

MARKETING | RESEARCH ARTICLE

Evaluating Innovation Factors (Authenticity, Packaging, Product and Process) in Traditional Indonesian Handicrafts: A Consumer-Centric Approach to Enhancing Market Competitiveness

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ABSTRACT

Traditional handicrafts must embrace innovation to remain competitive against mass-produced machine-made products, which are often more affordable and easily scalable. The primary challenge in this innovation process lies in maintaining authenticity and cultural significance while adapting to contemporary consumer preferences, ensuring that the traditional identity of these crafts is not lost. This study aims to evaluate the implementation of various innovation factors in traditional Indonesian handicrafts, explicitly focusing on Authenticity, Packaging, Product, and Process Innovation. It examines how these factors are integrated into products based on consumer purchasing experiences. Data were collected through a survey using a 5-point Likert scale from 416 respondents who had purchased handicrafts within the past year, employing purposive sampling. The data were analyzed using SPSS and SmartPLS. The results showed that Authenticity Innovation and Packaging Innovation had mean scores below 3.892, indicating that these factors are less adopted or valued in the market and require further improvement. In contrast, Product and Process Innovation scored above average, reflecting a stronger integration into products and a greater focus on innovation in these areas. Unlike previous studies by Shafi et al. (2021), which explored the hypothetical application of consumer acceptance of innovation factors in handicrafts, this study investigates the practical application and consumer experience of innovation adoption in traditional handicraft products that consumers have already purchased. It offers valuable insights into enhancing product offerings and addressing the needs of diverse consumer segments.

Keywords: Innovation, Handicrafts, Arts, Indonesia, Purchase Intention, Batik.

JEL Code: 031

I. Introduction

The creative industry in Indonesia, particularly the handicraft sector, is experiencing significant growth and making a notable contribution to the national economy (Kementerian Pariwisata dan Ekonomi Kreatif. a, 2020). Handicrafts, which reflect cultural heritage and individual creativity, are attracting increasing global attention, driven by a rising demand for sustainable, unique, and traditionally rooted products (Kementerian Perdagangan Republik Indonesia, 2024). Despite this growth, traditional artisans face mounting



pressure to innovate while preserving cultural authenticity. The challenge lies in balancing tradition with modern consumer preferences, as excessive adaptation risks eroding these crafts' historical and artistic value.

However, the industry faces numerous challenges in the modern era (Inacraft News, 2024). In the context of globalization and industrialization, traditional handicrafts must also compete with mass-produced, machine-made products that are cheaper and more scalable (Muñoz et al., 2006; Shafi et al., 2021). While innovation is necessary to remain competitive, excessive changes in design or production methods may diminish these crafts' cultural and historical significance. Additionally, incorporating technology to enhance efficiency and reduce costs may undermine artisans' skills and dedication, potentially alienating consumers who value handmade products. Not all innovations are well-received by the market, as radical changes or misaligned designs could lead to a decline in consumer interest. Therefore, understanding consumer preferences and aligning innovations with market demands presents significant challenges for artisans striving to sustain cultural heritage and market relevance.

Handicrafts, which reflect cultural heritage and individual creativity, are gaining global attention, driven by the increasing demand for sustainable, unique, and traditionally rooted products. (Kementerian Perdagangan Republik Indonesia, 2024). The handicraft subsector, which includes items made from wood, textiles, ceramics, and metal, is crucial for preserving Indonesia's cultural traditions while supporting economic development. 2023 the sector grew by 1.20%, with a substantial increase of 3.97% in early 2024, fueled by increased demand and production efficiency. The global market for handicrafts is also expanding, with a projected value of USD 2,394.32 billion by 2032, growing at a CAGR of 10.11% (Fortune Business Insights, 2024). Indonesian exports, including batik, have made a significant impact, reaching USD 744.79 million in 2022 (Kementerian Perdagangan RI, 2023). As the market grows, artisans face the challenge of innovating without compromising traditional values. Authenticity, packaging, product design, and process innovation are vital in shaping consumer perceptions and influencing purchasing decisions. (Shafi et al., 2021). Research on traditional craft industries in Pakistan highlights the importance of government intervention and foreign investment to foster innovation and improve competitiveness. (Yang & Shafi, 2020). For artisans to address intra-industry rivalry, competitive strategies require continuous skill and knowledge development. (Hijri & Atmaja, 2022). High-quality products are closely linked to business performance, with innovation and creativity being enhanced through human resource competencies. (Suhaeni, 2018). Competitive advantage is a key driver for improving performance and mitigating competitors' influence. Small and medium enterprises (SMEs) in the handicraft sector can adopt innovation to penetrate markets and attract customers. However, the application of innovation in this sector remains limited, as seen in the decline of craft entrepreneurs compared to those in the food, beverage, and fashion industries. (Suhaeni, 2018). Study from Rahmi & Mursyidin, (2024) Highlights the crucial role of independence and adaptability for SMEs in Industry 4.0. These traits are vital for resilience and competitiveness in the digital age. Policymakers and industry stakeholders should foster environments that support SMEs in navigating the challenges and opportunities of Industry 4.0, ensuring they remain innovative and contribute to economic growth.

Shafi et al. (2021) used Exploratory Factor Analysis (EFA) to identify eight key factors influencing consumer acceptance of innovation in handicraft products. However, their study was hypothetical, asking respondents to envision innovations rather than assessing actual implementations. The findings highlighted four main innovation factors: Authenticity, Packaging, Product (Value-Adding, Product Improvement, Product Design), and Process (New/Alternative Material, Quality Material, Technology Innovation). A one-sample t-test showed a significant consumer preference for innovation, with mean scores differing from the midpoint of 3. While previous research emphasizes the importance of innovation, there remains a gap in understanding how actual implementations affect consumer purchasing behavior. Shafi et al. (2021) relied on hypothetical representations, whereas this study explores real consumer experiences with innovations already applied in traditional Indonesian handicrafts.

In contrast, the current research aims to bridge this gap by testing the real-life application of these innovation factors and examining their direct impact on consumer behavior and purchase intentions in the context of actual handicraft products. This study will also explore the adoption of these innovation factors

within the Indonesian handicraft industry, identifying areas where innovation is already well-integrated and where improvements are needed. By providing a deeper understanding of consumer acceptance of innovation in a real-world context, this research will assist artisans in developing effective strategies to meet modern consumer demands without compromising the essence of traditional craftsmanship. The study aims to offer actionable insights for artisans and marketers, providing strategic recommendations to enhance competitiveness while preserving the cultural integrity of the products. By examining both the adoption of these innovations in the Indonesian handicraft industry and areas requiring further improvement, the study will help artisans balance traditional craftsmanship with modern consumer demands, ultimately enhancing their competitiveness in an expanding global market.

II. Literature Review and Hypothesis Development

The Diffusion of Innovation (DOI) theory, introduced by Rogers, (2003) It is widely cited in the innovation literature. According to DOI, innovation is "an idea, practice, or project perceived as new by an individual or other unit." At the same time, diffusion refers to "the process by which an innovation is communicated through certain channels over time among members of a social system." (Rogers, 2003). This process ultimately determines whether consumers accept or reject an innovative product. Innovation is a competitive tool for entrepreneurs to capitalize on emerging opportunities or drive change, aiming to develop new products, services, or business models. (Rothaermel, 2024). In the context of handicrafts, authenticity is a fundamental attribute, while innovation plays a crucial role in adapting these products to modern market demands.

Authenticity is a defining attribute of handicrafts, and innovation plays a crucial role in maintaining this authenticity while ensuring relevance in evolving markets. Shafi et al. (2021) noted that authenticity innovation enhances the perceived value of handicrafts by addressing consumer needs for genuineness in creative ways. Tools such as labels or tags play a pivotal role in presenting products as authentic, with consumers often relying on certifications to verify their originality. (Kühne et al., 2010). That study highlights that labels verify originality and serve as marketing tools that help handicrafts compete with imitations. Furthermore, storytelling elements, such as product narratives and distinctive names, reinforce authenticity and foster deeper emotional connections with consumers. These certifications help authentic handicrafts compete with cheap imitations, safeguarding their market position.

Packaging innovation modifies physical and communicative aspects of packaging to enhance consumer appeal and product protection. (Pålsson & Hellström, 2023). In handicrafts, well-designed packaging preserves cultural motifs while improving transportability and shelf-life. This innovation is crucial for handicrafts, as well-packaged products appeal more to consumers by maintaining their unique characteristics and traditional motifs. Packaging serves a dual purpose: enhancing aesthetic appeal and providing practical benefits, such as facilitating transportation, extending shelf life, and protecting products from damage. This aligns with findings from Girón et al., (2007), which shows that high-quality packaging differentiates products in competitive markets. Despite its importance, research on packaging innovation in the Indonesian handicraft sector remains limited, particularly regarding consumer preferences for sustainable packaging.

Product innovation entails introducing or significantly improving existing products (Chang et al., 2012) by incorporating or blending new knowledge into novel forms (Rothaermel, 2024). The handicraft industry includes value-adding, product improvement, and product design innovation (Yang & Shafi, 2020). Value-adding focuses on increasing consumer satisfaction by incorporating functional features or decorative elements based on market demands (Naidu et al., 2014; Yang & Shafi, 2020). Product improvement involves refining physical aspects like size, color, shape, and finishing to meet customer needs better or overcome logistical challenges, such as export requirements (Shafi et al., 2019). Product design innovation introduces significant changes to craft designs, blending tradition with modernity to appeal to contemporary consumers

while preserving cultural significance (Yang & Shafi, 2020). These innovations aim to attract and retain customers in increasingly competitive markets.

Process innovation refers to new methods of producing existing products or delivering established services. (Rothaermel, 2024). This includes integrating alternative materials and advanced techniques, such as eco-friendly production methods. (Shafi et al., 2019) or automated craftsmanship tools (Li et al., 2024). Redzuan & Aref, (2011) Highlight that the use of high-quality raw materials enhances durability and consumer satisfaction. Mendoza-Ramírez & Toledo-López, (2014) Further demonstrate that technological advancements, including digital modeling and AI-driven customization, can streamline production processes while preserving artisanal quality. However, SMEs in the handicraft sector face challenges accessing these technologies due to financial constraints and a lack of technical expertise, limiting their capacity for large-scale innovation adoption. These innovations underscore the importance of harnessing knowledge and resources to foster growth and secure the market position of small craft enterprises. Moreover, existing literature focuses heavily on government intervention. (Yang & Shafi, 2020), foreign investment (Shafi et al., 2019), and competitive strategies (Hijri & Atmaja, 2022), but there is a lack of sufficient discussion on how handicraft SMEs independently adopt innovation strategies. Additionally, while Rothaermel, (2024) and Pålsson & Hellström, (2023) Provide theoretical foundations for innovation dynamics; their applicability to the Indonesian handicraft sector remains underexplored. By incorporating real-world cases of innovation adoption and consumer purchasing behavior, this study contributes to filling these research gaps.

III. Research Method

This study relies on primary data collected through a structured questionnaire completed by respondents who meet the eligibility criteria established by the researcher. The eligibility criteria for respondents include Indonesian citizens aged 18 years and older who have purchased handicraft products within the past year. Specifically, respondents must have purchased at least one handmade craft product in the previous year to ensure a representative sample of actual consumers. This criterion ensures that the data reflects the behaviors and preferences of those actively purchasing handicrafts.

Utilizing a pre-structured written questionnaire, the survey method is the primary instrument to efficiently gather data on respondents' attitudes, opinions, preferences, behaviors, and characteristics. The questionnaire was developed based on existing literature and expert feedback to ensure that each question accurately measures the intended variables. A review process involving consumer behavior and product innovation experts ensured the questions aligned with the research objectives. A 5-point Likert scale is employed as the measurement tool, where a score of 1 indicates "strongly disagree," and a score of 5 indicates "strongly agree." The 5-point Likert scale was selected for its simplicity, ease of understanding, and effectiveness in capturing respondents' attitudes across various opinions. It is considered a standard tool in social science research for measuring attitudes and perceptions.

The study focuses on analyzing facts, numerical data, and the frequency of occurrences, allowing for the validation of theories by examining relationships between measurable variables through statistical analysis (Creswell J. W., 2017). The research adopts a cross-sectional approach, capturing data simultaneously to provide insights into the relationships between the variables under investigation (Cooper D. R., 2014). Before the primary data collection, a questionnaire pre-test will be conducted with 30 respondents to evaluate respondents' understanding of the items. This pre-test sample size is chosen to ensure the instrument is clear, valid, and comprehensible for the target population. Potential biases in data collection, such as selection bias or response bias, are minimized by ensuring that the questionnaire is distributed through various channels to reach a diverse demographic. Additionally, respondents will be anonymized to reduce social desirability bias. Validity testing will use the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy, with an expected value greater than 0.5, and the Component Matrix, where values should exceed 0.5, to identify the factors of all variables. Reliability testing will be conducted using Cronbach's alpha to assess the internal consistency of the

questionnaire. A concise summary of reliability: A Cronbach's alpha value below 0.6 indicates poor reliability, 0.7 is acceptable, and values above 0.8 indicate good reliability (Hair et al., 2014; Malhotra N. K., Dash, 2016).

Descriptive statistical analysis is applied to effectively represent and summarize the data, focusing on demographic information and consumption patterns related to handicraft purchases. (Neuman, 2013). Data from 416 respondents are analyzed using measures such as minimum and maximum values, mean (central tendency), and standard deviation (variation from the mean) (Ghozali, 2018). The transition to frequency distribution analysis is now more fluid. Frequency distribution analysis classifies responses from very low to very high, using SPSS software to create organized frequency distribution tables. To simplify data interpretation, an average response categorization system was developed by calculating the range between the highest (5) and lowest (1) scale values, dividing it by the total number of scale levels (five), and assigning corresponding categories.

Additionally, clustering analysis of respondent profiles was performed using SPSS to enhance the understanding of the data. This analysis groups respondents with similar characteristics, behaviors, or preferences, helping to identify distinct consumer segments and inform targeted marketing strategies. Together, these methods ensure a comprehensive description and interpretation, enabling the researchers to draw meaningful insights. Table 1 outlines the operationalization of variables, including specific definitions, indicators for measurement, and references used in their development, ensuring clarity and accuracy in assessing the variables.

Table 1. Variable Measurements

Variables	Code	Statements
Authenticity Innovation (Shafi et al., 2021)	AUTH1	The handicraft product I purchased has a hangtag or label certifying the authenticity of the product.
	AUTH2	The handicraft product I purchased has a hangtag or label mentioning the name of the artisan who made the Handicraft.
	AUTH3	The handicraft product I purchased has a hangtag or label mentioning the origin of the product.
	AUTH4	The handicraft product I purchased has a hangtag or label mentioning the story behind the unique features of the product.
Packaging Innovation (Shafi et al., 2021)	PACK1	The handicraft product I purchased uses a new packaging design
	PACK2	The handicraft product I purchased uses recycled packaging.
	PACK3	The handicraft product I purchased uses changes in packaging to enhance shelf life.
	PACK4	The handicraft product I purchased uses changes in packaging aimed at improving transportation.
	PACK5	The handicraft product I purchased uses decorative packaging to serve as a gift.
Product Innovation (Shafi et al., 2021; Yang & Shafi, 2020)	Value-adding	
	PRO.VA1	The handicraft product I purchased has incremental changes to improve ease of use.
	PRO.VA2	The handicraft product I purchased has an improvement in aesthetic value.
	PRO.VA3	The handicraft product I purchased has the addition of new functions in the product.
	PRO.VA4	The handicraft products I purchased have improved the quality of the products to enhance their durability and reliability.
	Product Improvement	
	PRO.PI1	The handicraft product I purchased has changed in size.
	PRO.PI2	The handicraft product I purchased has changed in color.
	PRO.PI3	The handicraft product I purchased has changed shape.
	PRO.PI4	The handicraft product I purchased has improvements in finishing.
	Product Design	
	PRO.PD1	The handicraft product I purchased has a new product design.
	PRO.PD2	The handicraft product I purchased has improvements in Design.

Variables	Code	Statements
	PRO.PD3	The handicraft product I purchased has additional unique cultural aspects in the designs.
Process Innovation (Shafi et al., 2021; Tahar & Fellauge, 2019)	Alternative/new materials	
	PRC.MA1	The handicraft product I purchased has new combinations of materials to create a new and unique look.
	PRC.MA2	The handicraft product I purchased has changed its material to improve its finishing.
	PRC.MA3	The handicraft product I purchased has replaced hazardous materials with eco-friendly/safest materials.
	Quality Material	
	PRC.QM1	The handicraft product I purchased has improvements in the quality of materials used.
	PRC.QM2	The handicraft product I purchased uses high-quality materials to enhance its durability.
	PRC.QM3	The handicraft product I purchased uses quality material to prevent humidity/moisture/sunlight damage.
	Technology Innovation	
	PRC.TI1	The handicraft product I purchased uses the latest technology to produce accurate size/shape/ color combinations, etc.
	PRC.TI2	The handicraft product I purchased has changes in tools/equipment/machinery aimed at fast delivery of the finished product.
	PRC.TI3	The handicraft product I purchased utilizes technological innovations in its product shipping.
	PRC.TI4	The handicraft product I purchased uses a unique technology that attracts attention.

IV. Results and Discussion

This study initially collected data from a total of 496 respondents. However, 17 respondents (3.42%) were excluded because they had not purchased handicraft products within the past year. Additionally, 63 respondents (12.7%) were identified as outliers, as they provided identical responses to all the main questions. Consequently, the final dataset comprised 416 respondents, exceeding the initial target of 340 participants. This data refinement ensures a more accurate representation of relevant consumer behavior. Table 2 presents the respondents' profile information.

Table 2. Respondents Profile

Respondent Profile	Category	Qty (N 416)	%
Gender	Male	193	46,39%
	Female	223	53,61%
Age	18 - 27 years (born 1997 - 2006)	89	21,39%
	28 - 43 years (born 1981 - 1996)	231	55,53%
	44 - 59 years (born 1965 - 1980)	85	20,43%
	60 - 69 years (born 1955 - 1964)	11	2,64%
Employment	Government employees	186	44,71%
	Private employees	64	15,38%
	Students	59	14,18%
	Housewife	32	7,69%
	Entrepreneur	32	7,69%
	Freelancer (freelance)	11	2,64%
	Retirement (retirement)	10	2,40%
Teachers/Educators	8	1,92%	

Respondent Profile	Category	Qty (N 416)	%
	BUMN employees	4	0,96%
	Does not work	4	0,96%
	Professional (Lecturer, Researcher, Architect, etc.)	4	0,96%
	Sailor	2	0,48%
Last Education	Junior High School/Senior High School	91	21,88%
	Diploma (D1/D2/D3)	30	7,21%
	Bachelor's Degree	238	57,21%
	Master's Degree	57	13,70%
Domicile	Java	339	81,49%
	Bali & Nusa Tenggara	10	2,40%
	Sumatera	37	8,89%
	Sulawesi	12	2,88%
	Bali dan Nusa Tenggara	11	2,64%
	Papua & Maluku	7	1,68%
Monthly Income	<= Rp. 1.000.000	45	10,82%
	Rp. 1.000.001 - 5.000.000	127	30,53%
	Rp. 5.000.001 - Rp. 10.000.000	190	45,67%
	Rp. 10.000.001-Rp. 20.000.000	34	8,17%
	> Rp. 21.000.000	20	4,81%
Monthly expenses	<= Rp. 1.000.000	35	8,41%
	Rp. 1.000.001 - Rp. 1.500.000	25	6,01%
	Rp. 1.500.001 - Rp. 2.000.000	28	6,73%
	Rp. 2.000.001 - Rp. 3.000.000	78	18,75%
	Rp. 3.000.001 - Rp. 5.000.000	103	24,76%
	Rp. 5.000.001 - Rp. 7.500.000	76	18,27%
	>= Rp. 7.500.000	71	17,07%

The respondent profile consists of 416 individuals, primarily female (53.61%) and aged between 28 and 43 (55.53%). Most respondents are government employees (44.71%) and hold a bachelor's degree (57.21%). Most reside in Java (81.49%), with a significant portion reporting a monthly income between Rp. 5,000,001 and Rp. 10,000,000 (45.67%) and monthly expenses between Rp. 3,000,001 and Rp. 5,000,000 (24.76%). This demographic predominantly represents middle-aged, educated professionals living in Java with moderate income and expenditure patterns. This provides insight into the key consumer segment within the study, emphasizing the relevance of targeting professionals in Java.

Table 3 presents data related to various aspects of handicraft purchases. It includes information on the types of craft products purchased, their price ranges, and the locations where respondents buy these products, with some questions allowing multiple selections. Additionally, the data captures the frequency of purchases and the motivations for buying handicrafts, where respondents could provide multiple answers to indicate their reasons.

Table 3. Handicraft Purchasing Behavior

	Description	Qty (N 416)	%
Types of Craft Products	Bamboo/Rattan/Pandan Weaving	52	12,50%
	Hand-painted Batik/Batik Stamp/Batik Dye/Batik Combination	189	45,43%
	Songket Fabric/Ulos Fabric/Weaving Fabric	30	7,21%
	Stone Craft	8	1,92%
	Crafts from Recycled Materials	7	1,68%
	Bali Batik Fabric Craft	1	0,24%
	Wood Craft	39	9,38%
	Ceramic Craft	5	1,20%

	Description	Qty (N 416)	%
	Leather Craft	27	6,49%
	Silver/Other Metal Crafts	10	2,40%
	Embroidery/Crochet/Needlework Craft	30	7,21%
	Others	18	4,33%
Handicraft Price Range	Below Rp50,000	36	8,65%
	Rp100,001 - Rp500,000	92	22,12%
	Rp50,001 - Rp100,000	217	52,16%
	Rp1,000,001 - Rp5,000,000	25	6,01%
	Rp500,001 - Rp1,000,000	45	10,82%
	Above Rp5,000,000	1	0,24%
Places to Buy Handicrafts *respondents can answer >1 option	Traditional market	108	20,26%
	Online marketplace (Tokopedia, Shopee, etc.)	111	20,83%
	Tourist souvenir shop (gift shop)	104	19,51%
	Special physical store	87	16,32%
	Craft exhibition	80	15,01%
	Social Media (Instagram, Facebook, etc.)	30	5,63%
	Showroom/office store, etc.	13	2,44%
Buying Frequency	Every 3-6 months	42	10,10%
	Once a year	41	9,86%
	Only for special events or trips	164	39,42%
	Uncertainly	163	39,18%
	As needed	2	0,48%
	Every month	4	0,96%
Reasons for Buying Handicrafts *respondents can answer >1 option	Handmade craftsmanship	157	17,92%
	Supporting social sustainability	84	9,59%
	Supporting local businesses	162	18,49%
	Quality and uniqueness of the product	167	19,06%
	Usefulness or function of the product (for everyday use)	155	17,69%
	As a souvenir or gift	91	10,39%
	Exclusivity and limited production	60	6,85%

Most respondents (45.43%) reported purchasing Hand-painted Batik, Batik Stamp, Batik Dye, or Batik Combination products, making these handicrafts the most popular. These were followed by Bamboo, Rattan, or Pandan Weaving (12.50%) and Wood Crafts (9.38%). In terms of price range, more than half of the respondents (52.16%) spent between Rp50,001 and Rp100,000 on handicrafts, with the second most common range being Rp100,001 to Rp500,000 (22.12%). The most common places for purchasing handicrafts included Online Marketplaces (20.83%), Traditional Markets (20.26%), and Tourist Souvenir Shops (19.51%). Most respondents indicated that they buy handicrafts only for special events or trips (39.42%) or on an uncertain basis (39.18%), suggesting infrequent or situational purchasing behavior. Key motivations for purchasing handicrafts included the quality and uniqueness of the products (19.06%), supporting local businesses (18.49%), and appreciation for handmade craftsmanship (17.92%). These findings indicate a preference for unique, authentic products, underscoring the importance of authenticity and craftsmanship in consumer decisions.

4.1. Construct Reliability and Validity

Table 4 presents the measurement results, including factor loadings, mean, standard deviation (SD), t-values, mean variable, Kaiser-Meyer-Olkin (KMO), Average Variance Extracted (AVE), Composite Reliability (CR), and Cronbach's Alpha. These metrics are used to evaluate the reliability and validity of the data. The robust reliability and validity checks ensure the accuracy and consistency of the constructs, providing

confidence in the results. Cronbach's Alpha assesses the consistency of responses, while the KMO measure determines the adequacy of the data for factor analysis. AVE evaluates the extent to which the indicators represent the latent variables, and CR examines the overall reliability of the constructs. Collectively, these metrics ensure that the constructs are measured accurately and reliably, providing a robust foundation for analysis.

Table 4. Construct Reliability and Validity

Code	Factor loadings	Mean	SD	t	Mean	KMO	AVE	CR	Cronbach Alpha
Authenticity Innovation (Composite)					3,691	0,790	0,573	0,844	0,840
AUTH1	0,770	4,017	1,125	72,849					
AUTH2	0,830	3,596	1,213	60,491					
AUTH3	0,871	3,813	1,212	64,171					
AUTH4	0,816	3,337	1,288	52,819					
Packaging Innovation (Composite)					3,683	0,848	0,519	0,835	0,831
PACK1	0,810	3,632	1,105	67,043					
PACK2	0,634	3,075	1,271	49,327					
PACK3	0,837	3,726	1,109	68,502					
PACK4	0,772	4,058	0,978	84,657					
PACK5	0,831	3,925	1,139	70,274					
Product Innovation									
Value-adding (Composite)					3,981	0,759	0,527	0,815	0,813
PRO.VA1	0,791	3,849	1,029	76,280					
PRO.VA2	0,789	4,238	0,815	106,100					
PRO.VA3	0,806	3,776	1,013	76,005					
PRO.VA4	0,826	4,063	0,900	92,035					
Product Improvement (Composite)					3,901	0,794	0,568	0,852	0,832
PRO.PI1	0,862	3,822	1,101	70,821					
PRO.PI2	0,858	3,894	1,121	70,865					
PRO.PI3	0,859	3,731	1,192	63,826					
PRO.PI4	0,668	4,156	0,837	101,261					
Product Design (Composite)					4,010	0,701	0,625	0,834	0,828
PRO.PD1	0,870	4,014	0,991	82,587					
PRO.PD2	0,894	3,913	0,955	83,537					
PRO.PD3	0,823	4,103	0,927	90,292					
Process Innovation									
Alternative/new materials (Composite)					3,897	0,664	0,591	0,801	0,793
PRC.MA1	0,882	3,870	0,973	81,117					
PRC.MA2	0,887	3,839	1,013	77,263					
PRC.MA3	0,758	3,981	1,078	75,350					
Quality Material (Composite)					4,134	0,725	0,664	0,854	0,852
PRC.QM1	0,871	4,154	0,786	107,838					
PRC.QM2	0,901	4,16587	0,838	101,371					
PRC.QM3	0,867	4,08173	0,912	91,278					
Technology Innovation (Composite)					3,840	0,800	0,627	0,871	0,869
PRC.TI1	0,830	3,813	1,022	76,094					
PRC.TI2	0,869	3,704	1,090	69,346					
PRC.TI3	0,851	3,952	0,963	83,681					
PRC.TI4	0,842	3,889	1,017	78,032					

The analysis highlights key constructs of innovation, emphasizing their reliability and validity metrics. Among the variables, Quality Material achieved the highest mean score (4.134), underscoring its critical role

in innovation. This construct was supported by strong factor loadings (above 0.86) and high-reliability metrics (AVE: 0.664, CR: 0.854, Cronbach's Alpha: 0.852). Product Design also demonstrated significant importance, with a mean score of 4.010 and high factor loadings, reflecting its role in enhancing consumer appeal. Similarly, Value-adding in product innovation recorded a robust mean of 3.981, highlighting its relevance in meeting consumer needs. Technology Innovation showcased strong reliability (Cronbach's Alpha: 0.869) and consistency (CR: 0.871), emphasizing its impact on improving production efficiency and driving product differentiation. These findings reinforce the importance of product innovation in enhancing consumer satisfaction and competitive advantage.

The constructs in this study demonstrated strong reliability (Cronbach's Alpha > 0.79) and validity (AVE > 0.50), confirming the robustness of the measurement model. This affirms the reliability and precision of the constructs used to measure innovation factors. To further assess discriminant validity in variance-based SEM (PLS-SEM), the study examined Heterotrait-Monotrait Ratio (HTMT) values using Smart PLS 4. Introduced by Henseler et al. (2015), HTMT evaluates the ratio of correlations between indicators of different constructs (heterotrait) and indicators within the same construct (monotrait). It is considered a more accurate method for assessing discriminant validity than traditional approaches like the Fornell-Larcker criterion. This provides a more rigorous and up-to-date measure of discriminant validity, ensuring that the constructs are distinct. The recommended thresholds for HTMT are ≤ 0.85 for strict discriminant validity and ≤ 0.90 for more lenient contexts. Values exceeding these thresholds suggest a lack of discriminant validity, indicating excessively high correlations between constructs and insufficient empirical distinction. (Hair et al., 2014).

Table 5. Discriminant Validity – Heterotrait Monorait Ratio (HTMT)

	AUTH	PACK	PRC.MA	PRC.QM	PRC.TI	PRO.PD	PRO.PI	PRO.VA
AUTH								
PACK	0.858							
PRC.MA	0.550	0.698						
PRC.QM	0.523	0.650	0.847					
PRC.TI	0.650	0.724	0.811	0.794				
PRO.PD	0.638	0.713	0.852	0.772	0.815			
PRO.PI	0.427	0.520	0.772	0.695	0.670	0.782		
PRO.VA	0.616	0.762	0.788	0.814	0.735	0.795	0.773	

The discriminant validity assessment using the HTMT criterion yielded satisfactory results. All HTMT values were below the recommended threshold of ≤ 0.90 , indicating that each variable in the model is distinct and effectively represents its respective construct. This result supports the conclusion that the constructs used in the study are differentiated from each other.

4.2. Descriptive Statistical Analysis

This study utilizes a 5-point Likert scale as a measurement tool, where a score of 1 represents "strongly disagree" and five represents "strongly agree." Descriptive statistical analysis is applied to summarize the collected data into representative statistics, categorized into two main components (Neuman, 2013). This research uses descriptive analysis to evaluate the response levels of 416 respondents who purchased handicraft products. The analysis involves tabulating the questionnaire data to determine the minimum value (the smallest in the dataset), maximum value (the largest), and mean (the most common measure of central tendency). The standard deviation is also used to quantify the extent of variation or deviation of the observed data from the mean. (Ghozali, 2018). The results provide insights into respondent feedback based on these descriptive metrics.



Figure 2. Evaluation of Innovation Variables in the Handicraft Products

The chart illustrates the mean values for various dimensions of innovation, with the overall average mean (Mean ALL) recorded at 3.892. Among the dimensions, Quality Material achieved the highest mean (4.134), underscoring its critical role in innovation. Product Design (4.010) and Value-adding (3.981) also performed above average, highlighting their importance in the handicraft industry. Other dimensions, such as New/Alternative Material, Product Improvement, and Technology Innovation, scored close to the overall mean. Meanwhile, Authenticity Innovation (3.691) and Packaging Innovation (3.683) fell slightly below the average, suggesting areas for potential improvement.

The data analysis involved determining the frequency distribution of respondents' answers for each variable, categorizing them into low, low, moderate, high, and very high. SPSS software was used to process the data and generate frequency distribution tables. To facilitate the descriptive analysis, answer categories were developed by calculating the range between the highest scale value (5) and the lowest scale value (1) and dividing it by the total number of scale points (5). This categorization enabled researchers to interpret the average responses more effectively. Based on the questionnaire results, the responses were classified into these categories, providing a clear and structured representation of respondent perceptions across the measured variables.

Table 6. Number of Respondents Presentation in the Mean variable Innovation Assessment categories (%)

	Very Low (1,00 - 1,79)	Low (1,80 - 2,59)	Moderate (2,60 - 3,39)	High (3,40 - 4,29)	Very High (4,30 - 5,00)
Authenticity Innovation	6,49	6,01	18,99	42,55	25,96
Packaging Innovation	3,61	5,53	17,07	50,96	22,84
Value-adding	0,72	4,57	12,50	50,96	31,25
Product Improvement	2,16	7,45	15,14	43,51	31,73
Product Design	2,40	2,64	16,11	40,38	38,46
New/ Alternative Material	2,40	3,61	20,67	38,46	34,86
Quality Material	1,44	0,72	14,90	38,46	44,47
Technology Innovation	2,64	5,29	17,79	48,08	26,20

The cluster analysis aims to segment respondents into four groups based on their average scores across various innovation factors, providing insights into their innovation preferences and orientations. Cluster 1 (Moderately Innovative) consists of respondents with average scores across most factors, reflecting a balanced approach to innovation. Cluster 2 (Highly Innovative) includes individuals with high scores in Value-adding, Product Design, and Quality Materials, indicating strong adaptability and forward-thinking.

Cluster 3 (Minimal Innovation) represents respondents with low scores who prioritize functionality over innovation. Cluster 4 (Limited Innovation) includes those with a selective focus, excelling in areas like Authenticity Innovation but scoring lower in others such as Technology Innovation. This segmentation helps identify dominant innovation orientations and supports the development of targeted strategies for product development and customer engagement.

Table 7. Profile of Consumer Clusters on Segmentation Variables

	Cluster one (Moderately Innovative)	Cluster 2 (Highly Innovative)	Cluster 3 (Minimal Innovation)	Cluster 4 (Limited Innovation)
Authenticity Innovation	3,734	4,446	2,153	1,692
Packaging Innovation	3,601	4,443	2,328	2,500
Value-adding	3,817	4,640	2,701	3,913
Product Improvement	3,701	4,593	2,479	4,163
Product Design	3,867	4,742	2,491	3,731
New/ Alternative Material	3,710	4,664	2,185	4,077
Quality Material	3,936	4,804	2,907	4,218
Technology Innovation	3,690	4,581	2,285	3,606
Cluster Size	54,09%	31,01%	8,65%	6,25%

The consumer cluster profile reveals distinct patterns based on segmentation variables. Cluster 1 (Moderately Innovative), the largest group (54.09%), shows moderate scores across all innovation factors, indicating a balanced approach to innovation adoption. Cluster 2 (Highly Innovative), comprising 31.01% of respondents, has the highest scores across all factors, particularly in Product Design (4.742) and Quality Material (4.804), reflecting a strong focus on innovation. Cluster 3 (Minimal Innovation), the smallest group (8.65%), reports the lowest scores, especially in Authenticity Innovation (2.153) and New/Alternative Material (2.185), indicating minimal interest in innovation. Cluster 4 (Limited Innovation), making up 6.25% of respondents, demonstrates a selective focus with relatively higher scores in Quality Material (4.218) and Product Improvement (4.163) but a lower emphasis on Authenticity Innovation (1.692). This segmentation highlights a diverse range of consumer innovation orientations.

Table 8. Profile of Consumer Segments on Socio-Demographic Characteristics and Self-Reported Consumption of Handicraft Products of the Sample.

	Cluster 1 (Moderately Innovative)	Cluster 2 (Highly Innovative)	Cluster 3 (Minimal Innovation)	Cluster 4 (Limited Innovation)
Gender				
Male	104 (25%)	57 (13,70%)	22 (5,28%)	10 (2,40%)
Female	121 (29,08%)	72 (17,30%)	14 (3,36%)	16 (3,84%)
Age				
18 - 27 (Gen Z)	44 (10,57%)	27 (6,490%)	8 (1,92%)	10 (2,40%)
28 - 43 (Gen Y)	125 (30,04%)	71 (17,06%)	23 (5,52%)	12 (2,88%)
44 - 59 (Gen X)	49 (11,77%)	28 (6,730%)	5 (1,20%)	3 (0,72%)
60 - 69 (Baby Boomers)	7 (1,682%)	3 (0,721%)	0 (0%)	1 (0,24%)
Education				
Below bachelor degree	46 (11,05%)	32 (7,692%)	6 (1,44%)	7 (1,68%)
Diploma	17 (4,086%)	7 (1,682%)	4 (0,96%)	2 (0,48%)
Bachelor degree	133 (31,97%)	69 (16,58%)	21 (5,04%)	15 (3,60%)
Master degree	29 (6,971%)	21 (5,048%)	5 (1,20%)	2 (0,48%)
Province				
Jawa	186 (44,71%)	100 (24,03%)	31 (7,45%)	22 (5,28%)
Bali dan Nusa Tenggara	6 (1,442%)	4 (0,961%)	0 (0%)	0 (0%)

	Cluster 1 (Moderately Innovative)	Cluster 2 (Highly Innovative)	Cluster 3 (Minimal Innovation)	Cluster 4 (Limited Innovation)
Sumatera	16 (3,846%)	16 (3,846%)	2 (0,48%)	3 (0,72%)
Kalimantan	8 (1,923%)	3 (0,721%)	0 (0%)	1 (0,24%)
Sulawesi	8 (1,923%)	2 (0,480%)	1 (0,24%)	0 (0%)
Papua & Maluku	1 (0,240%)	4 (0,961%)	2 (0,48%)	0 (0%)
Income				
<= Rp. 1.000.000	23 (5,528%)	16 (3,846%)	3 (0,72%)	3 (0,72%)
Rp. 1.000.001 - 5.000.000	74 (17,78%)	31 (7,451%)	13 (3,12%)	9 (2,16%)
Rp. 5.000.001 - Rp. 10.000.000	101 (24,27%)	65 (15,62%)	17 (4,08%)	7 (1,68%)
Rp. 10.000.001-Rp. 20.000.000	16 (3,846%)	13 (3,125%)	1 (0,24%)	4 (0,96%)
>= Rp. 20.000.000	11 (2,644%)	4 (0,961%)	2 (0,48%)	3 (0,72%)
Type of Handicraft Purchase (%)				
Bamboo/Rattan/Pandan Weaving	24 (5,769%)	15 (3,605%)	8 (1,92%)	5 (1,20%)
Hand-painted Batik/Batik Stamp/Batik Dye/Batik Combination	104 (25%)	63 (15,14%)	14 (3,36%)	8 (1,92%)
Songket Fabric/Ulos Fabric/Weaving Fabric	14 (3,365%)	9 (2,163%)	2 (0,48%)	5 (1,20%)
Stone Craft	4 (0,961%)	4 (0,961%)	0 (0%)	0 (0%)
Crafts from Recycled Materials	5 (1,201%)	2 (0,480%)	0 (0%)	0 (0%)
Bali Batik Fabric Craft	0 (0%)	1 (0,240%)	0 (0%)	0 (0%)
Wood Craft	22 (5,288%)	10 (2,403%)	4 (0,96%)	3 (0,72%)
Ceramic Craft	3 (0,721%)	1 (0,240%)	1 (0,24%)	0 (0%)
Leather Craft	13 (3,125%)	12 (2,884%)	0 (0%)	2 (0,48%)
Silver/Other Metal Crafts	5 (1,201%)	2 (0,480%)	3 (0,72%)	0 (0%)
Embroidery/Crochet/Needlework Craft	18 (4,326%)	6 (1,442%)	4 (0,96%)	2 (0,48%)
Others	13 (3,125%)	4 (0,961%)	0 (0%)	1 (0,24%)
Handicraft Price				
< Rp. 50.000	14 (3,365%)	10 (2,403%)	6 (1,44%)	6 (1,44%)
Rp 50.001 - Rp100.000	55 (13,22%)	28 (6,730%)	7 (1,68%)	2 (0,48%)
Rp 100.001 - Rp500.000	124 (29,80%)	65 (15,62%)	15 (3,60%)	13 (3,12%)
Rp. 500.001 – Rp. 1.000.000	12 (2,884%)	9 (2,163%)	2 (0,48%)	2 (0,48%)
Rp. 1.000.001 – Rp. 5.000.000	20 (4,807%)	17 (4,086%)	5 (1,20%)	3 (0,72%)
> Rp. 5.000.000	0 (0%)	1 (0,240%)	0 (0%)	0 (0%)

Analyzing socio-demographic characteristics and self-reported handicraft consumption reveals distinct patterns across the four clusters. Cluster 1 (Moderately Innovative) demonstrates strong engagement, with the highest proportion of females (29.08%) and individuals aged 28–43 years (30.04%). This cluster also has the most significant percentage of respondents holding a bachelor's degree (31.97%) and residing in Java (44.71%), reflecting a balanced yet active interest in innovation. Respondents in this group predominantly purchase hand-painted batik and related crafts (25%) and favor handicrafts priced between Rp. 100,001 and Rp. 500,000 (29.80%). Similarly, Cluster 2 (Highly Innovative) shows significant engagement from educated respondents (16.58% with a bachelor's degree) and a strong preference for moderately priced items (15.62% in the Rp. 100,001–Rp. 500,000 range). This cluster is also dominated by middle-income individuals, highlighting a consistent commitment to innovative consumption.

In contrast, Cluster 3 (Minimal Innovation) and Cluster 4 (Limited Innovation) exhibit limited engagement. Cluster 3 has the lowest representation of females (3.36%) and older age groups, such as Baby Boomers (0%), with minimal interest in higher education and income levels. Similarly, Cluster 4 shows low

participation from regions beyond Java and a limited focus on recycled materials and stone crafts. Both clusters display reduced interest in higher-priced handicrafts, indicating a preference for more affordable options. These findings emphasize the challenges of engaging less innovative clusters, particularly those with lower socio-demographic advantages while highlighting the strengths of Clusters 1 and 2 as key drivers of innovation-oriented handicraft consumption.

4.3. Discussion

This study provides a detailed analysis of the implementation and impact of various innovation factors within the Indonesian handicraft industry, offering valuable insights into consumer behavior and industry trends. By exploring key dimensions such as Authenticity Innovation, Packaging Innovation, Product Innovation (including Value-Adding, Product Improvement, and Product Design), and Process Innovation (such as New/Alternative Material, Quality Material, and Technology Innovation), the research identifies areas where innovation has been successfully integrated and highlights gaps that require improvement. The results indicate that Quality Material and Product Design achieved the highest mean values (4.134 and 4.010, respectively), emphasizing their critical role in influencing consumer preferences. Conversely, Authenticity Innovation and Packaging Innovation scored below the average mean of 3.892, signaling the need for strategic enhancements in these areas to resonate better with consumers.

Descriptive statistical analysis reveals that most respondents (55.53%) are middle-aged professionals, primarily residing in Java (81.49%) with moderate incomes ranging from Rp. 5,000,001 to Rp. 10,000,000. This demographic represents a key consumer segment actively engaging with innovation-driven handicrafts. Cluster analysis further identified four distinct consumer groups: Moderately Innovative (54.09%), Highly Innovative (31.01%), Minimal Innovation (8.65%), and Limited Innovation (6.25%). Clusters 1 and 2 demonstrate stronger engagement with innovation factors such as Value-Adding and Product Improvement, while Clusters 3 and 4 show limited interest, prioritizing functionality and affordability over innovation.

These findings underscore important implications for artisans and industry stakeholders. For highly innovative consumers, strategies should focus on enhancing product design, incorporating high-quality materials, and leveraging value-adding features. Maintaining traditional elements while improving affordability and functionality for less innovative clusters can attract greater interest. Furthermore, expanding market reach beyond Java is crucial for diversifying the consumer base and engaging underrepresented groups. Ensuring product authenticity through certifications and storytelling can strengthen consumer trust and distinguish products from competitors, as Shafi et al. (2021) highlighted. While innovation serves as a competitive advantage, the study emphasizes the challenge of balancing traditional values with modern consumer demands. Excessive technological integration risks alienating consumers who prioritize handmade authenticity. To address this, artisans should focus on technologies that complement craftsmanship without compromising cultural heritage. These findings align with the Diffusion of Innovation Theory (Rogers, 2003), which stresses the importance of gradual communication and adoption of new ideas within social systems to foster consumer acceptance.

V. Conclusion

This study aimed to assess the innovation variables within handicraft products, analyze descriptive statistics, and identify consumer segments based on their innovation behaviors and socio-demographic characteristics. By investigating key aspects such as authenticity, packaging, product design, and material quality, the research sought to uncover trends in innovation adoption and consumer preferences. Furthermore, the study aimed to categorize respondents into distinct clusters to understand better how innovation is embraced across various socio-demographic groups. The evaluation of innovation factors yielded valuable insights. Quality Material and Product Design stood out with the highest mean scores (4.134 and 4.010, respectively), underlining their significant role in the handicraft sector. In contrast, Authenticity

Innovation and Packaging Innovation scored somewhat lower, signaling areas that require further development. Descriptive statistical analysis revealed a predominantly middle-income, educated demographic actively engaged with innovative products, particularly in Java. The cluster analysis identified four distinct consumer groups: Moderately Innovative (54.09%), Highly Innovative (31.01%), Minimal Innovation (8.65%), and Limited Innovation (6.25%). Clusters 1 and 2 demonstrated high engagement with innovation factors, while Clusters 3 and 4 exhibited less interest, focusing more on functionality and cost.

These results highlight the importance of aligning innovation strategies with consumer preferences. For Clusters 1 and 2, businesses should prioritize high-quality materials, contemporary designs, and value-adding features to appeal to more innovative consumers. For Clusters 3 and 4, strategies should focus on affordability, functionality, and retaining traditional elements to cater to less innovation-driven segments. These insights can guide businesses in refining product development, marketing strategies, and regional expansion, primarily to engage underrepresented consumer groups outside of Java. Additionally, policymakers can use these findings to develop initiatives that promote innovation within the handicraft sector. Study from Nobelson & Yuliniar, (2025) Underscores the significance of several key factors in fostering innovation and sustainable growth, such as entrepreneurial innovation, marketing strategies, information technology adoption, and the courage to innovate. Trust in digital technology, opportunity competence, innovation capability, and operational efficiency all play critical roles in the success of businesses. Furthermore, the competitive environment, e-commerce, creativity, competence commitment, and entrepreneurial leadership are vital elements that can help businesses create a strong foundation for growth. Integrating and optimizing these factors for women-led SMEs is crucial for gaining a sustainable competitive advantage in today's dynamic marketplace.

Future research should explore the socio-cultural and psychological factors influencing innovation adoption, particularly how consumers perceive the balance between modernity and tradition. Longitudinal studies could track shifts in consumer preferences over time, offering valuable perspectives on changing market dynamics. Research into the role of e-commerce in promoting innovative handicraft products could provide actionable strategies for artisans and marketers. The concept of authenticity in brand storytelling contributes significantly to the consumer trust literature by emphasizing that consumers are more likely to trust brands that communicate openly and sincerely. (Mandung, 2025). Authentic storytelling in the handicraft industry resonates with consumers by reflecting the brand's values, culture, and commitment in a relatable way. This authenticity fosters trust and reinforces loyalty, suggesting its impact goes beyond immediate reactions. By aligning with consumers' values, storytelling enhances the brand's symbolic meaning, creating a strong foundation for long-term loyalty. Future research should explore how storytelling, trust, and consumer identity intersect in the context of handicrafts. Furthermore, comparative studies across regions could uncover geographical differences in innovation engagement, while qualitative methods such as interviews and focus groups could reveal more profound insights into the motivations and barriers faced by different consumer clusters. Addressing these areas will enable the handicraft industry to effectively balance tradition with innovation, ensuring sustained growth and competitiveness in the global market.

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