
Journal of Creativity Student

<http://journal.unnes.ac.id/journals/jcs>

Quality of “Vousmevoves” Ready-to-Wear Fashion Products Featuring QR Codes

Aiana Kylani^{1*}, Widowati²

^{1,2}Universitas Negeri Semarang, Indonesia

*Corresponding Author: aianakyl1294@student.unnes.ac.id

Abstract

The development of fashion products increasingly integrates cultural elements and digital technology to create innovative and functional ready-to-wear garments. This study aimed to evaluate the quality of a ready-to-wear garment with a street tech concept and QR Code integration. The *Vousmevoves* product combines streetwear characteristics, batik as a cultural element, and QR Code technology integrated through embroidery on a cropped jacket. The study employed the ADDIE (*Analysis, Design, Development, Implementation, and Evaluation*) model combined with a descriptive quantitative approach. Product quality was evaluated by six panelists consisting of two experts and four trained experts using a five-point Likert scale. The assessment covered six aspects: design, size, aesthetics, sewing technique, garment performance, and uniqueness. The obtained scores were converted into percentages to determine the quality category. The results showed that the overall product quality achieved a score of 82.22%, categorized as very good. The highest score was obtained for the size aspect (93.33%), followed by uniqueness (86.67%) and garment performance (83.33%), while the lowest score was obtained for design (73.33%), which remained in the good category. These findings indicate that the developed garment successfully integrates cultural and digital elements while maintaining good technical and functional quality. Further development should focus on improving the visual coherence of the street tech concept, particularly in integrating the garment silhouette, batik elements, materials, and QR Code technology.

Keywords: *digital fashion, fashion product quality, QR code, ready-to-wear, street tech*

INTRODUCTION

The fashion industry continues to develop in response to changes in lifestyles, consumer needs, and technological advancements (Bertola & Colombi, 2024; Bertola & Teunissen, 2018). One of the widely used categories is ready-to-wear clothing, which is produced according to standard sizes so that it can be worn directly by consumers without requiring special alterations (Gill, 2015). This characteristic makes ready-to-wear clothing advantageous in terms of practicality and ease of use. However, the increasing demand for ready-to-wear products also requires greater attention to product quality, which is not limited to visual appeal but also includes size accuracy, construction, sewing neatness, comfort, and garment functionality (Aakko & Niinimäki, 2021).

Product quality is an important aspect of fashion development because it determines the product's ability to meet users' needs and expectations (Ryding et al., 2015). A product with an attractive design but without adequate construction, proper sizing, comfort, and neat finishing cannot be considered to have optimal quality (Noble & Kumar, 2010). Therefore, quality evaluation is necessary to identify the strengths and weaknesses of a product and to provide a basis for improvement during the garment development process. This is particularly relevant to products developed individually by students because every decision, from design and material selection to construction and finishing, directly affects the quality of the final product.

The fashion product developed in this study is a ready-to-wear garment with a street tech concept named *Vousmevoyes*. The product combines streetwear characteristics with cultural elements through the use of batik and digital technology through QR Code integration. The QR Code is embroidered on the back of the cropped jacket and functions as a medium for communicating the product's philosophy, design concept, and identity. This technological integration provides the product with a distinctive characteristic while expanding the function of clothing as a communication medium between the product and its user. The development of the product was supported by the author's experience in garment production during an internship in the fashion industry. This experience included sewing, quality inspection of sewing results, finishing, and product marketing. Observations of various ready-to-wear products also revealed differences in quality in terms of materials, sewing construction, finishing, and comfort. These experiences provided a basis for the author to pay more systematic attention to product quality in the development of the *Vousmevoyes* garment.

Several previous studies have evaluated the quality and feasibility of fashion products based on various aspects. Research on QR Code-based ready-to-wear clothing has shown that product evaluation can include aspects of design, construction, aesthetics, comfort, and interactive media (Novitasari & Nurmasitah, 2025). Another study on QR Code-based interactive fashion also evaluated product quality through aspects of design, aesthetics, sewing technique, performance, and uniqueness, demonstrating that digital technology integration can be positioned as an innovative characteristic of fashion products (Jamila & Wahyuningsih, 2026). In addition, size and fit are important elements in ready-to-wear clothing because they are associated with user comfort and satisfaction (Aldrich, 2007).

Nevertheless, the quality evaluation of ready-to-wear products developed individually by students, particularly products that combine a street tech concept, cultural elements, and digital technology, still requires further investigation. In individually developed products, the designer is directly involved in the entire development process, meaning that decisions concerning design, material selection, construction, and finishing can affect the quality of the final product. Evaluation of such products is important not only for determining the quality of the final result but also as a basis for reflection and improvement of skills in subsequent product development.

Based on this background, this study aimed to evaluate the quality of a ready-to-wear fashion product with a street tech concept and QR Code integration based on six aspects: design, size, aesthetics, sewing technique, garment performance, and uniqueness. The evaluation was conducted to identify the product quality level and determine which aspects still require improvement. The results are expected to serve as a basis for product refinement and provide a reference for students and novice designers in developing fashion products that combine technical quality, aesthetics, cultural elements, and technological innovation.

METHOD

This study employed the ADDIE development model (*Analysis, Design, Development, Implementation, and Evaluation*) combined with a descriptive quantitative approach. The ADDIE model was used as a systematic procedure for developing the ready-to-wear garment, while the descriptive quantitative approach was used to evaluate product quality based on panelist assessments. The ADDIE stages in this study included analysis of product needs and characteristics, product and assessment-instrument design, product development, implementation through panelist assessment, and evaluation based on the assessment results.

The analysis stage was conducted to identify the product characteristics and quality aspects that needed to be considered in developing the ready-to-wear garment. The analysis was based on the characteristics of the street tech concept, the use of batik as a cultural element, QR Code integration, and product quality requirements. Based on the analysis, six aspects were established to evaluate product quality: design, size, aesthetics, sewing technique, garment performance, and uniqueness. The design stage involved developing the product concept and preparing the product quality assessment instrument. The product was designed using a street tech concept that combines streetwear characteristics, cultural elements through the use of batik, and digital technology through QR Code integration. The assessment instrument was developed based on six quality aspects: design, size, aesthetics, sewing technique, garment performance, and uniqueness. The assessment used a Likert

scale according to the score range specified in the instrument. The development stage involved realizing the design into a ready-to-wear garment. The product was developed as a collection consisting of a batik camisole, a velvet cropped jacket, and cargo pants. The development process included pattern making, material cutting, sewing, installation of supporting components, QR Code integration through embroidery, and finishing. Each stage was conducted while considering design suitability, size, construction, sewing technique, aesthetics, and product functionality.

The implementation stage was conducted through product quality assessment by six panelists consisting of two expert panelists and four trained expert panelists. The panelists assessed the product using an instrument developed based on six quality aspects: design, size, aesthetics, sewing technique, garment performance, and uniqueness. The assessment was conducted on the completed product to obtain an overview of product quality based on the panelists' perceptions. The evaluation stage was conducted by analyzing the assessments of the six panelists using descriptive quantitative analysis. The analysis was used to determine the overall product quality level and the quality level of each assessed aspect. The assessment results were subsequently used to identify aspects that met the quality criteria and aspects that still required improvement. The research data consisted of panelists' scores assessing product quality. The score for each aspect was calculated and converted into a percentage to determine the product quality level. The percentage score was calculated using the following formula:

$$P = \frac{\text{Score Obtained}}{\text{Maximum Score}} \times 100\%$$

Maximum Score = $n \times k \times 5$

where:

- n = number of panelists
- k = number of items/indicators in the assessed aspect
- 5 = highest score on the Likert scale

The resulting percentages were then interpreted based on the assessment criteria used in the study. The analysis was conducted for each aspect and for the overall product to obtain an overview of the quality of the ready-to-wear garment with a street tech concept and QR Code integration. The percentage criteria are presented in Table 1.

Table 1. Percentage Criteria

Percentage (%)	Category
81–100	Very Good
61–80	Good
41–60	Fair
21–40	Poor
0–20	Very Poor

The research instrument was a product quality assessment sheet used by six panelists, consisting of two expert panelists and four trained expert panelists. The instrument was developed based on six assessment aspects: design, size, aesthetics, sewing technique, garment performance, and uniqueness. Each indicator was assessed using a five-point Likert scale, with a score of 1 representing the lowest rating and a score of 5 representing the highest rating. The scores obtained from each panelist were then used to determine the product quality level for each aspect and overall.

RESULTS AND DISCUSSION

The developed product is a ready-to-wear garment with a street tech concept that combines streetwear, cultural elements, and digital technology. The product consists of a batik camisole, a velvet cropped jacket, and cargo pants. The technological integration is realized through a QR Code embroidered on the back of the cropped jacket. The QR Code functions as a medium connecting user with information about the product's philosophy, design concept, and identity. Product development was carried out through the stages of analysis, design, development, implementation, and evaluation. The analysis stage resulted in six aspects used as the basis for product quality evaluation: design, size, aesthetics, sewing technique, garment performance, and uniqueness. The design stage produced the product design and assessment instrument. The development stage produced the ready-to-wear

product according to the design, while the implementation stage involved product assessment by six panelists. The evaluation stage involved analyzing the assessment results to determine product quality. Product quality was assessed by six panelists consisting of two expert panelists and four trained expert panelists. The assessment covered six aspects: design, size, aesthetics, sewing technique, garment performance, and uniqueness. Each indicator was assessed using a five-point Likert scale. The assessment results for each aspect are presented in Table 2.

Table 2. Product Quality Assessment Results Based on the Assessment Aspects

Assessment Aspect	Obtained Score	Maximum Score	Percentage (%)	Category
Design	22	30	73.33	Good
Size	28	30	93.33	Very Good
Aesthetics	23	30	76.67	Good
Sewing Technique	24	30	80.00	Good
Garment Performance	25	30	83.33	Very Good
Uniqueness	26	30	86.67	Very Good
Overall	148	180	82.22	Very Good

Based on Table 2, the overall product quality obtained a percentage of 82.22% and was categorized as very good. The assessment results show that size received the highest percentage, whereas design received the lowest percentage. The differences among the aspects indicate that product quality is not determined solely by design suitability but also by technical, functional, and product-specific characteristics.



Figure 1. Front and back views of the product design

The design aspect obtained a score of 73.33% and was categorized as good. This result indicates that the product design met the design criteria established in the study. The street tech concept is reflected through the combination of the garment form, material selection, and design elements applied to the product. The size aspect obtained a score of 93.33% and was categorized as very good. This result indicates a high level of size and proportion suitability based on the panelists' assessment. Size accuracy is an important component of ready-to-wear products because it is related to how well the garment fits the body when worn.

The aesthetics aspect obtained a score of 76.67% and was categorized as good. The aesthetic assessment covered the suitability and harmony of the product's visual elements based on the indicators included in the instrument. The use of batik, velvet, and streetwear elements forms part of the product's visual character. The sewing technique aspect obtained a score of 80.00% and was categorized as good. This result indicates that the construction and sewing finishing of the product met the established criteria. Neatness and the quality of sewing finishing are important in supporting overall product quality. The garment performance aspect obtained a score of 83.33% and was categorized as very good. This result indicates that the product demonstrated performance consistent with the assessment criteria. Garment performance relates to the product's ability to be used according

to its intended function and designed characteristics. The uniqueness aspect obtained a score of 86.67% and was categorized as very good. This result indicates that the product has distinctive characteristics that provide added value. QR Code integration through embroidery is one of the innovative elements distinguishing the product from conventional ready-to-wear garments. Overall, the product obtained a score of 82.22% and was categorized as very good. This result indicates that the ready-to-wear garment with a street tech concept and QR Code integration met the established quality criteria. The size aspect obtained the highest percentage of 93.33%, while design obtained the lowest percentage of 73.33%.

The results showed that the ready-to-wear garment with a street tech concept and QR Code integration achieved a quality percentage of 82.22% and was categorized as very good. This result indicates that product quality is not formed solely by visual aspects but represents a combination of design suitability, size, aesthetics, construction, performance, and additional product characteristics. This multidimensional perspective is consistent with Pandian and Pari (2023), who identified performance, features, conformance, durability, serviceability, and aesthetics as important dimensions of apparel product quality that influence consumer satisfaction.

The result is also consistent with previous research on QR Code-based ready-to-wear products. Yosihah and Prasetyaningtyas (2026) evaluated a product using the same six aspects as those employed in this study and found a very high level of feasibility. However, the present study used a different object, design concept, material composition, and street tech character, resulting in a quality assessment that reflects a different product context. The design aspect obtained a percentage of 73.33% and was the lowest-rated aspect, although it remained in the good category. This condition indicates that the product design met the basic criteria but still has room for refinement. The product combines streetwear characteristics, cultural elements through batik, velvet material, and technological elements in the form of a QR Code. The number of elements that must be composed simultaneously requires the design aspect to balance visual identity, proportion, and unity among the elements.

Streetwear is not merely a clothing category but is also associated with aesthetics, style, and cultural identity that develop within particular social contexts (Dolbec, 2025). Korutz (2026), for example, demonstrates that streetwear can be understood through the relationship among aesthetics, style, and cultural identity. Therefore, applying a street tech concept to this product requires more than simply adding streetwear and technological elements; it also requires ensuring that both form a coherent visual language. The lower design score compared with size, performance, and uniqueness indicates that product innovation is stronger than its visual unity. Therefore, subsequent refinement can focus on harmonizing the silhouette, materials, batik motifs, colors, and QR Code placement so that the street tech identity becomes stronger. The size aspect obtained the highest score, 93.33%, and was categorized as very good. This result indicates that the size and proportion of the product are among the main strengths of the developed product. This finding is important because fit suitability is one of the key factors in consumer acceptance of ready-to-wear clothing.

Bizuneh and Destaw (2023) found a relationship among body characteristics, garment fit satisfaction, and size preferences among ready-to-wear clothing consumers. Another study of ready-made garment consumers also showed that fit problems are an important issue in the use of ready-made garments and are associated with the need for appropriate sizing standards (Makhanya et al., 2014). The high size score in this study indicates that product construction was able to produce proportions that met the assessment criteria. Thus, size can be maintained as one of the product's strengths in subsequent development.

The aesthetics aspect obtained a score of 76.67% and was categorized as good. This score indicates that the product's visual character met the criteria but remained below the size, uniqueness, and performance aspects. This condition can be understood because the product combines several sources of visual character simultaneously, namely batik, streetwear, velvet material, and QR Code technology. Aesthetic assessment of products integrating technology needs to consider whether the technology can be integrated into the visual language of the garment. Previous research has shown that QR Codes can be positioned as an integral part of interactive fashion design rather than merely as information labels (Yosihah & Prasetyaningtyas, 2026). Thus, the aesthetics of digital fashion products are determined not only by the presence of technology but also by the technology's ability to integrate with other design elements. The sewing technique aspect obtained a score of 80.00% and was categorized as good. This result indicates that product construction and finishing met the assessment criteria, although there is still an opportunity to improve technical quality. Sewing technique is important because the visual quality of a garment needs to be supported by sound construction

(Chumairoh & Sulistiami, 2025; Sholihah & Marniati, 2026). Mutmainnah et al. (2025) also included sewing technique as an aspect of interactive fashion evaluation, demonstrating that technology integration does not eliminate the need for garment construction standards. In this study, the score of 80.00% indicates that product innovation did not compromise overall technical quality. However, because the score remained in the good category rather than the very good category, subsequent development could focus on improving sewing consistency, finishing neatness, and construction accuracy.

The garment performance aspect obtained a score of 83.33% and was categorized as very good. This result indicates that the product not only has a strong visual character but also meets the usage-related criteria represented by the assessment indicators. This finding is consistent with the concept of apparel quality, which places performance as one of the dimensions of product quality. Febriani (2023) also identified performance as an important dimension of fashion product quality and demonstrated its relationship with consumer satisfaction. Thus, the high-performance score indicates that the street tech concept can be implemented without reducing the garment's primary function. This is important because the integration of digital elements should provide added value to the product rather than interfere with the basic function of clothing.

The uniqueness aspect obtained a score of 86.67% and was categorized as very good. This score indicates that the product's distinctive characteristics are one of the main strengths of the study. Uniqueness is primarily demonstrated through the use of a QR Code embroidered on the back of the cropped jacket. The QR Code provides access to information about the product concept, philosophy, and identity (Mustafa et al., 2025). Yoo (2019) showed that consumers may perceive QR Codes on fashion products as a means of providing product information and as a medium connecting consumers with digital information. More recent findings by Ghalachyan and Loranger (2026) also indicate increasing attention to digital labeling and QR Codes in apparel, particularly in the context of digital access to product information.

Thus, the high uniqueness score in this study can be understood because the QR Code provides an additional function beyond the physical function of the garment. The technology transforms the product from merely a fashion object into a medium connecting the physical product with digital information. Based on the six assessed aspects, the main strengths of the product were size (93.33%), uniqueness (86.67%), and garment performance (83.33%). In contrast, design (73.33%) received the lowest score. This pattern indicates that the product has performed successfully in terms of size suitability, functionality, and digital innovation but still requires strengthening in conceptual and visual aspects. These findings provide a clear direction for further development. The next version of the product does not need to change the main characteristics that received high scores but should strengthen the integration of streetwear characteristics, cultural elements, and digital technology. Therefore, product development should be directed not merely toward adding technology but toward creating a more cohesive integration of function, aesthetics, cultural identity, and the user's digital experience. More broadly, these results indicate that QR Codes can be positioned as part of a digital fashion product development strategy, provided that their presence offers a clear function and remains integrated with the design. Thus, technological innovation in clothing does not merely create novelty through a digital feature but can also strengthen product identity and user experience when designed as part of the product concept from the initial development stage.

CONCLUSION

The development of the ready-to-wear garment *Vousmevoyes* with a street tech concept and QR Code integration achieved an overall quality score of 82.22%, categorized as very good. The assessment results indicate that the product met the established quality criteria across the six evaluated aspects. The size aspect obtained the highest score of 93.33%, followed by uniqueness (86.67%) and garment performance (83.33%), indicating that dimensional suitability, product characteristics, and functional performance were the main strengths of the developed garment. Meanwhile, design obtained the lowest score of 73.33%, although it remained in the good category, indicating that further refinement is needed in integrating the streetwear, cultural, and digital elements into a more cohesive visual concept. Overall, the findings demonstrate that QR Code integration can provide an additional innovative characteristic to ready-to-wear fashion while maintaining good technical and functional quality. The evaluation results can serve as a basis for further refinement, particularly in strengthening the visual coherence of the street tech concept.

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