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The sustainability dilemma in the Turkish furniture industry: The case of MASKO

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ABSTRACT: This study examines the sustainability approaches and attitudes of the Turkish furniture industry by focusing on MASKO (Istanbul Furniture and Wood Products Manufacturers Site Management Cooperative), a cluster representing the sector. To develop a multi-stakeholder perspective, the qualitative research presented focuses on the cluster's three main stakeholder groups: producers, consumers, and designers. Thematic analysis of semi-structured interviews with 30 participants revealed five themes related to (i) sustainability perceptions, (ii) transformation in materials and production, (iii) market dynamics, (iv) design practices, and (v) policy expectations. The findings indicate that current sustainability transformations in the sector are largely focused on the requirements of export markets. The study also reveals that sustainability priorities and perceptions differ among stakeholder groups. While manufacturers emphasize cost-effective longevity, designers prioritize life-cycle-based strategies, and consumers mostly focus on reliability and health issues. This study highlights modularity, repairability, policy support mechanisms, and certification frameworks as potential leverage points for sustainability transitions in the sector.

Keywords: Furniture industry, sustainability, furniture design

Türk mobilya sektöründe sürdürülebilirlik ikilemi: MASKO örneği

ÖZ: Bu çalışma, sektörü temsil eden bir kümelenme olan MASKO'ya (İstanbul Mobilya ve Ağaç Ürünleri İmalatçıları Site Yönetimi Kooperatifi) odaklanarak Türk mobilya endüstrisinin sürdürülebilirlik yaklaşımlarını ve tutumlarını incelemektedir. Çok aktörlü bir bakış açısı geliştirmek amacıyla, sunulan nitel araştırma kümelenmenin üç ana paydaş grubuna odaklanmaktadır: üreticiler, tüketiciler ve tasarımcılar. 30 katılımcıyla yapılan yarı yapılandırılmış görüşmelerin tematik analizi, (i) sürdürülebilirlik algısı, (ii) malzeme ve üretimdeki dönüşüm, (iii) pazar dinamikleri, (iv) tasarım uygulamaları ve (v) politika beklentileri ile ilgili beş tema ortaya çıkarmıştır. Bulgular, sektördeki mevcut sürdürülebilirlik dönüşümlerinin büyük ölçüde ihracat pazarlarının gereksinimlerine odaklandığını göstermektedir. Çalışma ayrıca, sürdürülebilirlik öncelikleri ve algılarının paydaş grupları arasında farklılık gösterdiğini ortaya koymaktadır. Üreticiler maliyet etkin uzun ömürlülüğü vurgularken, tasarımcılar yaşam döngüsü temelli stratejilere öncelik vermekte ve tüketiciler ise çoğunlukla güvenilirlik ve sağlık hususlarına odaklanmaktadır. Bu çalışma, modülerlik, onarılabilirlik, politika destek mekanizmaları ve sertifikasyon çerçevelerini sektördeki sürdürülebilirlik geçişleri için potansiyel kaldıraç noktaları olarak öne çıkarmaktadır.

Anahtar kelimeler: Mobilya endüstrisi, sürdürülebilirlik, mobilya tasarımı

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1 Introduction

Environmental crisis and limited availability of material and energy resources, globally forces all economies to a transition to more sustainable production and consumption patterns. In the sustainability debate, furniture industry is particularly affected due to its heavy use of wood-based materials and end-of-life waste management processes (Candan et al., 2024). According to the literature, sustainability transition in the furniture sector is affected by business dynamics, facilitative policies and expectations of distinct actors including manufacturers, designers and consumers (Kuys et al., 2021; Bayraktaroğlu and Soylu, 2024). Furniture industry in Türkiye historically evolved from small-scale craft manufacturing to industrial production responding to the factors such as urban immigration, construction industry fostering housing opportunities, increased number of nuclear family houses and global trends. In the context of Turkish economy, the furniture industry holds an important position in overall export share with its increasing production capacity (Ticaret Bakanlığı, 2021). Moreover, Turkish furniture sector's ongoing efforts to integrate into global markets makes alignment with sustainability goals increasingly important (Türkiye İhracatçılar Meclisi, 2023).

The existing literature addressing sustainability in the Turkish furniture sector often employs single-actor (manufacturer, consumer or designer) perspective to examine the sector. Studies frequently highlights the manufacturer perspectives (Komut and Öztürk, 2017; Singer and İlçe, 2024), consumer perceptions towards furniture design and changing market perspectives (Güzel, 2020; Baradayı and Sedefoğlu, 2025). Design decisions are directly related to sustainability goals, since a product's environmental, economic and social impact is largely determined at the design phase. In addition to policy makers, public authorities, consumers and civil organisations (Farla et al., 2012), designers play a crucial role in the sustainability transitions due to their agency in creation of new products, services, and meanings within new socio-technical systems (Gaziulusoy and Öztekin, 2019). Examining the similarities and differences between sustainability perspectives and expectations of manufacturers, designers and consumers in the furniture sector, might provide theoretical and practical contributions the sectors sustainability transitions.

The research aims to examine the implications of sector's multi-actor divergence in an organised trade centre, such as MASKO (Istanbul Furniture and Wood Products Manufacturers Site Management Cooperative). Thus, the main objective of presented study is to conduct an in-depth qualitative analysis of sustainability trends in the Turkish furniture sector, using the example of MASKO in Istanbul, through examining the perceptions, practices, and expectations of manufacturers, designers, and consumers. It also aims to identify areas of conflict and balance among these actors and develop concrete policy and design-oriented recommendations for the sustainability transitions in the sector.

1.1 The context of sustainability in the furniture sector

The framework of sustainability was identified through the concept of development which considers not only needs of today but also capacity of future generations meeting their needs. This definition has revealed a comprehensive understanding that includes economic, social and environmental dimensions (Brundtland, 1987).

Sustainability in the furniture sector cannot be reduced to isolated environmental, economic, or social dimensions. Economic viability, for instance, depends on environmentally responsible resource management and long-term material efficiency. In practice, this intersection often translates into lifecycle-oriented strategies such as modularity, repairability, and product–service systems (Ibrahim and Putri, 2025; da Silva Cavalcante, 2024). On the other hand, socio-cultural sustainability involves inclusive design, safe production conditions,

fair labour practices, and the elimination of harmful materials. In this context, sustaining furniture craft traditions, integration of local materials and utilisation of artisanal knowledge in manufacturing processes can strengthen both environmental and social sustainability (Dikmen and Toruk, 2017).

The sustainability debate has evolved from eco-design to circular design. This evolution emphasises increased use of renewable resources, slowed material cycles, and local inputs (Morseletto, 2020; Güneş and Demirarslan, 2020). Sustainability transitions embody complex decision-making processes. For instance, in the furniture sector, the shift from solid wood to composite panels, present trade-offs. Composites may enhance material efficiency, but solid wood can better support longevity and reduced chemical exposure depending on design context. Therefore, minimising environmental impact requires lifecycle-based decision-making at the design stage (Çınar, 2005; Yang et al., 2025).

Since the beginning of the sustainability debate, many overreaching goals and related policies were introduced internationally. As one of them, the European Green Deal has made low-carbon production systems mandatory in natural resource-based sectors including furniture, aiming for carbon neutrality by 2050 (Candan et al., 2024). Beyond its environmental ambition, the European Green Deal also functions as a trade-regulating framework that indirectly restructures production systems in export-oriented sectors. Carbon reporting requirements, traceability standards and obligatory sustainability certifications influence market access conditions of non-EU producers (Özözen, 2024; Matias et al., 2024). In the scope of furniture manufacturing, this deal points out; energy and water efficiency in manufacturing, waste management, recycling, eliminating or reducing harmful components and chemicals, renewable resource use such as Forest Stewardship Council (FSC) certified wood and solar energy, and use of certification systems (Yılmaz, 2014; Matias et al., 2024).

Studies highlight that brands generally communicate environmental goals and achievements much more than social and economic sustainability (Primožič and Kuntar, 2022). Furniture brands often utilise online platforms, specific eco-labels and educational storytelling. Nevertheless, there is always a potential that greenwashing might change consumers potential positive attitude towards sustainable furniture negatively (Caldas et al., 2021). As a part of the global sustainability goals, Türkiye also takes steps at the policy and market level. The Turkish Exporters Assembly in its Sustainability Action Plan, clearly outlines the sector's green transformation goals, certification processes, and net-zero vision (Türkiye İhracatçılar Meclisi, 2023). Literature on Turkish furniture sector addressed the importance of designer awareness and education/certification levels in sustainable furniture production (Komut and Öztürk, 2017). In the context of consumer perspectives, the literature points out that quality, material, price, comfort (Yıldırım and Aslan, 2022), product styles and ease of use (Atılgan et al., 2018) were prominent. Additionally, environmentally conscious design approaches are discussed with material efficiency, waste reduction and health–environment-focused principles (Güneş and Demirarslan, 2020).

Design decisions are directly related to all these different layers of sustainability, since a product's environmental, economic and social impact is largely determined at the design phase. Green design, green material selection, product-service systems, and the adaptation of new technologies are frequently highlighted in the literature (Baumgardner and Nicholls, 2020; Yang et al., 2025). Durable construction, timeless aesthetics and adaptability potentially reduce the early replacement and extend the lifespan of a furniture. Additionally, selection of recyclable and renewable materials at the design phase can reduce the waste production (Güneş and Demirarslan, 2020; Candan et al., 2024). Moreover, incorporating life cycle assessments, enables the quantification of the environmental impacts of design decisions (Wenker et al., 2018).

1.2 The historical development of Türkiye's furniture sector

China, the United States, Germany, and Italy are among the largest manufacturers in global furniture production and shape trends (Sanayi ve Teknoloji Bakanlığı, 2020; Çiftçi and Demirarslan, 2021). Türkiye accounts for 1.6% of global furniture exports, with its export rate increased by 123% between 2012 and 2021 (Candan et al., 2024). This progress indicates significant economic output and highlights the strategic value of the sector due to its high employment potential and intensive use of local natural resources (Damlayıcı and Arslan, 2024).

Turkish furniture sector evolved through several shifts. The history of furniture production in Türkiye reflects a rich heritage stretching from the Ottoman Empire to the present day. During the Ottoman period woodworking, marquetry and carving techniques were used in production (Demirarslan, 2017). In the Republican era, modernist approaches emerged under the influence of urbanisation and industrialisation. Production in the 1950s was limited to small workshops due to material and capital constraints. Yet pioneering companies such as Moderno, Şark Mobilya and Kare Metal set the foundations for modern production (Tuna Ultay et al., 2024).

Though Turkish economy was still largely closed to external actors, furniture design drastically changed before 1980s and fostered a gradual shift in manufacturing facilities too. Academic designers such as Nezih Eldem and Önder Küçükerman were leading the integration of modernist approaches into Turkish furniture design in the 1960s and 1970s. In this period, modern furniture design and manufacturing processes adopted by more and more companies. Production and trade clusters such as Siteler in Ankara and Modoko in Istanbul were established (Demirci and Efe, 2006). During 1980s, the opening-up policies increased the export potential of the furniture sector and created a need for institutionalisation. In this context, MASKO was established as a cooperative of furniture and wooden goods manufacturers on 19 March 1984 (MASKO, 2025). In this period, furniture sales were mainly driven by increased housing projects in the country. A study focusing on competitive advantage of Turkish furniture sector highlights the role of R&D, design and marketing as critical factors enhancing sectors' competitive advantage in early 2000s.

MASKO has gone beyond being merely a retail shopping centre by creating an organised trade structure that brings together furniture manufacturers, designers and consumers. Similar to other clusters established at certain locations of the country, MASKO has provided a showcase for diverse manufacturers with different scale and market orientation. Today, MASKO houses 778 companies, offering a wide range of products including residential, office and other furniture categories, home textiles, and decoration products. Moreover, MASKO has made significant contributions to the furniture sector by fostering domestic market and exports (Serin et al., 2014). Thus, as a cluster, MASKO potentially illustrates complex relationships of distinct actors.

2 Methodology

2.1 Research design

This study aims to analyse sustainability transitions in the Turkish furniture sector, using the example of MASKO, through examining the perceptions, practices, and expectations of manufacturers, consumers and designers. Thus, the study adopts a qualitative, exploratory research design, grounded in an interpretivist case study approach (Yin, 2018). The exploratory orientation corresponds to the limited empirical research on sustainability transitions within the Turkish furniture sector (Creswell and Poth, 2017). Therefore, the research does not aim to develop a statistically generalisable claims about the entire sector.

The sample size was determined according to the principle of thematic saturation (Creswell & Poth, 2017).

The selection of MASKO as the empirical case is theoretically informed. The literature on sustainability transitions emphasises that systemic change emerges through interactions between actors, market structures, regulatory pressures, and socio-technical practices (Geels & Schot, 2007). MASKO was selected as a theoretically relevant case due to its position as one of the largest SME-based furniture clusters in Türkiye. As a geographically concentrated production and retail ecosystem, the cluster operates at the intersection of domestic price-sensitive markets and export-driven sustainability standards. Examining this cluster therefore enables analytical insight into the dynamics of sustainability transition within emerging-economy furniture sectors. Moreover, it constitutes a strategic observation site in which global regulatory pressures and local production realities intersect. In this sense, MASKO functions as a micro-level arena where sustainability-related tensions within the Turkish furniture sector might be observed in practice within a bounded case (Yin, 2018). For this study, three actor groups included in the investigation, which are (i) manufacturing companies operating in MASKO, (ii) designers (architects/interior designers) collaborating with these companies, and (iii) consumers who shop or plan to shop at the cluster. Participant information are presented at the Table 1.

Table 1. Research participant information table

Code	Group	Age / Gender	Occupation
P1	Manufacturer	43 E	Furniture Sales Manager
P2	Manufacturer	33 M	Company Owner
P3	Manufacturer	27 M	Company representative
P4	Manufacturer	25 M	Company representative
P5	Manufacturer	35 M	Board member
P6	Manufacturer	38 M	Sales Manager
P7	Manufacturer	54 M	Regional Manager
P8	Manufacturer	46 M	Sales Manager
P9	Manufacturer	36 M	Sales representative
P10	Manufacturer	27 M	Board Member
D1	Designer	25 F	Interior Architect
D2	Designer	24 F	Interior Designer
D3	Designer	27 F	Interior Designer
D4	Designer	25 M	Furniture Designer and Interior Designer
D5	Designer	29 F	Interior Designer and Environmental Designer
D6	Designer	23 M	Interior Architect and Environmental Designer
D7	Designer	25 M	Interior Designer
D8	Designer	43 M	Furniture Designer and Interior Designer
D9	Designer	23 M	Interior Architect
D10	Designer	23 K	Interior Designer
C1	Consumer	33 E	Civil Engineer
C2	Consumer	25 K	Genetic Engineer
C3	Consumer	20 K	Student
C4	Consumer	34 M	Sales representative
C5	Consumer	26 M	Doctor
C6	Consumer	28 M	Flight attendant
C7	Consumer	26 F	Social media specialist
C8	Consumer	30 F	Child development specialist
C9	Consumer	45 M	Civil Engineer
C10	Consumer	38 M	Wind power plant manager

The semi-structured interview guide was developed based on the literature review and iteratively refined during the early stages of fieldwork (Atılgan et al., 2018; Güneş and Demirarslan, 2020; Yıldırım and Aslan 2022; Türkiye İhracatçılar Meclisi, 2023). The study was conducted between May and September 2025 using purposive sampling. The face-to-face interviews were conducted with 30 participants: manufacturers (n=10), designers (n=10), and consumers (n=10). Participant recruitment continued until thematic saturation was reached. Manufacturers were selected among those who responded positively to the invitation email sent to all MASKO firms. The ten participating designers were mostly employed by selected manufacturers. Consumers were recruited on-site among individuals visiting and shopping at the selected firms, and who agreed voluntarily to participate.

2.2 Data collection and analysis

Each interview took around 30-40 minutes. Audio recordings of interviews were transcribed into text through Transkriptor software and anonymised to conduct a thematic analysis. The exploratory study was concluded when the researcher observed data saturation. The thematic analysis was conducted following Braun and Clarke's (2006) reflexive approach. Coding combined literature-informed sensitising concepts with inductive identification of meanings emerging from the data. Coding was conducted by the first author and subsequently reviewed by the second author to ensure analytical consistency. The analysis progressed iteratively through familiarisation, initial coding, clustering of related codes into categories, and interpretive development of themes. This process resulted in 298 codes organised into 20 categories and synthesised into five overarching themes. Identified themes were continuously reviewed against the dataset in order to keep internal coherence.

3 Findings and Discussion

Findings of the thematic analysis were discussed under identified five themes in order to develop a cross-actor understanding on sustainability transitions. As shown in Table 2, designers (n=112) and manufacturers (n=108) generated a substantially higher number of coded references compared to consumers (n=78), indicating a more articulated sustainability discourse among professional actors. Among five themes, *Policy and Future Expectations* (n=41), and *Market Dynamics and Cost Reality* (n=47) accounted for comparatively fewer coded references. Material transformation and design-related themes constituted the dominant areas of discussion.

3.1 The sustainability dilemma: from perception to practice

Diverse perspectives of sustainability among the participants were identified in four categories: level of knowledge, knowledge sources, environmental awareness and health perception (Table 2).

Manufacturers generally approached sustainability through operational pragmatism. Most associated it with durability, efficient material use, and maintaining product quality under economic constraints. It was frequently framed as a market trend or external expectation. Manufacturer perspectives still don't link sustainability with internally embedded organisational strategy that requires rethinking production systems or business models. In line with the literature highlighting the limited awareness of furniture manufacturers in Türkiye on the subject (Bayraktaroğlu and Soylu, 2024), findings of this study also showed that the level of knowledge is heterogeneous among participants. Several manufacturers highlighted cost–quality tensions when discussing sustainability. This indicates that, manufacturers may evaluate the environmentally preferable practices by considering feasibility and competitiveness.

Table 2. Thematic structure and distribution of codes across actor groups (n = 298)

Theme	(n)	Category	P* (n)	D* (n)	C* (n)	Total (n)
1- Sustainability from Perception to Practice	64	Level of Knowledge	4	9	13	26
		Environmental Awareness	3	2	8	13
		Knowledge Sources	2	7	13	22
		Health Perception	1	0	2	3
2-Transformation in Materials and Production Processes	74	Waste Reassessment	3	0	4	7
		Preference for Natural/Local Materials	12	12	3	27
		Energy Saving Applications	4	1	0	5
		Recycled Materials	11	5	0	16
		Sustainable Production Methods (CNC, 3D Printing, Automation, Artificial Intelligence)	10	8	1	19
3- Market Dynamics and Cost Reality	47	High-Cost Factors (raw materials, energy, labour)	4	5	0	9
		Price-Focused Consumption Behaviours	5	6	11	22
		Domestic Market-Export Balance	4	2	1	7
		Scale: Boutique Production vs. Industrial Production Comparisons	9	0	0	9
4- Innovation and Durability in Design	72	User Safety	1	0	2	3
		Modularity-Repair/Renovation	5	12	6	23
		Trend and Fashion Influence	6	12	5	23
		Longevity/Quality	4	14	5	23
5- Policy and Future Expectations	41	Government Support and Incentives	9	1	0	10
		Future Forecasting (Technology, Market Trends, Changing Consumer Expectations)	7	15	4	26
		International Competition and Export Targets	4	1	0	5
Total	298		108	112	78	298

*P = Manufacturers; D = Designers; C = Consumers

Designers reflected a more conceptually integrated perspective of sustainability. Most frequently notions mentioned by participants included durability, repairability, modularity and lifecycle thinking. As D4 stated, “Durability and repairability embody sustainability”, emphasising that design decisions shape environmental impact across the product lifespan. Unlike manufacturers, designers were more likely to frame sustainability as a design responsibility. However, knowledge acquisition was often informal and mediated through digital platforms and professional networks. Thus, it is possible to claim that sustainability expertise within design practice might be developing organically in the sector. Social media was referred to as an information source for sustainability by designer participants. For example, D3 stated that she collects sustainable product design examples from social media and uses them when developing new ideas. None of the designers mentioned systemic educative processes or professional knowledge resources.

In line with the literature, consumers' knowledge and awareness of sustainability have found to be relatively low (Candan et al., 2024). Some participants, such as C7 and C9, complained about the lack of visible information related to the sustainability within stores. Thus, sustainability might remain weakly institutionalised at the point of sale and consumer engagement. In such a situation, sustainability communication might depend largely on individual initiative. Additionally, the expectation for healthy products has come to the fore, particularly in children's furniture. As discussed in the literature, research shows that in addition to price, the use of non-toxic materials and chemicals largely influences the purchasing decision mechanism for children's furniture (Wan and Toppinen, 2016).

This indicates that further analysis is required to identify what type of information is valuable for enhancing Turkish consumers perceptions towards sustainable furniture. However, before that, perhaps a clearer understanding of sustainable furniture among designers and manufacturers might be developed and communicated with consumers in order to raise awareness and transform consumption patterns. Similarly, P9 explains how he benefits from social media by emphasising the need to increase communication on sustainable furniture through online and offline channels including podcasts. More conventionally, some participants, such as D9, pointed out the need to organise sustainability trainings in collaboration with academia and industry associations and to raise awareness among the young generation on the subject.

3.2 Transformation in materials and manufacturing processes

Consistent with literature, participants frequently framed sustainability through material transformation (Güneş and Demirarslan, 2020; da Silva Cavalcante, 2024;). This theme covers categories such as recycled and local/natural material preferences, revaluation of waste, energy saving, digital production methods (such as CNC, 3D printing, artificial intelligence), and difficulties in accessing sustainable materials (Table 2).

Manufacturers participated in the study, pointed out material transformations as one of the most critical factors for sustainability transitions of the sector. One participant noted, “since we produce plastic products, the issue of recycling and environmental friendliness is somewhat our concern” (P1). According to them, recyclability of components and utilisation of recycled materials were perceived as a sign of environmental responsibility. However, participants were also aware of the performance limitations (“quality issues can arise,” P3). Similarly, participants often explained their preference for local materials based on economic motivations. Import costs and supply uncertainty might be encouraging manufacturers to show interest in local wood and components. Participating manufactures were knowledgeable about sustainability certificates and EU regulations. Nevertheless, environmental benefits of locally sourced materials were not mentioned by participants. Additionally, biodegradability, material reuse or package waste were not mentioned at all. In this manner, it is possible to claim that manufacturers might be preferring to keep their existing processes, while expanding sustainable material use.

Designer participants, on the other hand, tended to interpret material transformation as a space for innovation. They have discussed not only the environmental properties, but also aesthetic potentials of recycled and green materials. Additionally, some designers highlighted the role of lifecycle evaluations for an effective material transformation in the sector. However, none of them had mentioned a lifecycle assessment software they use during design processes. At this point, lack of lifecycle assessment might increase the risk of superficial “green” positioning (Caldas et al., 2021).

Consumers’ perspectives on material transformation were relatively indirect. For instance, C2 expressed trust in “natural wood” and emphasised health-related indications in children’s

furniture categories. However, as expected, none of the consumer participants mentioned FSC or formal traceability mechanisms. Moreover, the concept of "recycled material" might be associated with weakness in consumer perspectives. Thus, in order to make material sustainability visible in consumer perception, manufacturers and designers might focus on tangible attributes. Such as perceived naturalness or safety. Moreover, the sector should invest in better communication of material driven sustainability indicators to convince consumers.

Similarly, waste reassessment practices illustrate the pragmatic approach of the cluster. Several manufacturers, such as P4 and P9, described reusing production leftovers in new models or implementing separation systems for waste streams. While such practices reflect circular economy principles (Morseletto, 2020), they might remain incremental and practice-based. In particular, supportive services introduced by local authorities may contribute efficiency of material cycles. Creating production ecosystems that enable industrial symbiosis also to enable significant opportunities for new entrants and actors in the sector. Furthermore, the development of innovative proposals focusing on the reuse of waste components and materials in furniture design will contribute to establishing new relationships between actors of the industrial ecosystem.

Shift from massive wood to composite boards and panels in the furniture manufacturing, have potentials to reduce cost and environmental footprint during logistics (Li et al., 2019). However, overall repairability of products might reduce and might even cause hazardous health effects due to bonding chemicals. Thus, novel designs are required utilising materials and manufacturing techniques with less footprint. Perhaps, that would be another shift in the evolution of Turkish furniture sector. Additionally, industrial forestry has not yet reached the expected levels of wood material production in Türkiye (Bayraktaroğlu and Soylu, 2024). This situation may create an opportunity for new domestic suppliers to enter the sector. Furthermore, it may also be an opportunity for domestic equivalents of other imported components used in production to gain a position in the market.

According to the findings, although interest in utilising renewable energy is widespread among manufacturers, energy-saving efforts were incremental, often limited to low-consumption machinery and maintenance optimisation (P7). Larger-scale renewable energy investments were perceived as financially burdensome. This resonates with sectoral findings that high initial costs hinder broader sustainability adoption in furniture manufacturing (Candan et al., 2024). Legislations and financial support mechanisms might foster such a transformation.

Material and production transformation within the cluster operates at the intersection of economic constraint, design experimentation, and consumer perception. For manufacturers, material shifts are evaluated through cost control and quality assurance; for designers, through lifecycle integration and innovation potential; and for consumers, through trust and health-related cues. Literature frequently positions material substitution as a central driver of sustainable transition (da Silva Cavalcante, 2024). Yet the findings suggest that in the MASKO context, material level change alone is insufficient to generate systemic transformation. Without reliable domestic supply chains, accessible certification frameworks, and clearer communication infrastructures, sustainability remains pragmatically implemented topic. In this sense, economic pressures may function both as barriers and as catalysts for localised sustainable material development.

Additionally, new technologies, such as 3D printers and artificial intelligence as tools for digital design and production methods were highlighted in the findings as tools empowering the design process (P1). Moreover, artificial intelligence is also suggested to be used in planning, optimisation, and cost estimation. Use of new technologies will help furniture

manufacturers to further automate the production processes, experiment with novel joint techniques and develop custom furniture surfaces using AI.

3.3 Market dynamics and cost reality

This theme covers manufacturing cost pressure, price-focused consumer behaviour, the domestic–export market balance, and the impact of production scale on sustainability (Table 2). Manufacturers participated in the study, repeatedly emphasised rising raw material, energy, and labour costs as limiting factors. The existing literature also points out economic feasibility as a dominant barrier in the Turkish furniture sector (Candan et al., 2024; Bayraktaroğlu and Soylu, 2024). Several participants particularly mentioned that the cost of sustainability transitions might result as loss of competitiveness in the domestic market (P4, P7, P8).

Firms are aware of the international sustainability goals. P8 for instance, pointed out the demand for sustainable products for export markets, as a contrast to domestic market. This observation aligns with the research suggesting that export orientation often accelerates sustainability transitions (Özözen, 2024; Bayraktaroğlu and Soylu, 2024). However, such a dual perspective, might limit sustainability as a compliance-driven feature. Additionally, manufacturers also pointed out the production scale as a factor affecting transition. Several manufacturers argued that large-scale industrial producers were better positioned to absorb certification costs and to invest in technological upgrades. At the same time, smaller boutique firms were perceived as more flexible in adopting new production models.

Designers, on the other hand, highlighted a tension between sustainability and trend-based consumption. As D2 stated, “the customer pays attention to fashion, sustainability takes a back seat.” This finding resonates with studies illustrating that consumer preferences in furniture purchasing are influenced by style, brand, and price (Atılgan et al., 2018; Yıldırım and Aslan, 2022). Designers often try to keep up with the trends. Thus, durability-oriented design becomes a harder market proposition.

Consumers participated in the study also confirmed the importance of style and market trends for their purchase decision. Participants also indicated that affordability and perceived quality is often more important than environmental considerations. Consumers tended to associate good quality furniture with durability and brand familiarity. As studies indicate, participants were not willing to pay more for sustainable products, even though environmental awareness exist (Güzel, 2020).

Price sensitivity in the domestic furniture market stands out as the most prominent issue for both manufacturers and consumers. While companies targeting local market might struggle to create a demand for sustainable furniture, export-oriented companies can play a critical role in transforming the sector. Exporters tend to adopt sustainability standards and sustainable product aesthetics earlier and also have the potentials to drive systemic change across the supply chain.

3.4 Innovation, durability and safety emphasis in design

Almost all participants emphasised the critical role of design and innovation in sustainability. This theme encompasses the fundamental elements of sustainable design such as modularity, repair/renewal, longevity and user safety. While Theme 1 revealed durability as a shared conceptual anchor, this theme focuses on how durability is translated into concrete design practices.

Manufacturers frequently acknowledged the value of modular and repair-friendly systems. For instance, P5 emphasised the long-term benefit of the strategy by stating, "making modular products is more costly but provides the customer with the convenience of replacing parts".

Quality and longevity were also repeatedly framed as sustainability indicators by manufacturers. Such as P2, who claims that “if we produce good quality products, customers won’t replace them repeatedly”. This is aligned with research suggesting that product lifespan extension is a key sustainability strategy in furniture design (Yang et al., 2025). However, the willingness to invest in modular or repairable products is also dependent on economic feasibility of the strategy.

Designers approached sustainable furniture design by linking durability with lifecycle, adaptability and disassembly logic. For instance, D1 mentioned the technical advantage and stated that, "modular seating elements with fewer connections, makes it easy to assemble and disassemble". Designers also highlighted timeless aesthetics and functional adaptability to reduce premature product replacement. Even though following and adopting global trends is a part of the design process, this perspective situates sustainability in design logic itself. Many participants also acknowledged the pressure of fashion cycles and aesthetic turnover on longevity-oriented strategies. In this context, smaller companies with boutique manufacturing models may offer more experimental and innovative approaches to sustainable furniture. Introducing a new design language around the mentioned notions, might be a challenging but fruitful strategy.

Consumers often pointed out design and innovation as drivers for a sustainability shift. Particularly, they emphasised longevity and repairability as desirable qualities of sustainable furniture. For instance, C6 indicated that repairability is a reason for preference, stating, "a product that can be repaired when broken is more reliable". In general, product quality was also perceived as an integral part of sustainability. Finally, safety, especially for children's furniture, was pointed out as a critical purchasing criterion and sustainability feature by consumers. C3 stated, "I prefer products that do not have a chemical smell and do not cause allergies".

This theme reveals that durability operates as a shared sustainability narrative and a practical design strategy with varying degrees of implementation. Yet durability in the context of sustainable furniture, indicates much more than longer lifespan. As designers and manufacturers pointed out, modularity and repairability might be a potential starting point for developing innovative and sustainable products. Turkish consumers have already been educated with modular and flat packaged products, thanks to large international manufacturers entered to the country in early 2000s. Considering the lifecycle of products, not only material transformation, but also designing novel joints and use scenarios might influence consumer behaviour towards the sustainable product purchase.

3.5 Policy support and future expectations

The final theme analyses the macro-level determinants of the sustainability transitions in the sector, including government supports, international competition, export goals, and future projections. As the research by Bayraktaroğlu and Soylu (2024) highlights, global economic dynamics, policies, and legislations largely support or hinder the sustainability transitions of individual furniture companies.

Almost all manufacturers who participated in the research underlined the role of government support and incentives as a catalyst for the widespread adoption of sustainability practices in the sector. Lifecycle driven tax policies might contribute to a transition to sustainability. Such an approach would support industrial symbiosis in the sector and enhance collaboration between actors of the value chain for closing material loops.

Manufacturers indicate a clear demand for policy support and financial incentives to enable a sustainability transition in the sector. P4 stated that "there is no state support; if there were incentives, more investments would be made". Similarly, P5 stated that, if the state provides

support, companies will use sustainable materials much more". These findings resonate with the literature underlining importance of governmental support mechanisms (Candan et al., 2024). Additionally, manufacturer participants point out that, international competition and export goals requiring stricter sustainability standards. Participants anticipated that sustainability would become mandatory within the next decade. For example, P4 predicted that "within 5–10 years, everyone will have to switch to sustainable production". This forward-looking perspective indicates awareness of structural change, such as the requirements of EU Green Deal. However, the findings indicate that current implementations might be inadequate to drive a systemic sustainability shift. For example, new business models, buyback programs, or digital product passports were not mentioned during the interviews

Similarly, designers are also aware of the problem. D8 provided concrete example related to the requirement that all fabrics be recycled in overseas projects. Regulatory frameworks increasingly prioritise material traceability and design for disassembly strategies. On one hand, glue-heavy, mixed-material constructions become liabilities. Additionally, mechanical joints, mono-material strategies, and modularity gain regulatory value. However, the findings indicate that designers might be in a relatively reactive state in this context.

Consumers rarely referred directly to policy instruments. Yet expectations around transparency and reliable product information were evident. This suggests that policy influence at the consumer level operates indirectly through labelling systems, retail communication, and availability of certified options.

4 Conclusion

This research presents an in-depth qualitative examination of the perspectives of manufacturers, designers and consumers on identified themes of sustainability transitions in Turkish furniture sector. MASKO, as one of the largest clusters of Türkiye was studied as a case to shed light on the sustainability transitions. The findings indicate that:

- Sustainability discourse is primarily centred around material transformation and design-related practices.
- Designers (n=112) and manufacturers (n=108) articulated aspects of sustainability more extensively than consumers (n=78).
- Manufacturers seek easier access to government support and financing for necessary investments.
- Manufacturers tend to define the sustainability in terms of the more efficient use of material and energy resources and the use of recyclable materials.
- Modularity, repairability, and lifecycle-based design thinking are recognised within the cluster.

Strengthening sustainability education and industry–university collaboration, introducing practical design guidelines, and developing dedicated educational programmes incorporating applied life-cycle costing, material traceability, and circular business modelling could facilitate the adoption of more sustainability-oriented approaches in mainstream product development processes.

The policy implications of the study indicate that:

- Policies could focus on reducing regulatory dependency by embedding sustainability standards into domestic market structures.
- Financial support mechanisms for certification processes, renewable energy investments, and enhancing sustainable material sourcing in the supply chain could foster systemic transformation.

- Policy instruments that encourage business model innovation, supply chain transparency, and circular service systems may further accelerate sectoral transition.
- Cluster-based sustainability governance models could accelerate transition through shared certification platforms, collective training programmes, and supply chain coordination mechanisms.

This study, due to its qualitative and exploratory nature, cannot provide statistically generalisable information about the industry. As the case focuses on a major cluster in Istanbul, findings may not fully represent smaller or regionally differentiated markets. Future research could further examine the relationship between consumer expectations, design strategies, and technological innovation. Future studies might employ a quantitative orientation to gain a deeper understanding about the correlations between factors identified in this research.

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