

Development and User Experience Evaluation of an E-Commerce Website for Makassar Jeans House

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ABSTRACT

Makassar Jeans House (MJH), a fashion business in Makassar City, faces limitations in delivering structured product information and supporting efficient sales procedures through its existing communication channels. This study aims to develop and evaluate an e-commerce official-store website that integrates product information, ordering functions, and customer interaction within a single digital platform. The study employed a Research and Development approach using the Four-D model, consisting of Define, Design, Develop, and Disseminate stages. Functional performance was evaluated through Black Box Testing involving three validators and 30 test scenarios, while user experience was assessed using the User Experience Questionnaire (UEQ) with 52 respondents. All functional scenarios were completed, resulting in a 100% functional success rate. UEQ results showed positive evaluations across all dimensions, with Attractiveness, Efficiency, Dependability, and Stimulation classified as Excellent, while Perspicuity and Novelty were classified as Good. The findings indicate that the developed website is functionally operational and provides a positive user experience, supporting the digitalization of MJH's product information and online ordering processes.

Keywords: E-Commerce; Official Store Website; Four-D Model; Black Box Testing; User Experience Questionnaire



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INTRODUCTION

The fashion industry has undergone substantial changes as digital technologies have become increasingly embedded in marketing, product information, and sales activities. Previous studies have shown that consumers tend to prefer online shopping for its greater convenience, efficiency, and flexibility compared with conventional purchasing processes (Saputri, 2016; Elmayanti et al., 2023). Laudon and Traver (2021) explain that e-commerce enables businesses to conduct transactions through digital networks while providing consumers with broader access to products and services. In the context of digital marketing, Aris and Asizah (2026) also show that digital platforms facilitate wider information dissemination and strengthen interactions between businesses and consumers. Accordingly, the adoption of digital technology has become an important consideration for fashion businesses seeking to respond to changes in consumer behaviour and purchasing practices. The function of an e-commerce website is not limited to

facilitating online transactions, as its usefulness also depends on the quality and accessibility of the information presented to users. Fadlurahman et al. (2025) emphasise the importance of user-oriented website design in supporting product visibility, interaction, and a positive digital experience for MSMEs. Melia and Ervynasari (2024) similarly found that e-commerce platforms allow consumers to obtain detailed product information and compare alternatives before making a purchase decision. These functions position an e-commerce website not merely as a sales channel, but also as an information system that connects products, business communication, and customer needs within a single digital environment.

Previous research has examined e-commerce from various perspectives, particularly regarding business performance, consumer behaviour, and digital system development. Andonov et al. (2021) found that e-commerce contributes to broader market access, operational efficiency, customer relationships, and business competitiveness, while Putri and Purwanti (2022) reported that the use of e-commerce was associated with improved sales performance among fashion MSMEs. In a more implementation-oriented study, Amin et al. (2025) developed a WordPress- and WooCommerce-based e-commerce platform for a fashion business using the Waterfall model. They evaluated the system using Black-Box Testing and the System Usability Scale (SUS). Fadlurahman et al. (2025), meanwhile, focused on developing a website-based UI/UX to support the digitalisation of MSMEs. These studies demonstrate that e-commerce research has progressed beyond examining adoption and business outcomes toward the development and evaluation of digital platforms in specific organisational contexts. Despite these developments, the existing literature leaves room for a more integrated approach to system development and multidimensional evaluation of user experience.

Amin et al. (2025), for example, combined e-commerce development with functional and usability testing, but employed the Waterfall model and SUS as the primary usability instrument. Zaid et al. (2026) applied the Four-D model in developing a website for an MSME. However, the evaluation focused primarily on business outcomes rather than a multidimensional assessment of user experience. Fadlurahman et al. (2025) focused specifically on UI/UX development and usability in the context of MSME digitalisation. These differences show that system development, functional validation, and user-experience evaluation have generally been examined through separate methodological emphases. A study that combines the Four-D development process, functional testing, and evaluation of both pragmatic and hedonic aspects of user experience can therefore provide a more comprehensive assessment of an e-commerce system. This approach is particularly relevant when the system is developed in response to specific operational and informational problems within a business.

Such an approach is especially important for fashion businesses that offer custom and semi-custom products, where the purchasing process requires more detailed information than standard ready-to-wear transactions. Customers may need to specify materials, sizes, embroidery, thread colours, models, and other product characteristics before an order can be completed. When this information is not presented systematically, communication between customers and the business may become lengthy and dependent on repeated manual explanations. An e-commerce platform for this type of business must therefore support not only the transaction process, but also the clear organisation and delivery of product information throughout the customer journey. Makassar Jeans House (MJH), a fashion business located in Makassar City, faces similar challenges in its product-information and sales processes. Product details and custom-order requirements have largely been communicated through direct interaction at the physical store, WhatsApp, and Instagram, making the process dependent on manual communication and limiting the availability of structured information.

The official store website was developed to address these conditions by integrating product information, ordering functions, and customer communication into a single digital platform. Previous website-based e-commerce development has shown that digital platforms can integrate

product catalogues, order processes, and supporting information in a more structured environment (Abinsair et al., 2025). In the case of MJH, the website was consequently designed not simply as an additional online sales channel, but as an integrated e-commerce and information system tailored to the characteristics of its business and products. The contribution of this study can be viewed from both practical and methodological perspectives. From a practical perspective, the study presents an official e-commerce store developed to meet the operational and informational needs of Makassar Jeans House, thereby supporting the digitalisation of its product information and ordering processes. From a methodological perspective, the study integrates the Four-D development model with functional validation via Black-Box Testing and empirical user experience evaluation using the User Experience Questionnaire (UEQ). The Four-D model structures the development process through Define, Design, Develop, and Disseminate stages (Thiagarajan et al., 1974), while UEQ evaluates attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty (Schrepp et al., 2017).

Thus, the academic contribution does not arise from the use of WordPress or WooCommerce itself, but from the systematic development and multi-level evaluation of the resulting e-commerce system. Based on the identified research gap, this study aims to develop an official e-commerce store website for Makassar Jeans House using the Four-D model and evaluate the resulting system from functional and user experience perspectives. Black Box Testing is used to determine whether the website functions as intended under predefined scenarios. At the same time, UEQ is employed to assess users' perceptions of the developed system across its six dimensions. The empirical scope of the study is therefore limited to system functionality and perceived user experience rather than direct changes in sales volume, conversion rates, customer satisfaction, market reach, or long-term business performance. Possible improvements in these business outcomes are treated as potential managerial implications of the website implementation rather than as effects directly demonstrated by the present study.

THEORETICAL FRAMEWORK AND HYPOTHESES

An e-commerce website can be understood as an integrated digital system whose effectiveness depends not only on the availability of transactional functions but also on the quality of the system and information provided to users. Turban et al. (2018) explain that B2C e-commerce systems require several supporting characteristics, including clear navigation, reliable transaction mechanisms, customer service facilities, security, and accessible product information. Laudon and Traver (2021) similarly emphasise that e-commerce integrates transaction processes with the exchange of information between businesses and consumers through digital networks. In this study, these characteristics constitute the initial component of the theoretical framework, as they determine how users interact with the Official Store website developed for Makassar Jeans House. Therefore, the website's effectiveness should be evaluated beyond its technical features by considering the quality of the user experience during their interaction with the system.

The characteristics of an e-commerce platform are reflected in two closely related aspects: system quality and information quality. System quality refers to the website's ability to perform its intended functions reliably, provide understandable navigation, support transaction processes, and respond appropriately to user actions. Meanwhile, information quality concerns the completeness, clarity, relevance, and accessibility of product and business information presented through the website. Melia and Ervynasari (2024) indicate that detailed product information facilitates product comparison and supports consumers in making purchasing decisions, while Qalati et al. (2021) highlight the importance of website quality in shaping users' perceptions in online shopping environments. Accordingly, the MJH official-store website is expected to provide both functional reliability and structured information as the foundation for a positive interaction between users and the system. System quality and information quality subsequently influence how users perceive the website from pragmatic and hedonic perspectives. Schrepp et al. (2017) classify perspicuity,

efficiency, and dependability as pragmatic dimensions because they represent users' perceptions of how easily, efficiently, and reliably a system supports task completion.

In contrast, stimulation and novelty represent hedonic quality because they relate to users' interest, motivation, creativity, and perceived innovativeness when interacting with the system. Attractiveness represents the overall impression of the product and is influenced by both pragmatic and hedonic qualities. Thus, a website that functions correctly and provides well-organised information is expected to create conditions that support both the completion of practical tasks and a positive experiential response. User experience is therefore positioned as an important evaluative indicator of the perceived success of the developed e-commerce system. Functional testing can determine whether a feature operates as expected, but it cannot assess whether users perceive the system as clear, efficient, dependable, engaging, or innovative. The User Experience Questionnaire (UEQ) addresses this limitation by assessing users' perceptions across six dimensions, namely attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty (Schrepp et al., 2017). In this framework, positive user-experience evaluations provide evidence that the system is not only technically operational but also perceived as effectively supporting users' interaction with the website. Consequently, user experience serves as a perceptual indicator of system success rather than a direct measure of behavioural acceptance or business performance. The relationship between system characteristics and user experience should also be interpreted in relation to the specific requirements identified during system development. The Four-D model proposed by Thiagarajan et al. (1974) provides a systematic sequence for translating identified needs into design specifications, developed functions, and subsequent evaluation.

In the present study, the Define and Design stages establish the informational and functional requirements that determine the characteristics of the MJH official store website. In contrast, the Develop stage transforms these requirements into an operational system. This process implies that system and information quality are not treated as independent features added after development, but as qualities that originate from the alignment between identified user and business requirements and the resulting website functions. The development process therefore provides an important connection between the practical requirements of MJH and the system characteristics subsequently evaluated through functional testing and user experience. The framework also recognises that technically correct system performance does not automatically result in favourable user perceptions. Qalati et al. (2021) emphasise that website quality influences how consumers perceive and respond to online shopping environments, indicating that technical availability must be accompanied by qualities that are meaningful during interaction. Users may encounter a system whose functions operate correctly but still perceive its navigation as complicated, its information as unclear, or its interaction as insufficiently engaging.

For this reason, Black Box Testing and UEQ are positioned as complementary rather than interchangeable evaluation approaches: the former verifies whether the system works as specified, whereas the latter evaluates how that functioning system is experienced by its users. Based on these relationships, the theoretical framework posits that the characteristics of the e-commerce system form the foundation of system and information quality, which in turn shape the pragmatic and hedonic aspects of user experience. Pragmatic quality reflects the extent to which the website helps users understand and complete their tasks. In contrast, hedonic quality reflects the extent to which the interaction is perceived as stimulating and innovative. The combination of these dimensions contributes to users' overall experience and their general evaluation of the developed system. This relationship provides the theoretical basis for combining Black Box Testing and UEQ in the present study, in which Black Box Testing assesses functional conformity and UEQ evaluates users' perceived experience. However, the framework does not assume that positive functionality and user experience directly translate into increases in sales, customer satisfaction, market reach, or other business outcomes, as these indicators fall outside the empirical scope of this study.

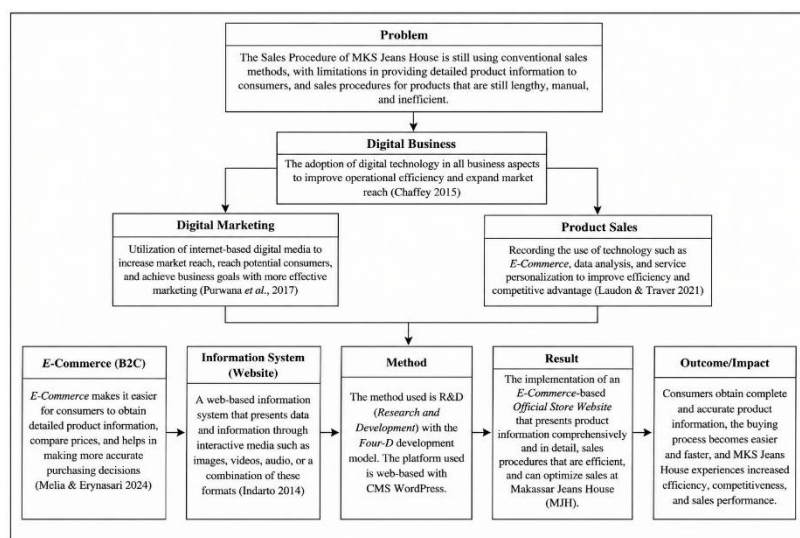


Figure 1. Conceptual Framework

METHODS

Research Design and Setting

This study employed a Research and Development (R&D) approach to develop and evaluate an e-commerce official-store website for Makassar Jeans House (MJH). R&D is intended to produce a specific product and evaluate its suitability for addressing the identified practical problem (Sugiyono, 2017). The development process followed the Four-D model proposed by Thiagarajan et al. (1974), which consists of four stages: Define, Design, Develop, and Disseminate. The study was conducted at Makassar Jeans House, a fashion business specialising in custom jeans and other fashion products in Makassar City, South Sulawesi. The research was conducted from August 6, 2025, to January 8, 2026, encompassing needs identification, prototype design, system development, testing, and evaluation.

Development Procedure

The Define stage focused on identifying the operational problems and system requirements of Makassar Jeans House. Data at this stage were obtained through direct interviews with the business owner and a review of the literature on digital business, B2C e-commerce, digital marketing, and website-based information systems. The interview addressed the existing sales process, limitations in the delivery of product information, communication practices, and the expected functions of the official store website. The findings from this stage were subsequently used to establish the functional and informational requirements that guided the website design. During the Design stage, the identified requirements were translated into the website's initial structure and prototype. The design process included the organisation of page structures, navigation flows, user interactions, product-information presentation, and transaction procedures required by MJH customers. The prototype served as a visual and functional reference before the system was implemented, and revisions were made when the initial design did not correspond to the identified requirements. The Develop stage then transformed the approved prototype into a functional e-commerce website and integrated the necessary functions for product information, ordering, transactions, customer accounts, and communication. In the Disseminate stage, the completed website was prepared for broader use and subjected to functional testing and user-experience evaluation.

Participants and Sampling

The population consisted of Makassar Jeans House customers and members of the general public who had interacted with and used the developed official-store website. Because an unrestricted number of users could access the website, the total population could not be determined with certainty. Participants for the user-experience evaluation were selected using purposive sampling, with prior access to and use of the MJH official-store website serving as the inclusion criterion. The initial minimum sample size was set at 50 participants, and the final evaluation included 52 respondents who met the specified criterion. The sampling procedure was intended to ensure that UEQ responses were obtained from individuals with direct experience of the website rather than from individuals who had not interacted with the system.

Functional Evaluation

Functional evaluation was conducted using Black Box Testing to determine whether the website functions produced outputs that corresponded to the predefined scenarios. Black Box Testing evaluates system behaviour from the user's perspective without examining the internal structure of the program code (Chamida et al., 2021). The testing involved three validators who assessed 30 functional scenarios covering page navigation and the website's principal features. Each scenario consisted of a tested function, an input or user action, and the expected system output. Assessment was conducted using a dichotomous Guttman scale, in which "Yes" indicated that the function operated as expected and "No" indicated that it did not. A function was therefore considered successful when the system's output matched the expected output defined in the testing scenario.

User Experience Evaluation

User experience was evaluated using the User Experience Questionnaire (UEQ), an instrument designed to measure users' perceptions of their experience when interacting with a digital product. The instrument consists of 26 bipolar items distributed across six dimensions: attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty (Schrepp, 2019). Perspicuity, efficiency, and dependability represent pragmatic quality, while stimulation and novelty represent hedonic quality; attractiveness reflects the overall impression influenced by both components. Before completing the questionnaire, the 52 respondents had accessed the MJH official store website and interacted with its navigation and features. Respondents then evaluated the website based on their experiences during these interactions using the seven-point response format provided in the UEQ instrument.

Data Analysis

The UEQ responses were processed using UEQ Analysis Tools to obtain scores for each of the six user-experience dimensions. Responses from the seven-point questionnaire were transformed to the standard UEQ scale ranging from -3 to +3, where -3 represents the most negative evaluation, 0 represents a neutral evaluation, and +3 represents the most positive evaluation. Descriptive analysis included the mean and standard deviation for each scale. At the same time, 95% confidence intervals were calculated at a significance level of $p = 0.05$ to indicate the estimated range of the population mean. The resulting scale means were subsequently interpreted using the UEQ benchmark developed by Schrepp et al. (2017), which classifies user-experience scores into Excellent, Good, Above Average, Below Average, and Bad categories. The benchmark analysis was used to determine the relative quality of the user experience for each dimension, rather than to infer changes in sales or other business performance indicators.

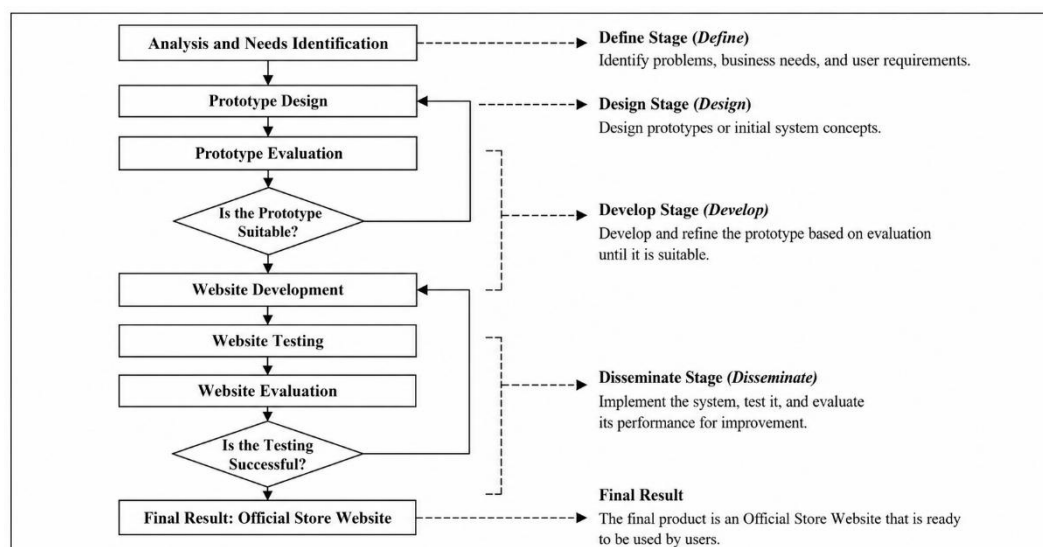


Figure 2. Research Design

RESULT AND DISCUSSION

Website Development Results

The Four-D development process resulted in an official e-commerce website for Makassar Jeans House, designed to meet the company's identified informational and transactional needs. The developed system integrates product information, customer accounts, product search, shopping-cart functions, ordering, custom product information, and customer communication into a single website. The system also provides informational pages that support access to business profiles, educational content, and other information relevant to MJH customers. These functions reflect the initial development objective of integrating e-commerce transactions with structured product and business information, rather than merely providing an additional online sales channel. The final website was developed after the prototype had passed the design and evaluation stages specified in the Four-D process. The implemented structure included the main page, product and custom-product pages, product details, account registration and login, shopping cart, checkout, MJH Education, and MJH Information. Transaction-related functions enabled users to select products, provide the required customer information, choose available transaction options, and submit orders through the system. The resulting website was subsequently subjected to functional validation before the user-experience evaluation was conducted.

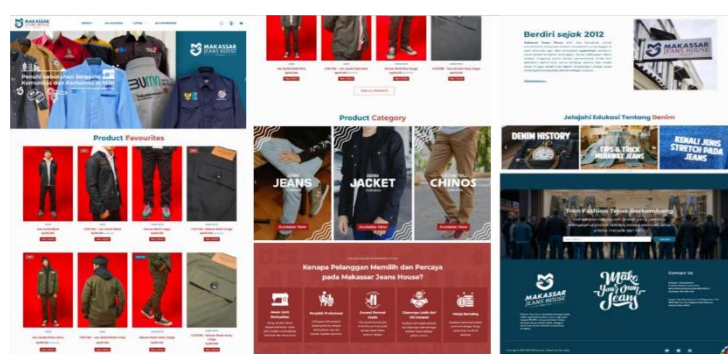


Figure 3. Makassar Jeans House Website

Functional Testing Results

Black Box Testing was conducted to determine whether the developed website met the predefined functional scenarios. Three validators assessed 30 scenarios covering page navigation and the principal functions of the e-commerce system, using a dichotomous assessment in which a successful result indicated that the observed output corresponded to the expected output. All 30 scenarios received successful assessments, resulting in a functional success rate of 100%. The tested functions included website access, product and information pages, search, account login, shopping cart access, order placement, customer contact links, and social media navigation. These findings demonstrate that the tested functions were operational in accordance with their specified functional requirements.

Table 1. Summary of Black Box Testing Results

Evaluation Indicator	Result
Number of validators	3
Functional scenarios tested	30
Successful scenarios	30
Unsuccessful scenarios	0
Functional success rate	100%

The functional results provide evidence of technical conformity within the scope of the scenarios examined in this study. Navigation functions successfully directed users to the intended pages, while account, cart, and ordering functions generated the expected system responses. The order-placement scenario, for example, successfully stored the submitted order data and displayed the corresponding order information after the required fields had been completed. These results served as the basis for proceeding to the user-experience evaluation with actual website users.

User Experience Evaluation Results

The User Experience Questionnaire was completed by 52 respondents who had previously accessed and interacted with the developed official-store website. All six UEQ dimensions produced positive mean scores, ranging from 1.351 to 1.936. Attractiveness obtained the highest mean score at 1.936, followed by Perspicuity at 1.837, Efficiency at 1.817, Stimulation at 1.755, Dependability at 1.736, and Novelty at 1.351. The results therefore show positive evaluations across both pragmatic and hedonic aspects of the user experience, although the magnitude of the evaluations differed among dimensions.

Table 2. UEQ Results by Scale

UEQ Scale	Mean	SD	95% Confidence Interval	Benchmark
Attractiveness	1.936	1.034	1.655–2.217	Excellent
Perspicuity	1.837	0.984	1.569–2.104	Good
Efficiency	1.817	1.134	1.509–2.126	Excellent
Dependability	1.736	0.988	1.467–2.004	Excellent
Stimulation	1.755	1.098	1.456–2.053	Excellent
Novelty	1.351	1.123	1.046–1.656	Good

The 95% confidence intervals for all six UEQ scales remained entirely above the neutral point, providing evidence that the estimated mean evaluations were positive across the measured dimensions. The intervals should not, however, be interpreted as evidence that respondent assessments were uniform, because the standard deviation more appropriately reflects variability. Standard deviations ranged from 0.984 to 1.134, with Perspicuity showing the lowest dispersion and Efficiency showing the highest. Novelty also displayed relatively substantial variation, with a standard deviation of 1.123, indicating that respondents differed to some extent in their perceptions of the website's innovativeness. The variation in these scores provides additional context for interpreting the scale means beyond what the benchmark categories alone provide.

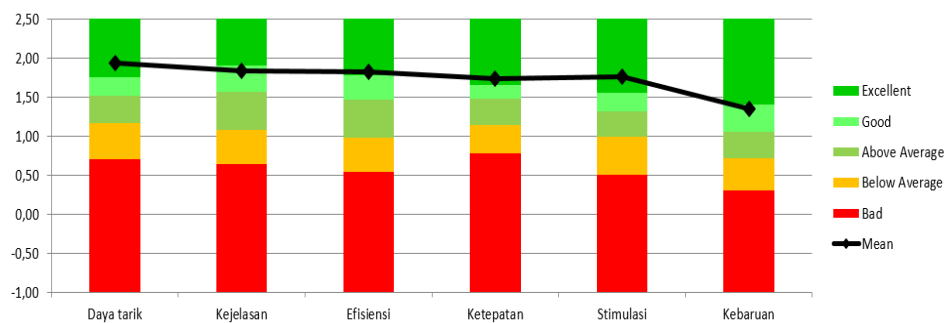


Figure 4. Benchmark Analysis of User Experience Questionnaire (UEQ) Results

Benchmark analysis classified four of the six UEQ scales as “Excellent”, namely Attractiveness, Efficiency, Dependability, and Stimulation. Perspicuity and Novelty were classified as “Good”, with Novelty obtaining the lowest mean score among all dimensions. From the pragmatic-quality perspective, the results indicate particularly favourable evaluations of efficiency and dependability, while perspicuity remained positive but did not reach the Excellent benchmark. From the hedonic-quality perspective, stimulation achieved an Excellent benchmark, whereas novelty remained at the good level. Overall, the UEQ results indicate a positive perceived user experience and identify Novelty as the dimension with the greatest opportunity for further improvement. Taken together, the two evaluation approaches provide complementary evidence regarding the developed website. Black Box Testing confirmed that all tested functions operated as expected under the predefined scenarios, achieving a 100% functional success rate. The UEQ evaluation further showed that users perceived the website positively across all six dimensions, with four dimensions classified as Excellent and two as Good. These results support the conclusion that the developed system was functionally operational and positively perceived by users within the scope of the present evaluation. They do not, however, establish changes in sales volume, conversion rates, customer satisfaction, market reach, or long-term business performance, as these indicators were not directly measured in the study

The findings of this study indicate that the e-commerce official store website developed for Makassar Jeans House supported its intended functions and provided a positive user experience. Turban et al. (2018) explain that an effective B2C e-commerce system should combine reliable transaction mechanisms, accessible information, clear navigation, and supporting services within an integrated digital environment. More recent research also shows that the quality of an e-commerce website is closely related to system, information, and service quality, which collectively shape users' evaluations of the online shopping environment (Saleem et al., 2022). In the context of this study, these quality dimensions were represented through product information, navigation, account functions, ordering facilities, and customer communication features.

The findings therefore support the theoretical framework in which e-commerce system characteristics provide the foundation for system and information quality, which are then perceived through the user experience. The functional evaluation confirms that the developed website was able to perform the principal activities specified during development. Black Box Testing is used to determine whether a system responds appropriately to predefined user actions without examining its internal program structure (Chamida et al., 2021). This form of evaluation is particularly relevant to system quality because users depend on reliable navigation, transaction processes, and predictable responses when interacting with an e-commerce website. Research on SME website quality in Indonesia similarly identifies system quality as an essential component of website quality alongside information quality and service readiness. The successful operation of the tested functions therefore provides evidence that the website fulfilled the technical requirements established during the Define, Design, and Develop stages. However, functional conformity alone does not fully represent how users perceive the system during actual use.

Information quality is another important aspect of the developed system, as MJH offers products that require more detailed information than conventional ready-to-wear transactions. Melia and Ervynasari (2024) emphasise that complete and accessible product information allows consumers to understand product alternatives and supports the purchasing decision process. Qalati et al. (2021) also explain that website quality plays an important role in shaping consumers' perceptions when interacting with online shopping platforms. Recent studies further demonstrate that information quality is a central component of overall website quality in e-commerce, as users rely on accurate, relevant, and understandable information before completing online transactions (Saleem et al., 2022).

The MJH official store addresses this requirement by consolidating product, business, and ordering information into a single digital environment, rather than relying entirely on fragmented communication across physical stores, messaging applications, and social media. This finding supports the theoretical relationship between information quality and the quality of users' interactions with an e-commerce system. The positive assessment of the pragmatic user experience can be interpreted in relation to the website's organisation and its ability to support task completion. Schrepp et al. (2017) describe perspicuity, efficiency, and dependability as pragmatic dimensions because they reflect whether users can understand a system, complete tasks efficiently, and maintain a sense of control during interaction. On the MJH website, product search, structured navigation, account access, shopping functions, and ordering procedures were integrated into a single system to reduce unnecessary transitions between communication channels. Evaluation of other e-commerce platforms using UEQ has likewise demonstrated that usability and user experience are strongly influenced by how effectively users can understand navigation and accomplish their intended activities (Putra et al., 2024). The findings of the present study therefore suggest that the website structure supported the practical purposes for which the system was developed.

The pragmatic evaluation is also closely related to the characteristics of MJH's previous business process. Before the website's development, customers relied heavily on direct communication through the physical store, WhatsApp, and Instagram to obtain product information and place orders. The introduction of an official-store website does not necessarily replace these channels. Still, it provides an additional structured environment in which users can independently access information and transaction-related activities. Fadlurahman et al. (2025) emphasise that user-oriented website development can support MSME digitalisation by improving the organisation of information and interaction between businesses and their users. In this context, the website contributes to MJH's digitalisation by integrating previously dispersed information and sales-support activities into an owned digital platform. The hedonic aspects of the findings provide a different interpretation of the website experience.

Schrepp et al. (2017) distinguish stimulation and novelty from pragmatic dimensions because these aspects concern users' interest, motivation, creativity, and perception of innovation rather than the completion of specific tasks. The website was perceived positively as an engaging system, while perceived novelty remained relatively less prominent than other aspects of the experience. A possible explanation is that the MJH website adopts interaction patterns already familiar to e-commerce users, including product catalogues, search functions, shopping carts, customer accounts, and checkout procedures. Studies evaluating established e-commerce platforms using UEQ have also shown that novelty is more difficult to strengthen than task-related aspects, because familiar interface conventions are often retained to support usability and reduce learning effort (Putra et al., 2024). Thus, familiarity supports pragmatic quality while limiting the extent to which the interface is perceived as distinctly innovative. However, this interpretation was not directly tested through qualitative data in the present study.

The relationship between system quality, information quality, and user experience also has practical implications for the digitalisation of small and medium-sized businesses. Recent evidence

from emerging markets indicates that the successful adoption of e-commerce by SMEs depends not only on the availability of technology but also on organisational readiness, facilitating conditions, and the perceived value of digital systems (Indiani et al., 2025). This perspective is relevant to MJH because the development of the official store was initiated by identified operational and informational requirements rather than by adopting technology for its own sake. The Four-D process enabled these requirements to be translated progressively into system design, development, and evaluation. The resulting website can therefore be understood as part of MJH's broader digital capabilities, particularly in organising information, supporting online ordering, and creating an official digital point of contact for customers. The findings also reinforce the methodological value of evaluating an e-commerce system through different but complementary levels of assessment. Functional validation establishes whether the system meets its predefined requirements, whereas UEQ evaluates how the resulting system is perceived across pragmatic and hedonic dimensions. Recent e-commerce research continues to emphasise user experience as an important element in understanding how users interact with and continue using digital commerce environments, demonstrating that technical availability alone does not adequately explain users' responses to a system. In this study, the combination of the Four-D model, Black Box Testing, and UEQ therefore provides a more comprehensive evaluation than relying solely on technical testing or usability assessment. The methodological contribution lies in integrating systematic development, functional conformity, and perceived user experience into a single research process, rather than in the specific software platform used to build the website.

The findings should nevertheless be interpreted within the empirical boundaries of the study. Positive functional performance and user experience indicate that the developed website met the tested requirements and was favourably perceived by its users. Still, these outcomes should not be interpreted as direct evidence of improved sales, customer satisfaction, market reach, or long-term business performance. Research on e-commerce adoption among SMEs shows that business outcomes depend on broader organisational, technological, and market conditions, rather than solely on the quality of the digital platform itself (Indiani et al., 2025). Future studies should therefore extend the present evaluation by examining transaction records, conversion behaviour, customer satisfaction, website analytics, system security, and longitudinal changes in business processes following implementation. Such evaluation would provide stronger empirical evidence regarding whether favourable system quality and user experience subsequently translate into measurable business outcomes

CONCLUSION

This study developed an official e-commerce store website for Makassar Jeans House using the Four-D model, comprising the Define, Design, Develop, and Disseminate stages. Functional validation through Black Box Testing showed that all tested scenarios met the predefined requirements, resulting in a 100% functional success rate. User-experience evaluation further showed positive perceptions across all UEQ dimensions, with Attractiveness at 1.936, Perspicuity at 1.837, Efficiency at 1.817, Dependability at 1.736, Stimulation at 1.755, and Novelty at 1.351. Attractiveness, Efficiency, Dependability, and Stimulation were classified as Excellent, while Perspicuity and Novelty were classified as Good. These findings indicate that the developed website was operational and provided a positive user experience, particularly in supporting access to product information, navigation, and online ordering. The findings should be interpreted within the scope of the evaluation conducted in this study. The assessment focused on functional conformity and perceived user experience among 52 respondents and therefore does not provide direct evidence of improvements in sales volume, conversion rates, customer satisfaction, market reach, or long-term business performance. The practical contribution of the study lies in providing MJH with an integrated official-store platform that supports the digitalisation of product information and ordering processes. In contrast, its methodological contribution lies in combining Four-D development, Black Box validation, and empirical UEQ evaluation within a single

research process. Future research should extend the evaluation by incorporating longitudinal transaction data, website analytics, conversion behaviour, customer satisfaction, security testing, and comparisons of business processes before and after implementation. Such evidence would provide a stronger basis for determining whether positive system functionality and user experience are subsequently associated with measurable business outcomes.

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