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Effect of Wood Based Materials on Current Use and Production of Outdoor Furniture From the Perspective of Human Dimension

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Abstract: In this study, urban furniture, being an unquestionable contributor to both quality of space and quality of life in Turkey is discussed in the light of current situation and opportunities for growth and within the framework of wooden urban furniture production and its use. In the Turkish market, though demand for wooden urban furniture is entirely met by the local market, the manufacturers generally prefer to use imported raw materials (65%). The most common types of wood species used in urban furniture production are Teak (*Tectona grandis*), Iroko (*Chlorophor aexcelsa*), Sapele (*Entandro phragmacylindiricum*), Oak (*Quercus* sp.) and Pine species (*Pinus* sp.). In the selection of suitable wood for urban furniture, rather than functional characteristics, the most important factor taken into consideration is endurance quality of wooden material and the least important one is design and construction attributes of materials. As a result, the wooden urban furniture segment, being a subsector of the Turkish furniture industry fully open to investment and development, has the potential to meet the existing level of demand of the marketplace. However, it is also revealed in the present study that the Turkish wooden urban furniture segment does not have original designs and international competitive power, mainly because of lack of adequate processes and standards in design and production.

Key words: Furniture production, Turkish furniture industry, urbanfurniture, wooden materials, Turkey

INTRODUCTION

It is a fact that rapid urbanization plays an important role on changing living conditions, community structures and technological developments influencing planning and appearance of the urban environment. Urban planners, designers and industrial product manufacturers are trying to create modern cities with their own aesthetic values. Urban furniture not only decorates the cities with the objective of creating modern living spaces but also is one of the factors playing important roles in enhancement of spatial quality of urban area (Chiesura, 2004). Although, various studies carried out related to the importance of urban furniture utilization there is still little or no information dealing with urban furniture as an individual production sector in Turkey (Akyol, 2006; Cubuk, 1991). It is believed that present study would fill the lack of adequate researches on historical development and use of urban furniture as well as its evaluation as a manufacturing subsector from the point of investment and development in the Turkish furniture industry. Such industry has been rapidly developing in the global furniture market in terms of its overall production and trade volume as displayed in Table 1. The main objective of this work was assessment of current situation of utilization of wood in manufacture of urban furniture from the point of producers and consumers in Turkey.

Urban furniture is composed of products designed to meet the evolving needs of consumers as a result of specific processes associated with the concept of city. For example, the elements in natural landscapes or urban spaces in such way to respond to various functions and requirements of their users including comfort, information, control of circulation, protection and recreation which are covered under a collective concept of "Urban Furniture".

Urban furniture has been widely used in developed countries, primarily in the United Kingdom and the United States and has become a crucial element of urban architecture over a short period of time. While urban furniture was initially manufactured by manually, it has been industrialized over time due to the need for larger commercial scale as a result of urbanization. Among the

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Table 1: High-performance countries and Turkey in global furniture production and exports

Countries	Production (%)	Exports (%)
China	32	29.5
USA	14	4.8
Italy	7	8.0
Germany	6	8.5
Poland	2	5.9
Turkey	2	1.0

first industrial products that could be considered urban furniture were the kerosene lamp poles used for street lighting purposes in the United Kingdom (Feyizoglu, 2008).

Nowadays, for the sake of usability for intended purposes, the urban furniture is required to possess the following properties: functionality, aesthetic and economical design, high feasibility and durability, compliance with standards, ergonomic qualities, resistance to vandalism, ease of installation and maintenance as well as its originality. Urban furniture can be classified into five groups according to different characteristics as displayed (Gursoy, 2011; Alpagut, 2005; Harris and Dines, 1998; Aykut, 1997; Atasay, 1989; Rapoport, 1977).

Classification of urban furniture

Urban furniture by functions of use: Floor covering elements (concrete, stone, wood, brick, asphalt, etc.), living units (benches, chairs, seating group elements), lighting elements (road and field illuminators), boundary elements (pedestrian and traffic barriers, etc.), signs and information boards (routers, locators, information communication boards), sales units (kiosks, stalls, etc.), water elements (fountains, ornamental ponds, canals, fire hydrants, etc.), upper covering elements (bus stops, shades, pergolas), trash cans.

Urban furniture by locations: Transition areas-streets, pedestrian ways, squares and districts-historical districts, shopping venues, parks, children's playgrounds, sports fields.

Urban furniture by assembly type: Movable urban furniture, semi-movable urban furniture, fixed urban furniture.

Urban furniture by types of use: Temporary use: refers to use of outdoor spaces by citizens at a certain point and for short periods of time. This type of use brings to mind the transportation techniques. Bordering elements, floor covering items, etc. Continuous use: refers to use of outdoor spaces by citizens at a certain point for a certain period of time, i.e., by spending time. This type of use consists of shopping, sitting, standing, waiting, spending time, etc. activities. Functional use: this class covers not the activities destined for certain functions as stated above, but the uses and functions for direct requirements of citizens while using outdoor spaces (street names, bus stop and station names, traffic signs, fountains, drinking water fountains, etc.).

Urban furniture by technical fittings: Infrastructural urban furniture: lighting fixtures, information communication and marker boards, phone booths, bus stops, clocks at squares, water elements, sales units, infrastructural facilities maintenance lids, etc. Non-infrastructural urban furniture: floor coverings, trash cans, seating elements, flowerpots, upper covering elements, boundary elements, tree protectors, bike parks, playground equipments, plastic art objects, etc.

Wood based materials, metals, plastics, concrete, glass, composites are main raw materials used in manufacture of urban furniture units (Kurtoglu, 2006). In addition to above conventional materials there are also some new combinations of various composite materials. This study is mainly concentrated on use of wood based materials in urban furniture manufacture. The wood based materials used in construction of urban furniture are classified as solid wood, laminated wood, fiberboard, particleboard, plywood, block board and decorative plastic-coated laminates. Wooden materials utilized in almost all groups of urban furniture are preferred and used in the light of particular strengths and weaknesses separately defined for each group of urban furniture. Although wood-based panels, being cheaper are getting popular to be used as substitute of solid wood in furniture, solid wood is still keeping its major market in urban furniture production. The choice of wood usually varies depending on its cost-efficiency and durability. The main features sought for in timbers furniture production are species, specific gravity, moisture content, amount of defects and dimensions (Gursoy, 2011; Bozkurt and Erdin, 1989). The determination of urban furniture construction is generally based on such certain factors as material selection, image requirements and constructional and economic difficulties linked to functional, physiological, psychological and social reasons. First of all, the material selected should fit to the quality and quantity of the space where it will be used. The material should be identified and conditions of use and construction in combination with other materials should be determined. Depending on the effects of forces, such deformations as opening, bending, cracking, buckling and breakage occur in joints of furniture. In order

to overcome these negative factors, analyses are required to be carried out on both construction techniques and mechanical properties of accessories as well (Oksuz, 2004; Gode, 2005; Dilik, 1997; Hacihasanoglu, 1991).

Factors leading to aging of urban furniture during its service life can be classified into three groups, namely physical factors, accidents and vandalism (Akyol, 2006). Of these, vandalism is one of the most complex and important problems encountered in the process of use of urban furniture. The concept of "misuse" involves the problem of vandalism. Writing on the walls, drawing on benches, or damaging the bulbs on street lighting elements, are some of the examples vandalism. There are six important criteria concerning durability in relation to vandalism in the process of use. These are conformity, scale, material, maintenance, layout and connection details. For example, an uncomfortable seating unit, a wrongly selected street lighting element and unreadable information board are all unsuitable in terms of their functions and leave the door open to vandalism (Zulfikar, 1998; Kasal, 1998; Yucel and Bilici, 1995; Turkoglu, 1991).

MATERIALS AND METHODS

In this study, two different questionnaires were conducted for producers and municipalities as consumers. Since any statistical data kept by the Chambers of Commerce and Industry and containing information on urban furniture manufacturers operating in Turkey were found we have reviewed the catalogues of fairs and exhibitions of companies engaged in this industry and on the basis of information received from the relevant persons and 32 manufacturers in the industry. Of these, 20 companies were selected as framework community. The results were assessed as a representative of the manufacture rscommunity because the number of companies participating in the research accounts of 62.5% of the whole community and in terms of production scale and capacity. As consumers, considering the rate of urbanization in Turkey, of 39 municipalities within Istanbul, 20 were selected as framework community. The manufacturer questionnaire addressed to industrial urban furniture manufacturers intended to investigate and reveal such information as product groups produced by manufacturers in Turkey, design and projecting methodologies, species of trees used in production. Also how they are supplied, degree of significance of materials used in production, construction and joining methods used in production and vandalism were analyzed. In the consumer questionnaire, included among the issues investigated were from where and how municipalities procure their urban furniture, economic life or renewal time of urban furniture, issues considered in the selection of urban furniture and materials preferred against vandalism.

In statistical analyses and assessments of this study, arithmetical means of data were calculated and a graph chart generated according to frequency distributions was used. In this context, survey results are assessed separately for manufacturers and consumers (Unver and Gamgam, 2008). The survey results for close-ended questions were transferred to the Statistical Package for the Social Sciences (SPSS) environment and evaluated with frequency and percentage distributions.

RESULTS AND DISCUSSION

Statistical data based on the findings from 20 companies located in Istanbul region (12) with others in Ankara (3), Antalya (1), Yzmir (1), Kocaeli(1), Kayseri (1) and Trabzon (1) are displayed in Table 2. According to the results, a review of frequency distributions of product groups of the manufacturers revealed that sets of street seats and tables represented 23% of all products of the manufacturers, followed by playground elements of 21%, floor covering materials of 18% and other products such as bus stops, trash cans and street lighting elements of 15% thereof. In addition, the manufacturers design a great majority of urban furniture in their own in-house design units while some companies directly manufacture the same or identical models of the products already available in the marketplace. This is in turn reflected on the frequency distribution graph of survey results according to which 91% of manufacturers design their products without any external support.

It was also observed that manufacturers procured their timber, lumber and draft requirements from both local and foreign markets. It is unequivocal that manufacturers used both ways and sources in procurement of raw materials mainly due to economic reasons. Figure 1a illustrates the findings on responses of manufacturers according to the order of significance of materials used in urban furniture production. Accordingly, 75% of the manufacturers consider wood as the most important input or raw material in production while manufacturers preferring metal materials or plastic materials account for 15 and 10%, respectively. Glass is

Table 2: Statistical results of products or product groups of manufacturers

Manufactured product groups	Number of manufacturers	Frequency rate (%)	Standard deviation	Average
Seating group	20	23	3.114482	17.2
Playground elements	18	21		
Table set	20	23		
Floor covering elements	15	18		
Other elements	13	15		

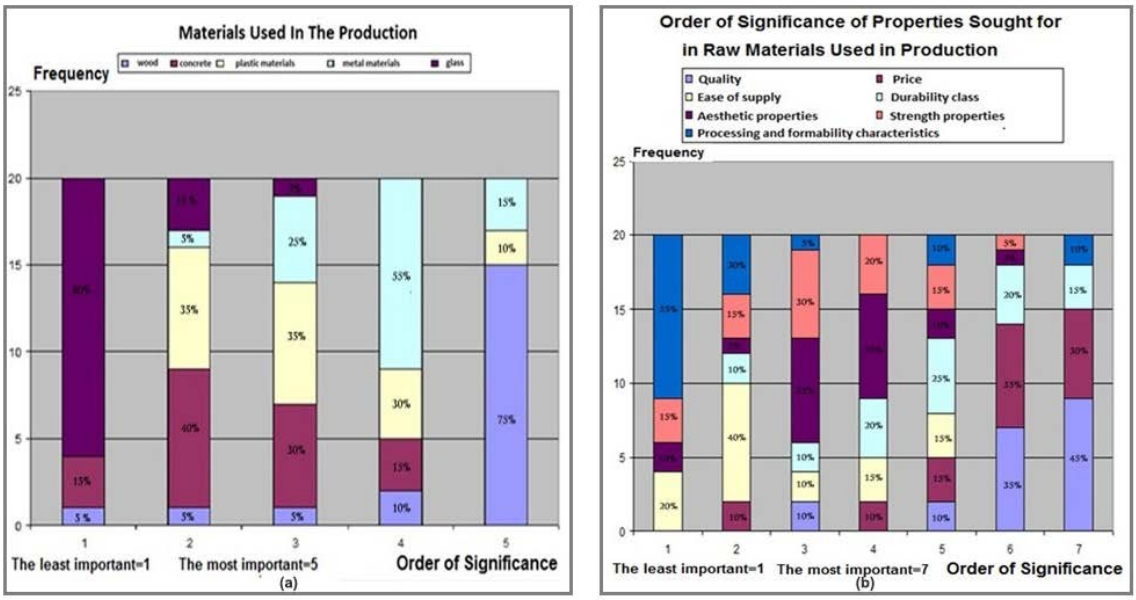

Fig. 1: a) Order of significance of materials used in production and b) properties sought for in raw materials used in production

Table 3: Species of trees and properties of timber used in manufacture of urban furniture in Turkey

Durability group and tree species	Timber properties specified for use
Hard-very durable group trees: tree species belonging to this group: iroko, teak, padouk	1st class or 2nd class timber used for production of furniture and in conformity with TS 11356. Moisture content of timber should not exceed 20%. Should be controlled according to the test method specified in TS 4087. Specific gravity of timber must be between 0.49-0.71 g/cm^3
Hard-durable group trees: tree species belonging to this group: Sipo, Framire	1st class timber used for production of furniture and in conformity with TS 11356. Moisture content of timber should not exceed 20%. Should be controlled according to the test method specified in TS 4087. Specific gravity of timber must be between 0.50-0.68 g/cm^3
Hard-medium durable group trees: tree species to this group: sapelli, acajou, dark red meranti	1st class timber used for production of furniture and in conformity with TS 11356. Moisture belonging content of timber should not exceed 20%. Should be controlled according to the test method specified in TS 4087. Specific gravity of timber must be between 0.46-0.75 g/cm^3
Soft-coniferous trees: tree species belonging to this group: scots pine, larch, spruce, cedar species	1st class timber used for production of furniture and in conformity with TS 11356. Moisture content of timber should not exceed 20%. Should be controlled according to the test method specified in TS 4087. Specific gravity of timber must be between 0.46-0.56 g/cm^3

not even listed among the most important inputs or materials of production while concrete and wood are both ranked in minimal and medium (15-80%) categories of significance. The results of the survey on wooden materials used in production revealed that mostly laminated timber (32%) and solid wood (30%) were used AND other wood-based materials are listed as follows: MDF (medium density fiberboard) (14%), particle board (10%), plywood (10%) and block board (4%). According to the results from the survey for determination of tree species used in the production, as domestic tree species, manufacturers used mostly pine species (*Pinus* sp.) (45%) and secondly oak species (*Quercus* sp.) (25%) and then followed by spruce (*Picea* sp.), (15%), hornbeam (*Carpinusbetulus* L.) (7.5%), beech (2.5%), fir (*Abies* sp.) 2.5%) nd cedar (*Cedrus* sp.) (2.5%). Of foreign tree species, mostly teak (*Tectonagrandis* L.) (30%) and iroko (*Chlorophora B. excelsa*) (25%) are used. Other imported tree species are listed as sapele (*Entandro phragmacylindiricum S.*) (12.5%), pine (*Pinus* sp.) (10%), oak (*Quercus* sp.), beech (*Fagus* sp.), sequoia (*Sequoia sempervirens E.*) and ayous (Triplochito of the scleroxylo) (5%) and limba (*Terminaliasuperba E.*) (2.5%). It is further noted that technical specifications prepared and issued by ISTON Inc., being a public entity standing as the largest urban furniture manufacturer of Turkey, are generally accepted and employed as a standard of tree species and timber properties as displayed in Table 3.

Findings about the properties sought for by manufactures in the raw materials used in urban furniture are shown in Fig. 1b. The properties sought for by the participating manufacturers in the raw materials used in production are listed primarily as quality (45%), followed by cost (30%), durability (15%) and workability (10%). The least important properties sought for by the participating manufacturers in the raw materials used in

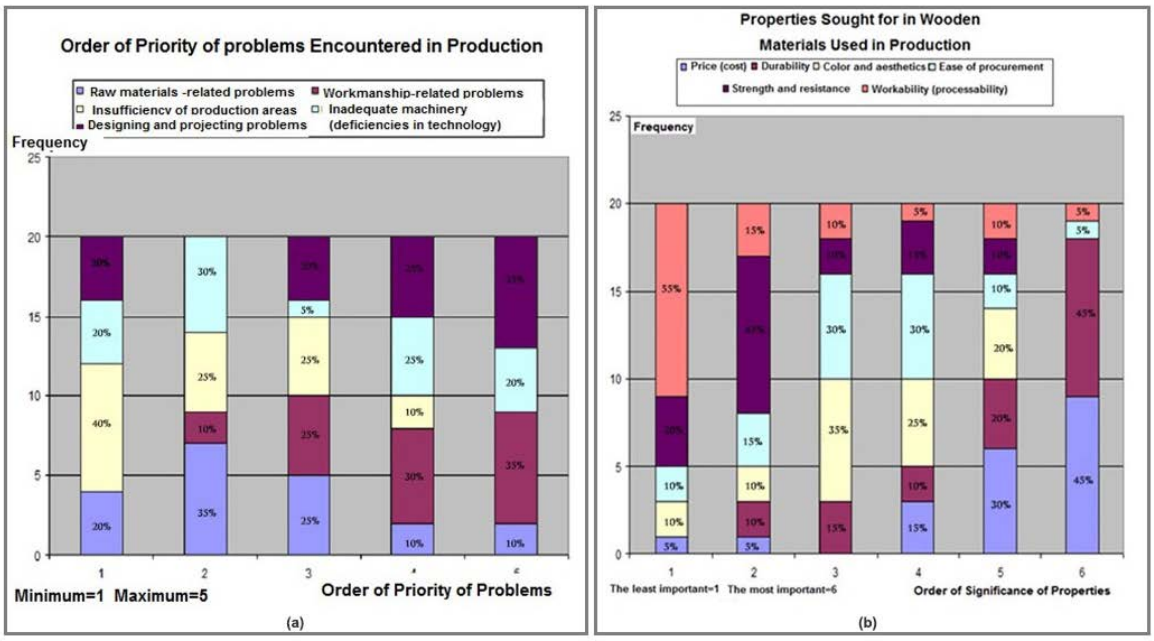

Fig. 2: a) Production problem and b) properties sought for in wood materials used in production

production are machinability and formability of raw materials (55%), ease of procurement (20%), strength and resistance properties (15%) and aesthetics (10%). This result may be accepted as an indicator of the fact that the specifications required to be sought for in urban furniture are not fully known or internalized by manufacturers, because the literature data shows aesthetics and strength and resistance properties among the most important criteria (Harris and Dines, 1998).

Main problems encountered in the production of urban furniture are shown in Fig. 2a. According to the data, the problems mostly encountered during production are labor-related problems (35%) and designing problems (35%), followed by deficiencies in technology (20%) and raw material-related problems (10%). On the other hand, the problem of inadequacy of production areas (25-40%) is among the medium and least important problems encountered in manufacturing. For production, in terms of meeting the aesthetic specifications, the materials preferred by the producers are listed in descending order as wooden materials, metal materials, plastic materials, concrete and glass materials. Accordingly, survey results relating to determination of wooden materials as the mostly preferred item in terms of aesthetics are shown in Fig. 2b where it is indicated that cost and durability were the most important properties sought for in wooden materials (45%), followed by conformity of resistance and workability (5%). The least important properties sought for therein are listed as processability (55%) and ease of procurement (20%).

According to findings of survey pertaining to maintenance and repair requirements of wooden urban furniture, it is observed that 60% of wooden urban furniture require maintenance and repair within 2-4 years, 25% within 4-6 years and 15% within 0-2 years. It can be concluded that most of urban furniture produced in Turkey have an economic life of around 2-4 years without any maintenance and repair requirements. In the present study, it was determined that 75% of manufacturers there had no knowledge or idea about vandalism and the survey findings focused on determination of materials preferred against vandalism are shown in Fig. 3a. The graph contains a list of materials from the most preferred (6) to the least (1), according to which the materials mostly preferred by manufacturers for protection against vandalism are metal (40%), followed by timber (20%), plastic (20%) and concrete (20%). The least preferred material is glass (100%). However, considering that these results are based on only responses of manufacturers (25%) declaring to be knowledgeable about vandalism, it may easily be said that a great majority of the urban furniture production sector (75%) does not have adequate or any information about vandalism which both prevents the functioning of urban furniture and adversely affects the development of sector.

Some varieties of urban furniture are used primarily by municipalities being the first degree responsible and consumer thereof, of 39 municipalities within Istanbul region, 20 participated in this survey. The 76% of

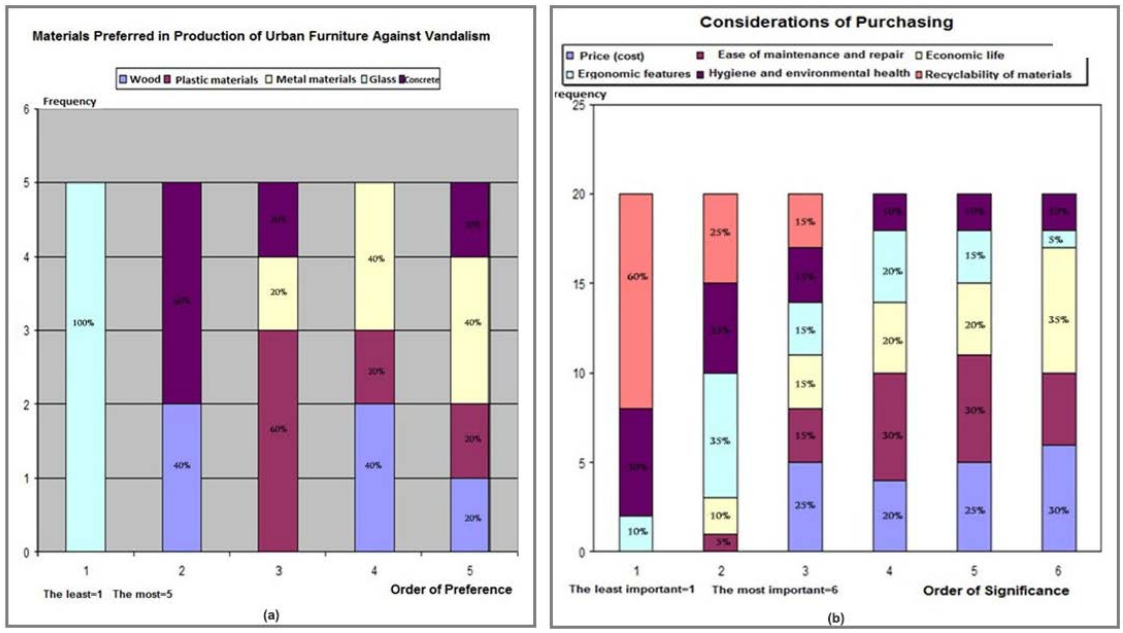

Fig. 3: a) Matrials preferred in production of urban furniture against vandalism, b) considerations in purchase of urban furniture

participating municipalities procure urban furniture from private companies, followed by 16% producing them in their own workshops and 8% buying them from public enterprises. None of 20 participating municipalities imported urban furniture. Accordingly, given that most of municipalities procure urban furniture from private companies, the urban furniture sector may be said to have sufficient manufacturing capacity against the existing demand level in the marketplace. Findings aiming to determine the properties taken into consideration in procurement of urban furniture are shown in Fig. 3b. According to these results, it is observed that economic life (35%) and cost (30%) of urban furniture are the most important factors taken into consideration, followed by ease of repair and maintenance of urban furniture (20%), hygiene and environmental health (10%) and ergonomic features (5%). In addition, 60% of municipalities are determined to pay the least attention to recyclability of materials in their urban furniture purchases.

In this study, according to survey findings relating to economical life or renewal time of urban furniture by municipalities in their own territories, 45% of all participating municipalities use, or deem it necessary to renew, their urban furniture within 12-24 months, followed by 25% within 24-36 months, 15% within 36-48 months, 10% within 0-12 months and 5% within 48-60 months. Accordingly, it can be concluded that urban furniture generally becomes unusable or are in need of being renewed within 12-24 months. On the other hand, a review of the survey results pertaining to factors effective in determination of need of renewal of urban furniture reveals that according to the degree of importance, 65% of all participating municipalities decide on the need of renewal of existing urban furniture according to aging AND 20% according to fall in quality of functioning of urban furniture and 15% according to demand of people living in the vicinity. Within this framework, the period of warranty given by the manufacturers is the least important factor (60%) in determining the need of renewal.

Figure 4a shows the survey findings aiming to determine the rates of use of materials in the existing urban furniture in Istanbul in the descending order. According to these results, the materials most widely used in production of existing urban furniture are wooden materials with 85% and metal materials with 15%. Accordingly, it can be said that the majority of urban furniture used in Istanbul are made from wood. Least importance is given to glass and concrete. The findings about the order of priority of characteristics taken into consideration in selection of wooden urban furniture are shown in Fig. 4b. According to a list of factors taken into consideration in selection of wooden urban furniture arranged in descending order from the most important (6) to the least important (1), 40% of participating municipalities pay attention to the class of durability of wooden material, followed by 20% to the cost, 15% to the

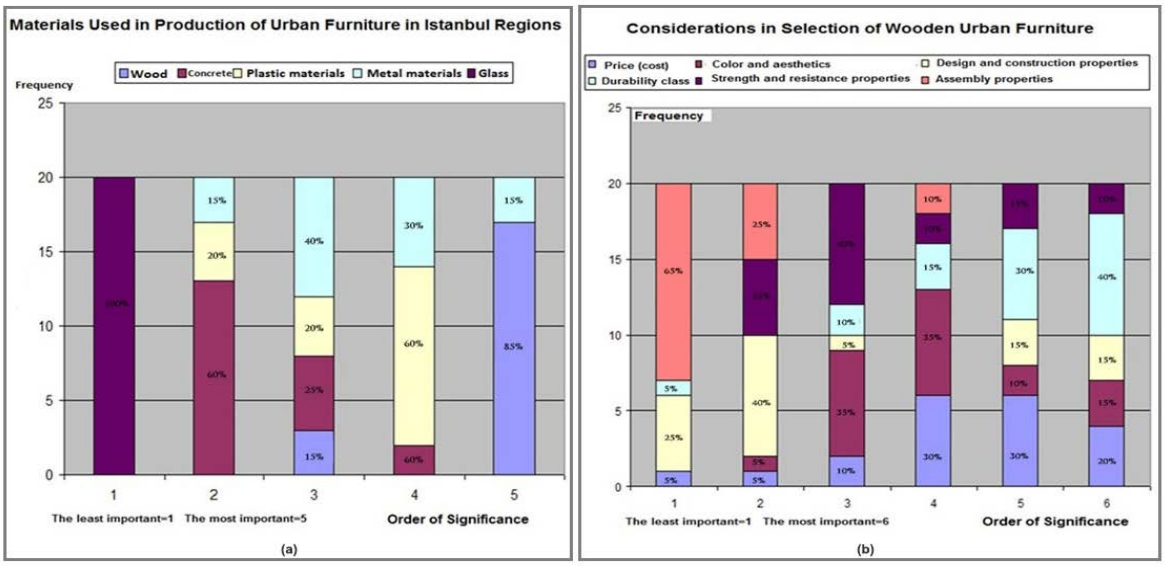

Fig. 4: a) Materials used in urban furniture in Istunbul and b) considerations in selection of wooden urban furniture

color and aesthetics and 10% to strength and resistance properties. This means to say that the most important factor taken into consideration by municipalities in selection of wooden urban furniture is the class of durability of wooden material while the least important ones are assembly features (65%) and design and construction properties (25%).

The findings intending to determine the priority of construction errors encountered by municipalities in wooden urban furniture are shown in Fig. 5a. According to these results, it can be seen that the mostly encountered construction error in wooden urban furniture is the assembly errors caused by poor and careless workmanship (55%), followed by production errors in processing techniques caused by deficiencies in technology (20%) and selection of a joining method unfit for the intended purpose of use (15%) and functionality defects caused by use of non-standard materials (10%). A review of survey results relating to the order of significance of measures taken for maintenance, protection and repaid of wooden urban furniture reveals that 70% of participating municipalities regularly apply such surface treatments as painting and varnishing every year, followed by 25% of municipalities repairing only damaged surfaces or parts upon demand of the people of the vicinity and 5% of municipalities requesting maintenance and repair services under warranty from the manufacturer. Accordingly, it can be said that the vast majority of wooden urban furniture are regularly maintained, painted and varnished every year. However, it is also unequivocal in the light of results of manufacturer survey as to maintenance and repair measures that the cooperation and coordination between manufacturer and consumer are insufficient. On the other hand, according to survey results relating to materials preferred for protection and reflection of historical properties in urban furniture, 90% of participating municipalities prefer wooden materials, followed by 5% preferring metal materials and 5% preferring plastic materials. In this study, the order of priority of materials preferred in urban furniture against vandalism is given in Fig. 5b. Accordingly, 50% of participating municipalities prefer wooden materials, followed by 45% preferring metal materials and 5% preferring concrete materials. The least preferred material is glass (90%). Furthermore, it is noted in the light of the survey results aiming to determine the order of priority of measures taken in urban furniture against vandalism that the measures taken and their order of priority vary depending on the materials used in production thereof. For example, in protection of concrete and wooden materials against vandalism, 60% of participating municipalities do not take any specific measure, followed by 20% assigning guards to and taking security measures in parks and gardens and 10% applying more screws thereon and 5% increasing the dameter thickness of material and the other 5% taking public awareness measures.

It is noted that the urban furniture production sector is located mainly in the Marmara region in Turkey, depending on the increasing rate of urbanization. Production capacity of the industry could not be determined exactly due to characteristics of production

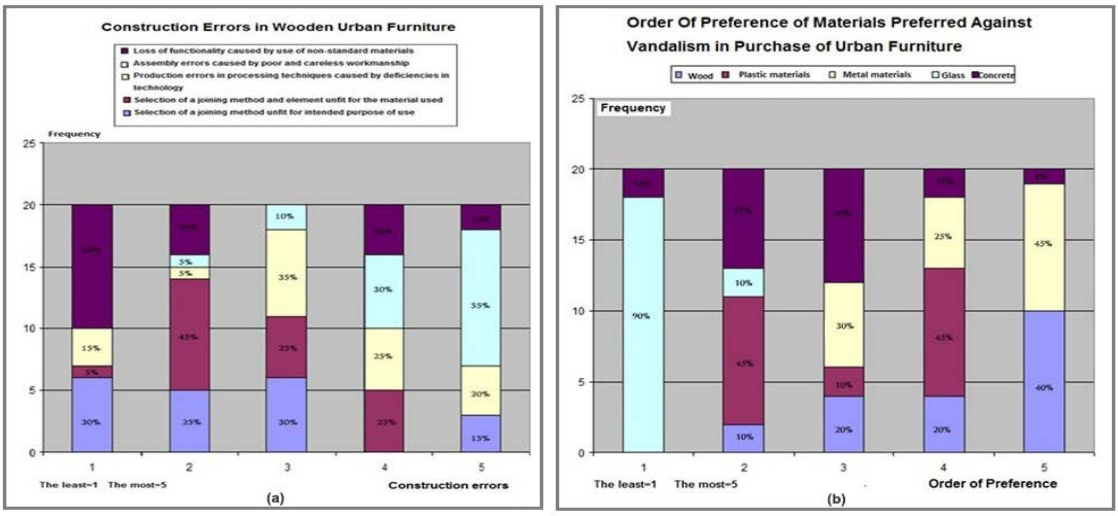

Fig. 5: a) Construction errors in wooden urban furniture and b) materials perferred vandalism

types of enterprises and due to competition considerations. However, it is obvious that the industry has a production capacity and a development level capable of meeting the level of demand in the marketplace. This is clearly demonstrated by the consumer survey data and results showing that urban furniture are entirely procured from the local market and a vast majority (91%) of manufacturers design their products without any external support. Included among the primary problems of the industry are designing and projecting problems and workmanship-related problems. Though the manufacturers say they are designing all of their products in their own in-house design units, it is understood that the deficiencies in designing and production processes and criteria are the basic reasons underlying the lack of original designs and the lack of international competitive power of the sector.

Manufacturers produce or have to produce multiple product groups such as playground units, sets of tables in the construction of urban furniture. This can be attributed to the fact that 76% of the participating municipalities procure their urban furniture from private companies and wish to purchase almost all of the product groups from the same supplier. That is why the manufacturers are in a struggle to specialize on more than one product group, rather than one single group. It is observed that manufacturers procure their raw material needs from both domestic and foreign sources. The native tree species used in the production of urban furniture in Turkey are mostly Pine and Oak species, while the imported tree species used in the production of urban furniture in Turkey are mostly Teak, Iroko and Sapele. The reason underlying the preference of these tree species is that they are included among the tree species listed in the technical specifications used as a standard in production of urban furniture in Turkey, as prepared and issued by a public enterprise named ISTON Inc. and have the specified timber properties. Also under the effects of ecological approaches developing across the world, the use of wooden materials in urban furniture production is increasing every day. The most commonly used wood-based materials are respectively laminated timber, solid wood, MDF (medium density fiberboard), plywood and particleboard. However, the order of priority given to the specifications sought for in the raw materials used in production shows us that the manufacturers do not exactly know or have not yet internalized the specifications required to be sought for in urban furniture, because aesthetics and strength and resistance properties are counted among the least important specifications in the present study while they are the most important specifications according to the literature.

Selection of urban furniture mainly relies on the economic life and cost thereof and selection of urban furniture made of wooden materials is mostly dependent upon the strength and resistance of materials thereof. The consumer survey has further shed a light on the fact that primarily and mostly wooden materials are used in production of urban furniture (85%). This result seems contradictory at the first glance. However, it can be attributed to the fact that the participating companies have responded to the survey results by considering wood-based urban furniture. On the other hand, the increasing use of synthetic and metal materials in urban furniture in the recent times can be explained purely by economic reasons because maintenance cost of synthetic and metal materials is less than that of wooden materials.

Vandalism, included among the urban problems of our day, is, beyond being an environmental issue, an important problem having social dimensions and requiring intervention of urban management. Both manufacturer and consumer survey results demonstrated that, in Turkey, 75% of the urban furniture industry is not knowledgeable about this social problem of vandalism. According to the study, the materials mostly preferred against vandalism are metal and wood with glass being the least preferred material. The reasons for these preferences can be easily explained by properties of materials. For example, the durability and resistance of wooden materials against burning, breakage and scratching can be increased through surface treatment and thanks to their dismountable connections, the deformed parts of wooden materials can be easily replaced. As for the measures taken against vandalism in urban furniture, it is clearly understood that municipalities are generally inadequately knowledgeable and generally do not inform the public adequately, about vandalism.

CONCLUSION

Basedon the finding in this research that the urban furniture industry, with its undebatable contributions to quality of space and life, is open to investments and development in Turkey. However, the industry does not have its original designs and international competitive power due to inadequacies in design and production processes and standards. This major problem of the sector is attributable to the poorly designed relations between manufacturers and consumers which means to say that the sole way of resolution of this problem passes through collaboration and cooperation of relevant stakeholders. It can be seen that the municipalities do not use imported urban furniture in urban spaces but the manufacturers mostly prefer to use import logs and timbers in production of finished products. This points out that there is a major gap in market share of semi-finished products in the urban furniture industry in Turkey. Therefore, if the manufacturers recognize this gap of the marketplace and make the required investments, it will be useful and helpful for development of both national economy and this market segment. On the other side, it is unequivocally determined that urban spaces may be transformed into modern and livable environments only by taking the consumer masses and their expectations, purposes of use, as well as the city's historical features, general habits, ergonomics, durability, aesthetics and vandalism and similar other factors into consideration in selection of urban furniture.

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