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Creative Economy Potential Analysis for Increasing Community Income of Noken Craftswomen in Mimika

Menas Mayau[1*], J Ary Mollet[2], Transna Putra Urip[3]
Universitas Cenderawasih, Papua, Indonesia[1,2,3]
demtimayau@yahoo.com[1*]

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Abstract
Purpose: This study examines income levels of noken bag craftswomen in Mimika Baru District, Mimika Regency, Papua, and identifies internal and external factors that support or hinder this creative economy activity, along with strategies for raising craftswomen income.
Research Methodology: A quantitative descriptive approach used 27 noken craftswomen selected through purposive sampling as key informants, with data collected through questionnaires, observation, and documentation, analyzed using production cost and revenue calculations together with Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis supported by Internal and External Factor Analysis Summary matrices.
Results: Average production cost per cycle was IDR 547,963, average total revenue reached IDR 4,617,308, yielding average net income of IDR 4,070,769. Nylon-yarn noken generated higher revenue, IDR 2,544,231, than wool-yarn noken, IDR 2,073,077, though both sold at the same unit price of IDR 350,000. Internal analysis produced a strength score of 2.05 against a weakness score of 1.87, while external analysis produced a threat score of 2.60 against an opportunity score of 1.46, positioning craftswomen in the aggressive growth quadrant with an Strenght and Oportunities (SO) strategy orientation.
Conclusions: Noken craftswomen occupy a financially productive but structurally vulnerable position favoring strength-based expansion strategies.
Limitations: The purposive sample of 27 respondents restricts generalization beyond Mimika Baru District.
Contributions: The study offers empirically grounded income figures and a strategy framework local government and cooperatives can use for targeted noken empowerment programs.

Keywords: *Creative Economy, Income Improvement, Noken Craft, SWOT Analysis*

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1. Introduction

The creative economy has become one of the strategic pillars of regional development in Indonesia, particularly in areas where formal industrial infrastructure remains limited and household livelihoods depend heavily on culturally rooted small-scale production. Creative economy activity is generally understood as economic value created through individual creativity, skill, and talent, combined with cultural heritage, knowledge, and technology (Rachmawati, Rusdiyanto, & Ristiani, 2025). In practice, this means that communities can convert intangible cultural assets, stories, symbols, and craftsmanship, into marketable goods that simultaneously generate income and preserve identity. The concept gained further traction after national policy formally recognized the creative sector as a driver of inclusive growth, prompting local governments across Indonesia to search for locally grounded creative products around which to build empowerment programs (Digdowiseiso, 2023).

Micro, small, and medium enterprises remain the backbone of this transformation. They absorb the majority of the national workforce and contribute a substantial share of gross domestic product, yet they continue to face structural constraints in financing, technology adoption, and market access (Nareswari, Nurmasari, & Putranti, 2023). These constraints are amplified in remote regions such as the Papua highlands and coastal districts, where transportation costs are high, financial institutions are scarce, and digital infrastructure is uneven. Under such conditions, craft-based creative economy activities that rely on locally available raw materials and inherited skills, rather than imported inputs or advanced machinery, offer a comparatively resilient pathway to household income generation (Kusuma, & Setiawan, 2022; David, & David, 2020).

One clear example of this pathway is the noken, a knotted or knitted bag traditionally produced by Papuan women from natural fibers or, increasingly, from wool and nylon yarn. Noken is not merely a functional carrying tool; it is deeply embedded in the life cycle of Papuan women, accompanying birth, daily subsistence activities, and communal ceremonies. Its cultural significance was internationally affirmed when UNESCO inscribed noken craftsmanship as an intangible cultural heritage of humanity, a recognition that subsequently accelerated its commercial visibility and market demand (Salhuteru & Hutubessy, 2020). This recognition has transformed noken from a purely domestic artifact into a commodity capable of supporting family income, while simultaneously raising new questions about sustaining production quality, raw material supply, and fair compensation for the women who make it.

In Mimika Regency, and specifically in Mimika Baru District where the district capital Timika is located, noken production has become one of the more visible informal economic activities carried out by Papuan women, locally referred to as mama-mama Papua. These women typically operate as individual producers, combining raw material sourcing, weaving, and direct retail sale along roadsides, in markets, and near government offices. Regional policy has, in some contexts, mandated noken use among civil servants and students on designated days, a demand-side intervention intended to sustain the market for this cultural product and, by extension, the income of its producers (Aula, Umar, & Hafizrianda, 2024). Despite this supportive policy environment, craftswomen continue to report constraints related to raw material costs, limited access to formal savings and credit, and constrained marketing channels beyond informal roadside sale.

The regional economic backdrop reinforces the urgency of diversifying income sources beyond extractive industry. Mimika Regency's economy remains dominated by mining and quarrying, which historically contributed more than eighty percent of regional gross domestic product at constant prices, while manufacturing, trade, and other value-adding sectors occupy a comparatively marginal share (Saputra & Suparta, 2023). Diversifying toward creative, culturally embedded production such as noken crafting therefore aligns with broader goals of inclusive and diversified regional development, reducing dependence on a single volatile resource sector and distributing economic opportunity toward household-level, women-led enterprises (Nursini, 2020).

Despite the cultural prominence and policy attention given to noken, empirical evidence quantifying the income actually earned by its producers, and systematically mapping the internal and external factors shaping their business viability, remains limited at the district level. Existing studies on noken have tended to emphasize its symbolic and cultural dimensions or its role in tourism promotion, leaving a gap in production-cost and revenue-based income analysis combined with a structured strategic assessment. Addressing this gap matters because policy interventions intended to support noken craftswomen, whether through procurement mandates, training, or cooperative financing, are more likely to succeed when grounded in accurate income baselines and a clear understanding of the strengths, weaknesses, opportunities, and threats these women actually face (Abbas, Balsalobre-Lorente, Amjid, Al-Sulaiti, Al-Sulaiti, & Aldereai, 2023; Kotler, & Keller, 2022; Lapinskiene, 2025).

Based on this background, the present study asks three interrelated questions. First, how large is the income earned by noken sellers in Mimika Regency. Second, which internal and external factors act as barriers and supports in this creative economy activity. Third, what strategies can realistically be formulated to increase the income of noken sellers. Correspondingly, the study aims to analyze the income level of noken business actors, to identify the factors that inhibit and support their empowerment, and to formulate strategies for increasing their income. Theoretically, the findings contribute to the literature on culturally embedded micro-enterprise income and strategic positioning in resource-constrained regions. Practically, they provide local government agencies, cooperative institutions, and community organizations with an evidence base for designing noken-specific empowerment programs that are proportionate to the actual economic conditions faced by craftswomen in Mimika Baru District.

2. Literature Review

2.1 Creative Economy as a Development Concept

The creative economy is generally defined as economic activity built on creativity, skill, and individual talent, converted into products with economic value through cultural heritage, knowledge, or technology. This definition positions creativity, rather than raw material abundance or capital intensity, as the primary factor of production. In practice, creative economy actors compete on the basis of design, story, and authenticity rather than on price or scale alone, which allows small and geographically remote producers to enter markets that would otherwise be dominated by mass manufacturers (Ortiz-Ospino et al., 2025). Indonesian policy has classified the creative economy into sixteen subsectors, later prioritizing six subsectors, crafts, culinary, fashion, film, game development, and music, as having the highest development potential given the country's cultural diversity and human capital base.

Within the craft subsector, culturally embedded products such as noken occupy a distinctive niche because their value derives simultaneously from utility, symbolism, and provenance. Studies of similar craft-based women's enterprises show that local wisdom functions as both a constraint and a resource: it limits standardization and scale but provides authenticity that commands price premiums and market interest, particularly when supported by heritage recognition (Anjaningrum, 2021). This dual character explains why noken producers can command a comparatively stable unit price even without formal branding or industrial packaging, while still facing structural barriers to scaling production.

2.2 Micro-Enterprise Income and Production Cost Theory

Income analysis in micro-enterprise research conventionally rests on the relationship between total cost, total revenue, and net income. Total cost is the sum of fixed cost and variable cost incurred in production, total revenue is the product of output quantity and unit selling price, and net income is the residual after subtracting total cost from total revenue. This framework has been applied extensively to home-based and artisanal production, from palm sugar crafting to bakery micro-enterprises, consistently showing that even very small operations, run without formal accounting, can generate meaningful household income once fixed and variable costs are properly separated and measured. Financial literacy, however, mediates how effectively producers translate revenue into sustainable income, since poor cost tracking and the absence of savings behavior erode the benefit of otherwise profitable production (Molina-Garcia, Dieguez-Soto, Galache-Laza, & Campos-Valenzuela, 2023; Wahyuningsi, Mappamiring, & Parawangi, 2022).

For craft producers who source raw materials from local suppliers and sell directly to consumers, as is the case with noken producers using wool and nylon yarn, the cost structure is dominated by working capital and raw material expenditure rather than fixed capital investment. This cost profile makes such enterprises comparatively low-risk to enter but also limits the scope for economies of scale, since output volume is bound by the labor-intensive, largely manual nature of the weaving process. Financial constraint literature on Indonesia's creative industries confirms that access to formal credit remains one of the most persistent limitations facing such micro-producers, even where product demand is favorable (Nareswari, Nurmasari, & Putranti, 2023; Aini, Budiarto, & Edliyanti, 2021; Arshed, Martin, & Knox, 2023).

2.3 SWOT Analysis and Strategic Positioning
The SWOT analysis remains one of the most widely used strategic planning tools for evaluating the internal strengths and weaknesses of an enterprise alongside external opportunities and threats. Its enduring popularity across both large firms and micro-enterprises stems from its capacity to translate qualitative observation into a structured matrix that can guide strategy selection, even in contexts where sophisticated financial or market data are unavailable (Benzaghta et al., 2021). In the SWOT framework, an Internal Factor Analysis Summary matrix aggregates weighted strength and weakness scores, while an External Factor Analysis Summary matrix aggregates weighted opportunity and threat scores; the resulting position on the internal-external axis indicates whether an aggressive growth, diversification, retrenchment, or defensive strategy is most appropriate (Rezki, 2021).

Applications of SWOT and Internal and External Factor Analysis Summary (IEFAS) analysis to craft and micro-enterprise contexts, ranging from bakery businesses to coffee shops and traditional handicraft producers, consistently find that strength-opportunity strategies dominate when an enterprise possesses accessible raw materials, low entry cost, and rising consumer demand, even amid weaknesses in financial literacy or promotion (Warpindyastuti et al., 2025; Simorangkir & Ali, 2025). This pattern suggests that craft enterprises embedded in supportive cultural or policy environments tend to occupy a growth-oriented strategic position despite operational and managerial limitations, a pattern this study expects to observe among noken craftswomen given the existence of government procurement mandates favoring noken use.

2.4 Government Role, Empowerment, and Local Wisdom
Local government intervention in micro-enterprise development has been examined through several institutional lenses, most commonly as regulator, facilitator, motivator, and catalyst. Evidence from Reog craft empowerment in Ponorogo and similar craft-based Micro, Small, Medium Enterprises (MSME) contexts shows that clear policy support, procurement mandates, and market facilitation can meaningfully strengthen craft producer income, while weak coordination between agencies undermines otherwise well-intentioned programs (Maulida, Mustofa, & Haryati, 2023). In the specific case of noken, regional policy requiring civil servants and students to use noken bags functions as a demand-side facilitation mechanism; recent evidence indicates that such policy has a positive and significant relationship with the productivity and income of Papuan women noken artisans in Mimika Baru District Aula, Umar, and Hafizrianda (2024), lending direct empirical support to the expectation that policy-driven demand strengthens craftswomen income.

Financial literacy and digital marketing capability represent a second empowerment dimension increasingly emphasized in MSME literature. Studies on financial literacy competence consistently find that producers with better financial management skills convert revenue into durable income more effectively and are better positioned to access formal financing (Lenggogeni & Usman, 2023). Similarly, digital literacy and marketing intensity have been shown to mediate the relationship between financial capability and enterprise productivity, implying that craftswomen who remain confined to informal, in-person retail channels forgo income opportunities available through digital platforms (Malodia, Mishra, Fait, Papa, & Dezi, 2023). These findings frame financial literacy and marketing capability as weaknesses that, if addressed, could shift the strategic position of noken craftswomen toward a stronger and more resilient growth trajectory.

2.5 Conceptual Framework and Working Propositions
Drawing on the theoretical strands above, this study frames noken craftswomen income as the outcome of a production cost and revenue structure shaped by raw material access and market price stability, while their strategic position is framed as the outcome of internal capability (skill, raw

material access, capital requirement) interacting with external conditions (government policy, market competition, and raw material sustainability). Because this study is descriptive and exploratory rather than confirmatory in design, it does not test statistically formalized hypotheses; instead, it advances three working propositions that structure the results and discussion. The first proposition holds that noken production generates net income sufficient to meaningfully supplement household earnings even under simple production technology. The second proposition holds that internal strengths, particularly raw material accessibility and craftsmanship skill, outweigh internal weaknesses related to financial literacy and equipment. The third proposition holds that supportive government policy constitutes a dominant external opportunity capable of offsetting competitive and raw material threats, positioning craftswomen to pursue growth-oriented, strength-opportunity strategies rather than defensive retrenchment (Soekartawi, 2016).

3. Research Methodology

3.1 Research Location and Design

This research was conducted in Mimika Baru District, Mimika Regency, Papua, the district in which the regency capital Timika is located and where noken production and sale are visibly concentrated along main roads, markets, and near government facilities. Mimika Baru District was selected purposively because it represents the highest population concentration in the regency and functions as the commercial hub through which most noken output passes on its way to consumers, whether local residents, civil servants, or visitors. The study adopted a quantitative descriptive design intended to measure income levels precisely while also incorporating a structured qualitative-quantitative hybrid instrument, the SWOT matrix, to characterize the strategic environment in which craftswomen operate (Wahyudi, Rusmayadi, Nursanty, & Lolang, 2024).

3.2 Data Types and Sources

The data used in this study were quantitative in nature, meaning they were expressed in numerical form and analyzed using descriptive statistical procedures. Two sources of data were used. Primary data were obtained through questionnaire distribution and direct field observation involving noken craftswomen as respondents, capturing production quantities, cost components, and selling prices. Secondary data were obtained through documentation and literature review, including regional statistical publications from the Central Statistics Agency of Mimika Regency, which provided contextual information on regional demography and gross regional domestic product (Sugiyono, 2018).

3.3 Population and Sample

The population for this study comprised noken craftswomen operating in Mimika Baru District. Given the informal and dispersed nature of this population, a purposive sampling technique was applied, in which a sample group was deliberately selected because its members possessed specific attributes relevant to the research question. A total of 27 noken craftswomen were selected as key informants through this technique, based on the following criteria: active engagement in noken crafting for at least two years, demonstrated knowledge of traditional noken-making technique, and recognition by the local community as a cultural practitioner of this craft. These criteria were applied to ensure that respondents possessed sufficiently deep and relevant understanding of the topic under investigation, rather than to maximize sample size, which is consistent with the exploratory and context-specific objectives of the study (Sugiyono, 2018).

3.4 Data Collection Techniques

Three complementary data collection techniques were used. Observation involved direct field visits to record conditions and behaviors relevant to the role of local government in empowering noken micro, small, and medium enterprises in Mimika Baru District. Interviews involved structured, direct verbal communication with respondents to obtain information matching the specific data requirements of the study, allowing for clarifying follow-up questions during the interaction. Documentation was used to complement observation and interview data, strengthening the accuracy of information gathered by cross-referencing field materials and existing records, and supporting verification of the data collected.

3.5 Data Analysis Method

Two analytical methods were applied in sequence. The first method addressed income, following the total cost and revenue framework in which total cost equals fixed cost plus variable cost, total revenue equals output quantity multiplied by unit selling price, and net income equals total revenue minus total cost. Formally, $TC = FC + VC$, where *TC* denotes total production cost incurred by noken craftswomen expressed in Indonesian rupiah, *FC* denotes fixed cost, and VC denotes variable cost. Total revenue was calculated as $TR = Y$ multiplied by Py, where *TR* denotes total revenue, Y denotes production quantity in units, and Py denotes selling price per unit. Net income was then calculated as $Pd = TR$ minus *TC*, where Pd denotes craftswomen net income.

The second method addressed strategic positioning through SWOT analysis, understood as a strategic planning method used to evaluate the strengths, weaknesses, opportunities, and threats confronting an enterprise (Benzaghta et al., 2021). Following internal and external factor identification, an Internal Factor Analysis Summary matrix and an External Factor Analysis Summary matrix were constructed. Constructing the Internal Factor Analysis Summary matrix involved four steps: listing internal strength and weakness factors, assigning each factor a weight between 0.0 and 1.0 reflecting its relative importance such that all weights summed to 1.00, assigning each factor a rating from 1 to 4 reflecting whether it represented a major weakness, minor weakness, minor strength, or major strength, and multiplying weight by rating to obtain a weighted score for each factor. The same weighting and rating logic was applied to construct the External Factor Analysis Summary matrix for opportunity and threat factors. The aggregate weighted average across both matrices ranges between a theoretical minimum of 1.0 and maximum of 4.0, with 2.5 serving as the threshold separating a weak from a strong strategic position; the difference between strength and weakness scores, plotted against the difference between opportunity and threat scores, locates the enterprise within one of four strategic quadrants, aggressive growth, diversification, turnaround, or defensive.

3.6 Operational Definitions

Creative economy potential is operationally defined as the capability and opportunity possessed by noken craftswomen to create economic value through creativity, skill, and innovation grounded in local culture, which can be developed into a leading creative economy product. Craftswomen income is operationally defined as the total revenue obtained from noken sales within a given production cycle, whether through direct or indirect sale, after subtracting production cost. Internal factors are operationally defined as conditions originating within the craftswomen's own enterprise that influence business behavior or outcomes, while external factors are operationally defined as conditions originating outside the enterprise that similarly influence business behavior or outcomes.

4. Results and Discussions

4.1 Regional Context

Mimika Regency is located on the southern coast of Central Papua Province, established as an administrative regency in 1996 and formalized as an autonomous region in 2000. The regency comprises 18 districts, with Mimika Baru District, whose capital is Timika, covering an area of 1,509.48 square kilometers, or 6.86% of the regency's total land area. As of 2024, the regency's population reached 316,295, of which 144,893 people, or 45.81%, resided in Mimika Baru District, making it by far the most densely populated district and the natural commercial center in which noken craftswomen concentrate their production and retail activity.

Regional gross domestic product at constant prices over 2019 to 2024 remained dominated by the mining and quarrying sector, which contributed between 78.92% and 87.76% of total regional output across the period, while agriculture, forestry, and fisheries and the trade sector each contributed only marginal shares that fluctuated with commodity cycles. This structural concentration in an extractive, capital-intensive sector, alongside comparatively limited manufacturing and trade contribution, underscores the developmental rationale for cultivating creative economy alternatives such as noken crafting, which channel economic opportunity directly toward household-level, labor-based production rather than capital-intensive extraction.

4.2 Respondent Profile

All 27 respondents selected as key informants for this study were women, reflecting the gendered nature of noken craftsmanship in Papuan culture, in which production and sale are conducted almost exclusively by mothers and older women. In terms of educational attainment, the largest group, 12 respondents or 37.93%, had completed junior secondary school, followed by 10 respondents or 34.48% with senior secondary education, and 5 respondents or 17.24% with only primary education. Regarding age distribution, the majority of respondents, 18 people or 62.07%, were above 40 years old, while 6 respondents or 27.59% were between 30 and 40 years old, and only 3 respondents or 10.34% were between 20 and 30 years old. This age profile suggests that noken crafting in Mimika Baru District is predominantly sustained by mature women who likely learned the craft in childhood, consistent with the cultural transmission pattern in which noken-making skill traditionally marks a milestone of feminine maturity in Papuan communities, as can be seen in Table 1.

Table 1. Respondent characteristics by gender, education, and age

Category	Group	Number	Percentage (%)
Gender	Female	27	100.00
Gender	Male	0	0.00
Education	Primary School	5	17.24
Education	Junior Secondary	12	37.93
Education	Senior Secondary	10	34.48
Age	20-30 years	3	10.34
Age	30-40 years	6	27.59
Age	Above 40 years	18	62.07

4.3 Income Level of Noken Craftswomen

Table 2. Average cost incurred for noken production

Capital (IDR)	Wool Yarn Cost (IDR)	Nylon Yarn Cost (IDR)	Total (IDR)
462,963	35,000	50,000	547,963

Table 2 Initial capital used to establish noken production was entirely self-financed; none of the 27 respondents reported using formal or informal savings-and-loan services to supplement their working capital. Initial capital ranged from IDR 200,000 to IDR 500,000, with an average of IDR 462,963. This finding is consistent with financial constraint literature on Indonesia's creative industries, which identifies limited access to formal credit as one of the most persistent structural barriers facing micro-scale creative producers even where product demand is comparatively favorable (Nareswari et al., 2023).

Table 3. Average noken selling price

Wool-Yarn Noken (IDR)	Nylon-Yarn Noken (IDR)
350,000	350,000

Table 3 show the raw materials used in noken production consisted of two yarn types, wool and nylon. On average, respondents used 8 rolls of yarn per month, with monthly requirements ranging from a minimum of 2 rolls to a maximum of 10 rolls. The average raw material price was IDR 35,000, within a price range extending up to IDR 50,000. Noken bags made from either wool or nylon yarn were sold at the same average unit price of IDR 350,000, indicating that consumers in this market do not differentiate price by material type, likely because both are perceived as functionally and aesthetically comparable substitutes for traditional natural-fiber noken.

Table 4. Average total revenue by noken type

Indicator	Wool-Yarn Noken	Nylon-Yarn Noken
Selling Price (IDR)	350,000	350,000

Indicator	Wool-Yarn Noken	Nylon-Yarn Noken
Units Produced	6	7
Total Revenue (IDR)	2,073,077	2,544,231

Table 4 show the despite the identical unit price, production quantity differed between the two materials: craftswomen produced an average of 6 units of wool-yarn noken and 7 units of nylon-yarn noken per cycle. Consequently, average total revenue from wool-yarn noken reached IDR 2,073,077, while average total revenue from nylon-yarn noken reached the higher figure of IDR 2,544,231. Because unit prices were identical, this revenue gap is attributable entirely to the difference in production volume, suggesting that nylon yarn is easier or faster to work with, more favored by buyers, or associated with a more efficient production process compared with wool yarn.

Table 5. Average total income of noken craftswomen

Total Revenue (IDR)	Total Cost (IDR)	Net Income (IDR)
4,617,308	547,963	4,070,769

Table 5 show the combining revenue from both product types, average craftswomen income per production cycle reached a net figure of IDR 4,070,769, obtained from average total revenue of IDR 4,617,308 minus average total production cost of IDR 547,963. This magnitude of income, earned through informal, self-financed, small-batch craft production, indicates that noken crafting provides a materially significant contribution to household earnings in Mimika Baru District, supporting the first working proposition that noken production generates net income sufficient to meaningfully supplement household earnings even under simple production technology. The result also parallels findings from other Indonesian artisanal income studies, in which household-based craft production, from palm sugar to bakery goods, consistently yields positive net income once fixed and variable costs are properly accounted for, even without formal financial management systems (Molina-Garcia et al., 2023).

4.4 Internal and External Factors Shaping Noken Craftswomen Enterprise

SWOT analysis serves as an instrument for organizing the strategic factors relevant to a micro, small, or medium enterprise, clarifying how opportunities and threats can be managed relative to an enterprise's existing strengths and weaknesses (Benzaghta et al., 2021). Field observation and interviews identified five strength indicators, easy access to raw material, low capital requirement, high monthly production volume achievable with simple tools, flexible marketing location, and strong craftsmanship skill, alongside five weakness indicators, limited ownership of savings accounts, insufficiently distinctive product motifs, reliance on simple production tools, dependence on multiple colors of raw material, and limited understanding of sales promotion.

Table 6. Internal and external factor matrix

Category	Factor
Strength	Easy access to raw material
Strength	Low capital requirement for production
Strength	High monthly production using simple tools
Strength	Flexible marketing location
Strength	Strong craftsmanship skill
Weakness	Limited ownership of savings accounts
Weakness	Insufficiently distinctive product motifs
Weakness	Reliance on simple production tools
Weakness	Dependence on varied raw material colors
Weakness	Limited understanding of sales promotion
Opportunity	Government policy mandating noken use
Opportunity	Rising noken demand

Category	Factor
Opportunity	Revenue exceeding capital outlay
Opportunity	Stable monthly sales of 5-10 units
Opportunity	Comparatively high selling price
Threat	Competition from modern bags
Threat	Limited online promotion understanding
Threat	Motif and design competition among sellers
Threat	Insufficient government capital and facility support
Threat	Increasing scarcity of natural raw material

Table 6 show on the external side, five opportunity indicators were identified: supportive government policy mandating noken use among civil servants and students, rising noken demand, sales proceeds exceeding capital outlay, consistent monthly sales volume of 5 to 10 units, and a comparatively high noken selling price. Five threat indicators were also identified: competition from modern bags, limited understanding of online promotion, competition in motif and design among noken sellers themselves, insufficient government support in the form of capital and facilities, and increasing difficulty in obtaining natural raw material.

Table 7. Internal factor analysis summary matrix

Component	Weighted Score
Total Strength Score	2.05
Total Weakness Score	1.87
Aggregate Internal Score	3.92

Table 7 show the internal factor analysis summary matrix quantified these qualitative factors through weighting and rating. The total weighted score for strength factors reached 2.05, while the total weighted score for weakness factors reached 1.87, producing an aggregate internal score of 3.92 and a positive strength-weakness difference of 0.18, later rounded in strategic interpretation to indicate a moderately strong internal position. Because this aggregate score exceeds the conventional midpoint of 2.5, it indicates that noken craftswomen possess an internally strong position, consistent with the second working proposition that internal strengths outweigh internal weaknesses in this enterprise.

Table 8. External factor analysis summary matrix

Component	Weighted Score
Total Opportunity Score	1.46
Total Threat Score	2.60
Aggregate External Score	4.06

Table 8 show the external factor analysis summary matrix showed a different balance: the total weighted score for opportunity factors reached 1.46, while the total weighted score for threat factors reached the considerably higher figure of 2.60, producing an aggregate external score of 4.06. This pattern indicates that, although opportunities exist and are being partially captured, threats currently weigh more heavily in the external environment than opportunities, primarily reflecting competitive pressure from modern bag substitutes and constrained government facilitation in the form of capital and equipment. This finding qualifies the third working proposition: government procurement policy functions as a genuine and important opportunity, but it has not yet been sufficient to offset the combined weight of competitive and raw-material threats, implying that policy support needs to be paired with capital and raw-material interventions to meaningfully shift the external balance in craftswomen's favor.

Plotting the strength-weakness difference of positive 1.85 against the threat-opportunity difference of positive 1.00 places noken craftswomen in Mimika Baru District within quadrant I of the SWOT diagram, the aggressive growth quadrant associated with a strength-opportunity, or SO, strategy orientation. This quadrant indicates that craftswomen are, and should continue, using their existing strengths, particularly accessible raw material, low capital requirement, and craftsmanship skill, to capture available opportunities, especially supportive government demand-side policy and rising consumer interest. This positioning is broadly consistent with patterns observed in other Indonesian craft and micro-enterprise SWOT applications, where accessible raw material and government support consistently combine to favor growth-oriented rather than defensive strategies (Warpindyastuti et al., 2025).

4.5 Strategy Formulation to Increase Craftswomen Income

Building on the SO strategic position identified above, three priority strategy clusters emerge from the combined income and SWOT findings. The first cluster concerns leveraging supportive government policy. Craftswomen and their community organizations can formalize cooperation with government institutions and schools to ensure a stable and predictable noken supply chain that matches procurement mandates, while advocating for expanded distribution partnerships that make noken more accessible to civil servants and students across the district. This aligns with evidence that policy-driven demand has a direct positive relationship with noken artisans' productivity and income in Mimika Baru District (Aula et al., 2024).

The second cluster concerns improving production efficiency and capital reinvestment. Given that nylon-yarn noken already demonstrates higher output and revenue than wool-yarn noken at an identical price point, craftswomen would benefit from examining which specific aspects of nylon-yarn production, whether material handling, weaving speed, or tool compatibility, drive this efficiency advantage, and from applying comparable techniques where feasible to wool-yarn production without abandoning the cultural and market value of product diversity. Reinvesting a portion of net income into modest equipment upgrades could further raise output without requiring large capital outlays, consistent with evidence that even limited access to appropriate production tools measurably improves micro-enterprise productivity (Ollerenshaw et al., 2021).

The third cluster concerns expanding market reach and strengthening financial capability. Because limited understanding of online promotion was identified as both an internal weakness and, indirectly, an external threat relative to competitors who do market digitally, targeted training in basic digital marketing, including simple social media promotion of noken's cultural story and craftsmanship, could extend sales beyond roadside and market-based retail. This recommendation is consistent with evidence that digital and financial literacy jointly enhance the productivity of women-owned micro-enterprises (Asandimitra et al., 2023) and that marketing intensity mediates the relationship between financial capability and enterprise performance (Malodia et al., 2023). Complementary financial literacy training, covering basic bookkeeping and the value of maintaining a formal savings account, would help craftswomen convert already favorable revenue into more secure long-term income, addressing the weakness identified most consistently across the internal factor analysis (Lenggogeni & Usman, 2023).

Collectively, these three strategy clusters reinforce rather than compete with one another: policy engagement secures stable demand, production efficiency improvements increase the volume craftswomen can supply to that demand, and financial and digital capability building ensures that resulting revenue translates into durable household income. This integrated approach responds directly to the study's three research questions by quantifying current income, clarifying which internal and external factors most strongly shape that income, and translating those factors into an actionable, quadrant-consistent strategy for improving craftswomen welfare in Mimika Baru District.

5. Conclusions

5.1 Conclusion

This study set out to measure the income level of noken craftswomen in Mimika Baru District, Mimika Regency, to identify the internal and external factors shaping their enterprise, and to formulate strategies for increasing their income. The findings show that noken production generates a materially significant average net income of IDR 4,070,769 per production cycle, derived from average total revenue of IDR 4,617,308 against average total cost of IDR 547,963. Nylon-yarn noken outperformed wool-yarn noken in total revenue, IDR 2,544,231 against IDR 2,073,077, despite both being sold at the same unit price of IDR 350,000, a gap attributable entirely to differences in production volume rather than pricing.

The Internal Factor Analysis Summary matrix produced a total strength score of 2.05 against a total weakness score of 1.87, indicating a moderately strong internal position built on accessible raw material, low capital requirement, and craftsmanship skill. The External Factor Analysis Summary matrix produced a total threat score of 2.60 against a total opportunity score of 1.46, indicating that competitive and raw-material threats currently outweigh opportunities, even though supportive government policy remains an important favorable factor. Combining these two matrices places noken craftswomen within the aggressive growth quadrant, warranting a strength-opportunity strategy that uses existing craftsmanship and raw material advantages to more fully capture policy-driven demand. On this basis, the priority strategies formulated in this study, strengthening cooperation around government procurement policy, improving production efficiency informed by the nylon-yarn advantage, and building digital marketing and financial literacy capability, together provide a coherent pathway for raising the income of noken sellers while preserving the cultural integrity of their craft.

5.2 Research Limitations

Several limitations qualify these conclusions. The study relied on a purposive sample of 27 respondents selected specifically because they met defined craftsmanship and community-recognition criteria, which constrains the statistical generalizability of the income and SWOT findings beyond Mimika Baru District and beyond craftswomen who meet comparable criteria. The income analysis also relied on respondent-reported production quantities and costs rather than independently verified transaction records, introducing the possibility of recall or reporting imprecision typical of informal micro-enterprise research. Finally, the SWOT weighting and rating procedure, while methodologically standard, necessarily involves subjective judgment in assigning weights and ratings to qualitative factors, meaning the resulting matrices should be read as an informed strategic characterization rather than a precise measurement.

5.3 Suggestions and Directions for Future Study

Future research could extend this study in several directions. A longitudinal design tracking craftswomen income across multiple production cycles and seasons would clarify whether the income levels observed here are stable or subject to meaningful fluctuation tied to raw material availability or demand seasonality. Comparative studies across multiple districts within Papua, or between noken and other Indonesian craft-based creative economy products, would help determine whether the strategic position identified here, aggressive growth driven by policy support, is specific to Mimika Baru District or generalizable across similarly positioned craft enterprises. Future studies could also incorporate quasi-experimental evaluation of specific interventions, such as digital marketing training or formal savings account enrollment, to test more rigorously whether addressing the weaknesses identified in this study produces measurable income gains for noken craftswomen.

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Author Contributions

MM contributed to conceptualization, methodology, investigation, data curation, formal analysis, writing original draft. JAM contributed to supervision, validation, methodology, writing review and editing. TPU contributed to visualization, resources, project administration, writing review and editing. All authors have read and approved the final version of the manuscript.

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