



A perceptual impact model of material, quality, and identity in wood furniture consumers' value associations

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ABSTRACT: Wood functions simultaneously as a material and as a symbolic, aesthetic, and identity-shaping medium in the context of furniture products. This study investigates how perceptual and emotional factors influence material-related value formation and purchase intention within the wood-based furniture segment. Based on neuroaesthetics and identity psychology, a novel Perceptual Impact Model was developed and tested using nine psychometric indices, including the Emotional Sensory Load Index (ESLI), Perceived Craft Distinctiveness Index (PCDI), Aesthetic Cognitive Activation Index (ACAI), and Identity Resonance Quotient (IRQ). Data were collected from 145 participants selected according to criteria ensuring thematic and psychographic alignment with the aims of the study. Statistical analyses confirmed the significant influence of aesthetic coherence and symbolic identification on consumer engagement (e.g., IRQ ↑41% in the high-sensitivity group, $p < 0.01$). The findings highlight key drivers such as multisensory engagement, craftsmanship perception, and the alignment between self-image and material aesthetics. By translating subjective experience into quantifiable metrics, the model strengthens strategic design and branding decisions, supporting sustainable innovation across the wood-based value chain.

Keywords: Wood-Based Product Strategy, Value Integration, Decision Support

Ahşap mobilya tüketicilerinin değer ilişkilerinde malzeme, kalite ve kimliğin algısal etki modeli

ÖZ: Ahşap, mobilya ürünleri bağlamında hem bir malzeme hem de sembolik, estetik ve kimlik şekillendirici bir ortam olarak aynı anda işlev görmektedir. Bu çalışma, algısal ve duygusal faktörlerin, ahşap bazlı mobilya segmentinde malzeme ile ilgili değer oluşumunu ve satın alma niyetini nasıl etkilediğini incelemektedir. Nöroestetik ve kimlik psikolojisi temelli olarak, Dokunsal Etki Modeli (Perceptual Impact Model) geliştirilmiş ve Duygusal Duyusal Yük İndeksi (ESLI), Algılanan Zanaatkarlık Ayırt Ediciliği İndeksi (PCDI), Estetik Bilişsel Aktivasyon İndeksi (ACAI) ve Kimlik Rezonans Katsayısı (IRQ) dahil olmak üzere dokuz psikometrik göstergesiyle test edilmiştir. Veriler, çalışmanın tematik ve psikografik hedefleriyle uyumu sağlayacak kriterlere göre seçilen 145 katılımcıdan toplanmıştır. İstatistiksel analizler, estetik tutarlılığın ve sembolik özdeşleşmenin tüketici bağlılığı üzerindeki önemli etkisini doğrulamıştır (örneğin, yüksek hassasiyet grubunda IRQ %41 artış, $p < 0,01$). Bulgular, çok duyulu etkileşim, zanaatkarlık algısı ve öz imge ile malzeme estetiği arasındaki uyum gibi temel itici faktörleri vurgulamaktadır. Model, öznel deneyimleri nicel göstergelere dönüştürerek stratejik tasarım ve marka kararlarını sağlamlaştırmakta, ahşap bazlı değer zinciri genelinde sürdürülebilir yeniliği desteklemektedir.

Anahtar kelimeler: Ahşap-temelli ürün stratejisi, Değer entegrasyonu, Karar desteği

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1 Introduction

As a natural and renewable raw material, wood has regained strategic relevance in contemporary furniture design, particularly within the premium segment (Hosey, 2012; Dharsono, 2025). Shifting global consumer trends increasingly favour organic, sustainable, and emotionally rich materials that merge ecological awareness with aesthetic sophistication and serve identity-shaping purposes (Manna, 2025; Al Darwish, 2023). This emerging perspective also activates complex psychological, cultural, and neurological processes (Thakral et al., 2012).

In premium furniture, wood's role goes far beyond functionality — it embodies affective and cognitive dimensions, serving as a medium for emotional, ethical, and identity-related meanings. Consumers in this segment often base their decisions on material-related value associations. While many studies have examined wood's biological or physical properties, few have explored the systemic relationship between perceived material quality, consumer identity, and product choice in the context of wood-based furniture. Recent research has also highlighted material perception as a key mediator of sustainable consumer behaviour and design aesthetics (Karana et al., 2015; Pedgley et al., 2020).

At the same time, integrated frameworks from perceptual psychology offer new tools for analysing internal representations, emotional responses, and motivational patterns related to material selection (Earnshaw, 2017). These approaches allow the perceived meanings of wood products to be translated into measurable and comparable indices. This study introduces a novel perceptual framework integrating material quality perception and identity-related value associations, which has not been systematically modelled in previous wood design research.

The aim of this study is to determine how perceptual and affective factors, measured through nine psychometric indices, shape material-related value formation and decision-making among premium wood-based furniture consumers. The research applies an empirically validated model to identify the underlying emotional, aesthetic, and symbolic mechanisms through which wood contributes to value perception and purchase intent. This approach enables the translation of subjective user experiences into quantifiable data, supporting design, branding, and communication strategies within the premium segment. The findings offer not only theoretical contributions but also practical insights into how wood may be more effectively positioned, not merely as a raw material, but as a multisensory, emotionally resonant concept that strengthens the cultural and competitive relevance of sustainable design innovation (Manu et al., 2022).

2 Material and Method

2.1 Research context

The study was conducted within a clearly defined perceptual-experiential domain, interpreted through the representation of a target group that consumes and interprets premium wood-based furniture. In this sense, the research field focused on globally emerging wood perception patterns within a socially and culturally embedded, intellectual context, using an online research environment. Respondents predominantly comprised highly educated, urban individuals who actively engage in cultural consumption and show openness towards premium product categories. Participants typically demonstrated aesthetic sensitivity and receptiveness to themes associated with natural materials, sustainability, and value-based choices, making them particularly suited to the study of neuroaesthetic and identity-related wood perception. This perceptual "research zone" was delineated through participants'

material preferences, decision-making mechanisms, and psychological response patterns to wood. Mapping this interpretive domain was essential for developing and validating the eleven distinct indices measuring various dimensions of wood perception, from sensory detection and moral value to purchase intent.

2.2 Data collection

Data were gathered via a quantitative online questionnaire, completed by a sample of 145 participants, as part of a doctoral research project. Respondents were selected from an international professional network of approximately 5,566 individuals, built through my academic and research collaborations. While randomly accessed within the network, the sample was specifically segmented at entry level to target individuals who owned wooden furniture, ensuring high thematic relevance.

Participants were classified as consumers of premium furniture and selected through targeted sampling based on income level, design affinity, and sustainability orientation. As an inclusion criterion, respondents were required to own at least one high-value solid wood furniture item purchased within the last five years. Their responses enabled the statistical construction and empirical validation of eleven psychometric indices measuring multisensory engagement, craftsmanship perception, aesthetic coherence, material attachment, sustainability-value alignment, and symbolic self-identification, among others. The dataset provided sufficient statistical power ($n = 145$, $\alpha = 0.05$, CI 95%) for the reliable interpretation of affective, cognitive, and identity-related material perceptions. This granular approach allowed the model to capture subtle patterns of emotional resonance and decision-making within the premium consumption context.

The questionnaire was distributed via an online platform (Google Forms), allowing for efficient international reach. Responses were recorded using a five-point Likert scale (1 = not at all characteristic, 5 = fully characteristic), with whole-number responses only. Each item was aligned with dimensions introduced by the model, such as sensory perception, identity resonance, durability perception, moral satisfaction, aesthetic experience, and purchase intensity. The data collection aimed to generate responses with broad dispersion and interpretable trends, enabling statistical validation of the neuroperceptual model. Participant anonymity was ensured, and data handling complied fully with ethical research standards.

2.3 The applied model

This study introduces the *Perceptual Impact Model* (Figure 1) to investigate the process leading to purchase intention, with particular emphasis on the interplay between neuroaesthetics, multisensory perception, and identity-based evaluation. Structured in chronological phases, the model demonstrates how perceptions of a product's origin, quality, and sensory characteristics influence emotional engagement and purchasing desire. Six core values, sustainability, material and quality, durability, craftsmanship, art and design, and heritage, act as multidimensional perceptual fields that catalyse identity formation and affective experience. A summary of these stages, their perceptual components, and key diagnostic questions is presented in Table 1. These values are processed cognitively via sensory input, where affective responses (e.g. scent, texture, visual rhythm of wood) merge with memory and cultural representations (Bond et al., 2024). Multisensory stimuli such as tactile texture and visual cues have been shown to strongly influence perceived material quality and brand perception (Danielsson, 2025; Wang et al., 2025). The second level introduces perceived quality, shaped by the interaction between communicated promises and actual experiences. This aligns with predictive coding theory, where expectations shape

sensory interpretation; discrepancies affect perceived authenticity (Ji and Lin, 2022). At the third level, product identification occurs: the premium wooden object becomes integrated into the consumer's self-image, reflecting personal values, aesthetic sensibility, and social status (Kim and Heo, 2021). Wood's naturalness and visual uniqueness enable self-extension, echoing psychodynamic models of emotional attachment. The subsequent phase is emotional engagement, triggered by repeated positive experiences, especially when enhanced by craftsmanship, multisensory stimuli, and authentic storytelling. These activate neural reward systems (Ko, 2017; Spence, 2020) and are often reinforced by implicit memories of material durability and tactile familiarity (Harju and Lähtinen, 2021).

In this context, emotional loyalty extends beyond brand allegiance to encompass deeper, identity-driven commitment, particularly among consumers aligned with slow design and sustainable lifestyles (Al Darwish, 2023). The model culminates in purchase desire, a cumulative outcome of the previous stages. Decision intensity increases when resonance between consumer and product occurs on aesthetic, ethical, and sensory levels (Kim and Heo, 2021). Thus, purchasing transcends economics, becoming an act of aesthetic self-expression, cultural identification, and multisensory investment.



Figure 1. The perceptual impact model

Table 1. Perceptual impact model – overview table

Components and layers	Significance	Source	Key questions
Heritage	The symbolic meanings of wood tied to collective cultural memory evoke identity-level evaluations.	Bond et al. (2024)	Through which neurosocial mechanisms does wood trigger associations with cultural heritage, and how does this affect long-term value perception?
Art and design	The aesthetic symmetry of design elicits visual dopamine responses and aids memory encoding.	Spence (2020)	To what extent do texture and formal proportions of wooden furniture influence aesthetic experience?
Craftsmanship	Enhances the sense of authenticity, strengthening affective attachment to the object.	Ko (2017)	What role do traces of manual work play in forming emotional bonds and sensory evaluations?
Durability	Durability perception relies on implicit memory of prior material experiences.	Harju - Lättinen (2021)	How do tactile and visual impressions influence perceptions of material durability?
Material and quality	Wood's texture and colour activate instant quality expectations via multisensory input.	Daniels-son (2025)	How rapidly is wood's perceived quality detected in a multisensory context?
Sustainability values	The material conveys ethical and environmental values that contribute to identity formation.	Al Darwish (2023)	How are sustainability associations integrated into mechanisms of moral judgement?
Sensory experience	Touch, sight, and smell generate affective responses and preferences.	Wang et al. (2025)	How do wood's sensory stimuli affect perceptions of authenticity and aesthetic character?
Perceived quality	The alignment between marketing claims and real use shapes perceptions of quality authenticity.	Ji & Lin (2022)	How is the communicated quality integrated with the experienced quality?
Product identification	The furniture item, as self-extension, becomes a reflection of self-image and aesthetic values.	Kim & Heo (2021)	How do naturalness and originality contribute to self-representation?
Engagement	Repeated positive experiences foster loyalty and reinforcement.	Ko (2017)	How does emotional attachment affect memory traces related to wood?
Purchase desire	Emerges through cumulative perceptual effects when product values resonate with the individual.	Kim & Heo (2021)	What factors trigger motivational response patterns leading to purchase decisions?

2.4 Statistical methods and applied indices

The aim of the statistical procedures applied in this research was to map the psychological and emotional structures related to wood-based furniture products through complex response patterns. To achieve this, nine quantitative indices were developed, uniquely combining perceptual, affective, identity-based, and motivational responses. The calculation of the indices is based on simplified, transparent formulas, enabling both academic and industry use. These indices and their respective formulas are summarised in Table 2, along with their theoretical background and operational definitions.

Table 2. Perceptual indicators – detailed table

Indicator name	Calculation formula	Explanation	Description	Source
Material Identity Alignment Index	$MIAI = -\sum(P_i \cdot \ln(A_i))$	P_i : proportion of alignment with personal values; A_i : identity relevance of the given material	Degree of alignment between natural material and individual value systems	Kim & Heo (2021)
Perceived Craft Distinctiveness Index	$PCDI = \sum n_i(n_i - 1) / (N(N - 1))$	n_i : number perceiving craft details; N : total respondents	Detectability and distinctiveness of visible craftsmanship elements	Stern & Schwarzbauer (2013)
Emotional Sensory Load Index	$ESLI = (s - 1) / \ln(E)$	s : number of perceived sensory attributes; E : variance of emotional responses	Intensity of emotional reactions elicited by sensory experiences	Wang et al. (2025)
Sustainability-Value Integration Index	$SVII = \frac{\sum(S_i \cdot \ln(S_i))}{\ln(T)}$	S_i : sustainability factor value; T : number of value preferences	Integration of sustainability into personal value systems	Al Darwish (2023)
Aesthetic Cognitive Activation Index	$ACAI = \frac{\sum(p_i \cdot \ln(p_i))}{\ln(n)}$	p_i : frequency of design element perception; n : number of design elements	Aesthetic perception and cognitive engagement triggered by design	Spence (2020), De Luca & Termini (1972)
Perceptual Integrity Synchronisation Index	$PISI = \sum(C_i - T_i)^2 / n$	C_i : communicated quality; T_i : experienced quality	Discrepancy between communicated and experienced product quality	Ji & Lin (2022)
Identity Resonance Quotient	$IRQ = \sum(V_i \cdot \ln(V_i)) / \ln(s)$	V_i : identity dimension scores; s : number of identity factors	Resonance between product identity and consumer self-concept	Kim & Heo (2021)
Material Attachment Stability Index	$MASI = (A_t / T_t) \cdot \ln(R)$	A_t : current attachment; T_t : time-based stability; R : brand recognition	Temporal stability of material attachment and brand loyalty	Ko (2017)
Volitional Purchase Intensity Index	$VPII = \sum(P_i \cdot M_i)$	P_i : perceptual factor; M_i : motivational weight	Combined weight of perceptual and affective components in purchase decision	Kim & Heo (2021), Gibson (1979)

The eleven thematic questions and the nine developed perceptual indices are clearly interrelated, both in terms of content and methodology. Each question is underpinned by a specific psychological or neuroaesthetic dimension, which the respective index is designed to capture formulaically. Table 3 presents the most logically fitting pairings and briefly explains why each index is the most appropriate match.

Table 3. Thematic questions and assigned indices – summary table

	Thematic Question	Assigned Index	Justification
1.	Heritage	1. MIAI – Material Identity Alignment Index	Measures identity resonance and material associations based on alignment with personal values.
2.	Art and design	5. ACAI – Aesthetic Cognitive Activation Index	Captures neuroaesthetic activation through design using Shannon entropy weighting.
3.	Craftsmanship	2. PCDI – Perceived Craft Distinctiveness Index	Quantifies detectability and distinctiveness of hand-crafted details (Simpson-based).
4.	Durability	9. MASI – Material Attachment Stability Index	Reflects long-term material attachment and perceived durability via time-based ratios.
5.	Material and quality	7. PISI – Perceptual Integrity Synchronisation Index	Models coherence between communicated and experienced quality via predictive coding.
6.	Sustainability values	4. SVII – Sustainability-Value Integration Index	Measures how sustainability integrates into personal values (entropy ratio).
7.	Sensory experience	3. ESLI – Emotional Sensory Load Index	Captures intensity of emotional responses to multisensory stimuli (Margalef-based).
8.	Perceived quality	7. PISI – Perceptual Integrity Synchronisation Index	Again applies to match between perceived and communicated product quality.
9.	Product identity alignment	8. IRQ – Identity Resonance Quotient	Quantifies self-representation through naturalness and identity weighting.
10.	Commitment	9. MASI – Material Attachment Stability Index	Reflects long-term emotional and tactile attachment to wood.
11.	Purchase desire	10. VPPI – Volitional Purchase Intensity Index	Measures how perceptual and affective elements convert into purchase motivation.

3 Results and Discussion

Understanding wood's collective heritage meaning requires an interdisciplinary neurosocial approach. On a sensory level, wood's texture, scent, and colour create a multi-channel experience that elicits emotional and memory-based responses. Culturally, wood is often associated with tradition and craft heritage — particularly among premium product consumers, where material choice holds symbolic value (cf. Bourdieu's *habitus* (1984)). (Note: premium products are purchased across all social strata.) To quantify this, the classic MIAI index (combining value alignment (P) and identity relevance (A)) may be extended by a third heritage dimension (H), producing the following modified formula: $MIAI_h = -[0.6 \cdot P_{norm} + 0.4 \cdot H_{norm}] \cdot \ln(A_{norm})$. The specific questionnaire items used to operationalize this extended index are listed in Table 4.

Table 4. Measurement of heritage-related perceptions

Purpose	Question	Measurement
Value alignment	“To what extent does wood align with your personal values?”	P
Naturalness / authenticity	“To what extent do you feel that wood retains its original, natural quality even after processing?”	A
Collective memory / Tradition	“To what extent does wood remind you of home or cultural heritage?”	H
Purchase Justification	“Is it important to you that products carry a sense of heritage?”	Control
Perceived Timelessness	“To what extent do you consider wood a lasting and enduring value?”	Supplementary

Based on Likert-scale responses from 145 premium consumers, the calculated average value of the extended $MIAI_h$ index is approximately ≈ 0.17 , which corresponds to an identification level of $1 - 0.17 = 83\%$, indicating positive attachment to wood as a material. This high identification rate confirms that wood is an affective and symbolic material. This aligns with prior findings suggesting that material choices often serve identity expression (Grayson and Martinec, 2004; Miller, 2010). Wood's multisensory appeal and cultural embeddedness reinforce this bond (Plassmann et al., 2012), with premium consumers particularly sensitive to symbolic heritage as part of their self-image and social representation (Bourdieu, 1984). Brands and producers are encouraged to integrate authentic heritage storytelling to enhance emotional engagement and perceived product value.

The visual features of wood-based furniture – such as proportion, symmetry, and texture – have been proven to activate the brain's reward centres responsible for aesthetic evaluation (Sztuka et al., 2025). This cognitive activation generates emotional responses on one hand, and fundamentally influences material preference and attitudes towards design on the other. To quantify this phenomenon, the Aesthetic Cognitive Activation Index (ACAI) was developed, which is an information-theoretic, entropy-type indicator: $ACAI = \sum p_i \cdot \ln(p_i) / \ln(5)$ where p_a represents the relative frequency of each response point, and $n = 5$ denotes the number of scale points. The index measures the homogeneity, intensity, and mental

consistency of aesthetic response – the more responses are concentrated on a specific value (e.g. 4 or 5), the closer the ACAI moves towards 1.0. This index draws on Shannon Entropy principles to measure perceptual consistency and mental engagement. As entropy-based metrics have proven valuable in quantifying uncertainty and variability in cognitive and social domains (Krippendorff, 2019; De Luca and Termini, 1972), their application here offers a robust means of translating subjective aesthetic responses into analytically tractable data. Based on four Likert-scale questions (proportion, symmetry, texture experience, general aesthetic impression) posed to the participants, the aggregated ACAI score was -0.7921 , indicating a high level of cognitive-aesthetic identification, indicates high aesthetic coherence and affective engagement, supporting theories that visual aesthetics activate the dopaminergic reward system (Chatterjee and Vartanian, 2016). This underscores the value of purposeful visual design in enhancing product appeal and influencing decision-making. Emphasising these features in brand communication may reinforce long-term material preference. Wood as a material can evoke cultural, sensory, and emotional depth. In the third phase of the research, the perception of craftsmanship and its relationship to object intimacy is presented using the Perceived Craft Distinctiveness Index (PCDI). The four questions used in the study are shown in the Table 5.

Table 5. Perceived craft distinctiveness: item-level breakdown

Dimension	Question	PCDI Score
Q1 – Perceived uniqueness	<i>To what extent does the given wood-based object appear unique or unrepeatable to you?</i>	0.7742 (~77%)
Q2 – Valuing imperfection and naturalness	<i>How valuable do you find small flaws or irregularities that indicate the natural quality of handcrafting?</i>	0.7842 (~78%)
Q3 – Visibility of craftsmanship traces	<i>To what extent are signs of handwork (e.g. carving, joints, surface irregularities) noticeable to you on the object?</i>	0.8792 (~87%)
Q4 – Felt intimacy with the object	<i>To what extent does the handcrafted nature of the wood-based object create a sense of personal connection or intimacy?</i>	0.8646 (~86%)

PCDI findings reveal that handcrafted features play a vital role in emotional attachment. Consumers readily recognise uniqueness, natural imperfections, and traces of manual labour—elements that foster a sense of intimacy and enhance perceived authenticity. These outcomes mirror prior research on the emotional and symbolic value of craft (Dormer, 1997; Csikszentmihalyi and Rochberg-Halton, 1981; Pine and Gilmore, 2007). In both design and marketing, making visible such features, rather than hiding them, can enhance product loyalty. Communicating the maker’s role and the object’s uniqueness supports emotional value creation.

Emotional attachment to natural materials, especially wood, and perceived durability are key decision-making factors. Step 4 examined this via the Material Attachment Stability Index (MASI), a three-dimensional metric capturing attachment based on current emotional bond (A_t), temporal stability (T_t), and brand recognition or trust (R). A_t and T_t were measured on 1–5 scales; R was log-transformed ($R > 1$; $R = 1$ adjusted to 1.1). For the 145 respondents,

mean values were: $A_t = 4.103$; $T_t = 4.268$; $R = 3.754$, resulting in an average MASI score of 1.273—indicating stable, moderately strong attachment and high perceived durability. These findings confirm that attachment to wood is grounded in durability and emotional reliability, shaped by prior experiences and cultural-sensory attributes. They align with long-term consumer-brand relationship models, where material attachment drives loyalty and ecological responsibility (Schifferstein and Zwartkruis-Pelgrim, 2008). Messaging that highlights longevity, reliability, and intergenerational use may deepen consumer trust and identification. The fifth phase introduced the Perceptual Integrity Synchronisation Index (PISI), assessing alignment between communicated (C_i) and experienced (T_i) quality. It identifies sensory or perceptual dissonance (neuroperceptual conflict) when visually conveyed cues (e.g., in advertising or store displays) differ from tactile, olfactory, or auditory experiences. PISI uses squared deviation to quantify consistency; lower values indicate higher perceptual integrity, i.e., when experience meets expectations. While the index could be decomposed further, the present study focused on the basic model, as shown in the Table 6.

Table 6. PISI – Input dimensions and variables

Dimension	Variable	Question	Note
Communicated quality	C_i	<i>"To what extent does the wood-based furniture appear to convey premium quality at first glance?"</i>	Visual and expected quality
Experienced quality	T_i	<i>"To what extent did you experience premium quality when physically engaging with the wooden furniture over time?"</i>	Actual multisensory experience

The average PISI value measured in the sample was 0.2897, indicating strong, though not complete, synchrony between visually conveyed and actually experienced quality. Some minor dissonance remains, which is particularly relevant in the premium segment, where expectations are strongly shaped by visual cues. If the sensory reality (e.g., overly uniform or processed wood) fails to meet these expectations, brand credibility suffers. As predictive coding theory suggests (Clark, 2013), unmet expectations may trigger cognitive dissonance and reduce preference. Hence, aligning visual and tactile qualities is a key strategic priority. Step six investigates the embeddedness of sustainability values and moral decision-making. The Sustainability-Value Integration Index (SVII) assesses how participants perceive wood’s sustainability, and the extent to which they internalise it as a core moral value—specifically, how closely sustainability experience aligns with personal value preferences. The seventh table outlines the corresponding research questions.

The more values respondents associate with wood, the higher the level of sustainability-value integration. The SVII (Sustainability-Value Integration Index) captures four key dimensions: subjective perception of wood’s sustainability (S_1), ethical judgement (S_2), moral satisfaction (S_3), and adherence to social norms (S_4). It also includes variable T , denoting the number of values linked to wood. A higher T lowers the divisor, raising the index. In this study, the mean SVII was 18.3776, indicating a high degree of internalised moral-sustainability alignment among premium consumers. Wood is seen not just as eco-friendly, but ethically significant. Storytelling around origin, regeneration, and transparent life-cycle practices may enhance moral satisfaction and reinforce normative motivations.

Table 7. SVII: measurement of sustainability-value integration index

Dimension	Variable	Question
Sustainability Sensitivity	S1	"To what extent do you consider wood capable of balancing human needs with environmental limits compared to other materials?"
Ethical conviction	S2	"Do you consider it important to choose environmentally friendly materials from an ethical point of view?"
Satisfaction with moral choice	S3	"Is it important to you to select materials during purchase whose production does not require excessive environmental intervention?"
Group norm Compliance	S4	"To what extent do you perceive that environmental considerations play a real role in material choices within your social environment?"

Value Dimension	Variable	Question
Number of value preferences	T	"Which values do you feel are strongly connected to wood as a base material?"

The seventh phase focused on the sensory experience of wood—scent, texture, grain—shaping emotional identification and perceived quality. The ESLI (Emotional Sensory Load Index) measures both the number of sensory dimensions perceived and emotional coherence. A greater number of sensory inputs, coupled with low variance in emotional response, yields a lower (negative) ESLI score. The average ESLI of -5.9196 suggests high multisensory emotional synchronisation with wood. Participants consistently reported positive emotional associations across touch, scent, and visual stimuli. Low emotional variance indicates authenticity and alignment—critical in premium experiences. Natural textures and minor irregularities should be embraced as intentional emotional cues, not flaws.

In the eighth stage, the PISI (Perceptual Integrity Synchronisation Index) assessed the match between communicated and experienced quality. Predictive coding theory posits the brain compares sensory input with expectations. A low PISI signals harmony. The mean PISI here was 0.3103 , reflecting moderate synchrony but room for improvement. Marketing visuals promised high-quality material, yet sensory experience occasionally fell short, causing minor perceptual dissonance. These findings underscore the importance of aligning visual, tactile, and narrative brand elements across channels (Clark, 2013).

The ninth phase analysed the alignment between personal identity and perceived naturalness of wood using the IRQ (Identity Resonance Quotient). Grounded in identity resonance and self-representation theories, this metric evaluates self-identification, uniqueness, aesthetic sensitivity, and identity coherence. With an average IRQ of 16.9913 , results indicate that wood serves not only functional but symbolic, identity-relevant roles. According to resonance theory (Kirmani, 2009), people gravitate toward objects that affirm self-concept. Material choices become expressions of personal style, values, and social roles. Emphasising authenticity and uniqueness enhances emotional connection—especially in creative sectors where individuality drives preference.

The tenth stage used MASI (Material Attachment Stability Index) to assess material attachment and brand loyalty. MASI comprises three components: current emotional attachment (A_t), temporal consistency (T_t), and brand reliability (R). In this study, mean

values were $A_t = 4.103$, $T_t = 4.268$, $R = 3.754$, resulting in a MASI score of 1.6168. This suggests strong, stable consumer loyalty tied to positive sensory and emotional experiences. Early impressions—particularly tactile and visual—contribute to emotional learning and long-term brand preference. Strategic communication can reinforce this by recalling positive material memories.

The final phase integrated these insights using the VPPI (Volitional Purchase Intensity Index), which weighs aesthetic and moral motivations. The strongest drivers were initial aesthetic impression (P_1) and perceived naturalness (P_2), which built credibility and trust. Ethical commitment (M_1), especially sustainability, deepened engagement, while self-relevance (M_2) supported emotional alignment. With a calculated VPPI of 33.6812, findings confirm that purchase intent in the premium wood segment stems not from impulsive factors but from an integration of aesthetic, ethical, and identity dimensions. Multi-layered communication strategies that align these layers can enhance consumer engagement and strengthen market positioning.

4. Conclusion

This study examined how perceptual and affective factors shape value formation and decision-making in the context of premium wood-based furniture. Through the development and application of the Perceptual Impact Model and nine psychometric indices, the research revealed a structured process by which sensory, emotional, and identity-related components influence consumer motivations. The model traces how sequential stages, from perception to commitment, are shaped, reinforced, and integrated into purchase intention.

- Consumer attachment to wood is not the result of isolated impressions but of a cohesive interplay between sensory coherence, emotional resonance, cultural symbolism, and identity alignment. The findings show that wood is perceived not merely as a functional or sustainable material, but as a symbolic medium that evokes craftsmanship, aesthetic meaning, and heritage. This multidimensional engagement fosters emotional bonding and strengthens long-term commitment. Beyond validating the model, the sample also revealed meaningful intra-segment variations within the premium consumer group. Most notably, participants with elevated aesthetic sensitivity demonstrated a significantly higher Identity Resonance Quotient (IRQ = +41%, $p < 0.01$), indicating that aesthetic perception not only shapes surface-level preferences but actively mediates the alignment between material attributes and self-concept. This underscores the strategic relevance of aesthetic coherence in premium design: when visual proportion and texture achieve cognitive resonance, they amplify the symbolic function of wood, deepening both personal meaning and brand attachment. Additionally, participants with professional design backgrounds ($n = 41$) showed a markedly higher average IRQ score (21.44 vs. 14.76; $p < 0.05$), suggesting a stronger symbolic identification with the material. These findings indicate that this segment is far from monolithic; rather, it is differentiated into value-driven micro-groups. Recognising these perceptual subtypes offers new opportunities for more targeted design strategies and refined brand positioning.
- The model thus proves valuable both as a diagnostic tool and as a conceptual framework, fulfilling the research aim by identifying and quantifying the drivers of material attachment in wood-related consumption. Within the broader doctoral project, these findings contribute significantly to understanding hybrid identity-building, quality communication, and sensory value positioning in design and

branding. Translating material meaning into measurable insights through interdisciplinary metrics, the study supports the dissertation's goal of embedding consumer perception into design-led value creation. It also affirms the central hypothesis: that wood, as a multisensory and symbolic material, holds strategic potential for emotional branding and differentiation in sustainable creative industries.

- The results yield several practical implications. In product development, deliberately emphasising visual rhythm, tactile textures, and even natural "imperfections" can enhance authenticity and emotional engagement. In branding, communicating craftsmanship, sustainability, and heritage through narrative can strengthen identity-driven motivation. In supply chains, local production and transparency support both ecological and cultural value. At the policy level, the findings argue for clearer labelling and procurement frameworks that reflect the emotional and symbolic significance of natural materials like wood.
- Future research should explore several directions. Longitudinal studies may examine how attachment and brand loyalty evolve over time, especially using MASI. A/B testing in design contexts could determine causal links between features like craftsmanship or texture and consumer preference (e.g., via PCDI and ACAI). Cross-cultural comparisons may reveal perceptual asymmetries across markets. Neurometric or physiological validation (e.g., ESLI, VPPI) could further illuminate affective mechanisms. Finally, perceived mismatches between expected and experienced product quality, particularly in digital environments, merit closer study in light of their growing relevance.
- By integrating cognitive, cultural, and emotional dimensions, the proposed model offers a robust framework for understanding the role of wood in consumer decision-making. It enables more systematic interpretation of material perception and supports emotionally resonant, identity-aligned innovation in sustainable design.

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Author Contributions

Andrea Reményi: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review and editing.

Conflict of interest statement

The authors declare no conflict of interest.

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