

Innovation Roadblocks: Micro, Small, and Medium Enterprises in Indonesian Batik Design Collaborations

Dita Andansari¹, Khairul Hisyam Kamarudin², Basyarah Hamat³, Ellya Zulaikha⁴, Andri Kurniawan⁵, Zulfikar Bagus Pambuko⁶

¹Doctoral Candidate in Faculty of Artificial Intelligence, Universiti Teknologi Malaysia, Malaysia, Lecturer in the Department of Design, Polytechnic State of Samarinda, Indonesia.

²Senior Lecturer, Department of Urban and Regional Planning, Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, 81310 Skudai, Johor, Malaysia.

³Senior Lecturer, Faculty of Artificial Intelligence, Universiti Teknologi Malaysia, Malaysia.

⁴Associate Professor, Industrial Design Department, Faculty of Creative Design and Digital Business, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia.

⁵Lecturer in the Department of Chemical Engineering, Polytechnic State of Samarinda, Indonesia.

⁶Lecturer in the Faculty of Islamic Studies Magister, Universitas Muhammadiyah Magelang, Magelang, Indonesia. National University of Science and Technology, Department of Management

DOI: <https://dx.doi.org/10.47772/IJRISS.2024.8100219>

Received: 14 October 2024; Accepted: 19 October 2024; Published: 18 November 2024

ABSTRACT

The handicraft industry in Indonesia is one of the three subsectors that contribute significantly to the country's GDP. Among other creative industry subsectors, handicrafts (particularly the Batik industry in this case) have the highest labor force multiplier. Despite MSMEs contributing 60% to the national GDP, the productivity of micro enterprises is still much lower than that of small and medium enterprises. This issue of low micro-scale productivity may be attributed to the lack of skills and human resource development, as well as ineffective management of government assistance for MSMEs. The batik craft industry, which has received recognition from UNESCO, is predominantly composed of micro-scale enterprises. Therefore, it is crucial to identify the factors that hinder the development of designs among micro-scale batik MSMEs. The purpose of this study is to identify the factors that hinder collaboration in the development of micro-scale batik MSME designs. The study uses an interview method with snowball sampling techniques, focusing on East Java, the Special Region (Daerah Istimewa, DI) of Yogyakarta, and East Kalimantan Provinces in Indonesia. The results reveal several factors that hinder design innovation in micro-scale batik MSMEs in these regions. The most influential factors are strategic, structural, human resources, market-related, government-related, and community-related issues. Internal factors include limited capital, minimal design knowledge, education, and work experience, while external factors include insufficient government training facilities, a lack of understanding of consumer preferences, and competition with other batik artists due to similarities in motif designs.

Keywords: design innovation, batik, inhibiting factors, collaboration, MSME

INTRODUCTION

Micro, Small and Medium Enterprises (MSMEs) in Indonesia are key drivers of the creative industry, including the craft sector, contributing significantly to the country's GDP—around 60%. However, micro-scale MSMEs exhibit a less healthy structure compared to other business scales, with micro businesses making up 98.70% of the total. Given that the average turnover and percentages have remained approximately the

same over the last ten years, it can be concluded that the productivity of micro businesses is still much lower than that of small and medium-sized businesses. Micro businesses appear more fragile and at higher risk of being overwhelmed by competitive pressures. This also suggests that government assistance for MSMEs has not been fully optimized, particularly for micro enterprises (Haryanti & Hidayah, 2018).

Batik MSMEs are among the largest in terms of micro-scale enterprises (Andansari et al., 2023). According to data from the Ministry of Industry's Center for Crafts and Batik (BBKP) as of February 2021 as of February 2021, there are 3,159 batik businesses throughout Indonesia. Of these, the medium-large scale batik industry accounted for 208 units, 342 units are medium scale, 815 units are small scale, and 1,794 units are micro scale. For example, in East Java, there are 40 large and medium-scale batik industries, and 176 micro, small, and medium-scale industries, with 128 being micro scale. In the Special Region of Yogyakarta, there are 12 large and medium-scale batik industries and 128 micro, small, and medium-scale units, with 107 being micro scale. In East Kalimantan, there are about 35 micro-scale batik industries and no large or medium-scale batik industries (BBKP, 2021).

The predominance of micro-scale MSMEs, despite their significant contribution to Indonesia's GDP, presents a fundamental challenge that needs to be addressed to enable these businesses, including batik MSMEs, to improve their status and remain competitive. Batik MSMEs, as part of the craft sector, have the highest labor multiplier among creative industry sub-sectors (Sukma et al., 2018). The craft industry relies not only on natural resources but also on the intellectual capacity of human resources to develop innovative products and markets. Although the creative crafts industry in Indonesia is one of the top three contributors to the country's GDP, there are issues related to human resources that must be addressed to ensure the sub-sector's sustainability and growth. As stated by Arifin & Sugiyanto (2015), the workforce in the Indonesian creative industry has weak bargaining power and generates limited profits for companies, highlighting the need for improvements and increased government attention to foster their development.

The education level of the workforce in Indonesia is predominantly low, with secondary school graduates representing the majority in three major subsectors: the culinary subsector at 50.14%, the crafts subsector at 24.30%, and the fashion subsector at 22.98%. Given that 24.30% of the workforce in the crafts subsector has only completed lower secondary school (SMP) or below, it is evident that this workforce requires special attention in terms of education and skills development. This is particularly important because craft labor makes a significant contribution to the Indonesian economy, accounting for 15% of GDP, with exports reaching US\$916 million in 2021—an increase from US\$829 million in 2020. Meanwhile, exports from the batik industry in the first quarter of 2020 amounted to US\$52.7 million, compared to US\$17.99 million in the first quarter of 2019 (Center for Crafts and Batik, 2020).

The educational level of the majority of Indonesian workers impacts both the quality and affordability of the workforce, including those in the creative industry. Although workforce competitiveness in Indonesia increased in 2018, the attractiveness and readiness of the workforce have declined over the past five years (Nandini, 2018). The current workforce needs to be better prepared to compete, particularly by mastering information technology, developing ideas and innovations, and improving creative efforts and soft skills. In the future, creative work in ideation and innovation could be key to gaining a competitive edge (Asmat, 2020). Innovation is a critical aspect of business strategy, as demonstrated by research from (Rofaida, 2019), (Barnawi et al., 2019) and (Suhaeni et al., 2018), which concludes that there is a positive relationship between innovation strategies in the craft industry and competitive advantage in the era of Industrial Revolution 4.0.

To support the craft industry in developing its business through innovation, the government has provided various forms of assistance. Several institutions, both governmental and non-profit, have programs aimed at advancing MSMEs in Indonesia. One such facility is outlined in Government Regulation (PP) Number 7 of 2021 concerning the Facilities, Protection, and Empowerment of Cooperatives and Micro, Small, and Medium Enterprises (Presiden RI, 2021), which is designed to help MSMEs grow. While this program offers value and provides new insights to craftsmen, it does not fully engage their imagination, capacity, and innovation. As a top-down policy initiative, it overlooks the unique potential of participants as well as the local context

(Marjoko, 2016; Prayogo, 2012). When the unique potential of participants is neglected, empowerment programs such as training and mentoring become ineffective because the needs and abilities of participants vary. Consequently, the government's program funds are wasted, failing to increase participants' competitiveness and risking a decline in their contribution to the country's GDP.

Top-down policies often involve providing assistance in the form of training and mentoring for small and medium businesses in the handicrafts sector, particularly on design and aesthetic issues, which remain underdeveloped. However, the materials provided frequently do not align with the needs of MSMEs, and nearly all training and coaching models are formal in nature. Many empowerment programs, especially those organized by ministries or institutions, follow formal mechanisms, which require participants to complete registration forms and other administrative tasks, with sessions conducted at government offices and limited to a short timeframe (TNP2K, 2020). Meanwhile, studies indicate that informal collaboration models have a greater impact on innovation performance than formal collaboration (Santoro et al., 2020). For active MSMEs in the medium- and low-tech sectors, formal and informal collaborations between corporate R&D departments and universities positively influence corporate innovation. Moreover, the interaction between formal and informal relationships can mitigate the absence of an R&D department (Apa et al., 2021).

In terms of design, a key aspect of soft innovation, creative collaboration is essential for industries, particularly MSMEs. Participants' descriptions of product choices suggest that design or creative collaboration with textile craftsmen is useful for producing products that align with consumer tastes and lifestyles (Engel-Enright, 2016). In Indonesia, however, creative collaboration is not widely practiced or given sufficient attention (Sitorus & Tyas, 2019), despite its importance in developing an inclusive economic ecosystem for MSMEs (Antaraneews.com, 2021). Collaboration initiatives funded by ministries or institutions typically focus on addressing marketing and production issues, with little attention to design development as a part of soft innovation. One such program, organized by the Directorate General of National Export Development, offers Designer Delivery Services to support product design and packaging development for MSMEs. However, in 2020, the quota was limited to only 125 participants (TNP2K, 2020), which is negligible compared to the 15.552 million MSMEs specializing in handicrafts (Burhanudin et al., 2020).

With the limited number of participants able to take part in government-provided collaboration programs in the design sector - less than 0.1% of the number of MSMEs specifically for handicrafts- there is a risk to sustainability in the face of competition. This threatens a decline in the country's GDP, where MSMEs contribute 60% of Indonesia's GDP, with the micro sector making up 99.99% of MSMEs. Based on the background explained above, several factors hinder batik MSMEs in pursuing batik design innovation. Human resources, government assistance, and also a lack of collaboration from related parties are among factors that hinder craft MSMEs, including batik crafts, in carrying out batik design innovation. The aim of this article is to identify the factors that hinder batik craft SMEs in developing soft innovation, specifically batik design innovation in Indonesia, in relation to collaboration.

LITERATURE REVIEW

According to the (OECD/Eurostat, 2018) in its book entitled *The Measurement of Scientific, Technological and Innovation Activities*, there are several main elements of the external environment of business innovation. Some of these elements include spatial and locational factors, markets, knowledge flows and networks, public policy and society and the natural environment. In addition to the main elements of the external environment of business innovation, the same book also explains a proposal for integrated data collection on external innovation drives, such as markets (which consist of domestic customers, access to international markets, suppliers and value chains, availability/cost of skills, availability/cost of finance, competitors, standards, markets for knowledge, digital platforms), public policy (regulations, functioning of courts and rules enforcement, taxation, public spending/level and priorities, government support for innovation, government demand for innovations, public infrastructure, general policy stability), society (which consists of consumer responsiveness to innovation, favorable public opinion towards innovation, level of trust among economic actors). The report is important in proposing a global standard for innovation data collection, which is essential

to address challenges in technology and innovation activities. The report identifies gaps in the measurement of innovation in developing countries, including the role of entrepreneurs, non-market-driven innovation and sector-specific methodologies. By taking advantage of the guidelines contained in this report, the countries involved can improve their innovation outlook, increasing R&D to capture a wider scope of activities. Adapting these standards to the needs of developing countries is essential to building the capacity to conduct effective innovation surveys.

Meanwhile, in the book *Factors Influencing Innovation and Competitiveness in the Service Sector in Nigeria: A Sub-Sectoral Approach*, O. O. et al. (2012) explained that external factors hindering innovation include market-related issues such as finance, short-term focus, market failure, and market risk. Governance factors include policies, regulations, standards, and institutions. Additionally, other barriers include human-related factors, such as fear, lack of motivation, and a lack of creativity; structural issues like the centralization of power and poor reward or incentive systems; and strategic challenges, such as unclear objectives, poor marketing, inadequate service, and legal skills.

Apart from the inhibiting factors that have been explained above, based on the literature review that has been carried out as shown in the following table.

Table 1. Summary of factors influencing the growth of SMEs based on previous studies in different regions

Titles	Name of Researchers, Year	Types of MSMEs, Factors	Methods	Results
A Review of Factors Affecting the Growth of Small and Medium Enterprises (SMEs) in Tanzania	(Nkwabi & Mboya, 2019)	General	mixed-method, content analysis, descriptive statistic	There are four significant variables that influence SCM growth namely financial constraints, capital constraints, poor technology, and strict regulations
Exploring factors hindering SMEs' growth: evidence from Namibia	(Baporikar et al., 2016)	Alcohol drinks (Beverage alcohol industry)	qualitative approach, in-depth interviews, in-depth observations	MSME factors in Namibia are impacted by various factors including safety, and conflicts, finance, work experience, skills, and lack of customer loyalty.
Factors Hindering Business-IT Alignment in Small and Medium Enterprises in China	(Wang & Rusu, 2018)	IT	semi-structured interview	A total of 26 factors inhibits Business-IT Alignment (BITA) in SMEs in China, including seven newly identified factors. These inhibiting factors include communication, values, governance, partnership, scope and architecture, and skills
Factors Affecting the Profitability and Growth of Small & Medium Enterprises (SMEs) in Indonesia	(Prijadi & Desiana, 2017)	General	descriptive statistics and correlation matrix	Interest rates set by financial institutions, such as the Bank of Indonesia, often determine the profitability of MSMEs.
Factors Affecting Growth of Women	(Aryal, 2015; Wairimu	General, Women entrepreneurship	descriptive survey,	Inadequate capital, lack of business skills and lack of

Owned Small and Medium Enterprises in Kenya: A Survey of Women-Led SMEs in South Coast Ukunda	Kamunyu & Simba Theuri, 2017)		regression analysis	access to credit facilities are the main factors influencing the growth of women-owned SMEs.
Factors That Hinder The Growth Of Small And Medium Enterprises (SMEs): Evidence From Nepal's SMEs	(Aryal, 2015)	Offset Presses, Manufacturing Industry, Farming Industry, Trading Industry, Wholesalers firms	Qualitative	Among hindrance factors for SMEs growth are including lack of finance, effective government policies, and appropriate technology, Lack of innovative information and technology, corruption and bureaucracy, high tariffs on imported machinery, lack of effective monetary and fiscal policies, lack of efficient training campaigns for SMEs
Factors That Motivate or Prevent Adoption of Open Innovation by SMEs in Developing Countries and Policy Suggestions	(Sağ et al., 2016)	General	Qualitative	Search of the external environment, detection of valuable ideas, knowledge and technology, and launch and management of respective collaborations, considerable time and effort constraints as well as limited and less skilled human resources
Factors affecting Firm Performance of SMEs in Malaysia	(Marmaya et al., 2018)	General	cross-sectional survey	52.1 percent of the variation in company performance can be explained by the dimensions of entrepreneurial orientation, information acquisition and information utilization
Factors Affecting the Performance & Business Success of Small & Medium Enterprises In Sudan (Case Study: Omdurman)	(Eltahir, 2018)	General	Correlation analysis	Competing external environmental factors can be seen as a major challenge influencing the performance of SMEs in Sudan. SMEs in Sudan are faced with competition that has a negative impact on business performance.

From Table 1, it can be summarized that the factors hindering MSMEs include finance, capital, technology, regulations, work experience, skills, customer loyalty, communication, values, governance, partnerships, interest rates, government policies, lack of information for innovation, lack of efficient training and promotion for MSMEs, collaboration, entrepreneurial orientation, and tight competition among enterprises. These inhibiting factors will be used as a basis for creating a list of interview questions related to the collaborative innovation of batik craft MSMEs in Indonesia in a later stage of this article. Furthermore, if the list to be grouped into internal factors and external factors, the conclusions above can be seen in the table as follows:

Table 2: Summary of internal and external factors influencing MSMEs collaborative innovation

Internal Factors		External Factors	
Sources	Findings	Sources	Findings
Human resources	<ol style="list-style-type: none"> 1.Values (Wang & Rusu, 2018) 2.Communication (Wang & Rusu, 2018) 3.Skills (Baporikar, et al,2016); (Wang & Rusu, 2018); (Kamunyu &Theuri,2017); (Sag et al,2016) 4.Work experience (Nkwabi & Mboya,2019) 	Market	<ol style="list-style-type: none"> 1.Competition (Eltahir,2018) 2.Governance (Wang & Rusu, 2018) 3.Customer’s loyalty (Baporikar, et al,2016) 4.Finance (Nkwabi & Mboya,2019)
Structure	<ol style="list-style-type: none"> 1.Capital (Nkwabi & Mboya,2019) 	Government	<ol style="list-style-type: none"> 1.Government policy (Nkwabi & Mboya,2019); (Kamunyu & Theuri,2017) (Aryal, 2021) 2.Interest rates (Prijadi & Desiana,2017)
Strategy	<ol style="list-style-type: none"> 1.Entrepreneurial orientation (Marmaya, 2018) 2.Cooperation (Sag et al, 2016) 3.Lack of innovation information (Aryal, 2021); (Marmaya, 2018) 4.Sharing (Wang & Rusu, 2018) 	Others	<ol style="list-style-type: none"> 1.Technology (Nkwabi& Mboya, 2019) (Aryal, 2021); (Sag et al, 2016)

In general, the factors influencing MSME innovation globally can be categorized into internal and external factors, both of which are equally significant. Among the internal factors, human resources and strategy are the most impactful, while market conditions and government policies are the most influential external factors. Whether these factors similarly affect soft innovation in batik crafts in Indonesia requires further research. This investigation could lead to the development of a collaborative model for soft innovation creation tailored to Batik MSMEs in Indonesia. To identify the inhibiting factors that influence the soft innovation and creative collaboration model for Batik MSMEs in Indonesia, an interview list will be created, targeting Batik craftsmen and MSME owners. The questions will focus on internal and external factors related to soft development and innovation, particularly in Batik design. The interview will begin with questions about the general conditions of these factors, followed by more specific questions related to how internal and external factors influence soft innovation, specifically design innovation, in Batik MSMEs.

RESEARCH METHODOLOGY

This research includes field research, field studies are carried out by exploring data sourced from research locations or places, which relate to factors inhibiting the development of MSME crafts in three regions, namely East Java, Yogyakarta Special Region and East Kalimantan. This research is a descriptive analysis, with primary data that the author obtained directly and with the help of other parties by conducting observations and interviews with batik MSMEs. Interviews were conducted using snowball techniques where groups of respondents were selected randomly. Since this technique allows researchers to approach a population sample of traits that are difficult to find which is in this case, the MSME batik craftsmen in the study areas. After being interviewed, the selected respondents were asked to identify other respondents who fit the target population. Interviews are conducted with respondents and the interview will stop after getting all answers

that are similar to all the questions that have been answered. The data analysis on this study was performed through Nvivo.

FINDINGS AND DISCUSSION

The interviews aimed at identifying both internal and external factors inhibiting design innovation in batik MSMEs involved 24 respondents: 10 from Sidoarjo City and its surrounding areas (East Java study area), 10 from Yogyakarta City (Yogyakarta Special Region study area), and four from Samarinda City and its surroundings (East Kalimantan study area). The surveys were conducted from July to November 2023. Of the 24 respondents, 23 were women and 1 was a man, ranging in age from 19 to 66 years old. The respondents had varying educational backgrounds, including Junior High School, High School, Vocational High School, Madrasah Aliyah, Bachelor's, and Master's degrees. Their fields of study covered general education, social sciences, economics, engineering, and art/design, with most having a general education background. This is primarily because the majority of respondents had completed high school, which does not provide specific skill specializations. After conducting interviews in Yogyakarta through Mrs. Hadiati as a batik trainer at the handicraft and batik hall, in Sidoarjo through Mrs. Windayati as a companion at the batik training center and in Samarinda through Mr. Jaiz as a batik craftsman, the interview results were input into the NVivo application to facilitate the analysis process. The interviews aimed to identify the internal and external factors inhibiting batik MSMEs in design innovation. The questions addressed internal factors such as human resources, structure, and strategy, as well as external factors like market conditions, government influence, and other elements including community and academic involvement. The respondents' answers generated keywords, resulting in new codes that represent the factors under discussion. The results of these codes, categorized into internal and external factors, are presented in the following charts and tables.

Table 3: Descriptions of internal and external factors inhibiting batik MSMEs in design innovation

Names	Descriptions	File	Reference
Academics Inhibiting Factors	Factors that hinder batik design innovation from the academic aspect	1	24
Community Inhibiting Factors	Factors that inhibit batik design innovation from the aspect of the batik community	1	24
Competition	Business competition among batik communities, one of which is similar designs	1	4
Market Inhibiting Factors	Factors that hinder design innovation from market or user aspects	1	24
Market preferences	Consumer preferences for batik motif designs have never been explored	1	14
Government Inhibiting Factors	Factors inhibiting batik design innovation from the government aspect	1	24
Training facilities	The government does not provide training facilities for batik design	1	6
Lack of award and recognition	The government does not appreciate the batik designs that have been made by MSMEs, for example they are not used as regional government uniforms	1	1
Lack of attention for design development to BATIK MSMEs	The government pays inadequate attention in terms of design development to BATIK MSMEs	1	2
Human Resources Inhibiting Factors	Factors inhibiting batik design innovation from batik makers and batik MSME owners	1	24

Poor government assistance	Government involvement in developing batik MSME skills is lacking	1	1
Education field	Fields of education that are not compatible with batik skills	1	5
Level of education	MSMEs/batik makers are junior high school and high school graduates	1	2
Work experience	Work experience before becoming a batik craftsman was not in the batik field	1	4
Training experience	The training experience is not batik design training	1	3
Strategy Inhibiting Factors	Strategic factors as barriers to design innovation	1	24
Lack of training	Lack of Design Training	1	2
Design knowledge	Up-to-date Design knowledge is lacking	1	12
IT knowledge	Lack of understanding about technology, especially information technology	1	2
Equipment	Limited batik equipment, especially for new MSMEs	1	1
Design competition	The motif designs are the same, almost generic among fellow batik MSMEs, leading to lack of variety and creativity	1	3
Design reference	Lack of design references	1	1
Environmental atmosphere	Environment over the lake	1	1
Production time	Batik production is requiring a lengthy process	1	3
Factors Inhibiting Organizational Structure	Factors inhibiting batik design innovation in terms of batik MSME organizational structure	1	24
Capital	Lack of capital	1	15
Revenue	Less income (instability of income)	1	6
Community Inhibiting Factors	Factors that inhibit batik design innovation from the aspect of the batik community	1	24
Competition	Business competition among batik communities, one of which is similar designs	1	4

Based on the interview results as presented in Table 3, the internal and external factors hindering design innovation in batik MSMEs, along with the associated keywords or codes, are explained according to the respondents' insights.

Internal factors

1. Strategy: The strategy factors influencing batik MSMEs were examined in the interviews to determine whether they hinder design innovation. After interviewing 24 respondents, several factors emerged as potential obstacles under the theme of strategy, including lack of training, design knowledge, IT knowledge, equipment, design competition, design references, environmental atmosphere, and production time.

- i. Insufficient Training: Two respondents identified insufficient design training as a significant obstacle to batik design innovation for MSMEs. They emphasized the need for more design-focused training to support innovation in batik MSMEs.
- ii. Design Knowledge: A lack of current design knowledge was seen as a major barrier to innovation by 12 respondents. The respondents felt that inadequate design knowledge hindered the ability of batik MSMEs to innovate.

- iii. **IT Knowledge:** Limited knowledge of information technology was cited as an obstacle to design innovation by two respondents. They noted that a lack of IT skills, particularly in the context of design, impeded innovation efforts.
- iv. **Equipment:** The limitations in batik equipment, especially for newly established batik MSMEs, were mentioned as an obstacle to design innovation. One respondent specifically identified equipment constraints as a barrier to innovation.

2. **Structure:** Two structural factors within batik MSME organizations were discussed during the interviews namely capital and revenue.

- i. **Capital for promoting innovation** is one of the main factors inhibiting batik design innovation in batik MSMEs. Among the 24 respondents, 15 indicated that a lack of capital hindered their ability to innovate in batik design.
- ii. **Revenue** is another factor that impedes batik design innovation in batik MSMEs. Six respondents reported that limited revenue is a barrier to innovating batik designs.

3. **Human Resources:** Human resource factors were examined through interviews with respondents to explore the challenges that hinder batik design innovation among batik makers and MSME owners. The interviews focused on various human resource aspects, including education, field of study, work experience, and training experience, to understand how these factors influence soft innovation—specifically batik design innovation—in their businesses. The respondents identified several human resource-related obstacles to design innovation, including:

- i. **Insufficient Government Assistance:** One respondent highlighted the lack of government involvement in developing the skills of batik MSMEs, particularly in the area of batik design innovation. The respondent pointed out that the limited government support for batik design development poses a significant challenge for MSMEs in innovating their designs.
- ii. **Field of Education:** Most respondents reported that their educational backgrounds were not in art or design fields related to batik. Many had general education, while others had backgrounds in fields such as computer science, agriculture, or socio-economics. Only a small number of respondents had education in fields directly related to batik, such as design, art, or fashion design. According to five respondents, the general nature of their education was a barrier to batik design innovation.
- iii. **Level of Education:** The majority of respondents had completed their education at the high school level, where the curriculum typically focuses on general subjects. Although the arts are taught as a separate subject, it usually covers a broad range of arts, including music, dance, and painting, without specifically addressing or assigning tasks related to batik design in detail. Two respondents mentioned that their level of education was a hindrance to batik design innovation.
- iv. **Work Experience:** Many respondents had work experience in fields unrelated to batik before starting or working in batik MSMEs. Some had been administrators in companies, others worked in sub-district offices, and some were housewives. This lack of relevant work experience was seen as an obstacle to batik design innovation, as reported by four respondents.
- v. **Training Experience:** Training in batik-related skills, both before and during their involvement in batik MSMEs, was considered insufficient by three respondents. The lack of adequate training was cited as one of the barriers to design innovation for batik MSMEs.

External Factors

1. **Market:** The market or user factor was explored in the interviews to determine whether the preferences of the market or users were considered in batik design innovation. Sixteen respondents indicated that they had never explored market or user preferences for the batik designs they had created. Some respondents mentioned conducting market surveys by analyzing color and pattern trends, visiting large-scale batik boutiques, and evaluating which designs sold better.

2. Government-related factors were identified as barriers to batik design innovation among MSMEs. Several respondents highlighted specific issues, such as insufficient training facilities, lack of work recognition, and limited government attention, as obstacles to innovation.

- i. Lack of training facilities: Six respondents stated that the government does not provide adequate batik design training facilities for MSMEs, which hampers their ability to innovate.
- ii. Lack of work recognition: There is a perceived lack of appreciation from the government for the batik designs created by MSMEs. For instance, none of the MSME-produced batik designs have been adopted as uniforms for regional government officials. Fewer than one respondent expressed that their work was appreciated.

3. Community factors refer to the influence of other batik makers or groups on the respondents. Among the 24 respondents, 20 stated that fellow batik SMEs were not an obstacle to design innovation. However, four respondents mentioned the existence of business competition among batik MSMEs, with similar designs being produced by different enterprises.

4. Academic factors were not considered a barrier to batik design innovation. All 24 interview respondents confirmed that academic involvement did not pose a problem for their design innovation efforts.

From the analysis, it is known that several factors asked during the interview gave rise to codes which meant that there was a problem in that factor, especially where more than one respondent expressed the problem in the code. From the table above it can be concluded that academics are not a problem at all in batik design innovation in Indonesia. Then in succession the factors that most hinder design innovation are strategy, structure, human resources, market, government and finally community. Determining inhibiting factors can be seen from the codes submitted by respondents as meaning the problems that occur in batik design innovation, and a respondent can convey more than the code of perceived problems. The problem codes for each factor can be summarized as in the following table:

Table 4: The problem codes

INTERNAL FACTORS			EXTERNAL FACTORS		
Sources	Code	Number	Sources	Code	Number
Human Resources	1. Government assistance	1	Government	1. Training Facilities	6
	2. Education Sector	5		2. Work Awards	1
	3. Education	2		3. Attention	2
	4. Work Experience	4			
	5. Training experience	3			
Total		15	Total		9
Strategy	1. Design Training	2	Market	1. Market Preference	16
	2. Design Knowledge	12			
	3. Information Technology	2			
	4. Equipment	1			
	5. Design Competition	3			
	6. Design Reference	1			
	7. Environmental Atmosphere	1			
	8. Production Time	3			
Total		25	Total		16
Structure	1. Capital	15	Academics	-	0
	2. Revenue	6			
Total		21	Total		0
Community				Competition	4
Total					4

CONCLUSION

Based on the results and analysis, it can be concluded that both internal and external factors significantly hinder batik MSMEs from pursuing design innovations, with the most prominent issue being a lack of design knowledge. The primary obstacles to innovation within batik MSMEs arise from internal factors, such as educational background, field of study, training experience, and previous work experience. Additionally, strategic factors, including limited design knowledge and a lack of understanding of community preferences, further impede innovation efforts. External factors, particularly the insufficient government support for batik design innovation training, exacerbate these challenges. This underscores the need for synergistic collaboration among the government, batik MSMEs, consumers, academics, and the community.

The discussion also revealed that academics play a crucial role in supporting batik MSMEs with design innovation, fulfilling their responsibilities as educators. Respondents did not view academics as obstacles to innovation, suggesting that academics, with their expertise in design and art, can effectively collaborate to advance batik design innovations, particularly those aligned with community preferences. It is recommended that future studies focus on developing a collaborative, bottom-up approach to batik design innovation. This would ensure that the support provided to batik MSMEs is optimized according to their specific conditions and needs. For example, training and mentoring programs should be tailored to the needs of MSMEs, considering factors such as content, resources, location, timing, participants, and implementation methods.

Suggestion for future research are to promote education and teamwork in the field of design by forming partnerships with universities, design schools, and professional designers. These collaborations aid in updating Batik patterns while safeguarding the cultural significance of the art form. MSMEs need to receive training and assistance in utilizing e-commerce platforms and digital marketing to enhance their exposure and presence. Additionally, establishing co-working areas and innovation centers for Batik MSMEs to work together with designers, technologists, and researchers would promote the exchange of knowledge and interdisciplinary innovation.

REFERENCES

1. Andansari, D., Kamarudin, K.H., Shyafary, D. and Pristanti, H. (2023). Innovation of Craft and Batik Products in the Industrial Revolution 4.0 Era in Indonesia, AIP Conf. Proc. 2706, 020200 (2023), <https://doi.org/10.1063/5.0120511>
2. com. (2021, August 1). *Digitalisasi dan kolaborasi kunci UMKM tumbuhkan ekonomi inklusif*. Antaranews.Com.
3. Apa, R., De Marchi, V., Grandinetti, R., & Sedita, S. R. (2021). University-SME collaboration and innovation performance: the role of informal relationships and absorptive capacity. *Journal of Technology Transfer*, 46(4), 961–988. <https://doi.org/10.1007/s10961-020-09802-9>
4. Arifin, A., & Sugiyanto, F. (2015). Value Chain Model of Plasma Core Partnership of Hair Production Creative Industry in Purbalingga Regency, Central Java Province. *Procedia - Social and Behavioral Sciences*, 211, 10–18. <https://doi.org/10.1016/j.sbspro.2015.11.003>
5. Aryal, N. (2015). FACTORS THAT HINDERS THE GROWTH OF SMALL AND MEDIUM ENTERPRISES (SMEs): EVIDENCE FROM NEPAL'S SMEs. *Asian Journal of Multidisciplinary Research & Review*, 2(5), 77–92.
6. Asmat, N. (2020, April 30). *Peneliti: Tenaga kerja Indonesia dituntut kuasai teknologi informasi*. <https://www.antaranews.com/>.
7. Baporikar, N., Nambira, G., & Gomxos, G. (2016). Exploring factors hindering SMEs' growth: evidence from Namibia. *Journal of Science and Technology Policy Management*, 7(2), 190–211. <https://doi.org/10.1108/JSTPM-11-2015-0036>
8. Barnawi, Wulandari, P., Antika, R., Zulfah, S. N., Lestari, S., Jamaludin, Ningsih, W., Rachmawati, R., Adi, Maulana, S., & Yasin. (2019). Eksistensi Home Industri Kerajinan Anyaman Bambu di Heuleut Leuwimunding Majalengka di Era Revolusi Industri 4.0. *Etos : Jurnal Pengabdian*

- Masyarakat*, 1(1), 34–42. <https://www.neliti.com/publications/328010/eksistensi-home-industri-kerajinan-anyaman-bambu-di-heuleut-leuwimunding-majalen>
9. Burhanudin, M., Rindayati, W., & Anggraeni, L. (2020). Analisis Perkembangan Industri Kreatif di Indonesia. *MT - Economic and Management*.
 10. Eltahir, O. A. B. (2018). Factors Affecting the Performance Business Success of Small Medium Enterprises in Sudan. *International Journal of Small Business and Entrepreneurship Research*, 6(6), 14–22.
 11. Engel-Enright, C. (2016). *CONSUMER PRODUCT PREFERENCES OF CULTURAL TEXTILE PRODUCTS: CO-DESIGN WITH TEXTILE ARTISANS FROM GUATEMALA AND PERU* Submitted by. Colorado State University Fort Collins.
 12. Haryanti, D. M. H., & Hidayah, I. (2018, July 24). *Potret UMKM Indonesia: Si Kecil yang Berperan Besar*. <https://www.ukmindonesia.id/>.
 13. Marjoko, G. (2016, September 26). *Materi Pelatihan untuk UMKM Sebaiknya Urut dan Berjenjang*. Rumahumkm.Net.
 14. Marmaya, N. H., Razak, N. A., Wee, M., Karim, R., & Ridzuan, A. R. (2018). Factors affecting Firm Performance of SMEs in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 8(10). <https://doi.org/10.6007/ijarbss/v8-i10/4779>
 15. Nandini, W. (2018, December 5). *Pekerja Indonesia Kalah Bersaing*. <https://katadata.co.id/>.
 16. Nkwabi, J., & Mboya, L. B. (2019). A Review of Factors Affecting the Growth of Small and Medium Enterprises (SMEs) in Tanzania. *European Journal of Business and Management*. <https://doi.org/10.7176/ejbm/11-33-01>
 17. O., J., M. O., I., J. A., S., B. A., O., & W. O., S. (2012). Factors Influencing Innovation and Competitiveness in the Service Sector in Nigeria: a Sub-Sectoral Approach. *Management*, 2(3), 69–79. <https://doi.org/10.5923/j.mm.20120203.03>
 18. OECD/Eurostat. (2018). *Oslo Manual 2018 Guidelines For Collecting, Reporting and Using Data on Innovation*. OECD. <https://doi.org/10.1787/9789264304604-en>
 19. Prayogo, Y. A. (2012). *Strategi Dinas Perindustrian Koperasi Dan UMKM Kabupaten Sragen Dalam Pemberdayaan Usaha Mikro, Kecil Dan Mengengah Mandiri Di Kabupaten Sragen*. Universitas Sebelas Maret.
 20. Presiden RI. (2021). *KEMUDAHAN, PELINDUNGAN, DAN PEMBERDAYAAN KOPERASI DAN USAHA MIKRO, KECIL, DAN MENENGAH*.
 21. Prijadi, R., & Desiana, P. M. (2017). Factors Affecting the Profitability and Growth of Small & Medium Enterprises (SMEs) in Indonesia. In *International Journal of Economics and Management Journal homepage* (Vol. 11, Issue S1). <http://www.econ.upm.edu.my/ijem>
 22. Rofaida, R.; S.; N. A. A.; P. Y. (2019). Strategi Inovasi pada Industri Kreatif Digital: Upaya Memperoleh Keunggulan Bersaing pada Era Revolusi Industri 4.0. *JURNAL MANAJEMEN DAN KEUANGAN*, 8(3), 402–414.
 23. Sağ, S., Sezen, B., & Güzel, M. (2016). Factors That Motivate or Prevent Adoption of Open Innovation by SMEs in Developing Countries and Policy Suggestions. *Procedia - Social and Behavioral Sciences*, 235, 756–763. <https://doi.org/10.1016/j.sbspro.2016.11.077>
 24. Santoro, G., Bresciani, S., & Papa, A. (2020). Collaborative modes with Cultural and Creative Industries and innovation performance: The moderating role of heterogeneous sources of knowledge and absorptive capacity. *Technovation*, 92–93. <https://doi.org/10.1016/j.technovation.2018.06.003>
 25. Sitorus, G. H. I., & Tyas, W. P. (2019). KAJIAN KESIAPAN UMKM BATIK SURAKARTA TERHADAP DIMENSI EKONOMI CERDAS SEBAGAI BAGIAN DARI PENERAPAN KONSEP SMART CITY. *TATALOKA*, 21(1), 129. <https://doi.org/10.14710/tataloka.21.1.129-139>
 26. Suhaeni, T., Administrasi Niaga, J., & Negeri Bandung, P. (2018). Pengaruh Strategi Inovasi Terhadap Keunggulan Bersaing di Industri Kreatif (Studi Kasus UMKM Bidang Kerajinan Tangan di Kota Bandung). *Jurnal Riset Bisnis Dan Investasi*, 4(1), 57.
 27. Sukma, M., Hartono, D., & Prihawantoro, S. (2018). The Impacts Analysis of Creative-Products Export on the Economy. *JEJAK Journal of Economics and Policy*, 11(1), 92–107. <https://doi.org/10.15294/jejak.v11i1.13653>

28. (2020). *Pemetaan Program Pemberdayaan Usaha Mikro, Kecil, dan Menengah (UMKM)*.
29. Wairimu Kamunyu, C., & Simba Theuri, F. (2017). Factors Affecting Growth of Women Owned Small and Medium Enterprises in Kenya: A Survey of Women-Led SMEs in South Coast Ukunda. *IOSR Journal of Business and Management*, 19(3), 60–66. <https://doi.org/10.9790/487X-1903046066>
30. Wang, J., & Rusu, L. (2018). Factors hindering business-It alignment in small and medium enterprises in China. *Procedia Computer Science*, 138, 425–432. <https://doi.org/10.1016/j.procs.2018.10.060>