. The general discontent occurs primarily as a function of the complete inadequacy of the general lay-out of the complex, which has a multitude of architectural barriers.
The users complain about the lack of maintenance, even ordinary, leading to dissatisfaction with the quality of the overall aesthetics of the complex. Most of the external and internal surfaces of the buildings have never been finished and there is still visible reinforced concrete. Another problem is related to the lack of sufficient artificial night lighting, due to obsolete and malfunctioning street lights.

The third thematic area relates to the assessment of the quality of the housing of the residential module, with the summary of the results showing a very low gap (equal to 14.34%), with a CSI equal to 85.67%, an indication of the users’ high satisfaction, which is most adversely affected by the poor equipment of the public spaces. The synthetic Customer Satisfaction index, obtained from the average of the previously identified sub-indices, is higher than 66%, and despite being relatively high, there are a series of problems.

The graphs that follow, highlight the degree of user satisfaction, expressed by the distance between the vertices of the radar of the “expected quality” (identified by the darker polygon) and the radar of the “perceived quality” (the lighter polygon). The distance between the vertices of two polygons establishes the level of satisfaction (Figure 5).

Upon analysis of the survey, it was possible to identify the problems encountered by the users and the factors that cause dissatisfaction. On the basis of the data obtained, a number of maintenance and enhancing interventions have been proposed, aimed at satisfying the expressed or latent needs of the users and summarized in five categories:

1. Restoring the optimal conditions of the road network and the safety of pedestrians
2. Overcoming any architectural barriers
3. Redevelopment of the general aesthetics of the residential module
4. Restoration and equipment of private green areas
5. Improving the artificial lighting
The evaluation of the economic feasibility of the intervention was determined on the basis of the maximum allowable cost limit, set by the Campania Region and the summary estimate costs were assessed through the bill of quantities referring to the prices set by the regional tariff. The total cost of the intervention, amounts to € 670,408.75 covering an overall surface area of 35.844 square metres, with a cost of € 18.70 per square metre. This value demonstrates the economic sustainability of the interventions, aimed at improving the living conditions in degraded realities such as those of the urban outskirts of Naples.

4. Conclusions

Regardless of the design and economic feasibility of any project or redevelopment intervention, as in this case, it is important to consider that in building processes within the public sector, there are two key players: the users and the public administration. In the light of this case study, there is a need to initiate a re-education process of the user so as to participate in the improvement of living quality processes. This along with a policy that promotes contact with citizens, while also make the authorities aware that using a Customer Satisfaction survey would help monitor the satisfaction level of the citizens and obtain advantages not only for users, but also for identify the latent needs that could then be used to continuously improve the quality of services offered. The customer satisfaction method is the missing link, which could constitute the meeting point between the two parties.

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