The Development of a Digital Marketing System for a Textile Business Based on a Website using User-Centered Design Approach (Case Study: Eka Jaya Tekstil)

Eko Wahyudi¹, Tresna Maulana Fahrudin^{2*}, Faishal Ashari³, Nabilah Selayanti², Agung Mustika Rizki⁵

¹Program Studi Hukum, Fakultas Hukum, Universitas Pembangunan Nasional "Veteran", Jawa Timur ²Program Studi Sains Data, Fakultas Ilmu Komputer, Universitas Pembangunan Nasional "Veteran", Jawa Timur ³Program Studi Teknik Industri, Fakultas Sains dan Teknik, Universitas Bojonegoro, Jawa Timur ⁴Program Studi Informatika, Fakultas Ilmu Komputer, Universitas Pembangunan Nasional "Veteran", Jawa Timur

Email: ¹ekow.ih@upnjatim.ac.id, ²*tresna.maulana.ds@upnjatim.ac.id, ³faisal.gaxes@gmail.com, 422083010013@student.upnjatim.ac.id, ⁵agung.mustika.if@upnjatim.ac.id

DOI: https://doi.org/10.31284/j.jtm.2024.v5i1.5083

Received 13 September 2023; Received in revised 11 January 2024; Accepted 31 January 2023; Available online 2 February 2024

Copyright: ©2024 Eko Wahyudi, Tresna Maulana Fahrudin, Faishal Ashari, Nabilah Selayanti, Agung Mustika Rizki

License URL: https://creativecommons.org/licenses/by-sa/4.0

Abstract

Offline product marketing has not been able to reach a wide range of target customers amidst the intensive use of the internet and social media by people in Indonesia. The competitiveness of business product sellers to acquire customers is increasingly competitive, especially during and after Covid-19, with various strategies using supporting technology such as social media and e-commerce. Eka Java Tekstil, as a company that operates in textile business products, has also adapted by expanding product marketing not only offline, but also through website-based product digitization. In developing a digital marketing system for textile business products, a User Centered Design approach is used where the system is developed by emphasizing user needs starting from identifying user needs, determining the context of use, determining requirements, creating solution designs, and evaluating the design against user needs. The website-based product digital marketing system that has been developed has succeeded in presenting Eka Jaya Tekstil's profile as a company that produces textile business products, production house galleries, offers superior products, and orders products. The system that has been developed involving 30 respondents using Likert scale by comparing the results of the initial and final evaluations, an increase in the average System Usability Scale (SUS) score by 6.34 points was observed. There was an improvement in the acceptable range from marginal high to acceptable, a shift in the grade scale from D to C, and the adjective rating remained Good. This indicates the success of the redesign using the UCD method in meeting user needs.

Keywords: Digital Products, Eka Jaya Tekstil, Marketing Systems, Textiles, User Centered Design

1. Introduction

The textile and textile product sector are one of the industrial sectors in Indonesia that significantly contributes to the economic growth of the country [1]. The Textile and Textile Products (TPT) industry plays a significant economic role, involving high technology, substantial capital, and skilled labor. As an industry sector that employs a large workforce, TPT is expected to be a primary driver in absorbing labor in the industrial sector. The TPT industry is also an integral part of the group of industries focused on economic growth [2]. Its significant contribution to Indonesia's Gross Domestic Product (GDP) makes it one of the five key industries providing crucial contributions to GDP formation [3].

The role of the Textile and Textile Products (TPT) industry in the national economy holds high significance [4]. During the period from 2010, this industry contributed approximately 1.4% to the national Gross Domestic Product (GDP). Meanwhile, between 2012 and 2014, the sector successfully absorbed a considerable amount of labor, averaging 21.2% of the total workforce in the manufacturing sector [5]. In 2014, this industry was also able to generate significant employment opportunities for the people of Indonesia, with approximately 1.5 million people working in the textile and textile product subsector [6].

Current challenges in the sales and marketing of textile businesses revolve around brand legality and product digitalization [7]. As we know, a brand is a symbol that can distinguish goods or services from one company to another. A brand will receive legal protection if registered with the appropriate authorities [8]. The 4.0 Industrial Revolution fundamentally can change the way people live, work, and interact with each other [9]. On the other hand, challenges related to product digitalization involve technological infrastructure, data security, and adaptation to the global market [10]. Although digitalization presents market expansion opportunities, its implementation must consider regulatory frameworks, technological readiness, and consumer responses to such changes [11]. Successful marketing strategies must proactively integrate brand protection with the effectiveness of product digitalization [12].

Eka Jaya Tekstil is a clothing company leading the transformation of the textile industry, focusing primarily on brand legality and product digitalization. Through the Business Identification Number (NIB), the company secures its brand, with brand legality serving as the foundation for improved business development, providing legal protection and a unique identity for its products. Understanding the importance of the digital era, Eka Jaya Tekstil takes steps towards product digitalization, enabling it to reach a broader market than ever before.

Therefore, Eka Jaya Tekstil needs to develop a digital product marketing system based on a website using the User Centered Design (UCD) approach. UCD is an application renewal method that involves user participation throughout the renewal process [13]. By using the User-Centered Design (UCD) method, it can be applied in the improvement and evaluation of interfaces due to its role in placing the user as the primary focus in system development [14]. User-Centered Design (UCD) aims to address user difficulties in using the system, with the expectation that users can understand the system's functions and workflow independently [15].

2. Method

User-Centered Design (UCD) is an innovative approach in the development of web-based systems that places a strong emphasis on users as the primary focus [16]. The fundamental concept of UCD involves placing users at the forefront throughout the entire system development process, with all aspects, characteristics, contexts, and system environments based on user experience [17]. According to Lightbown, User-Centered Design is a repetitive process that centers around the user [18]. Therefore, it is not surprising that the user becomes the primary focus in this process. This indicates that each stage of the process will take into consideration the user's perspective [14]. In (Figure 1) below is the flow diagram of the User-Centered Design (UCD) process.

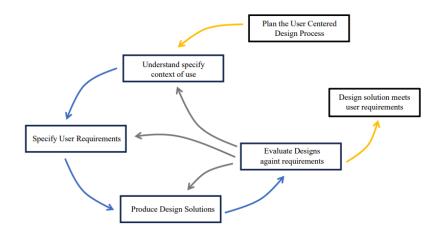


Figure 1. User-centered design fow diagram

Plan the User-Centered Design

In this step, it is crucial to engage in discussions with the project team to ensure that the project development approach is centered around user needs. This involves efforts to reach an agreement that user involvement will be a fundamental part of the entire project progression, encompassing both the initial and final stages, as well as other critical points as needed.

Specify the Context of Use

The characteristics of users, tasks, organization, and the technical and physical environment define where this system will be used. This is valuable for gathering and evaluating information about the current context. Subsequently, the context applicable to the upcoming system can be understood and established. Analyzing existing or similar systems can provide insights into various contextual aspects, including shortcomings, baseline performance levels, and satisfaction. Additionally, such analysis can also uncover needs, issues, and constraints that might be overlooked but need to be addressed by the system under development.

Specify User Requirements

In this step, statements regarding user requirements are formulated, related to the intended user context and the desired business objectives within the system to be developed. Functional requirements and other conditions that need to be applied in the system are also established.

Produce Design Solutions

In this phase, the designer develops a design solution based on user requirements while simultaneously creating the initial design. Sketches, models, simulations, and various types of prototypes are employed to visualize ideas and facilitate efficient communication with users. The aim is to prevent potential high costs and needs associated with overhauling the product in the next steps of the life cycle. When the design solution is presented to users, they should also be able to perform necessary tasks. User feedback gathered is then integrated to enhance the design solution.

Evaluate Design

The next step is to assess whether the system design has achieved its primary objectives and provides valuable feedback for the development of the next system iteration. Design evaluation is necessary to confirm the extent to which user satisfaction and organizational goals are met, and it offers additional insights for enhancing the design. User-involved testing becomes crucial in determining if people can successfully use the product.

Table 1. System Usability Scale (SUS) testing instrument

No.	Question
1.	I would like to use this system more often.
2.	I find that the system doesn't have to be made as complicated as this.
3.	I think the system is easy to use.
4.	I believe I would need help from technical support to be able to use this system.
5.	I found some features in this system are well-integrated.
6.	I think there is too much inconsistency in this system.
7.	I imagine that most people would find it easy to learn this system very quickly.
8.	I find this system very difficult to use.
9.	I feel confident using this system.
10	I need to learn before I can use the application.

System Usability Scale (SUS)

The System Usability Scale (SUS) is a questionnaire form used to measure the extent to which a system can be effectively used by users [19]. The framework of the System Usability Scale (SUS) consists of ten statements and five response options presented in the form of a Likert scale. Participants are then asked to choose the response that best aligns with their perspective on the given statements, expressed on a scale of 1-5, where a score of 1 indicates "Strongly Disagree" and a score of 5 indicates "Strongly Agree". Table 1 serves as a testing instrument referring to the SUS framework.

The received responses will be processed by calculating the average value of each statement's response in each dimension. The method for calculating the SUS test results is as follows: (1) Subtract 1 from the response of statements with odd numbers (xi-1), (2) Calculate the response of statements with even numbers using the formula 5 minus the instrument response (5-xi), (3) Sum up all response values and multiply by 2.5, and (4) Calculate the average response value for each statement from all respondents.

Figure 2 shows the categories for system usability scale assessment which consists of acceptability ranges (not acceptable, marginal, and acceptable), grade scale (F, D, C, B, and A), and adjective rating (worst, imaginable, poor, ok, good, excellent, and best imaginable) [20].

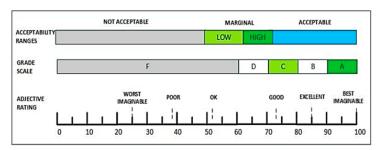


Figure 2. Categories for system Usability Scale (SUS) Assessment

3. Result and Discussion

The result and discussion explained the condition of Eka Jaya Tekstil Website previously, user-centered design analysis, defining user context, creating solution designs, and initial evaluation, final evaluation, and the comparison of initial and final evaluation.

The Condition of Eka Java Tekstil Website Previously

The previous condition of Eka Jaya Tekstil website consisted of a single page with a blue background, featuring company description, product details, product pricing, and a photo gallery of the production facility. However, the website header is less attractive, lacking a clear representation of the products offered to customers. Additionally, the text font was too bright. Regarding the shopping

experience, there is no shopping cart available, it only displays the products and their prices. The payment methods for product orders were also not clearly presented.

User-Centered Design Analysis

User-centered design assessment is a step in which we gather information to identify user needs. In this study, user needs are collected through an analysis of the current conditions of the website and the initial evaluation results from a questionnaire.

Defining User Context

This step is a procedure to understand user categories on the website. Additionally, stakeholder identification is carried out to determine the parties involved in system development. In this stage, the focus is placed on understanding user needs, identifying issues faced by users, comprehending the context of these issues, and obtaining feedback from users.

Identifying User Requirements

Based on the survey results from the first evaluation stage, several issues were identified. Table 2 contains detailed explanations of these problems. The issues faced by users on the Eka Jaya Tekstil website

Table 2. The issues faced by Users on Eka Jaya Tekstil Website

osite header is less attractive
a clear representation of the products offered to customers
t font was too bright
no shopping cart available
ment methods for product orders were also not clearly presented.
t

User challenges serve as the basis for understanding user needs in the website redesign process. System requirements analysis is a part of the initial study to identify specific needs to be implemented. Table 3 shows the user requirements related to the use of Eka Jaya Tekstil website before the redesign process.

Table 3. The user requirement of Eka Jaya Tekstil Website

Requirement	Requirement Code	Description
Output	KP01	The display of the website header is less attractive
	KP02	The display of the products offered to customers are not clear
	KP03	The display of the text font was too bright
Process	KPP1	There is no shopping cart available for customers to order products
	KPP2	There is no shopping cart to review what items have been ordered, the price per item, and the total paid
	KPP3	The payment methods for product orders were also not clearly presented.

Creating Solution Designs

The third stage of the UCD method is to produce a solution design. In producing a solution design, no iteration is carried out so that the redesign is only carried out once. Our redesign was limited to adding headers, selecting text, and adding carts. In general, the changes made to the Eka Jaya Tekstil website are as follows: (1) The website header display plays a short video showcasing activities of textile fabric sewing, (2) The product display offered to customers utilizes larger pixel-size and clearer product photos, (3) The text font display is chosen to adapt to each section of the website background. If the background color is dark, the text is made bright, and vice versa, (4) Providing a shopping cart button for customers to order products on the website page, (5) Providing a

shopping cart summary to review the items that have been ordered, the price per item, and the total amount paid, and (6) Providing information that the payment method is through cash on delivery (COD) or payment is made after the product is received by the customer. The following is a display of the results of the redesign on the Eka Jaya Tekstil website.



Figure 3. The update of Eka Jaya Tekstil Website header

Figure 3 shows the update of Eka Jaya Tekstil website header. The website header display plays a short video showcasing activities of textile fabric sewing. There is Eka Jaya Tekstil logo at the top of the header along with the caption 'Welcome to Eka Jaya Tekstil, We Provide Various Textile Products, High-Quality Clothing Made with Precision and Modern Machinery'.

Figure 4 shows the update of Eka Jaya Tekstil website header. The product display offered to customers utilizes larger pixel-size and clearer product photos. Some of the products offered include affordable T-shirts priced at Rp 25,000, men's jeans (blue) priced at Rp 250,000, Muslim men's combination tops priced at Rp 100,000, single-color Muslim men's tops priced at Rp 100,000, plain men's T-shirts priced at Rp 50,000, and long-sleeve men's sweater shirts priced at Rp 85,000.

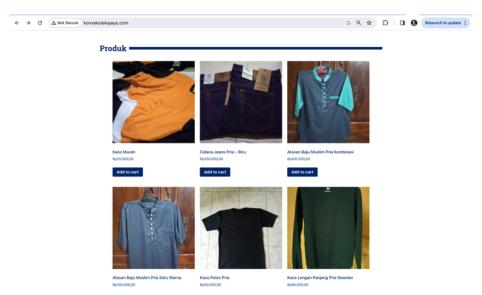


Figure 4. The update of Eka Jaya Tekstil Website product list

Figure 5 shows the update of Eka Jaya Tekstil font type and color. With a white background, the text color is chosen to be a slightly darker shade of gray.



Figure 5. The Update of Eka Jaya Tekstil Website font type and color

Figure 6 shows the update of Eka Jaya Tekstil cart button. The button color is chosen to be blue with the label 'Add to cart'. If the button is pressed, a checkbox button and a link 'View cart' will appear.



Figure 6. The Update of Eka Jaya Tekstil Website cart button

Figure 7 shows the details of the products added to the shopping cart and will be displayed along with the price, quantity, subtotal, and total. Customers can choose the **'Proceed to checkout'** button if they want to proceed to the next process. Figure 8 shows the customer address page on Eka Jaya Tekstil Website.

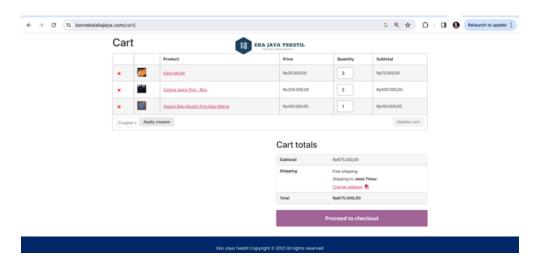


Figure 7. The Update of Eka Jaya Tekstil Website cart summary

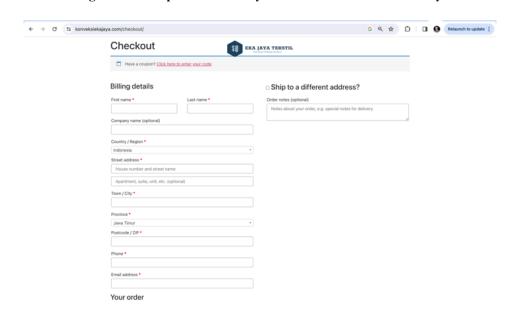


Figure 8. The Update of Eka Jaya Tekstil Website customer address page

Figure 9 shows the update of Eka Jaya Tekstil website payment method information which describes 'payment is made when the product is received' or Cash on delivery.



Figure 9. The Update of Eka Jaya Tekstil Website payment method information

Evaluating Designs Against Requirements

Two evaluations were conducted. The first evaluation aimed to analyze user needs as the basis for designing the built solution design. The second evaluation was carried out to test the created solution design. Table 4 shows the design solution of Eka Jaya Tekstil Website.

Table 4. The design solutions

Requirement	Requirement Code	Description
Output	SD01	The website header display plays a short video showcasing activities of textile fabric sewing
	SD02	The product display offered to customers utilizes larger pixel-size and clearer product photos
	SD03	The text font display is chosen to adapt to each section of the website background. If the background color is dark, the text is made bright, and vice versa
Process	SDP1	Providing a shopping cart button for customers to order products on the website page
	SDP2	Providing a shopping cart summary to review the items that have been ordered, the price per item, and the total amount paid.
	SDP3	Providing information that the payment method is through cash on delivery (COD) or payment is made after the product is received by the customer

Initial Evaluation

The initial evaluation results provide the following quantitative analysis. A total of 30 respondents filled out the questionnaire. Subsequently, calculations were made based on each respondent's answers, resulting in the following histogram.

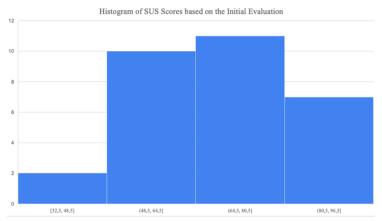


Figure 10. Histogram of SUS Scores based on the initial evaluation

Figure 10 shows an average SUS score of 66.17, with a minimum score of 32.5 and a maximum score of 90. The SUS score is used to indicate the level of user acceptance. A SUS score is categorized as acceptable if it is above 70. The SUS score for the Eka Jaya Tekstil website is 66.17, falling into the marginal high category with a grade scale of D, and an adjective rating of Good. Therefore, there is a need for an update on the Eka Jaya Tekstil website.

Final Evaluation

Based on the results of the second-stage evaluation, quantitative analysis was obtained as follows. There were 30 respondents willing to fill out the second-stage evaluation questionnaire. Subsequently, calculations were made based on each respondent's answers, resulting in the following histogram.

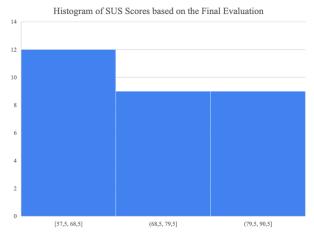


Figure 11. Histogram of SUS Scores based on the final evaluation

Figure 11 shows the average SUS score obtained is 72.42, with a minimum score of 57.5 and a maximum score of 90. The SUS score for the redesigned website of Eka Jaya Tekstil falls within the acceptable range of acceptable with grade scale of C, and an adjective rating of Good. These results indicate an improvement in user acceptance of the redesigned interface of the Eka Jaya Tekstil website. Additionally, the evaluation results have met the conditions to stop the iteration process of redesign. This suggests that the design solution can be recommended for publication and use by customers.

Comparison of Initial and Final Evaluations

Based on the comparison graph in Figure 12, it can be observed that the average SUS score has increased by 6.34 points after the redesign process using the user-centered design (UCD) approach. In the initial evaluation, the SUS assessment categorized the Eka Jaya Tekstil website into the marginal high group with a good adjective rating and received a grade scale of D. After undergoing the redesign process using the UCD approach, the Eka Jaya Tekstil website moved up to the acceptable group with a good adjective rating, and received a grade scale of C. This proves that the user-centered design (UCD) method in the redesign process of the Eka Jaya Tekstil website has been successful.

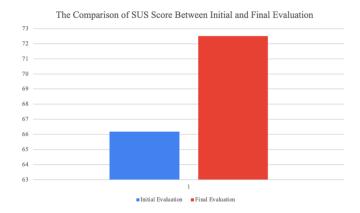


Figure 12. The Comparison of SUS Score between initial and final evaluation

4. Conclusion

After undergoing the redesign process using the user-centered design (UCD) approach, the following conclusions were drawn: (1) Based on the conducted survey, recommendations for the design of the Eka Jaya Tekstil website were obtained, aligning with user needs, resulting in an increased usability score in accordance with standards accepted by users, and (2) By comparing the results of the initial and final evaluations, an increase in the average System Usability Scale (SUS) score by 6.34 points was observed. There was an improvement in the acceptable range from marginal high to acceptable, a shift in the grade scale from D to C, and the adjective rating remained Good. This indicates the success of the redesign using the UCD method in meeting user needs.

Acknowledgment

This research was funded by Institute for Research and Community Service (LPPM) UPN Veteran Jawa Timur in RISTER (Riset Terapan) Schema 2023.

References

- [1] Setiawan, A. (2017). Perlindungan Hukum Terhadap Industri Tekstil Dan Produk Tekstil Dalam Negeri Melalui Tindakan Pengamanan (Safeguard) Di Indonesia Relevansinya Dengan Mea 2015. *Jurnal Mercatoria*, 10(1), 18-31, https://doi.org/10.31289/mercatoria.v10i1.616.
- [2] Eka Kristina Ningsih, N. L. P., & Setiawina, N. D. (2020). Analysis of Competitiveness and Influence Factors of Textile Export, Textile Products in ASEAN Economic Community. *American Journal of Humanities and Social Sciences Research (AJHSSR)*, 4(7), 288–294. www.ajhssr.com.

- [3] Asmara, A., Purnamadewi, Y. L., Mulatsih, S., & Novianti, T. (2013). Faktor Faktor yang Memengaruhi Perkembangan Investasi pada Industri Tekstil dan Produk Tekstil (TPT) Indonesia. *Jurnal Manajemen Teknologi*, 12(2). https://doi.org/10.12695/jmt.2013.12.2.3.
- [4] Kuncoro, M. (2013). Indonesia's Textile and Its Products Industry: Recent Development and Challenges. *International Journal of Business and Economic Development*, 1(3), 60–74. www.ijbed.org.
- [5] Siswana Kurniadi, D., Syarief, R., & Ani Suryani, dan. (2017). Strategi Pengembangan Usaha Produk Tekstil di PT Priangan Sentosa Tasikmalaya, Jawa Barat. *Jurnal Manajemen Pengembangan Industri Kecil dan Menengah*. *12*(1), 63-74. https://doi.org/10.29244/mikm.12.1.63-74.
- [6] Rizkhi Apriliyanto, M., Rusdarti, Rusdarti. (2018). Analisis Penyerapan Tenaga Kerja Industri Tekstil dan Produk Tekstil di Provinsi Jawa Tengah. *Economics Development Analysis Journal*, 7(4), 374-383. https://doi.org/10.15294/edaj.v7i4.27718.
- [7] Rathore, B. (2019). Exploring the Impact of Digital Transformation on Marketing Management Strategies. *Eduzone: International Peer Reviewed/Refereed Academic Multidisciplinary Journal*, 8(2), 39–48. https://doi.org/10.56614/eiprmj.v8i2y19.366
- [8] Inayah, I. (2019). Kesadaran Hukum UMKM Terhadap Ketentuan Di Bidang Kekayaan Intelektual. Law and Justice, 4(2), 120–136. https://doi.org/10.23917/laj.v4i2.8942.
- [9] Adha, L. A. (2020). Digitalisasi Industri Dan Pengaruhnya Terhadap Ketenagakerjaan Dan Hubungan Kerja Di Indonesia. *Journal Kompilasi Hukum*, *5*(2), 267–298. https://doi.org/10.29303/jkh.v5i2.49.
- [10] Martínez-Peláez, R., Ochoa-Brust, A., Rivera, S., Félix, V. G., Ostos, R., Brito, H., Félix, R. A., & Mena, L. J. (2023). Role of Digital Transformation for Achieving Sustainability: Mediated Role of Stakeholders, Key Capabilities, and Technology. *Sustainability*, *15*(14), 1–27. https://doi.org/10.3390/su151411221.
- [11] Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N., & Roig-Tierno, N. (2021). Digital Transformation: An Overview of the Current State of the Art of Research. *SAGE Open*, *11*(3), 1–15. https://doi.org/10.1177/21582440211047576.
- [12] Hermayanto, R. (2023). Effective Marketing Strategies in Business: Trends and Best Practices in the Digital Age. *Jurnal Administrare: Jurnal Pemikiran Ilmiah Dan Pendidikan Administrasi Perkantoran*, 10(1), 61–72. https://doi.org/https://doi.org/10.26858/ja.v10i1.45101.
- [13] Puspita Eugenia, M., Abdurrofi, M., Almahenzar, B., & Khoirunnisa, A. (2022). Pendekatan Metode User-Centered Design dan System Usability Scale dalam Redesain dan Evaluasi Antarmuka Website Studi Kasus Website Diseminasi Sensus Pertanian. *Prosiding Seminar Nasional Official Statistics* 2022, 573-584. https://doi.org/10.34123/semnasoffstat.v2022i1.1454.
- [14] Indra Gunawan, M., Indah Rokhmawati, R., & Hendrakusma Wardani, N. (2019). Evaluasi dan Perbaikan Antarmuka Pengguna Menggunakan Pendekatan User Centered Design (UCD) dan Card Sorting (Studi Kasus: Website Awake Project Malang). *Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer*, 3(5), 4835-4845.
- [15] Ramadhan, R., Lestari L.B, P., & Fattah, F. (2021). Pemanfaatan User Centered Design (UCD) untuk Pengembangan Website Pelayanan Administrasi Domisili Penduduk Kecamatan Tomia. *Buletin Sistem Informasi dan Teknologi Islam*, 2(4), 245–254. https://doi.org/10.33096/busiti.v2i4.987.
- [16] Chammas, A., Quaresma, M., & Mont'Alvão, C. (2015). A Closer Look on the User Centred Design. *Procedia Manufacturing*, *3*, 5397–5404. https://doi.org/10.1016/j.promfg.2015.07.656.
- [17] Agarina, M., Suryadi Karim, A., & Sutedi. (2019). User-Centered Design Method in the Analysis of User Interface Design of the Department of Informatics System's Website. *The 5th International Conference on Information Technology and Bussiness (ICITB 2019)*, 218–230.
- [18] Yatana Saputri, I. S., Fadhli, M., & Surya, I. (2017). Penerapan Metode UCD (User Centered Design) Pada E-Commerce Putri Intan Shop Berbasis Web. *Jurnal Nasional Teknologi dan Sistem Informasi*, 3(2), 269–278. https://doi.org/10.25077/teknosi.v3i2.2017.269-278.

- [19] Oktaviani, S., Wiguna, C., & Priyanto, A. (2022). Application of System Usability Scale (SUS) method in testing the usefulness of information system Student Creativity Program (PKM) based on website. *The 2nd International Conference of Science and Information Technology in Smart Administration (ICSINTESA 2021)*, 2658, 1–6. https://doi.org/10.1063/5.0107302.
- [20] Maricar, M. A., & Pramana, D. (2020). Usability Testing pada Sistem Peramalan Rentang Waktu Kerja Alumni ITB STIKOM Bali. *Jurnal Eksplora Informatika*, 9(2), 124–129. https://doi.org/10.30864/eksplora.v9i2.326.

How to cite this article:

Wahyudi E, Fahrudin T M, Ashari F, Selayanti N, Rizki A M. The Development of a Digital Marketing System for a Textile Business Based on a Website using User-Centered Design Approach (Case Study: Eka Jaya Tekstil). *Jurnal Teknologi dan Manajemen*. 2024 Januari; 5(1):63-72. DOI: 10.31284/j.jtm.2024.v5i1.5083