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INTEGRATING INDIGENOUS AESTHETIC KNOWLEDGE IN UPCYCLING USED WOOD FURNITURE

(MENGINTEGRASIKAN PENGETAHUAN ESTETIK ORANG ASLI DALAM MENGITAR TINGGI PERABOT KAYU TERPAKAI)

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Abstract

Tacit knowledge, as personal and experience-based expertise, plays a crucial role in upcycling used wood products (UWP), as it encompasses the intuitive skills and craftsmanship that Indigenous practitioners use to redesign and repurpose materials creatively. This study examines Indigenous experiences and tacit knowledge in upcycling used wood products (UWP), focusing on critical aspects like development time, craftsmanship expertise, and value appraisal. The research aims to analyze how Indigenous knowledge and experiences can contribute to evaluating and enhancing the upcycling process for UWP. This study addresses a critical gap in the upcycling process by focusing on the often-overlooked tacit knowledge inherent in community-centric upcycling, highlighting the potential of these practices to transform used UWP. This research contributes to sustainable practices and offers a model for incorporating Indigenous expertise into upcycling frameworks. The findings offer potential guidelines for professionals and small makers to integrate Indigenous knowledge and experiences into effective upcycling. Professionals can refine their understanding of the upcycling process and elevate the aesthetic experience of their products. At the same time, small makers can apply these insights to craft distinctive, sustainable designs that stand out. Future research could develop standardized guidelines for integrating Indigenous tacit knowledge into upcycling processes and examine the long-term impact of community-based upcycling on local economies and environmental sustainability.

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Keywords: Upcycling, Used Wood Furniture (UWF), Indigenous Upcyclers, Aesthetic Experience.

Abstrak

Pengetahuan tersirat, sebagai kepakaran peribadi berdasarkan pengalaman, memainkan peranan penting dalam proses menaik taraf produk kayu terpakai (PKT), kerana ia merangkumi kemahiran intuitif dan pertukangan yang digunakan oleh pengamal Orang Asli untuk mereka bentuk semula dan menggunakan semula bahan secara kreatif. Kajian ini meneliti pengalaman dan pengetahuan tersirat Orang Asli dalam menaik taraf PKT, dengan memberi tumpuan kepada aspek utama seperti tempoh pembangunan, kepakaran pertukangan, dan penilaian nilai. Penyelidikan ini bertujuan menganalisis bagaimana pengetahuan dan pengalaman Orang Asli dapat menyumbang kepada penilaian dan peningkatan proses menaik taraf PKT. Kajian ini menangani jurang kritikal dalam proses menaik taraf dengan memberi tumpuan kepada pengetahuan tersirat yang sering diabaikan dalam pendekatan menaik taraf berpusatkan komuniti, sekali gus menonjolkan potensi amalan ini untuk mengubah UWP terpakai. Penyelidikan ini menyumbang kepada amalan lestari dan menawarkan model untuk mengintegrasikan kepakaran Orang Asli ke dalam rangka kerja menaik taraf. Hasil kajian ini menawarkan garis panduan berpotensi untuk profesional dan penggiat kecil bagi mengintegrasikan pengetahuan dan pengalaman Orang Asli ke dalam proses menaik taraf yang berkesan. Profesional dapat memperhalusi pemahaman mereka tentang proses menaik taraf dan meningkatkan pengalaman estetik produk mereka, manakala penggiat kecil dapat menggunakan penemuan ini untuk menghasilkan reka bentuk yang tersendiri dan lestari. Penyelidikan masa depan boleh membangunkan garis panduan standard untuk mengintegrasikan pengetahuan tersirat Orang Asli ke dalam proses menaik taraf serta mengkaji kesan jangka panjang menaik taraf berasaskan komuniti terhadap ekonomi tempatan dan kelestarian alam sekitar.

***Kata kunci**: Menaik Taraf, Perabot Kayu Terpakai (PKT), Penggiat Lestari Orang Asli, Pengalaman Estetik.*

Introduction

The Orang Kuala Rengit, who live along the Rengit River in Kampung Bumiputra Dalam, in Rengit, Batu Pahat, have historically focused on trading and seafaring activities. However, in recent decades, they have transitioned to reselling goods, often sourced from Singapore. Unfortunately, little research has examined the environmental impact of these reselling practices, prompting the need for observational studies and interviews to understand their activities better.

Observations revealed that the discarded wooden furniture was in good condition, indicating untapped upcycling potential. For instance, the roadside disposal of a minor, undamaged wooden table illustrates a gap between perceived and actual value. While such items could be creatively upcycled into valuable new products, they are often prematurely discarded due to a lack of design-oriented thinking.

One young entrepreneur repairs and retouches second-hand furniture, selling it at higher prices, demonstrating some recognition of this potential. However, he focuses on simple repairs without true upcycling or redesigning salvaged parts. Introducing upcycling concepts to Indigenous entrepreneurs could help build their creative skills, foster innovation, and open new avenues for economic growth through sustainable design practices.

Therefore, activities such as upcycling have recently emerged as a sustainable practice particularly relevant for this Indigenous community, who rely on reselling used goods. Instead of discarding end-of-life products, upcycling involves transforming them into new, higher-value items, thereby reducing waste and conserving resources. For instance, furniture with minor flaws can be repurposed into stylish, functional pieces rather than left to deteriorate, as seen in local waste disposal practices.

Defined as creating high-quality, valuable products from waste materials, upcycling aligns with circular economy principles that aim to maintain resource use continuously while minimizing environmental impact. This approach could greatly benefit Indigenous entrepreneurs by adding value to salvaged items and reducing the waste associated with their current reselling practices.

Ceschin and Gaziulusoy (2016) highlighted upcycling's shift from an object-focused to a more holistic, system-based design approach, underscoring its complexity within a circular economy. Dokter et al. (2021) noted that upcycling necessitates specialized design knowledge to enhance product longevity. Cini (2019) argued that creativity and aesthetic awareness are essential for transforming discarded textiles into high-value items.

The Indigenous community heavily relies on reselling used goods like toys, electronics, and furniture. However, this economic activity has led to a concerning trend of discarding items, causing local pollution and contributing to flash floods in the nearby river during rainstorms. This behavior is normalized within the community, partly due to limited knowledge of repair and upcycling and a belief that damaged products hold little value. The upcycling movement has primarily focused on more significant industries, but smaller makers like those in Rengit could also benefit from accessing suitable methods and knowledge.

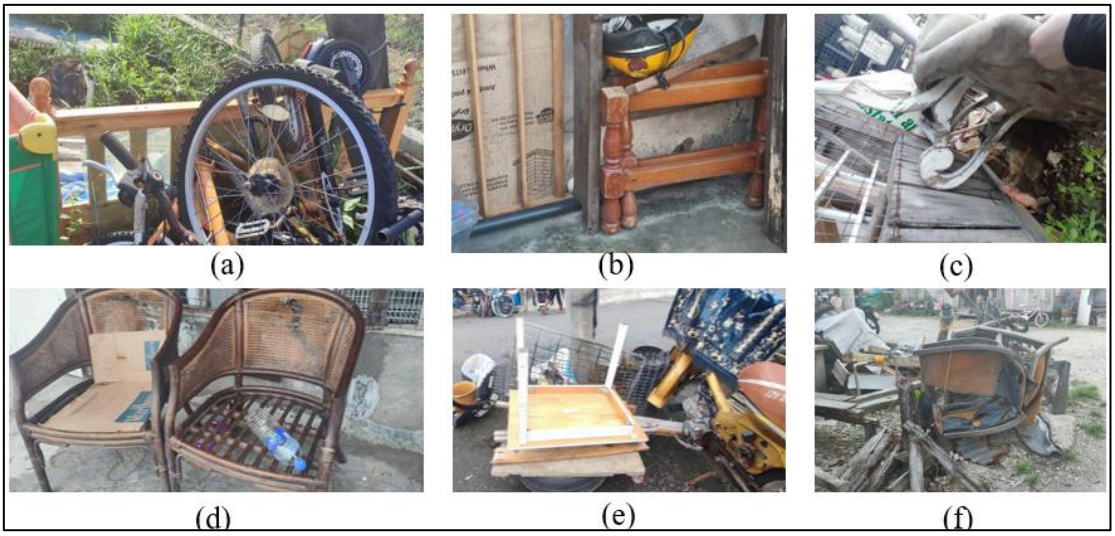

Figure1: Waste Disposal Practices in the Identified Research Area

This study will therefore concentrate on introducing green upcycling practices to the Indigenous community, encouraging innovative product re-creation and sustainable development through skillful material handling and repurposing. Hence, this study aims to analyze the experiences and knowledge that could support Indigenous eidetic imagery assessment towards used wood products (UWP) for the upcycling process.

Literature Review

Eidetic Imagery Relevance

Tacit knowledge is gained through experience, which often includes skills, beliefs, attitudes, and expertise used to perform an activity. In comparison, Eidetic imagery is the ability to recall vivid mental image that persists after a visual stimulus has been removed. This research explores the potential role of eidetic imagery in enhancing Indigenous upcyclers' tacit knowledge and aesthetic perception in the upcycling process. Eidetic imagery, or the vivid recall of images after brief exposure to stimuli, has been studied in various contexts (Alloport, 1924; McGrath, 1932). However, studies on eidetic imagery, primarily focused on medical and developmental contexts, remain scarce and outdated, highlighting a gap in understanding its application in design processes.

Critical researchers have examined eidetic imagery's characteristics and relevance. For example, Alloport (1924) identified traits like detail richness and selective tendencies in eidetic recall, while Glicksohn et al. (1999) explored its connections with

synesthesia. However, many studies do not address the effects of experience and expertise on imagery, which is essential in Indigenous upcycling. Research has primarily linked eidetic imagery to intellectual disabilities (Syed et al., 2020), visuospatial memory (Nabata & Ogawa, 2017), and mental development in children (Alloport, 1924), indicating limited applicability to design-focused or practical fields.

For Indigenous upcyclers, eidetic imagery's abstract nature does not align with their material-centric, culturally influenced approach to repurposing wood products. Unlike eidetic recall, which is often limited to visual stimuli, creative upcycling demands hands-on manipulation of materials and an understanding of design elements—skills influenced by cultural heritage and tacit knowledge. Hence, this study prioritizes imagery perception, aesthetic experience, and material engagement as they align more closely with Indigenous practices and sustainable upcycling goals.

Indigenous Aesthetic Experience

Indigenous experiences are crucial in understanding how different factors influence their material perception and differentiation of value and quality in upcycled products. However, studies exploring Indigenous perspectives on upcycling still need to be available. Maryam Syafiqha et al. (2018) documented Orang Kuala's economic shift due to JAKOA interventions, improving their livelihood through selling used items. Similarly, Siti Mastura et al. (2014) emphasized the importance of preserving Malay design philosophy through artifacts, while Lin (2007) explored Taiwan's Aboriginal cultural objects, adapting their meaning to appeal to contemporary markets. Redies (2015) provided a model of aesthetic perception that includes sensory, cognitive, and emotional stages, emphasizing how personal and cultural contexts shape aesthetic responses.

Meanwhile, research on aesthetic experience and perception is extensive, examining product interactions with behavior, cognition, and experience (Desmet & Hekkert, 2007; Redies, 2015; Siti Mastura, 2017). Such insights are valuable for exploring how Indigenous groups engage with used wood products (UWPs) and value aesthetics.

These prior studies, however, often lack specificity on Indigenous people's involvement in upcycling UWPs, which is the primary focus here. For instance, Maryam Syafiqha et al. (2018) largely contextualized Orang Asli Kuala culture without deeply exploring their engagement with upcycling. Furthermore, other studies broadly emphasized aesthetic and material perception but did not account for the unique aspects of Indigenous craftsmanship, skills, and knowledge passed down over generations (Singh et al., 2019; Lin, 2007; Sung & Cooper, 2015).

Indigenous upcyclers' backgrounds in carpentry and woodworking influence their cognitive design process and valuing ability, with an openness to novel aesthetics

(Fayn et al., 2015). Interestingly, Fayn et al. (2015) highlighted that appraisal of novelty is a part of the experience of aesthetic experience, which is correlated to a person's high openness. This interaction shapes their aesthetic experiences and helps refine criteria for evaluating UWPs in upcycling. This study can improve material appraisal in upcycling processes by enhancing understanding of Indigenous aesthetic perception and cognition (Chatterjee & Vartanian, 2016).

In conclusion, previous studies needed to focus specifically on Indigenous perspectives and UWP criteria for upcycling. Yet, these studies offer theoretical frameworks that support this research's exploration of cognitive and aesthetic processes in Indigenous communities' approach to upcycling. The following section discusses how Indigenous experiences can influence imagery perception towards UWP by analyzing their eye behavior.

Imagery Perception in Aesthetic Experience Through Eye Behaviour Evaluation

This section explores "Aesthetic Eye Behavior in Eye Tracking Tests," focusing on how individuals visually engage with aesthetic elements and perceive used wood products (UWPs) for upcycling. The study of eye behavior, which is deeply correlated with imagery perception, showcases how Indigenous eyes capture subconscious preferences or thought processes during upcycling activities, as supported by Batool et al. (2021), who linked gaze patterns to preferences. Similarly, Brieber et al. (2020) explored the link between art experience and viewing time, while Khalighy et al. (2015) demonstrated that product aesthetics could be quantified through eye-tracking. This research leverages these insights, employing eye-tracking and pictorial stimuli to identify aesthetic perceptions and upcyclability criteria for UWPs, with longer dwell times in specific regions indicating a higher likelihood of upcycling potential. Semmelmann and Weigelt (2017) pioneered online webcam eye-tracking, while Li et al. (2021) expanded eye-tracking to analyze traditional Chinese commercial blocks, combining visual analysis with psychological perceptions. Studies like Musabini and Chetitah (2020) assessed driver distraction through heatmaps, while Rolke et al. (2019) highlighted aesthetic stimuli's ability to capture attention.

In previous studies, researchers like Kuo et al. (2021) found that visual impressions influence product perception, but limitations remained. For instance, Semmelmann and Weigelt (2018) tested basic visual capabilities but needed to capture complex aesthetic perceptions, while Li et al. (2021) studied traditional architecture without focusing on UWP-specific criteria. Studies by Musabini and Chetitah (2020) on distraction and Rolke et al. (2019) on chair design used limited scales, making them less applicable to nuanced UWP aesthetics.

To conclude, previous studies should have specifically addressed UWP criteria in Indigenous upcycling processes—however, specific theoretical frameworks provided valuable guidance for this research. Therefore, the cognitive design process in valuing ability and eidetic ability to determine UWP criteria is influenced by product self-expressive value, craftsmanship, experience, and essential local knowledge that could initiate the cognition of visual aesthetic perception in an upcycling process.

Methodology

A case study was selected to gather data for this study. This section elaborates on procedures used to develop data collection for the qualitative research process. The research methods were built based on the research construct and theoretical proposition to test the research validity and reliability of the selected method. Pilot study observations revealed that numerous used wood products with upcycling potential were discarded, reflecting their undervalued utility (Figure 2). It was noted that various types of wood products have been discarded without proper waste disposal practices.

Figure 2: Discarded used Wood Furniture Was Found During Observation in the Pilot Study on the Research Site

This study explores the Indigenous aesthetic experience in upcycling used wood furniture (UWF) in Rengit, Batu Pahat. The researchers work with Tok Batin, a community leader, who facilitates access to the critical info key informants and assists in the data collection process. Participants were purposively sampled based on their experience and engagement in UWF upcycling to ensure a rich representation of tacit knowledge and aesthetic appraisal practices. Informed consent will be obtained from all participants, and their confidentiality will be ensured by anonymizing personal data during reporting. The primary data to be collected includes understanding the

upcyclers' knowledge of the upcycling process, their ability to assess the physical quality of wood, and how they determine the value of UWF. Specifically, this involves gathering information on the upcycled knowledge of the materials, how they appraise the aesthetics of the wood, and their criteria for valuing UWF for further use. Most participants are male, reflecting the dominant presence of males among active upcyclers or UWF sellers. The observed gender distribution reflects the physically demanding nature of handling heavy and bulky UWF items, which male participants predominantly undertake. The participants' experience spans six to 15 years. Table 1 highlights how their expertise and diverse experience levels contribute to mapping and understanding their tacit knowledge and experiences.

Table 1: Participants Demographic

Participant	Age	Gender	Experience	Specialised
P1	21	Male	11 years	Repairing furniture
P2	27	Male	6 years	Hobbyist/Casual upcycler
P3	22	Male	7 years	Repairing furniture
P4	34	Male	15 years	Repairing wood products
P5	26	Male	7 years	Repairing furniture

A combination of interviews, observations, and photography/videography will be used to collect the data. Photography and videography complement interviews and observations by capturing the nuanced physical characteristics of UWF and the upcycling process, enabling detailed visual analysis of aesthetic criteria. Interviews will provide insight into the upcycled experiences and perceptions of the upcycling process. The interview employs Retrospective Think-Aloud (RTA) to gather insights. During the session, participants are presented with seven images of UWF as stimuli and are asked to review a completed task, explaining their thoughts and actions. Recordings or prompts are often used to aid in recalling their decision-making process. Observations will allow the researcher to see first-hand how the upcyclers work with UWF and make decisions about its value. Photography and videography will document the physical characteristics of the wood and the upcycling process, providing visual evidence to support the findings.

The expected results of this study are twofold. First, it aims to identify factors influencing how UWF is valued during the upcycling process. Second, it seeks to understand the tacit knowledge of the Indigenous community regarding upcycling, including their aesthetic judgments and how they determine the worth of materials. Through this approach, the study will shed light on the Indigenous aesthetic experience and its role in the upcycling of UWF.

The collected data will be analyzed using descriptive analysis. The steps involved in this process include data transcription, data familiarization, coding, categorization, theme development, and data display. This method will allow the researcher to

provide a clear and comprehensive understanding of the upcycled aesthetic experiences and their decision-making processes when valuing and upcycling used wood furniture.

To validate the findings, the study will use pattern matching, a technique based on triangulation. This involves comparing the patterns found in the data from interviews, observations, and artifacts with the identified theoretical framework of Indigenous aesthetic experience. The researcher will cross-check these patterns to confirm their consistency and reliability. By triangulating data from different sources (i.e., the upcycle testimonies, the physical characteristics of the UWF, and the visual documentation), the researcher can ensure that the identified themes and findings are robust and grounded in multiple perspectives, enhancing the validity of the conclusions drawn from the study.

Result and Analysis

Knowledge of Upcycling Process and Upcycling Capabilities

Most participants were unfamiliar with the term upcycling or *kitar tinggi*, but after an explanation, they understood it differently, often modifying the concept. Only Participant 2 (P2) and Participant 4 (P4) had experience in upcycling used wood furniture (UWF), while Participants 1 (P1), 3 (P3), and 5 (P5) had considered modifying products but opted against it due to concerns about potential risks. Instead, these participants chose to focus on repairing UWF. As illustrated in Figure 4, one upcycler restores a damaged dining chair by disassembling it and cleaning the fabric to remove stains and dullness (Figures 3a & 3b). This process not only improves the chair's appearance but also enhances its value, exemplifying upcycling by elevating the quality and aesthetics of the product.

a) b)

Figure 3: a) Repairing and Refurbishing the Upholstery of a Dining Chair. b) The Dining Chair is to be Cleaned After the Fabric Has Been Removed

Upcycling Skills Among Indigenous Participants

The participants possess the ability to upcycle furniture, effectively repairing and producing high-quality pieces that can be resold at a significant value. Each participant demonstrated proficiency in craftsmanship and woodworking, skillfully restoring used wood furniture's shape, design, function, and durability (UWF). They were adept at identifying damaged components, employing suitable repair techniques, and enhancing the overall appearance of the furniture. While P1, P3, P4, and P5 prioritized repairs, P2 expressed a particular passion for the creative craftsmanship of upcycling UWF. Notably, P1, despite being the most vocal participant, focused on preserving the original design and avoided upcycling, whereas P3, P4, and P5 rarely engaged in upcycling but did so occasionally.

This study revealed that the upcycling process is primarily driven by experiential learning and self-taught skills, which are often passed down through family traditions or shared through informal knowledge exchange. The upcycling workspaces are typically in front of stores or within the participants' homes.

Indigenous Upcyclers Capabilities in Manipulating Used Material in Upcycling Process

The interview revealed that Participant 3 (P3) (n=1) is particularly drawn to materials with attractive grain patterns and unique shapes, which he transforms into creatively distinctive products. P3 visually assesses the used wood furniture (UWF) and conceptualizes the design in his mind before initiating the upcycling process. This process involves measuring the wood, cutting it, sanding it smooth, and applying varnish. P3 noted that the distinctive forms and materials are vital sources of inspiration for his upcycling endeavors (Figure 4).

Figure 4: Using the Sawdust and Glue Mixture to Cover Wood Chipping.

Participants demonstrated skill in identifying and addressing faults in UWF, which they attributed to years of experiential learning. The tools utilized by the participants were far from primitive (Figure 6). Most participants focused primarily on repairing UWF, so they employed similar repair techniques that necessitated a standard set of tools. The most fundamental and frequently used materials included a sawdust and glue mixture, sandpaper, and various finishing materials, such as clear lacquer and shellac. Essential tools for the repair process included G-clamps, screwdrivers, an Allen key, chisels, and hammers.

Figure 5: Spray Gun (left) and Power Drill (right) Used in the Upcycling and Repairing Process

The UWF received by participants was only sometimes in optimal condition. Some pieces exhibited functional issues, such as loose joints, split panels, missing parts, and broken components, which could render them both functionally ineffective and aesthetically unappealing. In addition to these functional damages, several UWF displayed aesthetic flaws, including chipped surfaces and edges, wood patina, and discoloration, which impacted their visual appearance.

Participants P1, P3, P4, and P5 (n=4) favored repairing UWF due to the potential for resale and repairable defects. The repair process typically begins with identifying the damages to the UWF and then addressing functional, design, and aesthetic issues. The participants would then fill cracks or holes with a mixture of sawdust and glue, sand the surfaces to achieve a smooth finish, and apply a final coat of clear lacquer, shellac, or varnish. Figure 5 below visually represents the upcycling and repair process employed by the Indigenous upcycles.

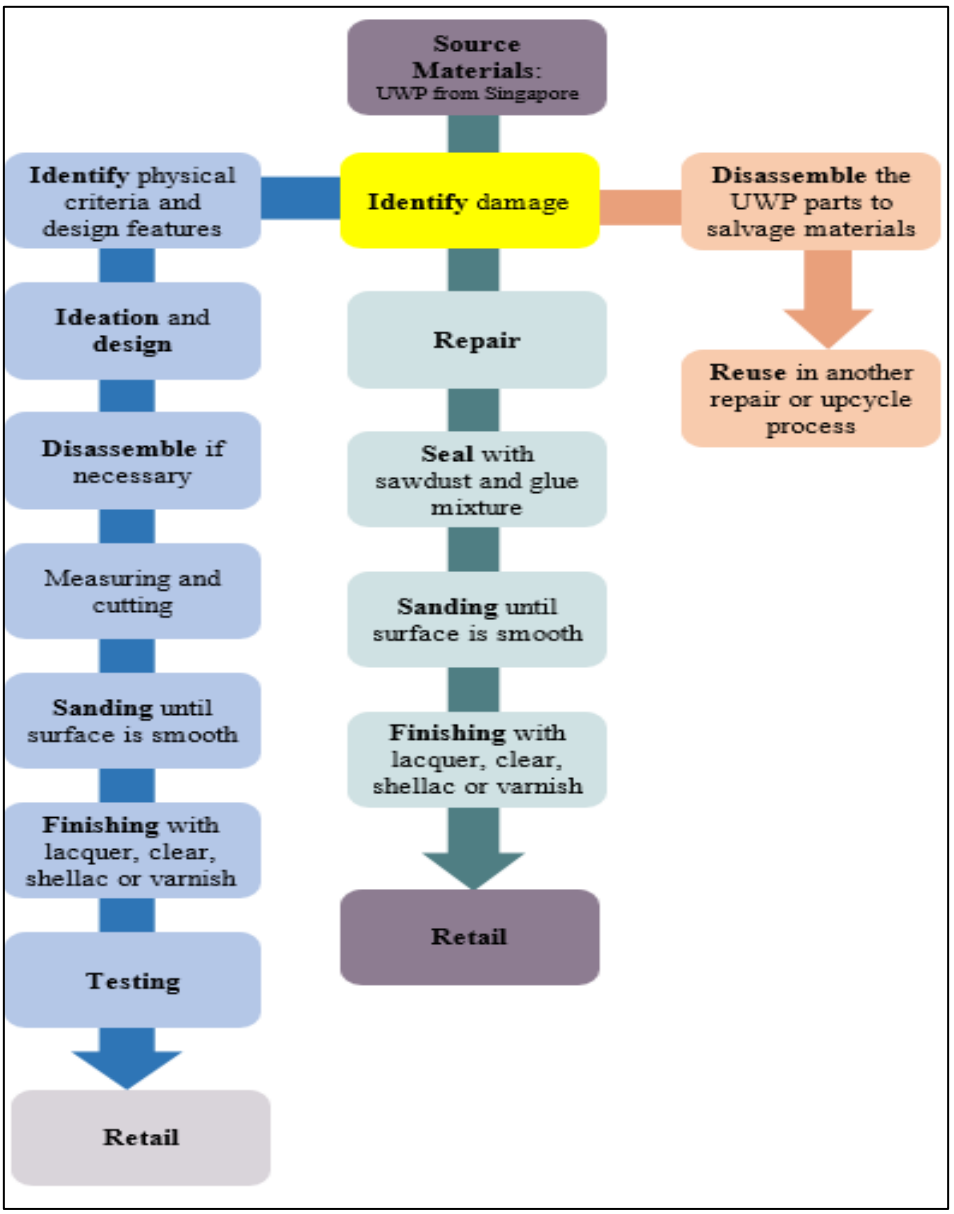

Figure 6: Upcycling and Repair Process by the Indigenous Community Model (Authors, 2023)

Duration of the Repair/Upcycling Process

The repair time required varies among participants, with no clear correlation between years of experience and repair duration. P1, P3, P4, and P5 (n=4) observed that repair time largely depends on the damage's extent; more severe damage necessitates more extended repair periods. P1 and P3 (n=2) indicated that repairing heavily damaged items can take up to three days, whereas minor repairs typically require about one day. P4 (n=1) estimated a repair duration of approximately two days, depending on the product type, and P5 (n=1) reported a similar time frame.

P2 (n=1) estimated that upcycling takes one to two days, with approximately one hour allocated for cutting and shaping, followed by a full day to complete the product. An additional day is required for finishing and durability testing. Repair duration is also influenced by the type and number of units in a set, with larger sets generally requiring more time for repair. Despite the variations in time, the primary focus remains on restoring and preserving both the aesthetic appeal and functionality of the items, as these factors contribute to higher profits.

Table 2: Duration for repair/upcycling process

Participants	Duration for repair/upcycling process (days)
P1	1 day to repair small damage 2-3 days to repair Severe damage
P2	Upcycle: One hour to form product Overall finish would take 1-2 days
P3	1 day if the damage is normal 3 days if the damage is a lot
P4	2 days to repair. Depends on the number of products in a set. For example, a dining table with chairs takes about 2 days
P5	1 or 2 days to repair. Depends on the type of product.

Aesthetic Appraisal Ability of The Physical Qualities of Used Wood Furniture (UWFs)

This section examines the Indigenous participants' views on UWFs, particularly their aesthetic perceptions. While their views differ, they share similarities due to the close-knit nature of their community, which shapes their aesthetic outlook. Their cultural background and knowledge of materials influence their perception of UWF. Participants P1, P3, P4, and P5 (n=4) have experience repairing complete furniture sets and individual units. Understanding their ability to assess and appreciate the aesthetic value of products requires insight into their upcycling and repair experiences, including their perception of a product's potential. In upcycling, participants evaluate materials by adding, substituting, or eliminating parts.

Disassembly is used to separate reusable parts of UWF for future repair projects. As shown in Table 3, participants' perceptions of UWF's physical qualities were influenced by material durability and aesthetic appeal.

Table 3: Indigenous Participants' Perception Towards Physical Qualities of UWFs

Participants	Aspect	Perception towards UWF
P1	• Product type • Personal Preference • Traditional furniture style	Aesthetic appraisal Preservation of physical traits to ensure authenticity
P2	• Material (Addition) • Product type	Elevating the value through modifying parts of the furniture. Replace broken parts with alternative materials.
P3	• Furniture parts • Material (Deduction)	Remodel the UWF parts that are in poor condition into better ones.
P4	• Material Reutilization • Product type • Disassemble UWF parts	Transformed a UWF into another product of a similar function Manipulating the physical properties of the UWF. Reutilization of material into another project
P5	• Personal preference • Traditional furniture style	Maintain the authenticity of the product by keeping the material in its original state. Maintain quality and assured lifespans longevity knowing only one type of material in UWF especially if it's Jati Wood.

Their personal experiences and industry knowledge significantly influence participants' preferences. Participants P1, P2, and P5, who collaborate daily, share a common perspective on product quality and value, particularly emphasizing the durability of Jati wood. Their primary focus is restoring UWF to its original form to preserve its authenticity.

P2 approaches materials as a source of inspiration for creative upcycling, opting to replace damaged parts with alternatives while prioritizing the product's aesthetic transformation. Similarly, P4 engages in upcycling by repurposing materials but aligns with P1, P3, and P5 in aiming to restore products. This involves selecting UWF in optimal condition for repair.

Each participant demonstrates unique priorities: P1 focuses on restoring distinct damaged parts, whereas P3 emphasizes assessing the structural integrity of UWF

legs. P3, P4, and P5 are more concerned about material quality, particularly favoring Jati wood. P4, however, works with a broader range of wood types, including Jati, Rosewood, and Mahogany, based on market demand. Additionally, P2 and P4 value distinctive features such as unique forms and accessories, with P4 showing particular interest in floral carvings and wood grain patterns.

In conclusion, the participants' attitudes reflect a blend of individual and community influences, shaping their aesthetic and repair approaches and providing insights into Indigenous upcycling practices. Furthermore, the participants' aesthetic appraisal aligns with the Indigenous aesthetic framework, emphasizing natural material qualities and cultural heritage.

Table 4: Statement of Preferences in UWF Parts and Preferred Criteria for an Upcycling Process

Participant	Interested Parts	Statements	Preferred Criteria	Statements
P1	Damaged parts	"Usually I'm looking at parts that are damaged and replace them to restore them to its original form"	• Wood Colour • Material durability • Types of wood • Natural feel to wood product	"Type of wood is important because wood has its own grade. The heavier the wood, the higher the quality they are. The weight depends on the number of people who can lift the UWF. Moreover, the heavy product assured buyers the durability and a long lifespan of up to 30 years. A higher number of accessories on UWF also affects the price. Also, wood colour is my personal preference because it feels natural."

Table 4 (continues)

Participant	Interested Parts	Statements	Preferred Criteria	Statements
P2	Unique forms and accessories in the product	"Shape and parts accessory. For example, carvings and unique and weird shapes."	• Novelty in forms • Material knowledge	"The shape is the most important. I usually try to find the one with the most unique and weird shape. And another consideration is the severity of the damage."
P3	Chair legs (Jati wood)	"Leg chairs and type of wood like Jati wood"	• Types of wood	"Types of wood is important."
P4	Wood part with pattern/ carving and forms (mostly Jati, But Rosewood, Mahogany, Serea, Cengal	"Rubber wood has low resold value. That is why I focus on repairing Jati UWF. Sometimes I work on Rosewood, Cengal, Serea and Mahogany. Other than that, I grain pattern Jati wood. The more matured the wood, the deeper the grain pattern, the longer their lifespan is because they are durable."	• Wood carvings– floral and geometric designs • Decorations • Wood Pattern determines the strength of the wood • focus on hardwood	"Wood Carvings"

Table 4 (continues)

Participant	Interested Parts	Statements	Preferred Criteria	Statements
P5	Part that uses specific material such as Jati or Nyatoh	"I look at the types of wood. For me personally, I focus on Jati Wood, but sometimes I get product made of Nyatoh."	• Material properties • Durability • Material maturity	"Especially Jati wood is the best because of its lifespan up to 30 years. From experience, the Jati UWF is more durable compared to the new one as they have more mature wood. I use to sell the new Jati, and they break when expose to harsh heat of sunlight."

The Aesthetic Experience in Value-Assessment Skills

Participants assessed UWF pricing based on several factors: material grade, wood type, product type, market price, design complexity, and customer preferences. While each participant had a distinct approach, P1, P3, and P5 shared a standard method, categorizing UWF based on weight. For instance, Grade A UWF, requiring five people to lift, was priced at RM2000 or higher, while Grade B, manageable by two people, ranged from RM1000 to RM1999. P1 and P2 demonstrated more advanced pricing skills, with P5 acknowledging a need for more experience in this area. In contrast, P4 prioritized wood properties in pricing, noting that hardwoods with rougher grain patterns typically commanded higher prices, whereas softwood products were generally priced lower.

Additionally, P4 considered the number of units in a set when determining price. P2, who viewed upcycling as a hobby and needed more experience, based pricing on design complexity and customer willingness to pay. These diverse pricing strategies highlight the participants' varying expertise, motivations, and methods of valuing UWF.

Discussion

This section discusses the relationship between the Indigenous experience and its effect on eye behavior. By analyzing eye behavior, the research gains insights into Indigenous upcyclers' visual preferences and attractions when engaging with UWF. This examination allows us to analyze their subconscious choices and evaluate their

rationale by observing the specific focus areas in their eye gaze while interacting with stimuli in RTA. This finding aligns with Brieber et al. (2020) and Batool et al. (2021), who observed that prolonged visual attention often reflects subconscious preferences, particularly in evaluating materials and design elements. However, the findings also indicate that, beyond demonstrating interest in specific parts of the UWF, participants, during the RTA session, articulate their thoughts on additional aspects, such as the process of repairing or upcycling.

Participants ' subconscious selections reflected their preference and thought process for repairing or upcycling, heavily influenced by their expertise and perception of available materials. Most preferences leaned towards materials with superior qualities, such as durability, wood type, and design characteristics, including form, color, and design features. Additionally, participants displayed more significant expertise in repairing UWF, showing a distinct preference for repair over other upcycling methods. This preference shaped their reasoning during the RTA sessions as they explained their focus on specific parts, and this influenced their reasoning in the RTA as they explained the parts. Figure 10 illustrates a model that aligns with community-based upcycling practices, emphasizing hands-on methods informed by Indigenous expertise and resource availability.

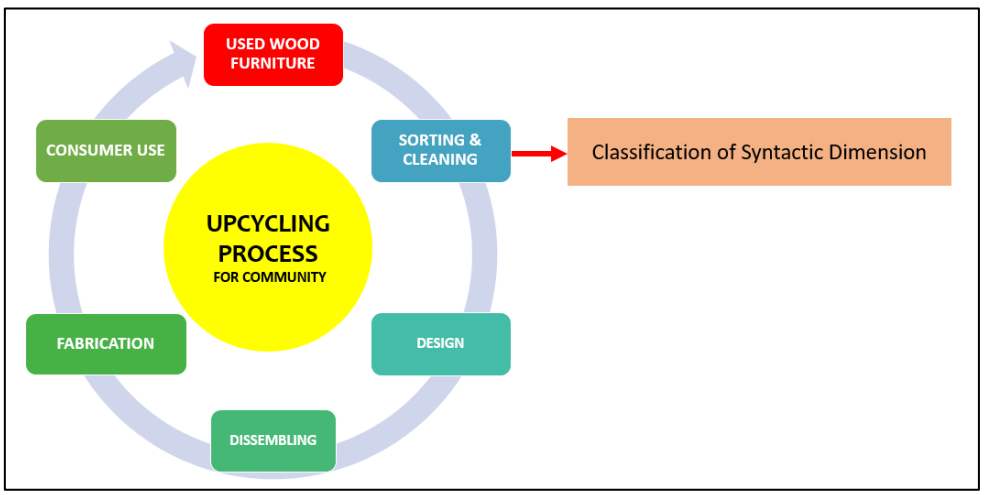

Figure 7: The Upcycling Process by Indigenous Community by Authors (2023)

Conclusion

The study emphasizes the sustainable practices of the community in their upcycling efforts. Indigenous upcyclers use available materials efficiently, reducing waste and extending the life cycle of UWFs. Their traditional knowledge helps preserve cultural

heritage while promoting environmental sustainability. By focusing on repair and creative reuse, the community supports broader environmental goals and offers a model for sustainable development. A more suitable model would consider the community's specific resources, skills, and needs, emphasizing hands-on, creative methods with minimal disassembly. Adapting the SIRIM model to a community context can make the upcycling process more relevant and effective for local upcyclers. The model aims to guide policymakers, professional designers, and local upcyclers in adopting sustainable upcycling processes at the community level scale.

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