



## Building an e-commerce ecosystem for MSMEs in Medan: a strategic approach to design and user satisfaction

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### ABSTRACT

This study presents the design and evaluation of an e-commerce application tailored for Small and Medium Enterprises (SMEs) in Medan. Utilizing a Research and Development (R&D) approach and the system development life cycle (SDLC) model, the research identifies user needs and designs a solution to meet these needs. The solution includes features such as marketplace learning materials, a discussion forum, and marketplace recommendations. The design process involved creating storyboards, information architecture, wireframes, and mockups. The application's user experience was evaluated using the User Experience Questionnaire (UEQ), revealing a generally positive user experience with areas for improvement in efficiency. The research underscores the importance of such applications for the growth of SMEs and suggests further research to enhance user efficiency.

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## INTRODUCTION

With the advancement of technology, human activities have become increasingly facilitated, including in the business sector. Conventional marketing, which previously relied on word-of-mouth promotion or through print media, can now be done digitally through e-commerce. For Micro, Small, and Medium Enterprises (MSMEs) in Medan City, the use of e-commerce applications can be a key to increasing competitiveness and operational efficiency. Indeed, technological advancements, especially in the field of e-commerce, have provided new opportunities for MSMEs to increase their efficiency and competitiveness. In the context of Medan City, which is one of the main economic centers in Indonesia, this is an opportunity that should not be missed. Micro, Small, and Medium Enterprises (MSMEs) are the backbone of the Indonesian economy, including in Medan City. According to data from the Medan Central Statistics Agency (BPS) in 2021, there are about 200,000 MSMEs operating in this city, contributing about 60% to the Gross Regional Domestic Product (GRDP) and creating most of the jobs (BPS, 2021).

However, many MSMEs in Medan are still facing challenges in reaching a wider market and improving their operational efficiency. In this case, e-commerce or electronic commerce can be

an effective solution. E-commerce not only allows MSMEs to reach customers outside the city or province, but also facilitates business management and allows product customization based on customer preferences (Achiando, 2018; Chen et al., 2023; Mwaga & Omwenga, 2017). With the advancement of technology, human activities have become increasingly facilitated, including in the business sector. Conventional marketing, which previously relied on word-of-mouth promotion or through print media, can now be done digitally through e-commerce. For MSMEs in Medan City, the use of e-commerce applications can be a key to increasing competitiveness and operational efficiency.

Recent studies have illuminated the multifaceted impact of e-commerce on the productivity and profits of Micro, Small, and Medium Enterprises (MSMEs). Effendi & Subroto (2021) caution that while e-commerce adoption does not directly increase MSME's operating revenue, it provides a pivotal medium for expanding business reach and operational efficiency. This sentiment is echoed by Sandina Ami et al. (2023) affirm the positive and valid impact of e-commerce on MSMEs' revenue cycles, suggesting that effective implementation can yield significant benefits. Furthermore, Andi Arifwangsa Adiningrat et al. (2023) underscore the importance of e-commerce in enhancing MSME profitability and efficiency. Mustafa et al. (2023) provides evidence of the positive and significant impact of e-commerce on MSME revenue, highlighting its role in boosting productivity and reducing costs. Gao et al. (2023) reflect on the pandemic era, noting how MSMEs have leveraged e-commerce and digital marketing to sustain and enhance sales, profitability, and customer base, leading to more sustainable production. Together, these insights paint a comprehensive picture of the pivotal role e-commerce plays in the modern business landscape, offering MSMEs opportunities for growth, efficiency, and sustainable development. Through e-commerce, MSMEs in Medan can market their products online, which allows them to reach a wider market and operate 24/7. It is also important to understand that the use of e-commerce applications by MSMEs not only helps in selling products, but also in business management. E-commerce allows MSMEs to automate the sales process, update stocks in real-time, and provide better customer service, all of which contribute to increased operational efficiency (Chen et al., 2023).

E-commerce applications also allow MSMEs to utilize the customer data they collect to make better business decisions. For example, they can use customer purchase data to understand consumption patterns and product preferences, which can then be used to design more effective marketing strategies (Chaffey & Chadwick, 2019). In addition, e-commerce applications also allow MSMEs to innovate in their product offerings. For example, they can offer customized products or additional services, such as fast or free shipping, which can provide added value for customers (Pantano & Gandini, 2017). However, while the benefits of e-commerce for MSMEs are clear, there are also challenges to be faced. Some of these challenges include a lack of technology knowledge and skills, trust issues, and difficulties in utilizing data (Amornkitvikai et al., 2022; Mohan, 2019). Therefore, support from the government and other institutions in helping MSMEs overcome these challenges is very important.

In Medan City, the wedding sector is one of the sectors that is quite developed in MSMEs. From decoration, catering, to wedding planning, MSMEs in this field strive to provide the best service to meet consumer needs. However, like other MSMEs, they also face challenges in reaching a wider market and improving their operational efficiency. Although there are already several e-commerce applications used by MSMEs in Medan, none are specifically intended for the wedding sector. Therefore, the development of an e-commerce application specifically for MSMEs in the wedding sector in Medan City, such as "maripesta.com", could be an innovative solution that helps these MSMEs reach a wider market and improve their operational efficiency. Based on previous research, there is a gap between the potential of MSMEs in the wedding sector in Medan City and the utilization of e-commerce technology. While the benefits of e-commerce are recognized, the use

of this technology by MSMEs in the wedding sector is still limited. In addition, the lack of e-commerce applications specifically for the wedding sector is also a gap that needs to be filled.

Thus, a marketplace application like "maripesta.com" is needed that can help MSMEs in the wedding sector in Medan City to reach a wider market and improve their operational efficiency. This application can be a platform that makes it easy for MSMEs in the wedding sector to sell their products and services and makes it easy for consumers to find and buy the products or services they need for their wedding.

The Importance of E-Commerce Applications for MSMEs, The adoption of e-commerce by MSMEs, particularly in Medan, has been explored in various studies, revealing a significant impact on their performance and sustainability. Setiyani, Rostiani, and Gunawan (2023) emphasize the importance of understanding the dimensions of e-commerce adoption, which is crucial for MSMEs in Medan to leverage digital marketplaces effectively. Similarly, Nawawi (2023) find that organizational support significantly influences the performance of MSMEs, suggesting that a supportive environment is key to leveraging e-commerce benefits. Syah & Karen (2022) highlight the millennial MSMEs in Medan, noting the positive outcomes of adopting e-commerce-based accounting information systems on their performance. Nurlinda et al. (2020) underline the positive impact of external environments on e-commerce adoption, pointing to broader factors that encourage MSMEs in Medan to embrace digital solutions. Finally, Sutejo et al. illustrate how e-commerce has been instrumental for MSMEs in Medan during the COVID-19 pandemic, helping them sustain and even increase their income through expanded digital presence (Sutejo et al., 2022). These findings collectively underscore the transformative potential of e-commerce for MSMEs in Medan, highlighting its role in enhancing business performance and navigating through pandemic-induced challenges.

The transformative impact of e-commerce and digital marketing on MSMEs has been extensively documented across various contexts and regions. Mandasari and Pratama (2020) observed that during the COVID-19 pandemic, e-commerce significantly boosted the income and sales volume of MSMEs in Denpasar, highlighting the crucial role of digital marketing in contemporary business strategies. Similarly, Gao et al. (2023) found that the adoption of e-commerce and digital marketing tactics not only enhances the financial performance of MSMEs in Bangladesh but also their sustainability, underscoring the importance of digital strategies for business continuity. In Kenya, Kawira, Mukulu, and Odhiambo (2019) reported a significant impact of digital marketing on MSMEs' performance, particularly noting increases in profitability, sales volume, and customer base. Sugiharto (2024) emphasized that e-commerce acts as a pivotal digital marketing strategy for MSMEs navigating the challenges of the industrial revolution 4.0, impacting their technological adoption and performance enhancement. Finally, Subagyo (2017) demonstrated that the use of digital marketing platforms like Tokopedia and Bukalapak notably increases sales volume for MSMEs in Kediri, showcasing the efficacy of digital marketing in expanding business reach and sales outcomes.

This allows MSMEs to reach markets that were previously difficult or impossible to reach through traditional marketing methods. Furthermore, e-commerce enables MSMEs to operate 24 hours a day, seven days a week. This means that MSMEs can make sales without time constraints, which can increase their sales volume. Based on research by Taiminen & Karjaluoto (2015), it was found that e-commerce enables businesses to provide non-stop services to customers, which positively impacts customer satisfaction and ultimately affects sales.

Essentially, e-commerce applications assist MSMEs in Medan in two main ways: expanding market reach and enabling more flexible operations. E-commerce opens opportunities for MSMEs in Medan to reach a broader market, both nationally and internationally. With e-commerce applications, MSMEs can easily connect their products or services with customers from various locations, without geographical constraints. In a study by DeLone & McLean (2016), it was

found that the adoption of e-commerce by MSMEs can help them increase market penetration and achieve sales growth.

Meanwhile, from an operational perspective, e-commerce applications allow MSMEs in Medan to operate more efficiently. With an e-commerce system, MSMEs can automate a large number of their business processes, ranging from inventory management, sales processes, to customer service. This can help MSMEs reduce operational costs, increase efficiency, and ultimately increase profits (Shanmugam & Kumar Shanmugam, 2021). However, despite the clear benefits of e-commerce applications for MSMEs in Medan, there are still challenges to be faced. One of them is technical challenges and a lack of knowledge about digital technology. Therefore, training and mentoring in the use of e-commerce technology are essential to ensure successful adoption (Mohan, 2019).

**Creating an E-Commerce Application**, To create an e-commerce application, several critical steps must be taken. First, determine the business needs and objectives of the application. Then, conduct market research to understand consumer needs. Next, choose the platform to be used for the e-commerce application, such as Android or iOS. After that, design and develop the application with a focus on good user experience and user interface (UX/UI) (Huang & Benyoucef, 2013). Finally, conduct testing and launch the application. To create an effective e-commerce application, MSMEs in Medan need to undergo a series of processes involving planning, research, development, and application testing. The first step in creating an e-commerce application is determining the business needs and objectives of the application. These objectives can range from increasing sales, expanding the market, to improving operational efficiency. Knowing these business needs and objectives is crucial as it will determine what features and functions need to be included in the application (Abed, 2020; Shatnawi\* et al., 2020).

Next, MSMEs need to conduct market research to understand their consumers' needs and preferences. This involves collecting and analyzing data about potential customers, including their demographics, online shopping behavior, and what e-commerce application features they consider important. This market research is crucial to ensure that the developed e-commerce application truly meets the needs and expectations of consumers (Huang & Benyoucef, 2013). After conducting market research, MSMEs should choose the platform to be used for their e-commerce application. This choice is usually between the Android or iOS platforms, each of which has its own advantages and disadvantages. For example, Android has a larger market share in Indonesia, but iOS customers tend to spend more money in applications (Statista, 2023). The next step is the design and development of the application. At this stage, MSMEs need to work with an application development team or freelancer to build their e-commerce application. The main focus at this stage is to create a good user experience (UX) and user interface (UI). Good UX and UI can increase customer satisfaction and ultimately increase sales (Huang & Benyoucef, 2013).

Next, before the application is launched, it is important to conduct application testing. This testing aims to ensure that all application features function well and there are no bugs or technical issues. This testing usually involves using the application in various scenarios to ensure that the application works well under all conditions (Liu et al., 2022). Finally, after all the previous steps have been completed and all issues have been addressed, it's time to launch the application. This launch should be accompanied by a strong marketing strategy to ensure that the application gets enough visibility and can attract users (Kumar & Reinartz, 2016). In creating an e-commerce application, it is important to remember that this process is not a one-time process that is done and does not need to be worked on again. Instead, e-commerce applications need to be continuously updated and adjusted based on feedback from users and changes in the market (Chaffey, 2011)

**The Influence of E-Commerce Applications on SME Marketing**, recent studies have underscored the transformative impact of e-commerce on the efficiency and competitiveness of MSMEs in Indonesia. Cao et al. (2018) illustrate how product innovation and social media significantly enhance business competitiveness through e-commerce, suggesting a direct link

between digital strategies and improved operational and financial performance. Similarly, (Gao et al., 2023) delve into the positive effects of e-commerce services on supply chain performance, advocating for open innovation solutions to fast-track the digital transformation of Indonesian MSMEs. Further highlights the competitive edge provided to MSMEs by the booming e-commerce industry, particularly in navigating the challenges posed by the COVID-19 pandemic. (Bruce et al., 2023) affirm the crucial role of digital marketing and e-commerce in bolstering the financial performance and sustainability of MSMEs during these trying times. Finally, Vrontis et al. (2022) emphasize the significance of e-commerce adoption and entrepreneurship orientation towards ensuring the sustainable performance of MSMEs, thus contributing to their competitiveness and autonomy in the digital era.

The adoption of e-commerce by MSMEs in Medan can have a significant influence on their marketing strategies. For example, by using e-commerce applications, MSMEs can utilize customer data to understand their shopping preferences and behaviors, which can ultimately be used for personalizing offers and marketing communications (Vrontis et al., 2022). In addition, e-commerce applications also allow MSMEs to implement customer loyalty programs, which have proven effective in increasing customer retention and sales (Yi & Jeon, 2003).

Although e-commerce applications have the potential to enhance SME marketing in Medan, there are still several challenges that need to be addressed. One of them is the challenge in terms of knowledge and skills in digital technology. To effectively utilize e-commerce applications, MSMEs require sufficient understanding and skills about digital technology and e-commerce (Kapurubandara & Lawson, 2007; Savrul et al., 2014). Therefore, training and mentoring in the use of e-commerce technology can be an appropriate solution to overcome this challenge.

The current research builds on findings from previous studies on the adoption and impact of e-commerce on Micro, Small, and Medium Enterprises (MSMEs), particularly in the context of Medan City, Indonesia. It identifies gaps such as the inconsistent evidence on the direct financial benefits of e-commerce (Effendi & Subroto, 2021; Mustafa et al., 2023; Sandina Ami et al., 2023), the limited application of this technology in the wedding sector despite recognized benefits, and challenges in adoption due to a lack of technological knowledge and skills, trust issues, and difficulties in utilizing data (Amornkitvikai et al., 2022; Mohan, 2019). Furthermore, the research seeks to explore the necessity for government and institutional support to overcome these adoption barriers and to address the specific needs and preferences of MSMEs and consumers in Medan for e-commerce. It aims to fill the gap in creating market-specific e-commerce solutions, understand the operations and processes that benefit most from e-commerce, and analyze how e-commerce adoption contributes to the long-term sustainability and competitiveness of MSMEs. By addressing these gaps, the research aims to provide a comprehensive understanding of the role of e-commerce in enhancing the performance and competitiveness of MSMEs in Medan City, focusing on specific sectors like the wedding industry and considering the unique challenges and opportunities present in the local context.

## RESEARCH METHOD

The System Development Life Cycle (SDLC) is a critical framework in the field of information system development, guiding the process from inception to completion. Radack (2009) highlights the importance of integrating security measures at each SDLC stage to ensure the protection and integrity of information systems. This approach is crucial in today's digital landscape, where security threats are ever-present. McMurtrey (2013) illustrates the SDLC's flexibility by detailing its application in a 21st-century health care project, demonstrating its adaptability to sector-specific needs. Underscore the SDLC's foundational role in structuring software development projects, ensuring that all critical phases, from planning to maintenance, are systematically addressed. Zhang et al. (2005) introduce a methodology to incorporate human-computer interaction within the

SDLC, highlighting the user interface's significance in system usability and functionality. Lastly, Kute and Thorat (2014) provide a comprehensive review of various SDLC models, offering valuable insights into their effectiveness in facilitating successful system development. Collectively, these studies affirm the SDLC's essential role in the systematic and secure development of information systems, accommodating the dynamic requirements of modern technology projects.

These stages are then used as a guide for model development in this study. The various stages can be described as follows.

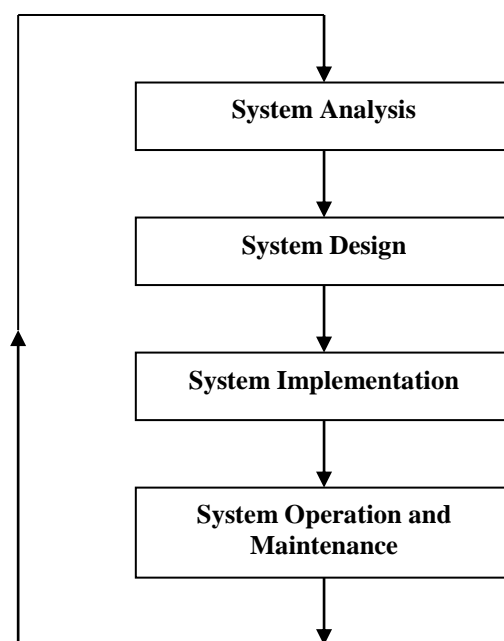


Figure 1. System development life cycle (Jogiyanto, 2005)

System analysis, which consists of: preliminary study, identification of problems and user needs, as well as conducting initial research to analyze the strengths and weaknesses of the old system and determine user needs. System design, which consists of general design (thought flow) and special design (system design)

System implementation, namely testing and implementing the system. System operation and maintenance, namely system evaluation and improvement activities.

Typically, evaluating how a current system is working involves reviewing its performance, usability, security, and how well it meets the users' needs and business objectives. This can be achieved through user feedback, system analytics, performance metrics, and regular maintenance checks to identify areas for improvement.

## RESULTS AND DISCUSSIONS

### User Characteristics Identification

At this stage, several steps are carried out, namely the creation of user personas and Empathy Maps. This stage aims to know in detail what the users of the marketplace application need, with the users being new SME entrepreneurs using the marketplace. Because of this, a simple and easy-to-use application is needed for learning so that users can easily use the application. This application is used by users who are mostly SME entrepreneurs and people who want to become SME entrepreneurs. They need to get a simple and not too complicated application.

### User Analysis and Specification

After the user identification from the interview and the creation of personas and empathy maps, the next step is to specify the requirements and needs of the users. These needs must be met for the design solution process. In addition, other information is needed for the design solution planning. The needs that must be met are summarized in a content requirement. These content requirements are: 1) there is material about learning various marketplaces used to know how to use and market products; 2) there is a discussion forum where they can express the complaints they experience and also comment on the complaints experienced by others; 3) there are recommendations for a marketplace suitable for the product category to be sold.

### Solution Design Storyboard

A storyboard is a series of stories depicted visually so that it can make it easier for users to understand the message or meaning in it. The marketplace learning application is an application that contains various learning services in using the marketplace to how to trade in the marketplace. Therefore, the creation of the storyboard refers to the data obtained from various MSMEs that have been interviewed.



Figure 2. Home View

### Information Architecture

Information Architecture is a diagram used to help users understand the content within an application. In addition, with Information Architecture, users can easily access the information within the application.

### Wireframe

A wireframe is a basic framework in an application or website. A wireframe can also be referred to as a blueprint or detailed description of a plan that depicts the shape and core functions of a screen on an application page. Screenflow is a flow of how the design solution will interact with the user. Screenflow will consist of pages within the application and interact with each other to form a specific process within the marketplace application. In the Screenflow, the application is marked by two onboarding screens that will show a little about the application. After that, on the last onboarding, the user can press the enter button and the user will be directed to the account login page.

### Mockup

A mockup is a design with higher precision with information in the form of images, colors, typography, and content that can already be in a form other than lorem ipsum. This mockup provides a visual effect like a real form in the application with a visual design that has been applied into a real product, so it already looks like a finished product. Image 3. is a home mockup that the user will see after the user successfully logs in or registers.



Figure 3. Mockups

### Testing and Evaluation

The testing conducted to evaluate this marketplace application uses the User Experience Questionnaire (UEQ) method. The User Experience Questionnaire (UEQ) is a tool used to measure a user's experience with a product or service. The UEQ is designed to provide a quick and intuitive overview of the user's experience with a product or service.

The UEQ is measured on a 7-point Likert scale, ranging from -3 (strongly disagree) to +3 (strongly agree). The UEQ consists of the following six categories: (a) Attractiveness: This refers to the user's overall assessment of the product or service, including whether they find it appealing and enjoyable. (b) Perspicuity: This refers to the extent to which users can quickly and easily understand how the product or service works. (c) Efficiency: This refers to the extent to which users can achieve their goals quickly and without unnecessary effort when using the product or service. (d) Dependability: This refers to the extent to which users can rely on the product or service to function as expected. (e) Stimulation: This refers to the extent to which the product or service can attract the interest and enthusiasm of users. (f) Novelty: This refers to the extent to which the product or service offers something new and different to users

The UEQ provides a good overview of how users perceive the product or service and can help identify areas that need improvement.

**Table 1.** UEQ Data

Respondents	Attractiveness	Perspiciuity	Efficiency	Dependability	Stimulation	Novelty
1	7	6	5	5	6	7
2	6	5	4	6	5	6
3	7	6	5	7	6	7
4	6	5	4	6	5	6
5	7	6	5	7	6	7
6	6	5	4	6	5	6
7	7	6	5	7	6	7
8	6	5	4	6	5	6
9	7	6	5	7	6	7
10	6	5	4	6	5	6

**Table 2.** Convert the 7 Point Likert Scale to a -3 to +3 scale

Respondents	Attractiveness	Perspiciuity	Efficiency	Dependability	Stimulation	Novelty
1	3	2	1	1	2	3
2	2	1	0	2	1	2
3	3	2	1	3	2	3
4	2	1	0	2	1	2
5	3	2	1	3	2	3
6	2	1	0	2	1	2
7	3	2	1	3	2	3
8	2	1	0	2	1	2
9	3	2	1	3	2	3
10	2	1	0	2	1	2



**Table 3.** Average calculation for each category

Category	Average
Attractiveness	+2.6
Perspicuity	+1.6
Efficiency	+0.6
Dependability	+2.2
Stimulation	+1.6
Novelty	+2.6

Based on the User Experience Questionnaire (UEQ) data, users generally have a positive experience with the product or service. Attractiveness and Novelty are the strongest areas, indicating that users find the product or service highly appealing and offering something new and different. This demonstrates success in design and innovation. Dependability is also rated highly, indicating that the product or service functions as expected. However, Efficiency is the area with the lowest score, indicating that there is room for improvement in facilitating users to achieve their goals quickly and without unnecessary effort. To improve efficiency, further analysis may be needed to identify and address any barriers that users may encounter.

The current research delves into the development process of a marketplace application tailored for new SME entrepreneurs, emphasizing user-centric design methodologies. This approach is grounded in the creation of user personas and Empathy Maps to thoroughly understand the needs and preferences of the application's target users. These tools serve to identify that users require a straightforward, user-friendly interface that supports their learning curve, catering to both established and aspiring SME entrepreneurs. The identification and specification of user needs, based on interviews and the creation of personas and empathy maps, lead to the formulation of content requirements. These include learning materials about various marketplaces, a discussion forum for sharing experiences and issues, and personalized marketplace recommendations.

In the solution design phase of developing a marketplace application for SME entrepreneurs, several critical components are incorporated to ensure a user-centric and intuitive experience. The process begins with the creation of storyboards, which use visual narratives to depict the application's functionalities and educational content, thereby making it more accessible and engaging for users; this approach is deeply informed by insights gathered from interviews with MSME operators. To further enhance user comprehension and navigation within the app, an Information Architecture is developed, meticulously organizing the application's content to ensure ease of access. Additionally, the design phase includes the development of wireframes and screenflows, which serve as the foundational structure of the application, outlining the basic framework and delineating the flow between screens to simplify the user's journey from initial onboarding to engaging with the application's core functionalities. Finally, mockups provide a more detailed visual representation of the application, integrating elements such as images, colors, and typography to offer a refined preview of the user interface, effectively bridging the gap between conceptual design and the final product, ensuring that the application not only meets the functional needs of its users but also delivers a visually appealing and intuitive user experience.

For the Testing and Evaluation phase, the User Experience Questionnaire (UEQ) method is employed, offering insights into users' perceptions across six categories: Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, and Novelty. The results indicate a generally positive user experience, with high marks in Attractiveness and Novelty, showcasing the application's appeal and innovative approach. Dependability also scores well, affirming the application's reliability. However, the Efficiency category reveals opportunities for improvement, suggesting a need for further analysis to enhance the ease with which users can achieve their objectives.

Comparatively, the current research underscores the pivotal role of user-centered design in developing digital solutions for SME entrepreneurs, aligning with previous research that

highlights the importance of understanding user needs and preferences in the design process. However, it uniquely contributes to the field by specifically addressing the educational and operational needs of SME entrepreneurs venturing into the marketplace domain. The application of user personas, Empathy Maps, and comprehensive design and evaluation methods demonstrates a holistic approach to addressing the challenges faced by SMEs in navigating digital marketplaces, setting a benchmark for future research and development in this area.

## CONCLUSION

Given the importance of e-commerce applications for the development of MSMEs in the city of Medan, the role of the government and other stakeholders in assisting MSMEs to adopt this technology becomes very important. Through e-commerce applications, MSMEs in Medan can not only reach a wider customer base but can also operate more efficiently. Based on the research that has been conducted on the design of the user experience of the marketplace application, a user needs analysis was conducted on the design of the marketplace application with interviews with ten users who have businesses. These user needs are based on the sales made. The initial solution design results are in the form of visual design, wireframe, and screen Flow. After everything is formed, the mockup and prototype will be made. After the solution design is completed, there is an evaluation of the solution design. Testing on the Application Design is done using UEQ (User Experience Questionnaire). Overall, the UEQ data shows a positive user experience with the product or service. The strongest areas are Attractiveness and Novelty, which show an appealing design and innovative approach. However, there is room for improvement in Efficiency, which may require further analysis to identify any barriers or difficulties that users may encounter. Further research may be needed to gain deeper insights into areas that need improvement.

The research into the user experience design of a marketplace application tailored for Micro, Small, and Medium Enterprises (MSMEs) in Medan carries profound implications for decision-making processes and contributes both theoretically and practically to the burgeoning field of e-commerce and MSME development. On the decision-making front, the findings underscore the strategic value of continuing to invest in and promote e-commerce technology among MSMEs, as evidenced by the positive reception in areas of Attractiveness and Novelty, as revealed by the User Experience Questionnaire (UEQ). The identification of Efficiency as a potential area for improvement highlights the critical need for decision-makers to prioritize user experience optimizations in e-commerce platform development. This focus on user efficiency could drive the development of policies and support frameworks that facilitate MSMEs' adoption of e-commerce, including training, financial incentives, and infrastructure enhancements. Moreover, the insights gained can guide MSMEs in formulating strategies to expand their market reach through e-commerce.

From a theoretical standpoint, this research enriches the academic discourse on e-commerce adoption among MSMEs by providing empirical evidence of the impact of user experience factors such as Attractiveness, Novelty, and Efficiency. It advances UX design theory within the e-commerce domain, offering a detailed understanding of these factors' roles in user satisfaction and technology adoption rates among MSMEs. Practically, the study serves as a guide for developers and designers, highlighting the importance of prioritizing features that bolster user engagement. It also offers policymakers valuable insights into the role of e-commerce applications in boosting MSME competitiveness, thereby informing the creation of targeted support programs. Additionally, the application of the UEQ as an evaluative tool presents a practical approach for ongoing application improvement and benchmarking, enabling developers and businesses to continuously refine their offerings. This research ultimately bridges the gap between theoretical frameworks and their practical applications, underscoring the critical role of tailored e-commerce

solutions in facilitating MSMEs' digital transformation—a key driver for their sustained growth and competitiveness in the digital marketplace.

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