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# Residents' Satisfaction on Re-urbanization after Earthquake Disaster in Düzce, Turkey

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**Abstract:** The aim of this study was to research the effects of this diversity on urban developments in terms of people's satisfaction and highlight the developments in the future. Since Düzce was the most seriously damaged city after the earthquakes, it has been a good example for the study. The questionnaires in the research were semi-standard and they were administered to randomly chosen 507 people. The data found were evaluated by statistical analysis methods and some suggestions were given by making comparisons. Varimax rotation factor analysis was used in the explanation of the factors that affect the selection and satisfaction of residential areas and correlation analysis was used in stating the relationship of those with participants' characteristics. In conclusion, in the changing residence satisfaction according to the participants' characteristics, the local administration has to improve mainly the effective factors in order to increase the satisfaction of the residents living in the dwellings in the city centre. In order to increase the satisfaction of those far from the city center, the factors that are explained by the distance from the administrative and vital units have to be improved.

**Key words:** Turkey, Düzce, residence satisfaction, housing areas, problems

## INTRODUCTION

In our country, the urbanization process gains acceleration mostly in the direction of industrial developments. This situation makes the problems in the cities increase and the solutions for the problems are away from the sustainable urbanization models in the 21st century and they can not develop cities where people's comfort is more important.

In the urban developments consistent with the new urbanization movement stated as an important movement of this century, what is aimed is forming an urban life that people of all age reach contemporary life. Modern cities can be formed with a balanced mixture of the principles of walk ability, connectivity, mixed use and diversity, mixed housing, quality architecture and urban design, traditional neighborhood structure, increased density, smart transportation, sustainability and quality of life. In this direction, it is stated that new urbanization projects have been produced and administered in more than 500 and especially more than half of the old city centers in the USA. The studies carried out by a plan that begin from a single house and go on to district development step by step provides several benefits for residents, businesses, developers and municipalities[1].

In this context, in our country under the risk of natural disasters especially such as earthquakes, a new formation period comes out for the urbanization after disasters. It is important that this period be developed in conformity with the conditions of the 21st century. Especially the studies to be done on taking the quality of life to universal level will lead a decrease in the differences between the cities in our country and the other developed countries.

One of the most important elements of life quality is to indicate the satisfaction between people and residences. With this purpose, there have been several studies since 1960s[2-4]. While most of these studies have focused on the existent urban tissue, no studies have been found on the cities undergoing a renewal period after natural disasters such as earthquakes.

In the first studies done on resident's satisfaction, the concept of happiness was the most important thing[2]. In the studies done later, the concept of satisfaction took its place[3]. The reason for this is that satisfaction includes the judgments from experiences in the longer periods whereas happiness is a mood with a shorter period.

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In determining the relationships between people and residential environment, studies in the scales of home, neighborhood and city were done[4,5]. In the studies by Marans and Couper[6], who examined the scales of home, neighborhood and city together, it was stated that the most important cause of distinction in terms of residential environment among these scales resulted from the personality traits.

Mitchell *et al.*[7] mentioned about the difficulties in getting an entirety on the factors that determine the quality of life. Gonzales *et al.*[8] stated that the factors determining the environmental quality were affected by the participantive judgments of people. They stated that personal and social characteristics of people had an effect on the formation of these judgments.

Despite all these difficulties, they tried to build conceptual models to explain residential environment. Campbell *et al.*[3] saw life satisfaction as the sum of different environmental domains satisfaction. He determined these domains as health, marriage, housing, family, friendship, income situation, leisure time, society and place of resident. Marans and Spreckelmeyer[9] tried to explain resident environment with a conceptual model that indicated the relationship between objective conditions and experiences. Weideman and Anderson[10] stated by using this model that social and physical components in resident environment were effective on resident satisfaction. According to Smith *et al.*[11], the domains effecting urban environment quality were livability, character, connectivity, mobility, personal freedom and diversity.

In this research, the area of responsible for Municipality of Düzce, whose urbanization dynamics changed their direction with a regional earthquake arising from North Anatolia Fault Line in 1999 and whose process of becoming a province got quicker, was chosen as the study area. The focus was residential satisfaction of people using the houses (dwellings) which formed the urban tissue, were newly built and had different characteristics before and especially after the earthquake. With this purpose, the aim was to explain the domains forming residential satisfaction of people and criteria effective on the change of these domains. It has been provided that the results have determined the effects of applications done or not done on resident's satisfaction in the cities undergoing the period of new urbanization after the earthquake, in the direction of forming modern urban environment and in connection with the present facilities.

## MATERIALS AND METHODS

The research field includes the residential areas within the municipal borders of the province Düzce, located between Istanbul and Ankara metropolitan cities in the Northwest of Turkey and surrounded by the province Bolu on the east and south, the province Sakarya on the west and the Black sea on the North. This researched was complained in 2004.

The city of Düzce is built on a plain with first class alluvial soil, which is surrounded by mountains on the north and south. It is located in the height of approximately 110-120 m near the sea, with its agricultural and forest areas, rich flora and tributaries. The municipal borders are situated between 40° 40'-40° 47' north latitudes and 31° 21' – 31° 26' east longitudes. It is on the first-degree earthquake belt. Yearly average temperature is 13°C, yearly average rainfall is 839. 4 mm and average relative humidity is 76%. The most effective wind direction is south-southwest in winters and north-northeast in summers[12].

Urbanization in Düzce began after the year 1935. The proportions of city population to total population are as follows according to the years (%): 1935 8. 3, 1945 9. 2, 1955 11. 8, 1975 20. 2, 1985 22. 6, 1990 39. 6 and 2000 35. 4 (Mansuroglu, 1997 and changed from DIE 2000). Düzce includes different ethnic groups (Turkish, Circassians, Abazas, Georgians, Laz people, Bosnians, Albanians, Kurdish, Tatars, Arabs and Gypsies etc.).

Its being a passage to important industrial cities (Istanbul, Sakarya, Kocaeli, Kdz. Ereğli, Bolu and Ankara, etc.) makes the movement of the population increase, but it is observed that permanent population increase is not much. Generally, its economy includes industry, trade and service sectors such as forest products and weapon as well as agriculture and forestry. Its history, which has been known since 15th century and summarized in four periods (Bitinias, Romans, Ottomans and Republic), has gained a new dimension in the end of 20th century[12].

In Düzce, which became a province after 12 November 1999 earthquake while it was the town of Bolu, the municipality was established in 1884 and acceleration in urbanization was noticed with the population increase due to the industrial developments after the year 1950. However, casualties or damages after the earthquake caused the city population to decrease. Its population began to increase when it became a province. The migration, which was from villages to towns before, was from the houses damaged seriously in the earthquake in the city center to the rural areas or the other cities until the new residential areas were built.

The new borders (municipal borders and rural areas around it) which were determined after several changes include 20 neighborhoods and 29 villages. In addition, six neighborhoods in the new residential area and three villages in the surrounding will be included. In the case of their being administrated together, the villages among these will be included and the borders will extend.

The first construction plan of Düzce was made in 1985. While applications and revisions were being continued, the borders were renewed after the 1999 earthquake and in 2000; the construction plan, which was remade in 2000, is constantly undergoing revision. The works on environment arrangement plan, which was started when it was a town of the province Bolu, are being continued. In addition, in 2000, Province of Düzce Development Plan and Strategy was prepared by Abant İzzet Baysal University. When the results of both studies are evaluated, it is expected that there will be a more arranged urbanization.

Although after the earthquake some buildings in Düzce city center were tried to be regained by decreasing the floors, the ones who built their own houses themselves preferred a single- or two-three-storey houses with gardens. In the residential area of approximately 7800 houses (also known as permanent houses) which were built in an inclined area among the villages in the northeast part of the city, two-four-storey buildings were built with central heating according to the structure of the land (geologic etudes, soil, slope, etc.). This area was formed in conformity with the regular urban developments with housing environment arrangements, parks, playing grounds for children, sports facilities, wide roads, shopping centers, schools, health offices, security centers, modern system infra structure, etc. However, here came out a mixed system instead of the neighborhoods that were formed according to the diversity in social and economical conditions before. In the future, it is observed that this place will turn to its former situation in the city center, too.

The temporary residential area (prefabricated housing areas) after the earthquake has turned to the permanent housing areas in recent years. During this transition, people moving to the permanent houses either in the city center or in the new residential area have had different experiences especially on resident's satisfaction. In the research done to investigate these experiences and to give directions to new urban developments and the ones to be done in the future, the questions of the questionnaire were prepared focusing on the domains concerning with the three main parts.

**Participant characteristics:** The aim was to determine the socio-demographic characteristics of participants. For this, they were asked questions about gender, age, education, work, how long they have lived in the city, where they come from, the distance from the city center, which part of the city they live in, how many people there are in the family, income, how many floors there are on the apartment building they live in, the area of the house they live in, type of the house and the possession were asked.

The factors effecting the selection of the place of housing: with this purpose, 14 items were determined using the studies of Findley *et al.*[13] and Seo[14]. A three-point Likert-type scale was used to determine the degrees of effect. According to this; 1 'very effective', 2 'effective', 3 'ineffective'.

The domains effecting the residential satisfaction: in this section in order to determine the residential satisfaction of the people, 22 items were determined by using the studies of Turkoglu[15] and Bonaiuto *et al.*[16]. In order to show their degrees of effect, a three-point Likert type scale was used. According to this, 1 'very satisfied', 2 'satisfied', 3 'unsatisfied'.

In order to explain the domains effecting selection of the place of housing and residential satisfaction in the evaluation of the data, factor analysis was carried out with varimax rotation method. Correlation analysis indicated the relationships of participative characteristics of the determined factors.

## RESULTS

The city Düzce was observed in four parts numbered by D-100 motorway that divides the city in the direction of east and west as well as the center and Akçakoca road in the direction of north - south that cuts this motorway. The questionnaires (507) carried out by surveyors and some student surveyors with randomly chosen participant's in business, education or shopping environments were evaluated statistically on the computer.

**Analysis of participants' characteristics:** Of the participants, 57% were male, 43% female. Four hundred and seventy five were in the age group of 18-30, 42% 31-50 and 11% 50+. Fifteen percent were graduates of primary school, 11% secondary school, 34% high school, 17% college, 23% university. Sixty one percent were working, 27% were not working and 12% were students. Twenty percent lived in Düzce less than one year, 55% 1-5 years, 6% 6-10 years, 19% more than 10 years. Eighty two percent come to Düzce from cities, 5% from towns and 13% from villages. The participants marked the place of the housing on the map. Twelve percent live in northwest of Turkey, 65% northeast, 12% southeast, 11% southwest. Two hundred and forty five percent of the participants live in the city center, 12% 1-2 km from the city center, 6% 3-5 km from the city center, 9% 5+ km from the city center, 49% in the permanent housings in the new residential area built after the earthquake. The monthly income of 2% was less than 200 million Turkish Liras, 23% 200-499 million TL, 46% 500-999 million TL,

24% 1-1.9 billion TL, 3% 2-2.9 billion TL, 2% 3+ billion TL. Fourteen percent live in a single storey house, 19% two-storey house, 27% three-storey house, 28% four-storey house, 12% five-storey houses. The area of the houses they live in ; 60% 60-100 $m^2$, 30% 101-150 $m^2$, 10% 151 + $m^2$. Thirteen percent live in prefabricated houses, 7% in village houses, 70% in apartment buildings, 10% in villas. Fifty seven percent are the owners of the house, 40% live on rent, 3% lodging houses (Table 1).

**Factor analysis of the domains effecting the selection of housing:** In the study carried out in Düzce, 14 characteristics were evaluated as domains effecting the selection of housing. The most effective domains are; its being the single suitable place after the earthquake, being the possession owner, the natural beauty of the environment and its being quiet and calm, respectively. The least effective ones are; its being a good investment means, its being close to the city, its safety and its suitability for social and sports activities. As seen in Table 2, four factors were found that explain the selection of housing with a variance of 63%. I. factor is explained with 26% variance. I. factor includes seven domains. Common characteristics of these domains are that they determine the social and environmental characteristics of the area. II. factor is explained with 16% variance. II. factor includes two domains. Common characteristics of these domains are that they are all relevant with transportation. III. factor is explained with 12% variance. III. factor includes four domains. Common characteristics of these domains are that they are related to economical and physical structure. IV. factor, having a variance of 9%, is explained by the domain possession. Of these factors determined, the most effective ones in selection of housing are; possession, social and environmental characteristics, characteristics of economical and physical structure and transportation, respectively.

**The relationship between the domains effecting the selection of housing and characteristics of the participants:** According this study, Table 3 shows the effects of characteristics of participants on domains determining the selection of housing. According to this:

- Men see the domain about transportation in selecting the place of housing more important than women.
- The elderly see being the owner in selecting housing more important than the young people. Educated people state that the social and environmental characteristics of the area are important in the selection of housing.

Table 1: Participants' characteristics

| Characteristics | Domains | Code | Ratio (%) |
|---|---|---|---|
| Gender | Male | 1 | 57 |
| | Female | 2 | 43 |
| Age | 18-30 | 1 | 47 |
| | 31-50 | 2 | 42 |
| | 50+ | 3 | 11 |
| Education | Primary school | 1 | 15 |
| | Secondary school | 2 | 11 |
| | High school | 3 | 34 |
| | University (2 years) | 4 | 17 |
| | University | 5 | 23 |
| Work | The ones who work | 1 | 61 |
| | Student | 2 | 12 |
| | The ones who doesn't work | 3 | 27 |
| How long they lived in Düzce | Less than 1 year | 1 | 20 |
| | 1-5 years | 2 | 55 |
| | 6-10 years | 3 | 6 |
| | 10+ years | 4 | 19 |
| Where they come from | City Kent | 1 | 82 |
| | Town Kasaba | 2 | 5 |
| | Village Köy | 3 | 13 |
| The distance from the city center | In the city center | 1 | 24 |
| | 1-2 km | 2 | 12 |
| | 3-5km | 3 | 6 |
| | 5+ km | 4 | 9 |
| | New housings | 5 | 49 |
| District | Northwest | 1 | 12 |
| | Northeast Kuzey doğu | 2 | 65 |
| | Southwest Güney bati | 3 | 11 |
| | Southeast Güney doğu | 4 | 12 |
| Income (TL) | Less than 200 million | 1 | 2 |
| | 200-499 million | 2 | 23 |
| | 500-999 million | 3 | 46 |
| | 1-1.9 billion | 4 | 24 |
| | 2-2.9 billion | 5 | 3 |
| | 3+ billion | 6 | 2 |
| How many floors the housings have | 1 | 1 | 14 |
| | 2 | 2 | 19 |
| | 3 | 3 | 27 |
| | 4 | 4 | 28 |
| | 5 | 5 | 12 |
| The area of the housing | 60-100 $m^2$ | 1 | 60 |
| | 101-150 $m^2$ | 2 | 30 |
| | 151+ $m^2$ | 3 | 10 |
| Type of the housing | Prefabricated Prefabrike | 1 | 13 |
| | Village House Köy evi | 2 | 7 |
| | Apartment building Apartman | 3 | 70 |
| | Villa | 4 | 10 |
| Possession | Private | 1 | 57 |
| | Rent | 2 | 40 |
| | Lodging Houses | 3 | 3 |

- It is observed that for educated people it is not important to be the owner in the selection of housing.
- For the ones who work, social and environmental characteristics of the area are important in the selection of housing whereas economical and physical structure is not.
- As the number of the years the participants live in Düzce increases, transportation and ownership are important in the selection of housing.

Table 2: Domains effecting the selection of housing

| Domains | Mean [a] | Factor I | Factor II | Factor III | Factor IV |
|---|---|---|---|---|---|
| Suitability for sports and social activities | 2. 30 | 0. 60 | | | |
| Natural beauty of the environment; | 1. 90 | 0. 81 | | | |
| Its being quiet and calm | 1. 90 | 0. 79 | | | |
| Suitability for child's development | 2. 10 | 0. 79 | | | |
| Relationships with neighbors | 2. 10 | 0. 64 | | | |
| The size of the housing | 2. 00 | 0. 55 | | | |
| Safety against events such as theft etc. , | 2. 30 | 0. 51 | | | |
| Its being close to the city | 2. 30 | | 0. 88 | | |
| Transportation facilities | 2. 20 | | 0. 89 | | |
| Its being the single place after the earthquake | 1. 70 | | | 0. 62 | |
| Its economical suitability | 2. 00 | | | 0. 72 | |
| No infrastructure problems | 2. 10 | | | 0. 51 | |
| Its being a good means of investment | 2. 40 | | | 0. 55 | |
| Being a possession owner | 1. 90 | | | | 0. 92 |
| Mean | | 2. 10 | 2. 30 | 2. 10 | 1. 90 |
| Variance | | 26 | 16 | 12 | 9 |
| Alfa | | 0. 84 | 0. 87 | 0. 55 | |

[a]1: Very effective 2: Effective 3: Not effective

F I: social and environmental characteristics; F II: transportation; F III: economical and physical structure; F IV: possession

- The ones who come to the area from the city do not see transport and ownership effective factors in the selection of housing.
- For the ones who prefer the new residential areas, social and environmental characteristics and economical and physical characteristics of the area are important whereas transport and the ownership are not.
- The people who live in the north part of Düzce state that those social and environmental characteristics, economical and physical structure of the area and being the owner are not effective domains in the selection of housing when compared to the ones living in the southern part.
- It is stated for the participants whose incomes are low that transportation and physical and economical situation of the area are effective.
- As the number of the floors where the participants live on decreases, characteristics of transport and the ownership are effective in the selection of housing.
- As the size of the houses in which the participants live increases, it is observed that transportation and physical and economical structure are not effective whereas the ownership is effective.
- For the ones who live in villa-type houses, transport in the selection of housing is not effective whereas the ownership is effective.

**Domains effecting residential satisfaction:** In order to determine the satisfaction resulting from the place and characteristics of housing, 22 domains were determined. The reasons that the people living in Düzce are satisfied with the place and characteristics of housing are; use of housing, number of sports areas nearby, amount of green areas in the surrounding and its being in a quiet and calm place, respectively. The domains increasing their non-satisfaction are; maintenance facilities offered by the municipality, the distance from shopping centers, banks, post office and the municipality, etc. , respectively. According to the results found, people living in Düzce are satisfied with their houses and the environment. As seen in Table 4 and 5 factors have been found that explain the satisfaction of the participants with their houses and the surrounding with a variance of 60%. I. factor is explained with 16% variance. I. factor includes six satisfaction domains. Common characteristics of these domains are that the place of housing determines the satisfaction resulting from the distance from administrative and vital units. II. factor is explained with 14% variance. II. factor includes six satisfaction domains. Common characteristics of these domains are that the place of housing determines the satisfaction resulting from social and natural characteristics. III. factor is explained with 12% variance. III. factor includes four satisfaction criteria. Common characteristics of these criteria are that the place of housing determines the satisfaction resulting from characteristics of physical equipments. IV. factor is explained with 10% variance.

Table 3: The relationships between the domains effective in the selection of housing and characteristics of the participants

| Domains | Factor I | Factor II | Factor III | Factor IV |
|---|---|---|---|---|
| Gender | 0.04 | 0.13** | 0.04 | -0.01 |
| Age | 0.01 | -0.06 | -0.01 | -0.18*** |
| Education | 0.14** | 0.05 | 0.06 | 0.32*** |
| Work | -0.09 | 0.10* | -0.13* | -0.07 |
| The number of the years they live in | -0.07 | -0.28*** | -0.02 | -0.34*** |
| Where they come from | -0.03 | -0.12* | 0.01 | -0.11* |
| The distance from the city | -0.15** | 0.23*** | -0.18*** | 0.10* |
| District | 0.12* | -0.03 | 0.11* | 0.13* |
| Income | 0.06 | 0.10* | 0.14** | 0.04 |
| Number of the floors | 0.04 | 0.84*** | -0.05 | 0.21*** |
| Size of the housing | -0.02 | 0.26*** | 0.14** | -0.13** |
| Type of the housing | 0.03 | 0.21*** | -0.00 | -0.10* |
| Possession | -0.03 | 0.12* | 0.10* | 0.74*** |

* p<0.05 ** p<0.005 ***p<0.001

Table 4: The relationships between the resident characteristics and general satisfaction

| Domains | Mean[a] | Factor I | Factor II | Factor III | Factor IV | Factor V | Satisfaction |
|---|---|---|---|---|---|---|---|
| Adequacy of police, gendarme and fire brigade | 2.1 | 0.46 | | | | | 0.23*** |
| Distance from bank, post office, municipality etc., | 2.4 | 0.83 | | | | | 0.17*** |
| Distance from shopping places | 2.4 | 0.86 | | | | | 0.14*** |
| Distance from health units | 2.3 | 0.79 | | | | | 0.18*** |
| Distance from work places | 2.3 | 0.76 | | | | | 0.24*** |
| Maintenance facilities offered by the municipality | 2.6 | 0.42 | | | | | 0.16** |
| Number of playing grounds for kids | 2.0 | | 0.54 | | | | 0.12** |
| Relationships between neighbors | 1.9 | | 0.60 | | | | 0.30*** |
| Silence and calmness | 1.7 | | 0.71 | | | | 0.25*** |
| Cleanliness of common places | 2.1 | | 0.63 | | | | 0.24*** |
| Amount of green areas | 1.7 | | 0.55 | | | | 0.19*** |
| Safety against theft and such dangers | 2.1 | | 0.62 | | | | 0.22*** |
| School facilities | 1.9 | | | 0.54 | | | 0.21*** |
| Parking lot facilities | 2.3 | | | 0.53 | | | 0.29*** |
| Number of recreation centers nearby | 2.2 | | | 0.74 | | | 0.17*** |
| Number of sports facilities nearby | 1.7 | | | 0.74 | | | 0.14** |
| Use of housing | 1.7 | | | | 0.83 | | 0.60*** |
| Heating of housing | 1.9 | | | | 0.57 | | 0.38*** |
| Size of housing | 1.8 | | | | 0.84 | | 0.46*** |
| Strength of housing | 1.8 | | | | 0.53 | | 0.37*** |
| Animal breeding nearby | 2.4 | | | | | 0.84 | 0.08 |
| Agricultural areas nearby | 2.4 | | | | | 0.84 | 0.16*** |
| Satisfaction | | 0.28*** | 0.34*** | 0.26*** | 0.62*** | 0.14** | |
| Mean | 2.0 | 2.3 | 1.9 | 2.1 | 1.8 | 2.3 | |
| Variance (total 60%) | | 16 | 14 | 12 | 10 | 8 | |
| Alfa | | 0.83 | 0.77 | 0.72 | 0.70 | 0.77 | |

[a]1: Very satisfied 2: Satisfied 3: Unsatisfied * p<0.05, ** p<0.005, ***p<0.001

F I: distance from administrative and vital units; F II: social and natural characteristics; F III: physical equipments of the area; F IV: characteristics of housing; F V: agricultural scene

Table 5: Relationships between domains effecting residential satisfaction and participants' characteristics

| Domains | Factor I | Factor II | Factor III | Factor IV | Factor V |
|---|---|---|---|---|---|
| Gender | 0.11* | -0.10* | -0.11* | 0.01 | 0.03 |
| Age | -0.00 | -0.07 | -0.09 | 0.01 | -0.04 |
| Education | -0.01 | 0.02 | 0.05 | -0.03 | 0.07 |
| Work | 0.11* | -0.20*** | -0.19*** | -0.03 | -0.07 |
| The number of the years they live in | -0.29*** | 0.11* | 0.13** | -0.01 | -0.06 |
| Where they come from | -0.10* | -0,09 | 0.01 | -0.00 | -0.07 |
| The distance from the city | 0.49*** | -0.36*** | -0.37*** | 0.05 | -0.04 |
| District | -0.32*** | 0.18** | 0.12* | -0.08 | 0.04 |
| Income | 0.01 | 0.01 | 0.05 | -0.05 | 0.04 |
| Number of the floors | 0.24*** | -0.08 | -0.26*** | 0.01 | 0.07 |
| Size of the housing | -0.22*** | 0.09 | 0.15** | -0.17*** | 0.02 |
| Type of the housing | 0..7 | 0.03 | -0.01 | -0.14** | 0.07 |
| Possession | -0.03 | -0.03 | -0.06 | 0.05 | -0.03 |

* p<0.05, ** p<0.005, ***p<0.001

IV. factor includes four satisfaction criteria. Common characteristics of these criteria are that they determine the satisfaction resulting from characteristics of housing. V. factor is explained with 8% variance. V. factor includes two satisfaction criteria. Common characteristics of these domains are that they determine the satisfaction resulting from the agricultural scene around the place of housing. The effects of these factors determined according to significant level are; housing characteristics, social and natural characteristics of the place of housing, distance from administrative and vital units, physical equipments of the area, agricultural scene around housing, respectively.

**Residential satisfaction and participants' characteristics:** According to this study, Table 5 shows the effects of characteristics of participants on housing and satisfactions resulting from the environment. According to this:

- Men living in Düzce are more satisfied with the distance from administrative and vital units than women.
- Women are more satisfied with social and natural characteristics around housing more than men.
- The ones who work are more satisfied with the distance from administrative and vital units.
- The ones who do not work are more satisfied with social and natural characteristics around housing and physical equipments.
- As the number of the years the participants live in Düzce increases, their satisfaction about the distance from administrative and vital units of housing also increases.
- The ones who come to Düzce recently are more satisfied with social and natural characteristics and physical equipments of housing than the ones living in Düzce longer.

- The participants coming to Düzce from cities are more disturbed with the distance from administrative and vital units than the ones from villages.
- As the housings the participants live in get farther from the city center, it is observed that their satisfaction decreases.
- As the housings where the participants live in get farther from the city center, their satisfaction with social and natural characteristics and physical equipments increases.
- Living in the north part of Düzce decreases the satisfaction about the distance from administrative and vital units when compared to the ones living in the south.
- The ones living in the south part of Düzce are less satisfied with social and natural characteristics and physical equipments of housing than the ones living in the north.
- As the number of floors in the houses increases, their satisfaction about the distance from administrative and vital units decreases.
- As the number of floors in the buildings increases, their satisfaction about the social and natural characteristics nearby increases.
- As the size of the houses where the participants live increases, satisfaction about the characteristics of housing increases.
- As the size of the houses where the participants live increases, satisfaction about the characteristics of physical equipments.

## DISCUSSION

As a result of the study carried out, the most effective domain in the selection of housing for the ones living in Düzce is to be the ownership. It is followed by social and environmental characteristics of the housing and its economical and physical structure. Transportation is the domain that has the least effect on the selection of housing. Seo[14], investigated the changes resulting from the distance from city center in the selection of housing and found out that the domains effective in the selection of housing changed with the distance from the centre. In this study, too, it is observed that the domains effecting the selection of housing differs mostly with distance from the center. While transport and possession are the determining factors for the ones living in the city center, social and economical domains gain importance as they get farther from the center.

In this study, it has been determined that housing characteristics they are live in the most important domain on residential satisfaction. This result has been consistent with the results found by Türkoğlu[15] and Campbell *et al.*[3]. Another factor that effects satisfactions of people in Düzce is the distance from administrative units and transportability. Bonaiuto *et al.*[16] and Michelson *et al.*[17], in their studies, found out that this factor had an important effect on satisfaction. According to Marans and Rodgers[18], it was indicated that relationships among neighbors were the most effective determinant of satisfaction. It is seen that the most effective domain following physical characteristics of housing on satisfaction is relationships among neighbors. In the studies done by Bonaiuto *et al.*[16] in the example of Rome and by Potter[19] in the example of Ankara, physical and natural characteristics around housing effected the satisfaction. In this study, too, similar results were found. However, the difference of this study from the previous studies is the degrees of effect of determined satisfaction factors on general satisfaction. As the reason for these differences, Marans and Couper[6] stated that personal characteristics on satisfaction had strong effects. In the present study, personal characteristics are effective on satisfaction. However, the only domain that does not get affected from personal characteristics is characteristics of housing. In addition, this shows that everyone accepts physical characteristics of housing as an indispensable satisfaction factor.

In this research, satisfaction domains that change according to personal characteristics and distance from the center are distance from administrative and vital units, social and natural characteristics and physical equipment of the area. Working men who live in Düzce for a long time, the ones coming from rural areas and living in the center stated that they were more satisfied with the distance from administrative and vital units than the others were. Women who are not working, the ones that have recently come to Düzce and live in the permanent housings built after the earthquake and far from the city center are more satisfied with social and natural characteristics and physical characteristics of the area than the others are.

According to this study done for the example of Düzce, differences are observed between the ones living far from the center and the ones living in the center resulting from environmental characteristics of housing ($r = -0.10$; $p = 0.02$). The ones living in new residential areas that were built after the earthquake in Düzce are more satisfied with the location of housing than the ones living in the city center. The domains determining their satisfaction are social and natural characteristics of the location and characteristics of physical equipment. The domains forming these factors and effecting satisfaction most are relationships among neighbors, parking lot

facilities, calmness and quietness, cleanliness of common areas, safety, school facilities and amount of green areas, respectively. In order to increase the satisfaction of the ones living in the housings in the city center, local administrations have to recover these conditions first. What has to be done for the ones living far from the city center is to recover the domains explained with the distance from administrative and vital units.

In conclusion, people were more satisfied with new residential areas which are more comfortable especially with environmental factors and which provide urban needs when compared to the ones living in the city center and its surrounding. However, it has been observed that their disturbances about some issues are not more than the residents' disturbances in the other areas.

Problems arising from housing diversities and ineffective administrative structure in residential areas are perceived by the people, too. In the approaches of new urbanization, the principle 'participation' should be the most important thing.

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