



Determining the Factors Effecting Raw Material Preference in Furniture Sector in Turkey and the Problems Experienced in Supplying and Marketing Raw Materials

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Abstract

Furniture industry is one of the oldest and a developed industry in Turkey. In the last 20-25 years of furniture industry, in addition to production for the country's need, Turkey started to produce for export, to work technology-supported and to make large scale mass production rather than local workplace production. In addition to that, investments for innovative and technological production have been increasing to make production more efficient and high-quality. The scope of this study is to identify the factors that affect the raw material choices of the businesses active in furniture industry in Turkey and to determine the problems encountered in supplying raw material and in marketing. The study data were obtained by the survey method. Survey application was carried out in 283 businesses which were chosen through sampling among 20,867 businesses active all-around Turkey. The questionnaires applied by face to face interview technique were transferred to computer environment and analyzed with MS Excel and SPSS programs. Descriptive statistics and chi-square were used in the analyzes. It was found that the businesses in furniture industry were structured as single person company, which mainly make order production and mostly they produce household furniture. It was seen that mostly MDF, particleboard and plywood were used in the sector and this is mostly due to the clients' choice. Among the outstanding problems were high raw material prices, low quality of these materials, lack of customer's material knowledge and high production expenses. It was also found that lacquer paint and varnish were preferred as coating materials due to their decorative look.

Keyword: Furniture industry, raw material issues, marketing issues, particleboard, MDF, plywood

Türkiye Mobilya Sanayinde Hammaddede Tercihini Etkileyen Faktörler ile Hammaddede Temininde ve Pazarlamada Yaşanan Sorunların Belirlenmesi

Öz

Mobilyacılık sektörü, Türkiye'nin en eski ve en gelişmiş sektörlerinden birisidir. Mobilyacılık sektörüne ilişkin 20-25 yıllık süreçte, Türkiye'de kendi ihtiyacı için üretimin yanı sıra ihracata yönelik üretime, teknoloji destekli çalışmaya ve lokal atölye üretimlerinden büyük çaplı seri üretime başlanmıştır. Bununla beraber üretimin daha nitelikli ve verimli hale getirilebilmesi için yenilikçi ve teknolojik üretim yatırımları artış göstermektedir. Bu çalışma kapsamında Türkiye mobilya sanayinde faaliyet gösteren işletmelerin hammaddede tercihini etkileyen faktörler ile hammaddede temini ve pazarlamada yaşanan sorunların tespit edilmesi amaçlanmıştır. Çalışma verileri anket yolu ile elde edilmiştir. Anket uygulaması Türkiye çapında faaliyet gösteren 20.867 işletmeden örnekleme yolu ile seçilen 283 işletmede gerçekleştirilmiştir. Yüz yüze görüşme tekniği ile uygulanan anketler bilgisayar ortamına aktarılarak MS Excel ve SPSS programları ile analiz edilmiştir. Analizlerde tanımlayıcı istatistikler ve ki-kare analizi kullanılmıştır. Çalışma sonucunda mobilya sektörü işletmelerinin tek kişi işletmesi şeklinde yapılandığı, sipariş üretimi yaptıkları ve çoğunlukla ev mobilyası ürettikleri belirlenmiştir. Sektörde yoğun olarak MDF, yongalevha ve kontrplak kullanıldığı, bu tercihin ise çoğunlukla müşteri isteğine bağlı olduğu ortaya çıkmıştır. Kaplama malzemesi olarak lake boya ve verniğin dekoratif görüntüsü nedeniyle tercih edildiği tespit edilmiştir. Hammaddede fiyatlarının yüksek kalitesinin düşük olduğu, müşteri bilgisizliği ve üretim giderlerinin yüksek olması öne çıkan problemler olarak görülmüştür.

Anahtar Kelimeler: Mobilya sanayi, hammaddede sorunları, pazarlama sorunları, yongalevha, MDF, kontrplak.

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1. Introduction

Functionally, aesthetically pleasing, furniture made of wood is generally defined as furniture in order to meet the social and cultural basic needs of everyday life such as working, sitting, resting, eating, storing and exhibiting goods safely and comfortably. Furnitures are functional elements because they are the goods of use to satisfy human needs. The furniture is produced by using one or more of the construction elements such as particleboard, fiberboard, plywood indoors or outdoors.

With the increase in the population and the development of the living standards of the people in Turkey, there have been significant improvements in the production and quality of furniture. Depending on the increasing demand, the furniture industry received significant investments since 2000 and as of 2016, the industry in Turkey exports to 225 countries with \$2,2 billion export number (TÜİK, 2017). Especially in the last ten years, the industry had a growing trend in production and trade volume except for the crisis periods. Depending on the changes in the world's economy, the frequency of changing furniture dropped to 4 years and this number in our country dropped from 10-12 years to 8 years (TOBB, 2012).

Furniture buying tendencies change depending on functionality and aesthetic perceptions. Therefore, the continuous development of the furniture industry is considered natural. This change is not only in household furniture but also in office and garden furniture. While the annual spending for furniture per person in developed countries is \$239, it is around \$65 in developing countries.

Solving the raw material and marketing problems of the furniture sector, which is the only sector among Turkey's forest products industry creating an added value and thus, have foreign trade surplus, is important for national economy. In addition to all these developments, factors affecting the raw material choice of the furniture sector and the problems they face are indicated in different studies.

The most important problems of the furniture sector are the density of family companies, high raw material costs and marketing / market problems. (URL-1).

In their study Nemli *et al.* (2007) indicate that the most important raw material problems of furniture and cabinet manufacturers are high costs and insufficient quality, amount and dimensional stability. The main reasons for using particleboard in furniture industry are listed as low cost, dimensional stability, homogenous thickness, size and amount sufficiency (Suchsland and Woodson, 1986). Wu and Vlosky (2000) indicated that the reasons for using particleboard, MDF and plywood in furniture manufacturing are economic reasons and customer expectations.

In their study with 47 businesses in Turkey, Yurdakul *et al.* (2013) indicated that among the reason's businesses were not stocking were the lack of capital, change in prices and carrying costs. Among the raw materials used in furniture industry, it was found that it was OSB, lumber, coating followed by others depending on the choice (plywood, melamine coated chipboard, MDF (laminated), particle board, fibre board, massive panel, laminate and paper) that were the subject of import.

In the decision model, which was established for the purpose of determining the priority problems of the furniture sector, Çelik (2012) determined that the most important problem is the inadequacy of R&D and innovation activities, the low number of design studies and the high degree of mimicry. And the solutions he suggested for these issues were paying more attention to R&D works in businesses as well as working towards changing environmental conditions, technology, customer demands and needs; and developing original designs and styles. Çoban (2005) indicated that the most important problem of furniture industry in foreign trade was not reaching the European Union standards in production and design.

In their study, İnal and Toksarı (2006) focused on determining the relationships between product and quality and marketing problems in the furniture industry. As result, they found that there was a strong relationship between product and quality as well as marketing problems.

In their study, Sönmez and Aslan (2007) indicated that in order to solve the export problems of the furniture industry, SMEs should be informed on the legal regulations related to export, bureaucratic bottlenecks should be eliminated, government support and incentives towards exports should be increased, more businesses should be enabled to use export opportunity especially in branding and market research, and there should be more government institutions which will provide advice and support to the industrial businesses and provide market research support.

According to Aras *et al.* (2007) the most important problems of furniture sector were the lack of trained staff (35,5%), lack of raw material (27,5%), technological insufficiencies (24%) and energy cost (13%), in given order. In his study Demirci (2005) found that the most important problems of the furniture industry were the lack of trained staff followed by the lack of raw material, technology and energy. In addition, another problem he found was the lack of design.

According to the results of the study by Sönmez *et al.* (2007) the government support was mostly focused on export through organising overseas trade fair and exhibition participation, market research, finance, brand promotion activities, research and development, educational support, patent, utility model, export guidance, counselling, environment costs, employment support, opening stores abroad, operational and brand promotion activities, credit for advanced technology common use machinery- equipment. In the study, the most significant problems were related to the businesses lack of knowledge on the trade, excessive bureaucratic obstacles and the fact that government did not provide a sufficient support when compared to developed countries.

According to the results of Yıldırım *et al.* (2013) study they carried out in furniture sector, the fact that businesses which have quality management system establish a quality system, take quality certificate and follow quality standards improve their export opportunities in terms of marketing and ensured sustainability in quality, increased their foreign market share, reduced stock costs in terms of product design and product process and products with a low price provided competitive advantage in marketing. In addition to that, improving the existing standards continuously considering the customer satisfaction principle will offer significant contributions to country's economy.

Arslan and Sönmez (2010) indicated that among the problem's furniture businesses encounter in production were "high cost of production", "the delay in the delivery of raw materials on time" and "lack of skilled labour".

In the SWOT analysis conducted by Gürpınar and Döven (2007), they found that the opportunities in the sector were the structure of the furniture sector being open to improvement, the improvements in designing in recent years, the fact that the sector was open to cooperation and investment. The threats identified were the lack of raw material, international standards, intense competition, Turkish lira's raising value and increasing costs, political and economic instability and the economic structure of the businesses in the sector.

Akyüz *et al.* (2013) investigated the innovative approaches in the furniture industry and found that approximately 58% of the enterprises did not utilize advanced manufacturing technologies sufficiently. Businesses apply research and development and export their furniture; however, they do not have a properly structured R&D department. Businesses that are exporting their products utilize advanced manufacturing technologies at a higher rate and consider themselves stronger in competition. It was also found that 54% of the businesses complain from high finance costs.

Within the scope of the current study, the furniture sector in Turkey has been examined and the raw material problems identified. In addition, the factors affecting the raw material choice have been determined and accordingly, suggestions for improvements given.

2. Materials and Methods

The population of this study was the businesses operating in furniture sector in Turkey. According to the 2014 records from Social Security Institution there are 20,867 registered businesses in furniture sector in Turkey (URL-2). The sample size calculated with 5% error margin and 90% confidence level based on this number was set as 268.

$$n = (Z^2 \cdot N \cdot P \cdot Q) / (N \cdot D^2 + Z^2 \cdot P \cdot Q) \text{ (Dorman } et al. \text{ 1990)}$$

Here; n represents: sample size,

Z represents: Confidence coefficient (90% confidence coefficient was taken as 1.64),

P represents: the probability of existence of the feature that we want to measure in the population (0.5)

Q represents: 1-P,

D represents: accepted sampling error (taken as 5%)

To prevent potential problems with the questionnaire data, more questionnaires were administered and as a result, 283 acceptable questionnaires were collected.

In the study, a questionnaire form was used in collecting the data. The questionnaire includes questions about the

legal structures of the participating companies, their partnership status, the raw material and marketing problems, and the reasons for using and not using wood-based materials. The questionnaires were administered to the responsible person in the businesses through face to face interview technique. The collected data are analysed using statistical package program and the results are presented.

3. Results and Discussion

3.1. Overall structure of the furniture sector

This section includes structural information of the furniture sector in Turkey. The information obtained from the answers to the question asked for legal structures of the participating enterprises is shown in Figure 1.

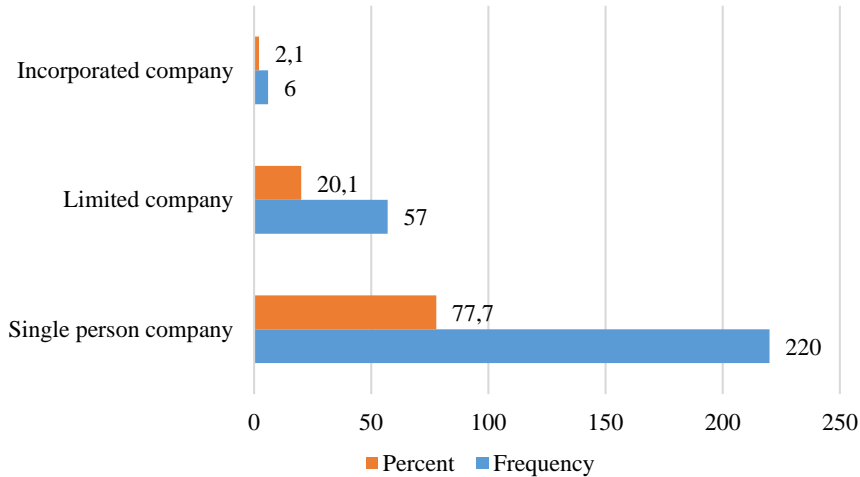


Figure 1. Legal structures of businesses

When the results are examined, it is seen that 77,7% of the participating businesses are single person companies. The rest of the businesses are corporations. The information obtained from the answers to the question asked for partnership structures of the companies is shown in Figure 2.

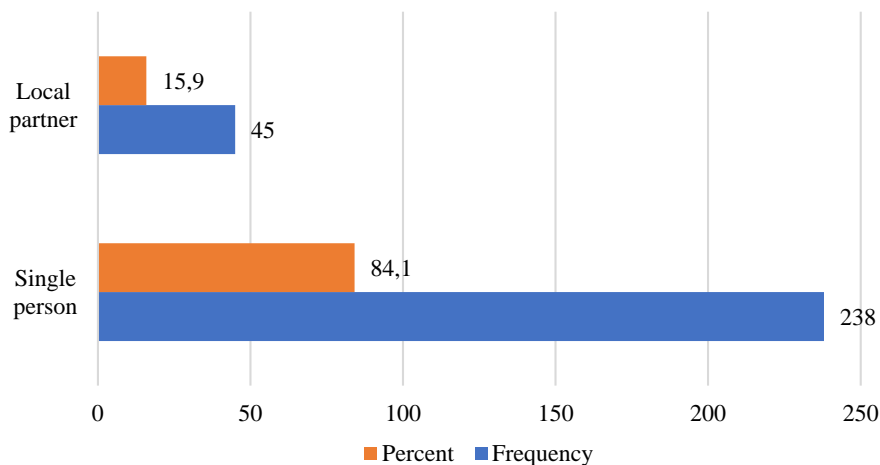


Figure 2. Partnerships structure of enterprises

According to the results of the questionnaire, only 15,9% of the businesses are businesses with a local partner. The information obtained from the answers to the question asked for production types of enterprises participating is shown in Figure 3.

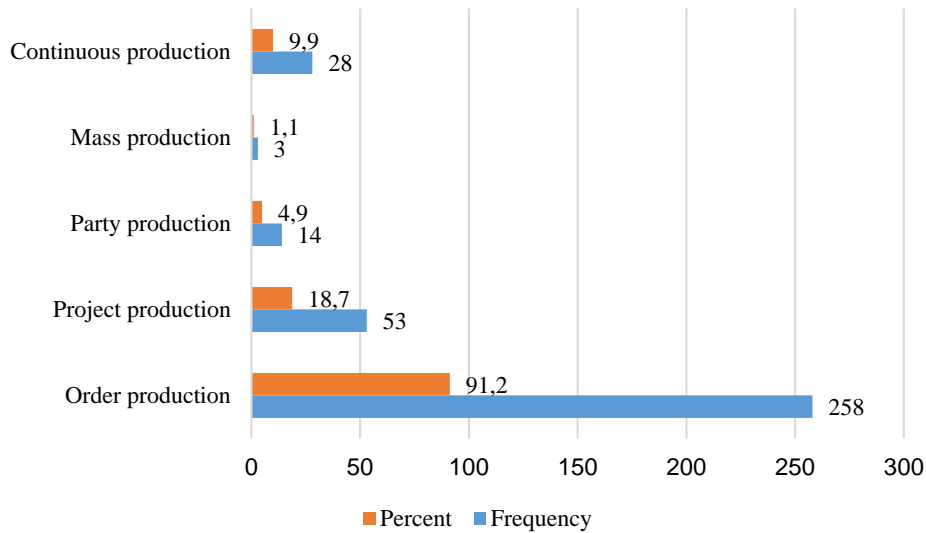


Figure 3. Production type of enterprises

When the results were analyzed, it was determined that the enterprises produced mostly (91,2%) order production and 18,7% project production. The information obtained from the answers to the question asked for the basic furniture production areas of the participating enterprises is shown in Figure 4.

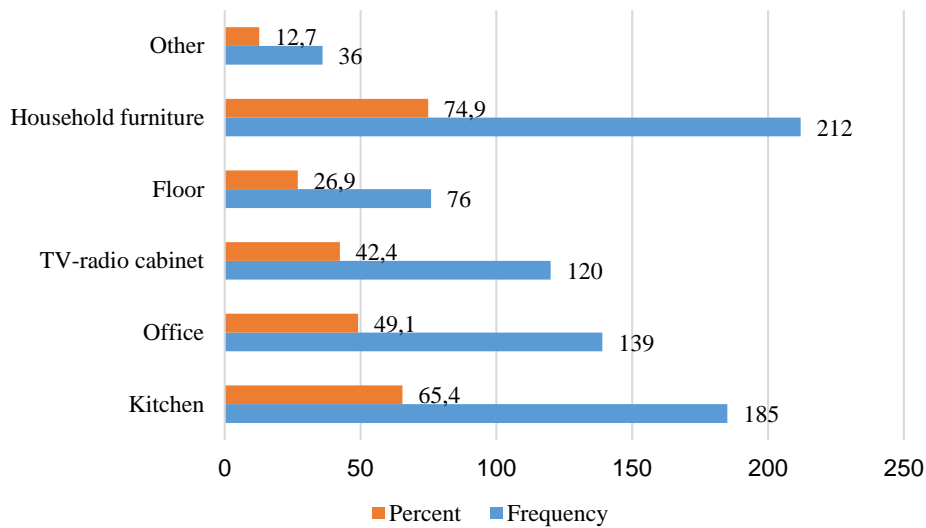


Figure 4. Basic furniture production areas of enterprises

When the results are examined, it is seen that the outstanding basic furniture production area of the participating businesses are household furniture and kitchen furniture.

3.2. The Raw Material and Marketing Problems of the Furniture Sector

The information obtained from the answers to the question asked for the raw material problems of the participating enterprises is shown in Figure 5.

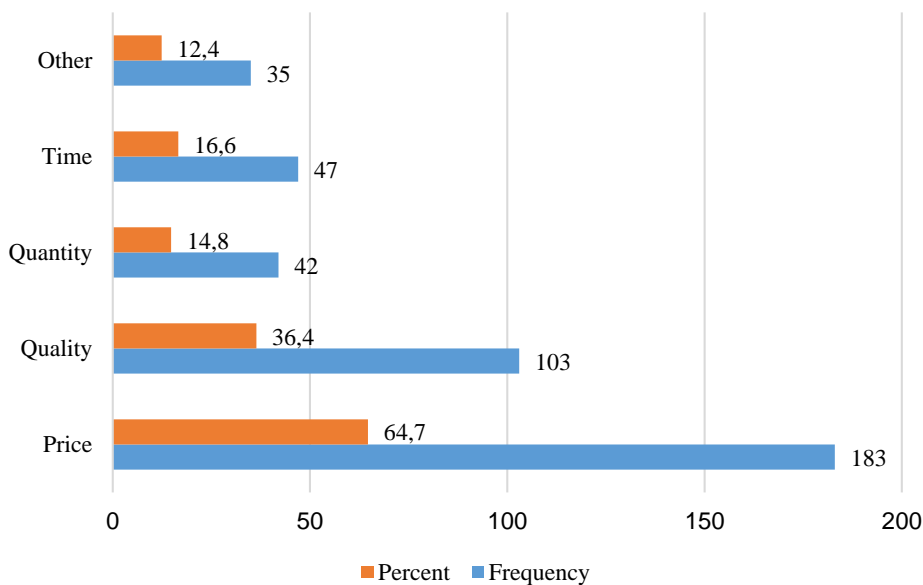


Figure 5. Source of raw material problems encountered by the businesses

The most important raw material problem of the businesses in the furniture sector is the price of the raw material. In addition to that, the quality of raw material is also seen as an important problem. The information obtained from the answers to the question asked for the marketing problems of furniture enterprises is shown in Figure 6.

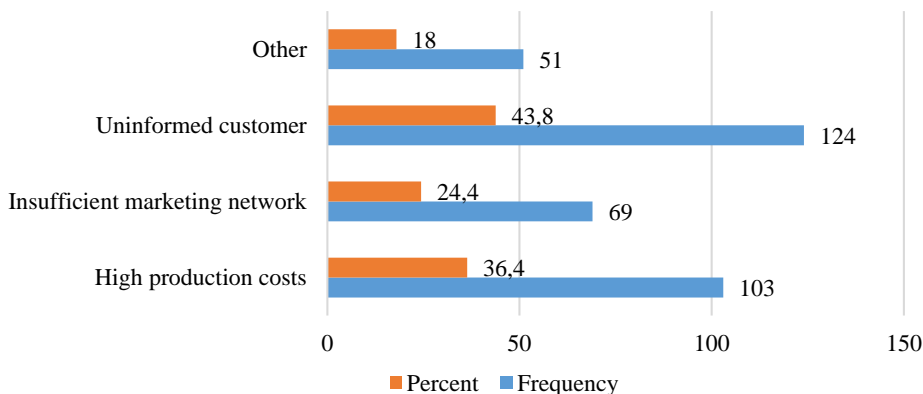


Figure 6. Marketing problems of enterprises

When the results are examined, the most important marketing problem is seen as uninformed customer issue. In addition, high production costs also cause to marketing problems.

3.3. Raw Materials Used in Furniture Business and Reasons to Use / Not Use of Raw Materials

One objective of the study was determining the raw materials used in production in the furniture businesses and to find out the reasons for using/not using these raw materials. In this context, the information obtained from the answers to the question asked for the types of raw materials used by the enterprises is shown in Figure 7.

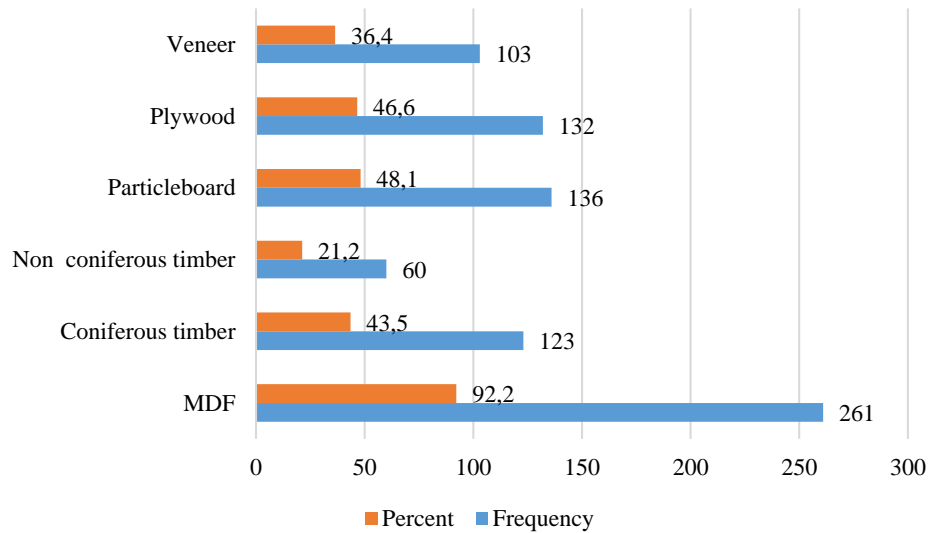


Figure 7. Raw materials used by enterprises in production

The results of the analysis indicate that the most often used raw material is MDF, in addition particleboard and plywood are also used at a significant volume. The information obtained from the answers to the question asked for is reasons for the use of particle board by the enterprises shown in Figure 8.

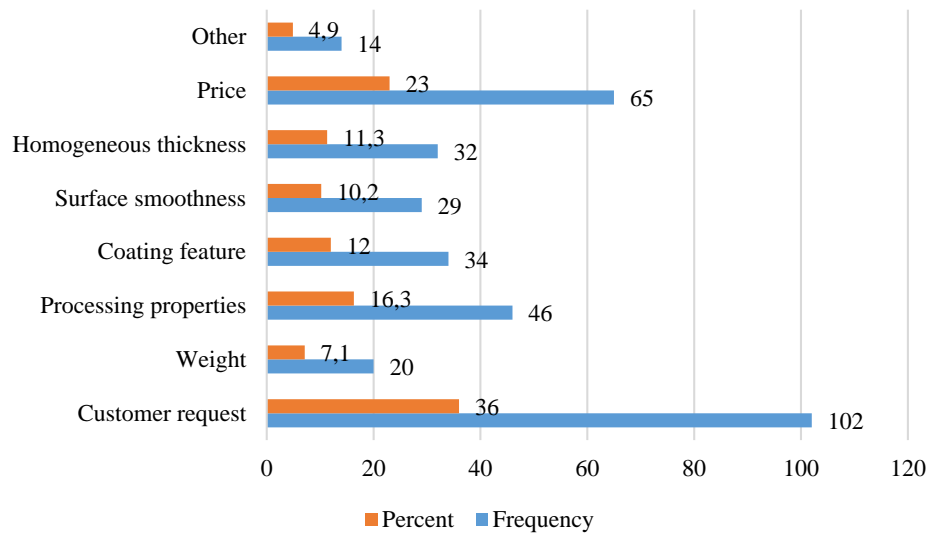


Figure 8. Reasons for using particle board by enterprises

When the results are examined, it is seen that the main reasons for using particleboard is customer request and price. The information obtained from the answers to the question asked for the reason's businesses do not use particleboard is shown in Figure 9.

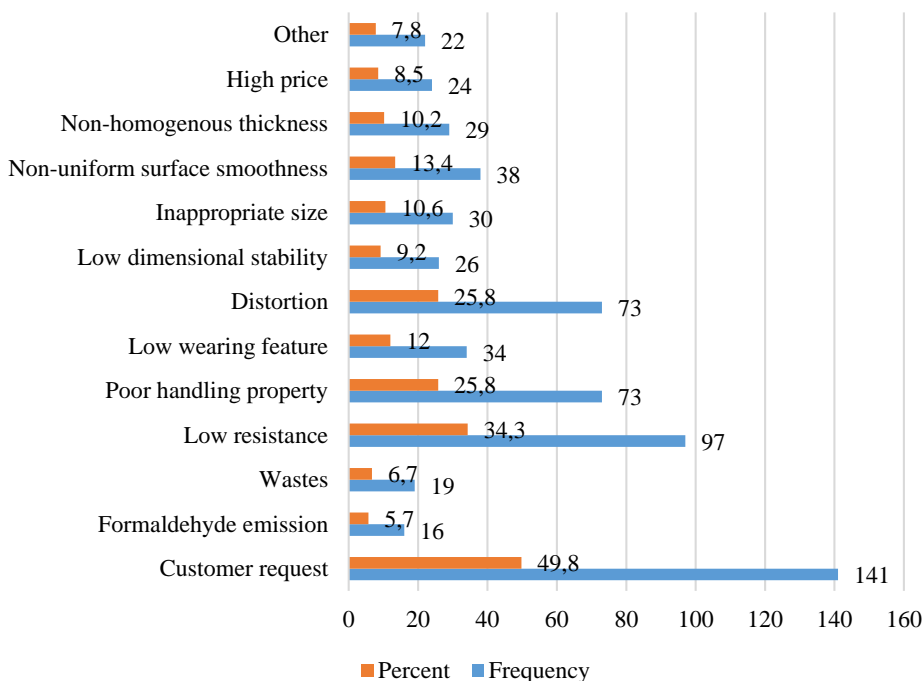


Figure 9. Reasons for do not use particleboard by enterprises

The results of the study indicate that the most important reasons for using particleboard are customer request and the low resistance feature. The information obtained from the answers to the question asked for reasons for using MDF board of enterprises is shown in Figure 10.

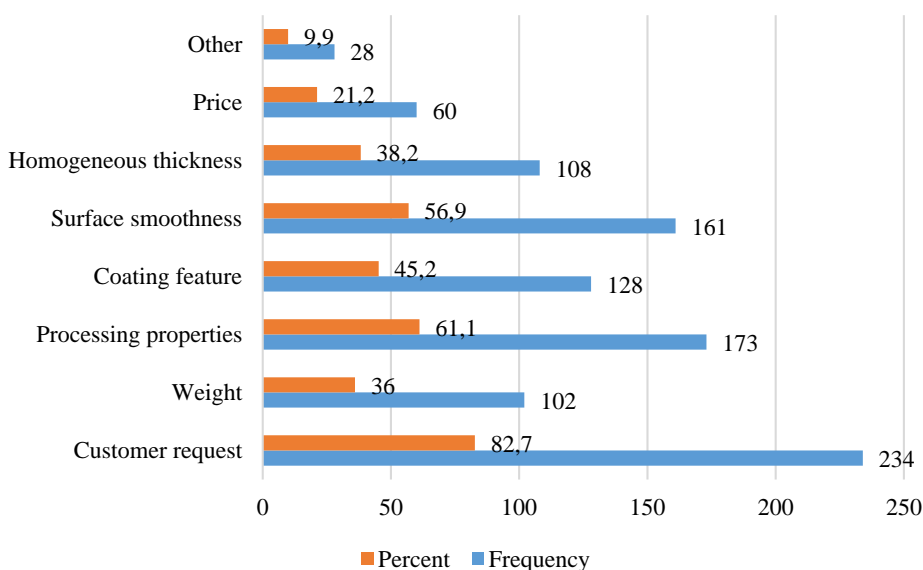


Figure 10. Reasons for using MDF board by enterprises

The results of the study indicate that the reasons for using MDF are customer request, processing properties and surface smoothness. The information obtained from the answers to the question asked for reasons for do not use medium density fibreboard of enterprises is shown in Figure 11.

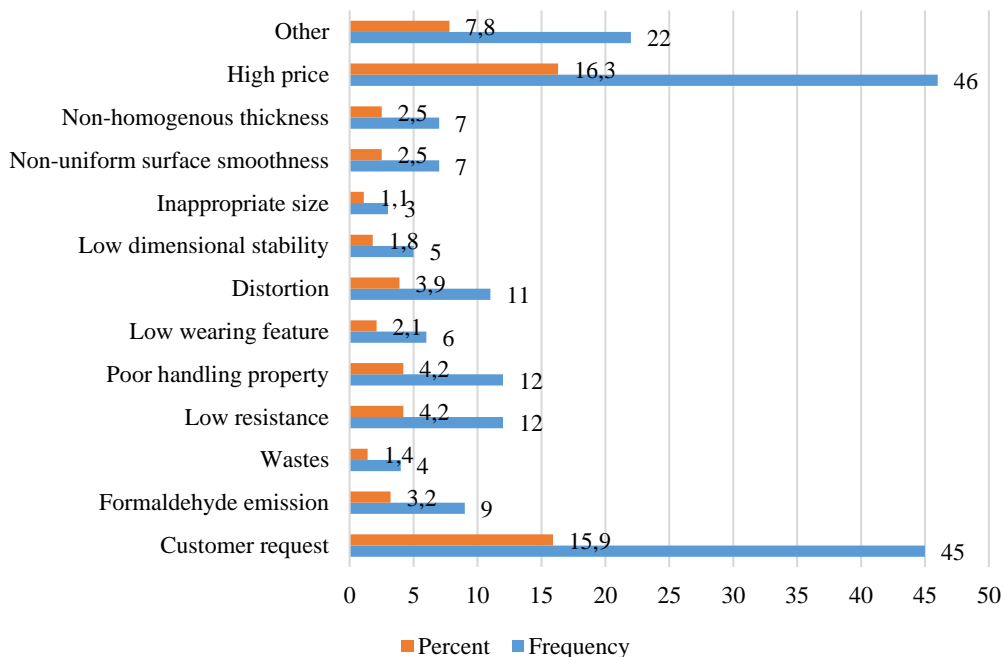


Figure 11. Reasons for do not use medium density fibre board by enterprises

Although furniture businesses use MDF at a high rate, according to the results they indicate that the reason for not using MDF is high cost and customer request. The information obtained from the answers to the question asked for the reasons for using plywood by the enterprises is shown in Figure 12.

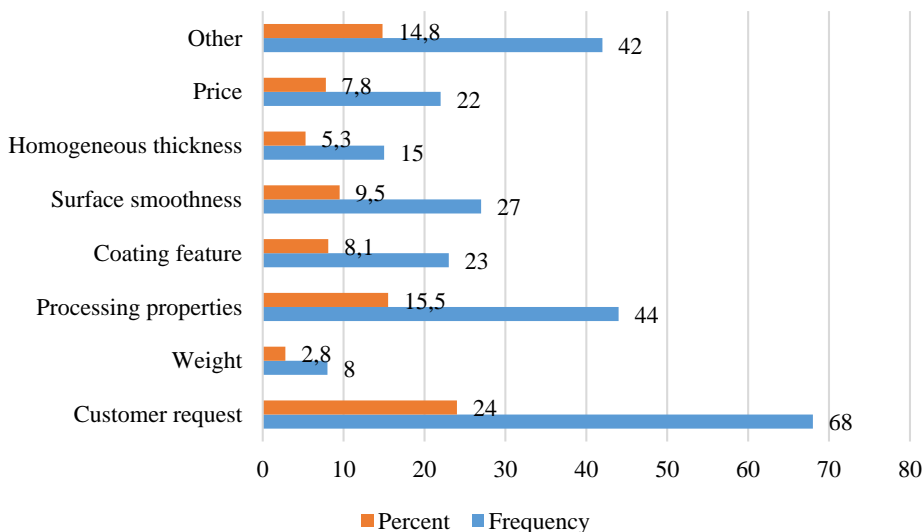


Figure 12. Reasons for using plywood by enterprises

When the results are examined, it is seen that the reason for using plywood is customer request and its processing properties. The information obtained from the answers to the question asked for reasons for not using plywood of enterprises is shown in Figure 13.

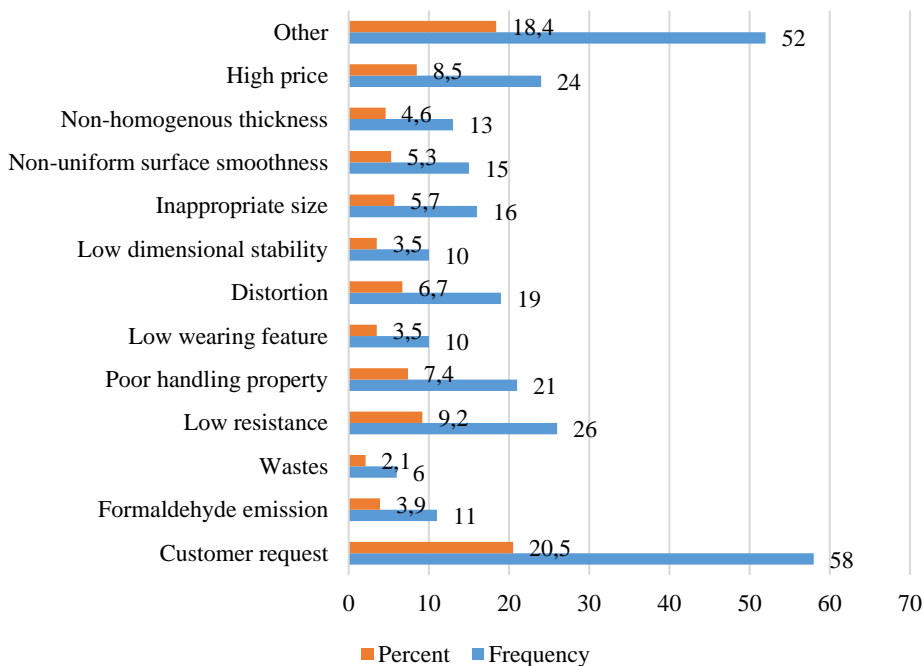


Figure 13. Reasons for not using plywood by enterprises

Although furniture businesses use MDF at a high rate, they indicate that the reason for not using plywood is customer request. The information obtained from the answers to the question asked for to determine the laminated materials used in production is shown in Figure 14.

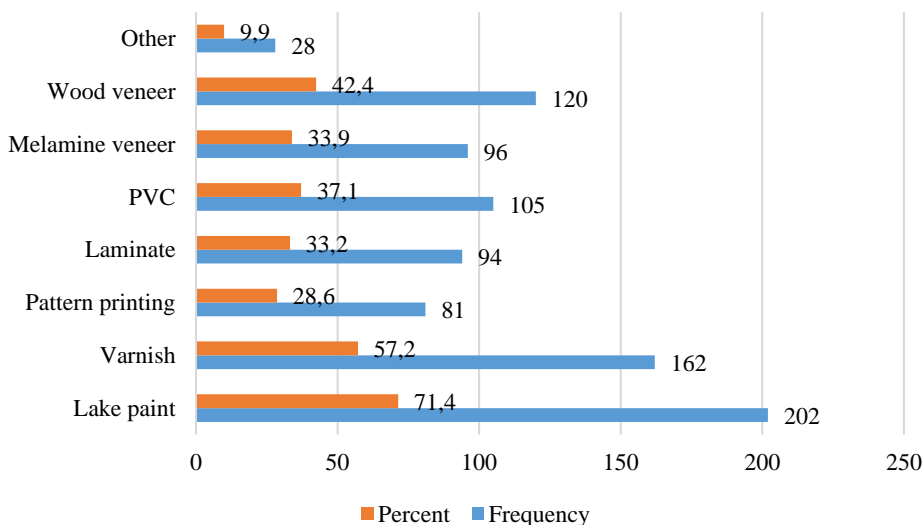


Figure 14. Types of laminating materials and coatings used in production

It is found that in producing particleboard, fibreboard and furniture, furniture businesses use lacquer paint, varnish and wood veneer at a high rate. The information obtained from the answers to the question asked for the reasons why the companies prefer these laminating materials is shown in Figure 15.

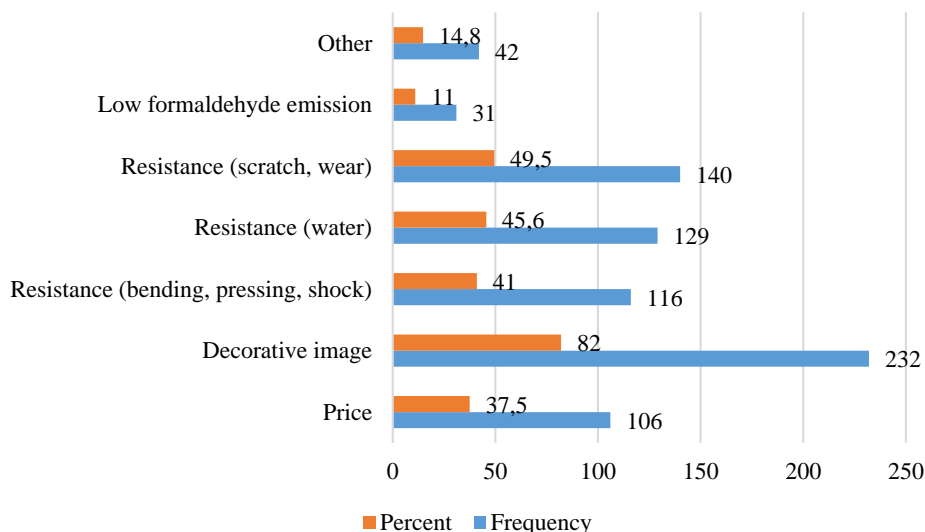


Figure 15. Reasons for choosing the laminating types used in production

Furniture businesses indicate that they prefer decorative look when choosing the type of coating and in addition to that, they state that scratch/wear resistance is another important factor in choosing the type of coating. Low formaldehyde emission, on the other hand, is not considered important.

3.4. Relationship between business legal and partnership structures and raw material and marketing problems

When the legal structures of the enterprises are examined, it is seen that 77% is the only company and the others are the company. When the shareholder structure is analyzed, it is seen that 84.1% of them are single partners and the rest are local partners. In this section, the relationship between the legal and partnership structures of enterprises and raw material and marketing problems are examined.

According to the results of the chi-square analysis, no relationship was found between the legal structures of enterprises and raw material problems and marketing problems. ($p>0,05$).

According to the results of the analysis made according to the partnership structure of the enterprises, there was no relationship between the type of partnership and raw material problems and marketing problems. ($p>0,05$).

4. Conclusion

Within the scope of the current study, the raw material problems in the furniture sector in Turkey and the factors affecting the raw material choice were revealed.

When the results were examined, it was seen that the furniture sector was mainly comprised of single person enterprises. It was found that businesses work based on order and that they manufacture mainly household furniture and kitchen furniture.

Furniture businesses indicated that the most important raw material problem was the high price of the raw materials and the fact that they could not have the quality they want in raw materials. In other studies, high cost and quality were also seen as important raw material problems and in addition, that the raw material was not delivered on time was considered as an important issue (Nemli *et al.* 2007, Arslan and Sönmez, 2010).

The most important marketing problem of the furniture sector in Turkey was seen as uninformed customers and high productions costs. In the literature, high production costs, insufficient export support, lack of trained staff, bureaucratic obstacles and not providing the quality standards are seen as important marketing problems (Çoban, 2005, Sönmez and Aslan, 2007, Aras *et al.* 2007, Arslan and Sönmez, 2010).

One objective of the study was to determine the raw materials used in the furniture business and the reasons for using/not using these raw materials. As a result, it was seen that 92,2% of the businesses used MDF whilst 48,1%

used particle board and 46,6% used plywood. In addition, it was seen that veneer and timber were also widely used. In their study, Wu and Vlosky (2000) indicated that economic reasons and customer expectations were important in raw material choice in the furniture sector.

Among all raw materials, the factors that stood out as the reason for using particle board was customer request and price; on the other hand, the reason not using it was indicated as again customer request and low resistance. When the fact that the use of particle board in the furniture sector is 48,6%, it is believed that this result is predictable.

The outstanding reasons for using MDF in the furniture sector were found as customer request, the processing features of MDF and surface smoothness; whilst the reasons for not using MDF were found as high cost and customer request. High use of MDF in the sector (92,2%) indicates that MDF is preferred in production despite its high cost.

Another raw material used in the furniture sector was plywood. The reasons for using plywood in the sector were found as customer request, its processing features and other factors. On the other hand, the reasons for not using it were found as customer request and other reasons. As in other raw materials, it was seen that customer request was an important factor; in addition, the fact that the “other” option had a significant selection rate was because there was no explanation so it is an issue to be handled separately.

The coating materials preferred in production in the furniture sector were found as lacquer paint and varnish; in addition, wood and PVC were also used. The reason for choosing this coating was indicated as the decorative look and resistance features. Apart from that, the cost of material was not found to be significant while choosing coating material.

Depending on the information provided as a result of the study, the following suggestions can be taken;

- The fact that most of the enterprises are single-person enterprises causes them not to benefit from the advantages of professional management. Partnerships to be established with the combination of capital will help to eliminate raw material and marketing problems.
- It is possible to choose the desired raw material type for the customer to choose. However, the customer's level of knowledge can affect price and product performance. In this sense, informing about alternative raw material types will eliminate the high price problem.
- Determining and bringing solutions to the raw material and marketing problems of this sector, which is dominated by small and medium sized family-owned companies, will enable the sector to concentrate its domestic market target on export.
- The product which has the most usage area in raw material preference comes to stand out as MDF due to customer request. It should be proposed as particleboard and plywood alternative products in areas that can meet the expectations of the customers.
- It is seen that price, customer demand and resistance characteristics are effective in the choice of raw materials. In particular, the selection of suitable material for the purpose of use of the product will cause the price disadvantage to be eliminated. For this reason, it is considered important for the producer to take training to increase the level of knowledge in material selection.

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