

Training-Driven Innovation in Hijab SMEs: Improving Design, Pattern-Making, and Sewing Skills for Competitive Advantage

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ABSTRACT

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Hijab small and medium enterprises (SMEs) contribute to local creative economies but often face limited product differentiation, imitation-based production, and uneven technical skills. This study evaluated a structured vocational training intervention covering hijab design, pattern-making, and sewing techniques. A descriptive-quantitative design was applied to ten hijab SME workers in Manyar, Gresik, Indonesia. Data were obtained through competency assessments, product-performance scoring, and four-point Likert observations of instructor and participant activities. Design scores increased from 40-60 before training to 60-80 after training. Post-training pattern-making scores ranged from 70-95, while sewing scores ranged from 70-85. Planned activities were implemented completely; instructor means ranged from 3.72 to 3.82 and participant means from 3.50 to 3.55. The findings show that focused, practice-oriented training can strengthen creative and production competencies and support better-quality, more differentiated hijab products. Because direct pre-test ranges were not reported for pattern-making and sewing, future evaluations should retain participant-level baseline and follow-up data to establish the magnitude and durability of change.

INTRODUCTION

The hijab fashion sector has developed into a visible component of the creative economy, supported by the growing cultural and commercial presence of Muslim fashion. Hijab products now function simultaneously as religious dress, identity expression, and lifestyle fashion. This expanded role has broadened consumer segments and increased expectations for originality, comfort, craftsmanship, and contemporary styling (Hassan & Ara, 2021a; Hassan & Ara, 2021b). Digital communication and influencer-led branding further accelerate trend circulation, requiring small producers to interpret rapidly changing consumer preferences while maintaining modesty principles (Poulis et al., 2024).

Small and medium enterprises (SMEs) are important actors in this market because they translate local knowledge, community-based production, and cultural preferences into accessible products. Their smaller organizational scale can support flexibility and close interaction with customers. However, the same scale also creates constraints. Indonesian Muslim fashion SMEs have reported barriers related to design innovation, limited resources, and insufficient skilled labor (Sari & Asad, 2018). Similar evidence from other SME contexts shows that weak access to finance, technology, and specialized knowledge reduces the capacity to experiment and respond to market change (Kapepe & Malama,

2024). These conditions are particularly challenging during seasonal demand peaks, when firms must increase volume without reducing product quality.

When internal design and technical capabilities are limited, SMEs may rely on products already available in the market. Imitation can reduce early development costs, but it weakens long-term differentiation and exposes enterprises to reputational and intellectual-property risks. Research on copycat products shows that consumers evaluate imitation in relation to category similarity and perceptions of the leading brand (van Horen & Pieters, 2017; Zhang et al., 2018). Legal scholarship also emphasizes that weak protection and awareness of intellectual property can undermine responsible innovation (Budiman & Hammar, 2024). For hijab SMEs, sustained imitation may therefore restrict brand development, reduce consumer trust, and make competition increasingly price-based.

Design Capability, Product Development, and Hijab Consumption

Design capability and technical production skills form the operational foundation of product differentiation. In fashion SMEs, value is created not only through the visual idea but also through the ability to convert that idea into a well-proportioned pattern and a neatly constructed product. Studies of fashion SMEs identify design knowledge, value-chain coordination, and coherent brand identity as important contributors to market competitiveness (Nayak et al., 2019; Silitonga et al., 2023; Anggraini et al., 2025). Craftsmanship also influences durability, comfort, and the ethical image of a product, linking production quality with broader corporate-responsibility expectations (García et al., 2022).

New product development in a small fashion enterprise can be understood as a practical sequence of idea generation, concept refinement, pattern or prototype development, production testing, and market feedback. The sequence does not require expensive research infrastructure, but it does require workers who can sketch alternatives, interpret measurements, manage fabric, and evaluate the finished product. In the hijab context, these tasks must also respond to modesty, coverage, usability, and the aesthetic expectations of different consumer groups. Product-development studies in Muslim fashion show that innovation is most credible when commercial adaptation is aligned with ethical and cultural principles (Putri et al., 2023).

Consumer decisions in the hijab market are shaped by the interaction of product quality, aesthetics, price, identity, and fashion consciousness. Young Muslim consumers may seek contemporary styling while continuing to interpret the hijab through religious and social identity (Hassan & Ara, 2021a; Hassan & Ara, 2021b). This dual orientation creates a design space in which variety is possible, but products must remain functional and culturally appropriate. Consequently, SMEs need both creative sensitivity and reliable technical execution. A distinctive sketch that cannot be translated into an accurate pattern, or a correct pattern that is poorly sewn, will not produce the value expected by consumers.

Training-Based SME Empowerment and Research Gap

Vocational training offers a direct intervention for strengthening the human capital needed for innovation. Evidence from SMEs indicates that employee training supports innovation by increasing the knowledge and confidence required to adopt improved processes (Demirkan et al., 2021). Training may also strengthen business motivation, production discipline, and competitiveness when it is closely connected to the participants' operational needs (Machasin et al., 2024). For fashion enterprises, practice-oriented instruction is especially relevant because design, pattern-making, and sewing are embodied competencies that improve through demonstration, guided repetition, feedback, and evaluation of tangible products.

Training can also support the shift from imitation toward differentiated production. Workers who understand design development are more able to generate alternatives rather than reproduce an existing model. Pattern-making knowledge helps them translate those alternatives into usable forms, while sewing competence ensures that the product meets quality expectations. In addition, local eco-hijab research shows that emotional attachment and advocacy can be strengthened when brands communicate values and product meaning effectively (Mayasari et al., 2024). Sustainable-fashion research similarly argues that SME innovation is strengthened when design decisions consider material use, circularity, and long-term value rather than short product cycles (Piller, 2022).

Although prior studies discuss Muslim fashion consumption, innovation barriers, branding, and SME empowerment, fewer studies report an integrated training intervention that combines creative design with pattern-making and sewing and then documents both learning outcomes and training engagement. The present study addresses this gap by evaluating a structured training program for hijab SME workers in Manyar, Gresik. The study asks: (1) how was the training implemented and followed by participants; (2) what competency levels were recorded for design, pattern-making, and sewing; and (3) how can the outcomes be interpreted in relation to product quality and SME competitiveness? The study aims to provide an applied model for capacity building in small-scale Muslim fashion production.

RESEARCH METHOD

Research Design, Setting, and Participants

The study used a descriptive-quantitative design to document the implementation and immediate outcomes of a vocational training intervention. The design was selected because the available evidence consisted of competency score ranges, product-performance assessments, and mean observation ratings. The analysis therefore emphasizes transparent description and comparison rather than inferential claims.

The research was conducted with hijab SMEs in Manyar Village, Gresik, Indonesia. Ten workers participated voluntarily. They were selected because they were actively

involved in at least one stage of hijab production, including design, pattern-making, or sewing. The small participant group enabled intensive demonstrations, direct feedback, and repeated hands-on practice. The unit of analysis was the participating worker, while the instructional sessions and finished products provided additional observational evidence.

Training Procedure

The intervention was organized in three stages: preparation, implementation, and evaluation (Figure 1). During preparation, the instructor developed competency-oriented training materials and assessment sheets. The materials addressed hijab design development, pattern construction, and sewing techniques. Observation instruments were also prepared to record instructor performance and participant engagement on a four-point scale.

Implementation consisted of three sequential sessions. The first session focused on design, including the development of hijab ideas, the use of a head template, proportion, variation, and functional considerations. The second session addressed pattern-making, with attention to translating the design into dimensions and forms suitable for construction. The third session focused on sewing, including seam accuracy, attachment of the headpiece or pet, hem finishing, and overall neatness. The small-group format allowed the instructor to demonstrate each process and provide immediate correction during practice.

Evaluation was conducted immediately after the relevant training activities. Design performance was compared using reported pre-test and post-test score ranges. Pattern-making and sewing were evaluated through product-performance scoring after training. Instructor and participant activities were observed throughout the three sessions. Participant feedback was also collected to provide contextual information about the training experience.

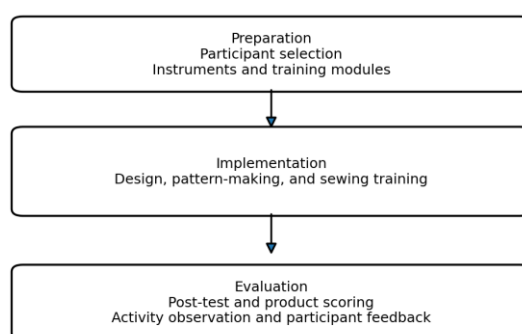


Figure 1. Research procedure: preparation, implementation, and evaluation.

Source: Authors' construction based on study data.

Instruments and Performance Criteria

The main instruments were competency assessments, product-performance scoring sheets, activity-observation sheets, and participant-response questionnaires. The performance framework allocated 40 points to technical accuracy, 30 points to aesthetic harmony, and 30 points to neatness (Table 1). The same overall logic was used to evaluate whether the product integrated accurate construction, coherent visual qualities, and acceptable finishing.

Table 1. Performance assessment components.

Assessment component	Maximum score
Technical accuracy	40
Aesthetic harmony	30
Neatness	30
Total	100

Source: Study assessment instrument.

Activity observations used a four-point Likert scale. The scale distinguished poor, fair, good, and very good performance and provided behavioral descriptions to guide the observers (Table 2). Two independent observers assessed instructor and participant activities, which reduced dependence on a single viewpoint.

Table 2. Likert scale for activity observation.

Score	Label	Description
1	Poor	Minimum engagement observed
2	Fair	Limited or uneven engagement observed
3	Good	Mostly consistent and active engagement observed
4	Very good	High and consistent engagement observed

Source: Study observation instrument.

Data Analysis, Validity, and Ethics

Data were summarized using score ranges, mean values, percentages, and categorical interpretations. For design, the reported pre-test range was compared with the post-test range. For pattern-making and sewing, only post-training ranges were available in the reported dataset; consequently, the analysis describes attained performance and observed product changes but does not calculate direct pre-post differences for those two competencies. Instructor and participant means were interpreted using the four-point observation scale.

Validity was supported by aligning the instruments with the competencies taught in each session. Reliability was strengthened through the use of two observers and the

integration of several data sources: assessments, finished-product scoring, observations, and participant responses. This triangulation was used to examine whether the score patterns were consistent with the observed training process and product outcomes. Participation was voluntary. The objectives and procedures were communicated before data collection, the information was used for academic and training-evaluation purposes, and participant confidentiality was maintained. No individual names are reported in the manuscript.

RESULTS AND DISCUSSION

Training Implementation and Participant Engagement

All planned instructional activities were reported as completed, producing an implementation rate of 100%. The observation means also indicate that the training was delivered consistently. Instructor activity reached 3.77 in Session I, 3.82 in Session II, and 3.72 in Session III. On the four-point scale, these means fall in the very good category. Participant activity reached 3.55, 3.50, and 3.50, respectively, which was interpreted as good (Table 3).

The narrow range of the means suggests stable engagement across the three competency areas. The highest instructor score occurred in the pattern-making session, while participant ratings were slightly higher in the first session. This pattern is plausible in a practice-based program: the initial design session may generate strong interest because participants can explore ideas visually, whereas pattern-making requires more intensive instructor guidance. The scores do not indicate declining participation; instead, they show sustained involvement as tasks became increasingly technical.

Table 3. Instructor and participant activity-observation means.

Session	Training focus	Instructor mean	Participant mean
I	Hijab design	3.77	3.55
II	Pattern-making	3.82	3.50
III	Sewing techniques	3.72	3.50

Source: Study observation data.

High implementation fidelity is important because outcome scores are difficult to interpret when participants do not receive the planned intervention. The observation results indicate that the three modules were delivered and that participants remained active. This supports the argument that training can strengthen SME innovation when it is linked to concrete work practices rather than presented only as general business information (Demirkan et al., 2021; Machasin et al., 2024).

Hijab Design Competency

Before training, design scores ranged from 40 to 60, corresponding to poor-to-fair performance in the study instrument. The initial designs were characterized by limited

variation and strong dependence on products already circulating in the market. Participants had difficulty converting ideas into structured visual representations, and the sketches showed weak development of proportion, color composition, and functional detail.

After training, design scores ranged from 60 to 80. The range shifted upward at both the lower and upper bounds. Post-training sketches showed clearer structure, improved proportionality, more consistent use of the head template, and greater variation in style. Participants also incorporated functional considerations such as comfort and usability. These changes indicate that the design module helped participants organize ideas and communicate them more clearly before pattern construction.

The result is strategically important because design is the first stage at which an SME can reduce reliance on imitation. A worker who can generate and compare alternatives can respond to consumer preferences without copying an established product. This capacity supports product identity and brand differentiation, which are repeatedly identified as important in fashion SME value creation (Nayak et al., 2019; Silitonga et al., 2023; Anggraini et al., 2025). It also corresponds with research showing that employee training can increase the ability to participate in innovation processes (Demirkan et al., 2021).

Pattern-Making and Sewing Competencies

Post-training pattern-making scores ranged from 70 to 95, placing participants in the good-to-very-good categories used by the study. Participants translated sketches into functional patterns that better matched head dimensions and usage requirements. The products showed fewer problems associated with size mismatch, imbalance, and inefficient fabric use. Workers with prior pattern-making experience tended to reach the upper end of the range, but all participants met the minimum reported quality threshold of 70.

Sewing was assessed through seam accuracy, headpiece or pet attachment, hem finishing, and neatness. Scores ranged from 70 to 85. The finished products showed more consistent stitches, stronger attachments, and improved finishing. All participants reached at least the reported minimum acceptable score. Table 4 summarizes the available competency evidence.

Table 4. Summary of reported competency outcomes.

Competency	Assessment stage	Score range	Interpretation
Hijab design	Pre-test	40-60	Poor-fair
Hijab design	Post-test	60-80	Fair-good
Pattern-making	Post-training	70-95	Good-very good
Sewing techniques	Post-training	70-85	Good-very good

Source: Study competency-assessment data.

The evidence for design permits a direct comparison between the reported pre-test and post-test ranges. For pattern-making and sewing, the results establish post-training

attainment but do not provide baseline ranges. Accordingly, the findings support the conclusion that participants achieved acceptable-to-high levels after training, while the precise magnitude of improvement in these competencies cannot be calculated from the reported aggregate data. This distinction is necessary to avoid overstating the effect of the intervention.

The three competencies are interdependent. Design gives direction to form and function; pattern-making translates the visual concept into dimensions and construction lines; sewing determines whether the planned product is executed accurately and neatly. Weakness in one stage can reduce the value created in the others. The combined training therefore reflects the logic of new product development more effectively than a single-skill workshop.

Training, Innovation, and Product Quality

The outcomes can be interpreted through a simple innovation pathway (Figure 2). Innovation-oriented vocational training supplies structured knowledge and repeated practice. These inputs strengthen design, pattern-making, and sewing competencies. Improved competencies then increase the likelihood of higher-quality, differentiated products and stronger organizational resilience. The model does not assume that training alone guarantees sales growth; rather, it identifies skills as a necessary operational condition for turning ideas into marketable products.



Figure 2. Training-based pathway from innovation capability to improved hijab SME output.

Source: Authors' construction based on study data.

This interpretation is consistent with evidence that employee training supports innovation performance in SMEs (Demirkan et al., 2021). It is also aligned with research linking digitalization and organizational capability to SME performance, because technology and market information generate value only when workers can incorporate them into production (Latha et al., 2023). In the present study, the design module addressed idea development, while the pattern and sewing modules addressed implementation. The improvement in design ranges and the high post-training technical scores illustrate how human capital connects an innovative intention with a tangible output.

Product quality is especially important in the hijab sector because consumers directly experience fabric handling, comfort, fit, finishing, and durability. Technical accuracy and

neatness contribute to trust, while aesthetic harmony supports identity expression. Corporate-responsibility research in fashion SMEs further suggests that quality, responsible production, and market performance are interconnected (García et al., 2022). Sustainable design scholarship adds that careful material use and construction can extend product value and support more responsible production pathways (Piller, 2022).

The findings also have implications for brand positioning. When SMEs improve technical consistency, they can compete on more than price. Better design and construction support recognizable product characteristics, clearer brand narratives, and the possibility of limited or premium collections. Research on market competitiveness emphasizes the role of refinement, innovation capability, and systematic improvement in high-quality SME development (Ren, 2023). In Muslim fashion, innovation and online product reviews can also support resilience by communicating product advantages and strengthening consumer confidence (Nurcahyanie et al., 2022).

Practical Implications, Sustainability, and Study Limitations

For SME managers, the training model suggests that capacity building should be organized around the actual sequence of production. Design instruction should be followed by pattern and sewing practice using the same product concept. This continuity enables participants to see how a decision in one stage affects material use, fit, and finishing in the next. Training should also be linked to simple quality-control tools, such as product checklists, sample approval, measurement verification, seam inspection, and periodic review of common defects.

For government agencies, universities, and development organizations, the results indicate that small-group, hands-on programs can support women's participation in local creative economies. SME empowerment is more sustainable when training is combined with access to mentoring, market information, technology, and institutional networks (Panjaitan et al., 2020). Knowledge creation and innovation speed have also been associated with competitiveness in Indonesian SMEs, suggesting that follow-up activities should help participants convert training into repeated experimentation and organizational learning (Taneo et al., 2020).

The intervention may also be adapted for other creative industries in which value depends on the integration of ideas and craft execution. However, adaptation should preserve the industry-specific competency chain. In fashion, the relevant chain includes design, pattern development, material handling, construction, finishing, quality control, branding, and market feedback. Intellectual-capital research emphasizes that innovation opportunities are recognized more effectively when knowledge and entrepreneurial awareness are developed together (AlMulhim et al., 2024).

Several limitations must be considered. First, the sample consisted of only ten participants from one location, so the results cannot be generalized statistically to all hijab SMEs. Second, the evaluation captured immediate outcomes and did not assess whether participants retained or routinely applied the skills. Third, the available report contains pre-test and post-test ranges for design but only post-training ranges for pattern-making

and sewing. Future studies should preserve participant-level scores for every module, apply consistent baseline and follow-up assessments, and report measures of central tendency and dispersion. A delayed follow-up should examine product consistency, production time, defect rates, sales, and the development of original collections.

CONCLUSION

Structured vocational training in hijab design, pattern-making, and sewing was implemented completely and maintained good-to-very-good levels of instructor and participant activity. The clearest direct learning change was recorded in design, where the score range shifted from 40-60 before training to 60-80 after training. Pattern-making and sewing reached post-training ranges of 70-95 and 70-85, indicating that participants attained good-to-very-good technical performance, although the absence of reported baseline ranges prevents calculation of direct improvement for those modules. Overall, the findings show that integrated, practice-oriented training can strengthen the competency chain required to move from an idea to a finished hijab product. For SMEs, this chain supports quality, differentiation, and reduced dependence on imitation. Sustainable impact will require follow-up mentoring, quality-control routines, and complete participant-level evaluation data. Future research should use larger samples and longitudinal measures to determine whether training gains are retained and translated into original collections, lower defect rates, stronger brands, and improved business performance.

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