Redesigning User Interface of Datascripmall Mobile Apps Using User Centered Design Method

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Abstract

The rapid growth of the e-commerce industry, driven by technological advancements and increased internet access, has intensified competition for attracting and retaining customers. In Indonesia, the shift from desktop computers to smartphones has made mobile commerce (m-commerce) increasingly dominant. PT Datascrip, a leading Indonesian company, launched Datascripmall, a B2C and B2B e-commerce marketplace, in August 2020. Despite initial success, a decline in mobile app users indicated a need for an improved user interface (UI) and user experience (UX). This research underscores the urgent need to redesign the Datascripmall mobile app's UI using the User-Centered Design (UCD) methodology, focusing on user needs and preferences. The study employed questionnaires to identify the need for clearer explanations and a more consistent interface. Adding smart features and shortcuts for experienced users was found to boost efficiency and satisfaction. Interviews with the Datascripmall manager confirmed the necessity of a UI/UX redesign to enhance mobile app user numbers. The UCD process involved understanding the context of use, specifying user requirements, designing solutions, and evaluating them against these requirements. The study highlights the benefits of a redesigned UI/UX, enhancing the user experience with greater intuitiveness and engagement. Both qualitative and quantitative data support recommendations for creating a user-friendly interface and increasing overall user engagement. The result of this redesign is a prototype framework developed using Figma, which encompasses page structure, features, and content, providing a comprehensive view of the Datascripmall application UI design. This redesign aims to enhance user satisfaction and increase user numbers, leading to a more comfortable and engaging shopping experience.

Keywords: E-Commerce, M-Commerce, User Interface, User Experience, User Centered Design

I. INTRODUCTION

The rapid expansion of e-commerce, driven by technological advancements and increased internet accessibility, has intensified competition to attract and retain customers [1]. Digital marketing plays a pivotal role by leveraging technology and online platforms to promote products, engage customers, and foster strong relationships. Modern smartphones, being cost-effective, flexible, and widely accessible, significantly influence user behavior [2]. This trend is especially pronounced in Indonesia, where a notable shift from desktops to smartphones underscores the evolution of connected media [3].

The global surge in mobile phone users has propelled the wireless mobile industry, making it the fastest-growing segment in telecommunications, with substantial implications for mobile commerce (m-commerce) [4]. M-commerce facilitates business transactions via mobile devices, enhancing user accessibility by enabling transactions without geographical constraints [5]. Despite its promising potential, challenges persist in ensuring a seamless user experience [6].

PT Datascrip, established in 1969, has grown into a leading Indonesian firm, launching Datascripmall, a B2C and B2B e-commerce marketplace, in August 2020. Despite early success, declining mobile app usage and customer feedback underscore the necessity for improved user interface (UI) and user experience (UX) [7]. High-quality UI/UX design is crucial for enhancing user satisfaction and customer retention [8].

Observational methods identified significant usability issues within the Datascripmall mobile app [9]. Users frequently encountered navigation complexities that hindered browsing and transactions. These challenges were exacerbated by inconsistent visual elements and a lack of intuitive design features, leading to user frustration and decreased engagement.

A user questionnaire among Datascripmall customers revealed widespread dissatisfaction with the current UI/UX [9]. Key issues included difficulty finding products, cumbersome checkout processes, and the absence of

personalized recommendations. Respondents emphasized the need for a streamlined, user-friendly interface that enhances shopping convenience and overall satisfaction.

In-depth interviews with Mr. Gerry Daniel Hamonangan, Manager at Datascripmall, emphasized the critical impact of UI/UX on user retention and business growth [10]. Mr. Hamonangan acknowledged a decline in mobile app usage due to poor UI design and customer feedback. Users expressed frustration over usability flaws and highlighted competitor apps offering superior experiences.

Given these insights, the redesign of Datascripmall's UI/UX is imperative. By employing the User-Centered Design (UCD) methodology, this study aims to address user pain points and preferences [11]. This approach ensures that the redesigned interface not only resolves current usability issues but also aligns closely with user expectations and industry standards.

This research integrates qualitative observations, survey data, and expert interviews to comprehensively understand UI/UX challenges at Datascripmall. By incorporating these insights into a structured redesign process, the study aims to enhance user satisfaction, improve engagement metrics, and enhance Datascripmall's competitive position in e-commerce.

The UI redesign is crucial as it directly impacts user satisfaction and app usability [12]. An effective redesign can address current usability issues, enhancing the overall user experience and reversing app usage declines [13]. The UCD method is justified for its systematic approach to incorporating user feedback and preferences into the design process [14]. By prioritizing the customer perspective, UCD ensures the redesigned interface meets actual user needs and expectations, involving understanding usage contexts, specifying requirements, designing solutions, and evaluating against these requirements [15].

This research highlights the detailed problem of declining user engagement with the Datascripmall app and the necessity for a novel approach to UI/UX design [14]. The outcome of this redesign is a prototype framework encompassing page structure, features, and content, offering a comprehensive view of the Datascripmall application UI design. Developed using Figma. By emphasizing the importance of user-centered methodologies and addressing specific user requirements, this study aims to provide a comfortable and engaging shopping experience, thereby increasing mobile app users and satisfaction.

II. RESEARCH METHODOLOGY

The User-Centered Design (UCD) method is an approach in product or system development that places the user as the primary focus. This approach aims to ensure that the developed UI genuinely meets the users' needs, preferences, and expectations [16], at every stage of the development process, from planning and design to evaluation [17]. This means that designer strive to understand how users will interact with the product or system, gather feedback from them, and continually refine the design based on user input [18]. There are several UCD processes that can be used as a reference in developing UI/UX designs (see Figure 1).

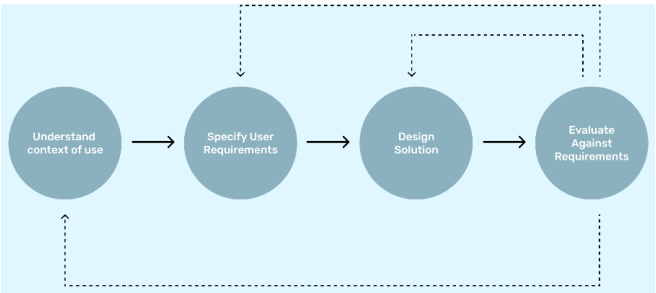

Figure 1. User Centered Design Method

UCD involves several stages. First, the Specify Context of Use stage is done by collecting information from potential users to support the design of the Datascripmall UI [19]. This stage involves observation, questionnaires, and interviews. Observation entails data collection by examining phenomena such as human behavior, work processes, natural events, and respondent reactions. Direct observation at Datascrip's premises helps gather relevant data for the UI redesign. Questionnaires present written questions or statements to respondents to gather responses, using Likert scale measurements to gather insights from active Datascripmall users. Responses are analyzed qualitatively to gain a deep understanding of user interface requirements. Interviews, as direct interactions between the interviewer and the interviewee, are aimed at obtaining specific information. An interview with Mr. Gerry Daniel Hamonangan, Datascripmall Manager, scheduled for February 28, 2024, provides insights into the application and company focus.

Next, the Specify User and Organizational Requirements stage is an introduction to user needs and determining the required functional details [20]. This stage involves using STP analysis, user personas, and user flow. STP analysis segments the market, targets specific user groups, and positions the product to meet their needs. User personas create detailed profiles of typical users to understand their goals, behaviors, and pain points. User flow maps out the steps users take to achieve their goals within the application, ensuring a smooth and intuitive experience.

In the Produce Design Solution stage, the design solutions are developed based on the information collected during the observation, literature review, questionnaires, and interviews. Activities in this stage include framework mapping, designing, and developing solution design ideas. The result is a prototype design framework that includes page structure, features, and content, providing an overall picture of the Datascripmall application design [20], [21].

Finally, the Evaluate Design stage involves usability testing the prototype and measuring user convenience to identify and correct weaknesses. This evaluation focuses on the user's perspective, involving respondents testing the designed prototype [22], [23]. The goal is to ensure that the

design meets user needs and preferences, leading to a more satisfying user experience.

By applying UCD, the redesigned interface becomes more intuitive, efficient, and aligned with user goals, resulting in a more satisfying user experience. UCD effectively addresses previous issues, making it a powerful method for improving the new interface design. This approach is vital for enhancing user engagement and ensuring the product's usefulness and market acceptance [24], [25].

III. RESULT AND DISCUSSION

A. Specify the Context of Use

1. Observation

In designing Datascripmall's user interface, observation was used to collect data. According to [9]. this method involves direct observation of phenomena. The author observed Datascripmall and competitor applications to gather relevant data for addressing identified issues and to form a strong basis for redesign. This approach provided deep insights into necessary improvements and effective design elements from competitors, aiming to enhance the user experience of Datascripmall.

2. Questionnaire

Following the guidelines of Frankel and Wallen [26], a minimum sample of 100 respondents was collected using a questionnaire through Google Forms. The respondents were active users of the DatascripMall application. Here is a summary of the respondent data:

Gender : 51% female, 49% male

Age : 3% (15-19 years), 38% (20-24 years), 23% (25-29 years), 14% (30-34 years), 13% (35-39 years), 9% (40-44 years)

Occupation : 1% student, 31% university students, 7% civil servants, 32% private employees, 14% entrepreneurs, 11% freelancers, 2% unemployed, 2% others

Using a Likert scale as per Sugiyono [9], the agreement levels were calculated as follows (Table 1):

Table 1. Likert Scale

Code	Description	Score
SS	Strongly Agree	5
S	Agree	4
N	Neutral	3
TS	Disagree	2
STS	Strongly Disagree	1

The percentage of agreement for each statement is calculated by dividing the total score by the ideal score (5 x number of respondents) and multiplying by 100%. Here are the key findings in Table 2:

Tabel 2. Questionnaire Results

No	Statement	Total Score	Per-centage
1	Users can easily check the status of their orders or transactions.	281/500	56.2%
2	Clear visual indicators notify users when a purchase is complete or an item is added to the cart.	374/500	74.8%
3	Users receive visual feedback during the loading process.	281/500	56.2%
4	Terms and icons used in DatascripMall are consistent with common online shopping experiences.	376/500	75.2%
5	Navigation reflects users' general thought processes during online shopping.	362/500	72.4%
6	The app helps users understand technical terms or policies clearly	236/500	47.2%
7	DatascripMall provides easy-to-access cancel or back options if users make mistakes.	431/500	86.2%
8	The shopping cart or wishlist features allow users to continue shopping later.	431/500	86.2%
9	The app manages user errors well and users have full control over account changes or preferences.	360/500	72%
10	The user interface maintains consistency in colors, icons, and layout.	287/500	57.4%
11	The app follows general mobile design standards for consistent button and navigation layouts.	357/500	71.4%
12	Consistency is seen in the presentation of information such as prices, product descriptions, and payment methods.	378/500	75.6%
13	DatascripMall effectively prevents user errors when entering personal information or making payments.	354/500	70.8%
14	Instructions and confirmations are provided before users perform irreversible actions like deleting items from the cart.	433/500	86.6%
15	Clear notifications are given if a transaction fails or if a situation requires user attention.	419/500	83.8%
16	The app helps users recognize previously viewed or purchased products.	265/500	53%
17	Information such as shipping addresses or payment methods is presented clearly without requiring users to remember it	250/500	50%
18	Transaction history and assistance are easily accessible without requiring users to remember specific details.	285/500	59%

No	Statement	Total Score	Per-centage
19	Smart features like product search, filters, or recommendations improve user efficiency in finding items.	374/500	74.8%
20	Personalization settings like display preferences or notifications enhance the user experience.	258/500	51.6%
21	Support for experienced users through shortcuts or quick actions like fast payments or checking order status	262/500	52.4%
22	DatascripMall adopts an aesthetic and minimalist design, focusing on essential elements in the user interface.	377/500	75.4%
23	Design elements, such as product images or page layouts, support quick and enjoyable user understanding.	413/500	82.6%
24	A good balance between design aesthetics and the main functionality of the application creates an engaging experience.	453/500	90.6%

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Interview

The redesign of the Datascripmall mobile app's UI/UX used the User-Centered Design (UCD) methodology to enhance user comfort and understanding, addressing challenges identified in the interview with Mr. Gerry Daniel Hamonangan, Manager at Datascripmall [10]. Key focus areas included:

1. UI/UX Expertise: Addressed the lack of specialists by recruiting UI/UX experts.
2. User Feedback: Gathered and prioritized feedback through surveys and usability tests.
3. Customer Expectations: Conducted competitive analysis to align with major marketplace interfaces.
4. Navigation Consistency: Improved navigation design based on heuristic evaluations and user journey mapping.
5. Visual and Interaction Consistency: Developed a UI style guide and performed cross-platform testing.
6. UI/UX Vision: Set measurable goals for continuous optimization.
7. Updates and Iterations: Coordinated with design teams for regular iteration cycles based on feedback.
8. The UCD methodology and systematic feedback integration led to significant improvements in the Datascripmall app's UI/UX, ensuring high usability and user satisfaction.

B. Specify User and Organization Requirements

1. STP Analysis

- **Market Segmentation**

Demographic: Target users are Indonesian individuals aged 21-45 with middle to high income, both male and female. They are interested in premium electronic products and have access to technology and the internet.

Geographic: Specifically targeted at residents across Indonesia

Psychographic: Young adults with an active, productive, and modern lifestyle who prefer the convenience of online shopping and focus on practical and functional electronic products

- **Target**

The primary target includes digitally active Indonesian individuals aged 21-45, with an interest in premium electronics and financial capability for online purchases. They value the convenience of shopping from home and trust reliable distributors.

- **Positioning**

Datascripmall positions itself as a user-friendly mobile platform for purchasing premium electronic products. It aims to enhance the online shopping experience through an interactive UI/UX design, focusing on user needs, and increasing transaction volume and active user.

2. User Persona

David is a 24-year-old private sector employee who enjoys online shopping, always looks for attractive promotions, and keeps up with the latest gadget trends (see Figure 2). He needs a user-friendly and convenient app to shop for gadgets with the best specifications, while still fitting within his limited budget.

Figure 2. User Persona

3. User Flow

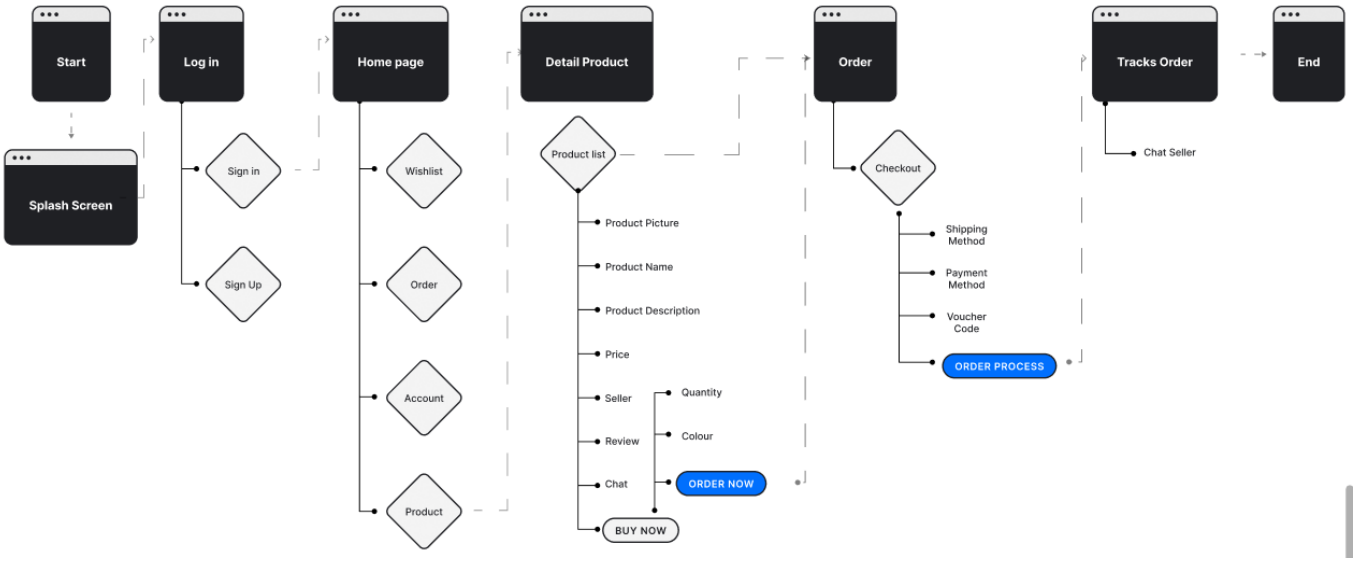


Figure 3. User Flow

The User Flow in the Datascripmall app is designed hierarchically, grouping information into specific classes or categories to guide specific actions as shown in Figure 3. It consists of a main page (parent) and subordinate pages (child). The Main Page serves as the hub, allowing users to complete the shopping process, especially for those with accounts

C. Produce Design Solutions

1. Moodboard

The moodboard reflects a clean, minimal, and modern aesthetic for Datascripmall brand identity (Figure 4). Blue, yellow, and red palettes enhance cohesion. Flat design and icons offer a light, accessible feel. Professional and modern tone with calming blue and energizing yellow/red. Mood: Simple and efficient, focusing on functionality and clarity. Manner: Structured for a clean, professional look, consistent with brand message of simplicity, clarity, and sophistication.

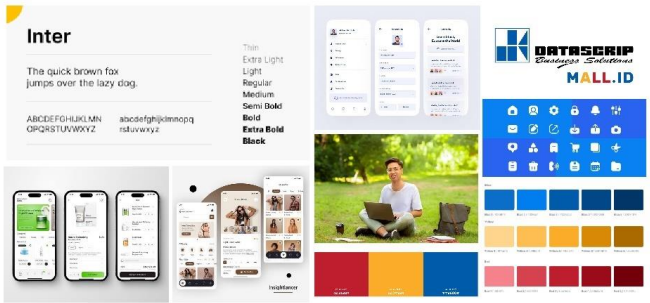


Figure 4. Moodboard

2. Colors

The color concept of the Datascripmall application is based on the selection of three main colors: blue, yellow, and red (Figure 5). Blue is chosen to convey professionalism and trust, reflecting the reliability and quality of Datascripmall's e-commerce services. Yellow is selected to highlight important elements and create visual appeal, reflecting cheerfulness and warmth in the online shopping experience. Red is used as an accent to emphasize key features and express urgency, creating engaging stimulation for users. Psychologically, users will feel comfortable and confident in online transactions due to the positive associations with blue, yellow, and red, simultaneously enhancing the attractiveness and functionality of the application's user interface.

Figure 5. Colors

3. Typography

Inter, a sans-serif font designed by Rasmus Andersson, emphasizes clarity and comfort for digital contexts, making it ideal for UI design in applications, websites, and e-commerce platforms (Figure 6). Its clean, modern, and friendly style supports informative and engaging user interfaces. With balanced proportions and readability, Inter contributes to advancing design goals effectively

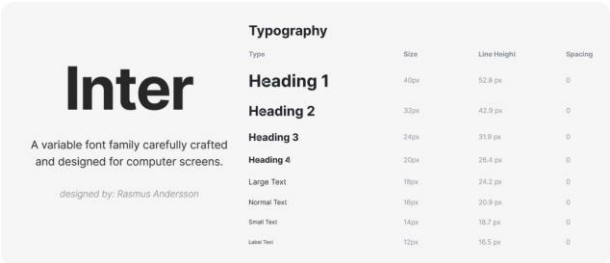


Figure 6. Typography

4. Imagery

The imagery concept of the Datascripmall application aims to maximize user engagement through effective use of icons and images (Figure 7). Adopting a flat design style with a simple brand color palette, the app explores visual representation of Datascripmall users with color as its identity. Through the use of key visuals, the primary goal is to enhance the shopping experience focusing on user comfort. The visual coherence created in the application's visualization not only generates appealing aesthetics but also reflects continuity and harmony across all aspects of the app. Thus, Datascripmall becomes not only an online shopping destination but also creates a comprehensive user experience, reinforcing the brand identity and enhancing the visual appeal of this e-commerce application.

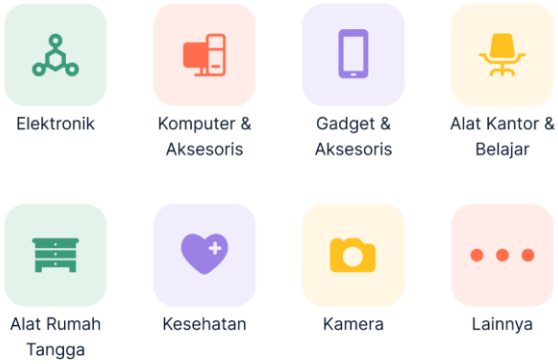


Figure 7. Imagery

5. Layout

The DatascripMall application is designed with a 4-column grid to ensure efficiency and a superior user experience (Figure 8). Clean and responsive layout facilitates easy product exploration across various categories. Design principles such as proximity, negative space, alignment, contrast, and repetition are employed to create an intuitive and appealing interface. This aids users in recognizing relationships between elements, focusing on essential information, and smoothly proceeding with purchases.

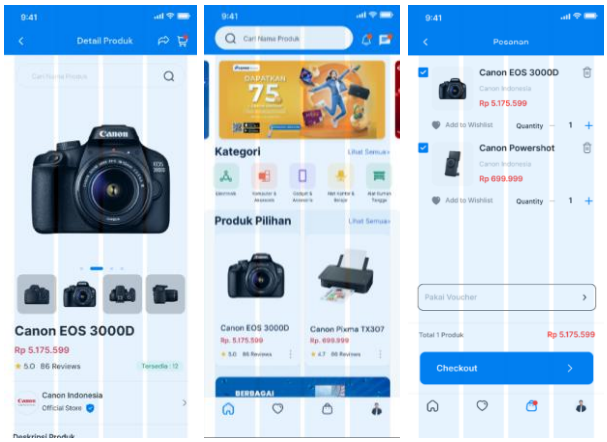


Figure 8. Layout

6. Wireframe

The wireframes used in Datascripmall's application encompass both low-fidelity and high-fidelity types (Figure 9). These options are chosen based on the clarity of the application's content depiction and the presentation of other details by both types of wireframes. Additionally, the use of low-fidelity and high-fidelity wireframes aims to clarify concepts and strengthen the structure in user interface design development.

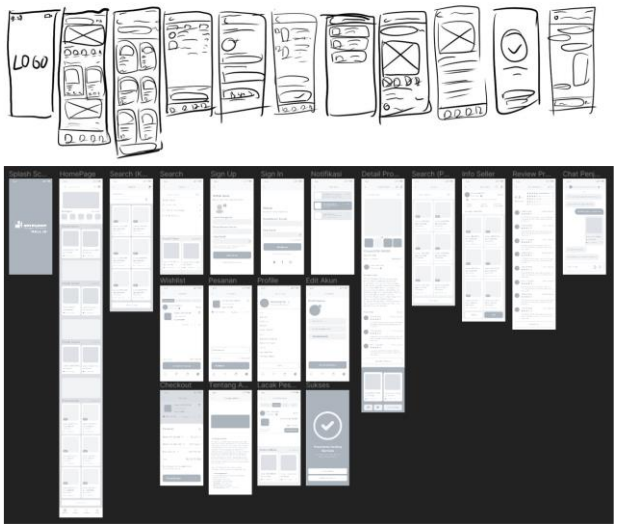


Figure 9. Wireframe

7. High Fidelity Prototype

The high fidelity prototype features a bottom navigation bar on the homepage for easy access to wishlist, orders, and account sections (Figure 10). Additionally, it includes pop-ups and supporting pages like notifications, seller chat, and feedback to enhance user interaction. The implementation and testing process, illustrated through diagrams and flowcharts, showcase the author's contribution to knowledge advancement. Data, including images, tables, and diagrams from references, are clearly sourced to ensure academic integrity.

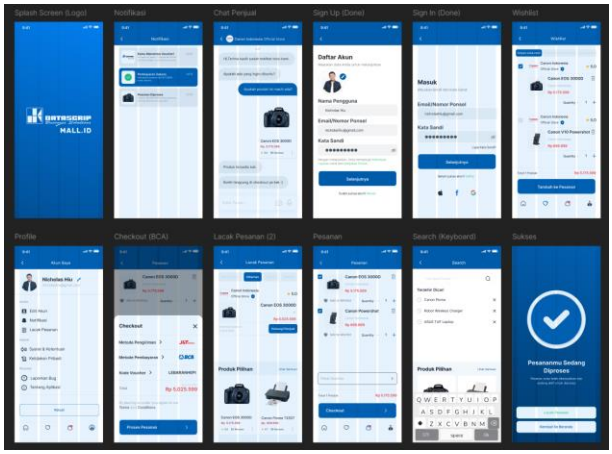
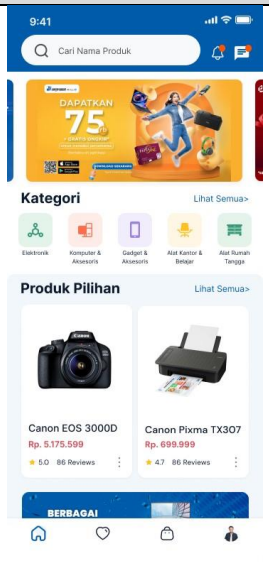
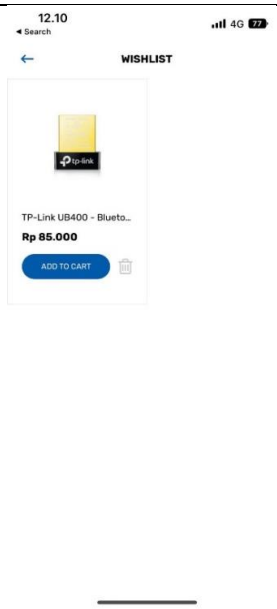
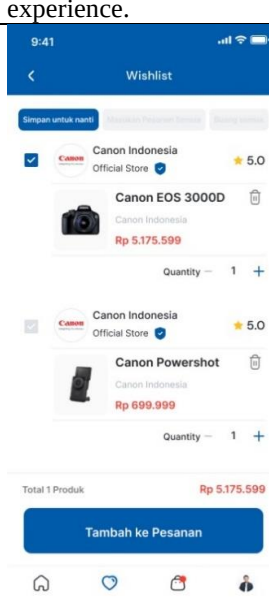
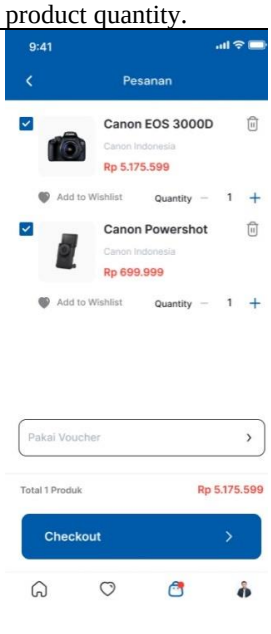
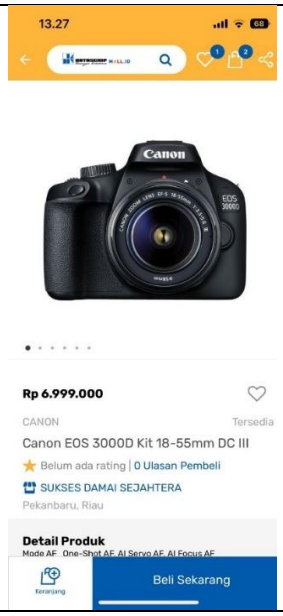
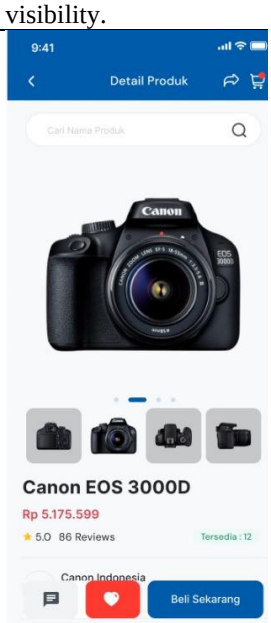
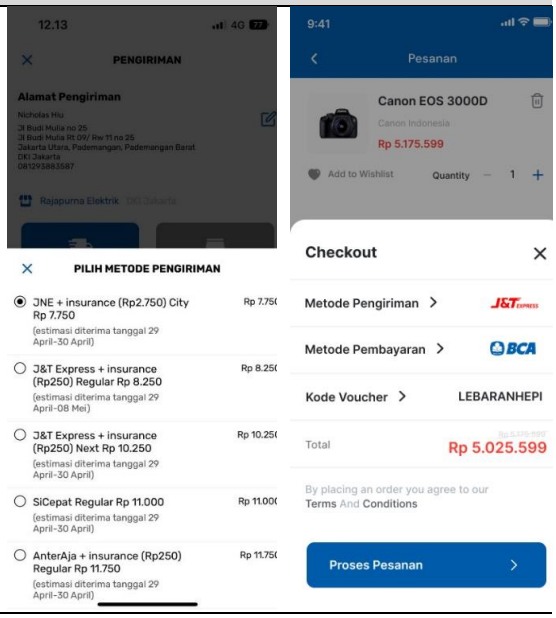
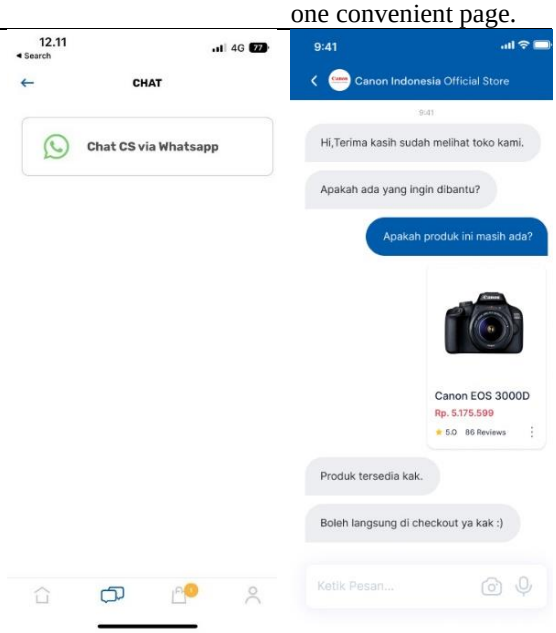


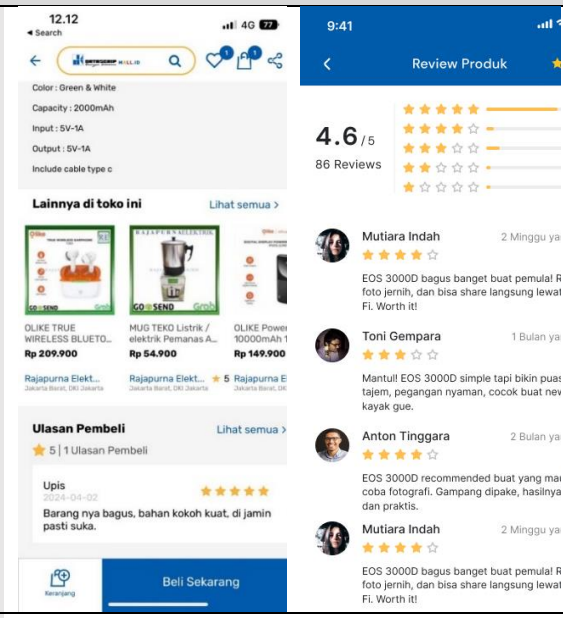
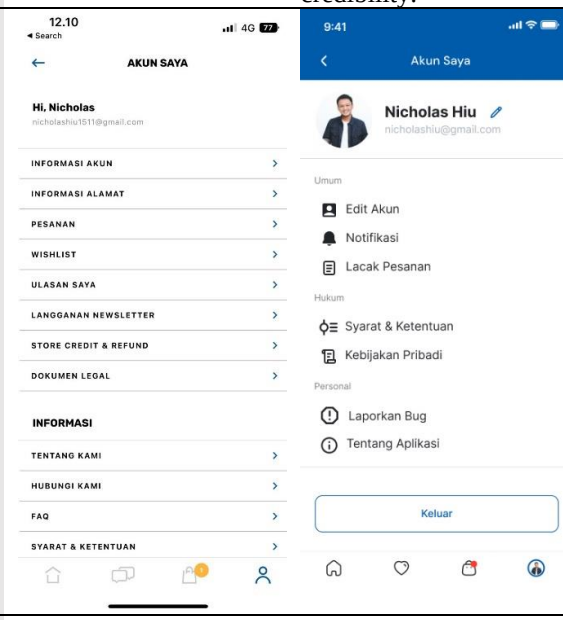
Figure 10. High Fidelity Prototype

8. Before and After Redesign

Table 3. Before and After Redesign

No	Before	After
1		
Home page	Top bar: Orange brand color. Icons varied. Layout and product content standard. Bottom navigation complex.	Top bar: Brand blue color. Consistent flat design icons. Improved layout and product content clarity. Simplified bottom navigation for enhanced shopping experience.
2		
Wish list	Product bar vertical. No checklist feature. No quantity option.	Product bar shifted sideways. Added checklist for easier product selection. Quantity feature for selecting desired product quantity.
3		
Orders	No voucher option before checkout.	Voucher option added before checkout for instant discount visibility.
4		
Product Details	Product images standard format. No bottom bar.	Product images changed to draggable boxes below main image. Added bottom bar with seller chat, wishlist, and buy now buttons for improved accessibility.

No	Before	After
5		
Check out	Checkout process in multiple pages.	Checkout process changed to pop-up window for streamlined selection of shipping, payment, and voucher options in one convenient page.
6		
Chat	No direct communication with sellers	Added chat feature for direct communication with sellers, enhancing shopping convenience.

No	Before	After
7		
Review	Basic review format without account avatar or purchase date.	Added account avatar and purchase date for improved review credibility.
8		
My Ac count	No icon identification. Basic profile options.	Added icons for easier option identification. Added profile column for avatar and username change.

D. Evaluate Design

Usability testing is a direct user-involved method to evaluate product performance, aiming to enhance user experience by gathering direct feedback. [27]. The number of

users needed varies depending on project scale, typically ranging from 5 for small projects to 15 for larger ones [28].

The usability testing aimed to determine the ease of use of the redesigned DatascripMall application. A total of 10 users were involved, completing tasks according to predefined scenarios as shown in Table 4. The scoring system ranged from 0% to 100%, reflecting varying levels of agreement with the usability aspects. Scores were analyzed to gauge user satisfaction and identify areas for improvement.

Table 4. Usability Testing

P	STS	TS	N	S	SS	Total%
1	0	0	0	2	8	**96%**
2	0	0	0	4	6	**92%**
3	0	0	0	1	9	**98%**
4	0	0	0	3	7	**94%**
5	0	0	2	1	7	**90%**
6	0	0	0	3	7	**94%**
7	0	0	0	2	8	**96%**
8	0	0	3	2	5	**84%**
9	0	0	0	5	5	**90%**
10	0	0	0	3	7	**94%**
11	0	1	0	2	7	**90%**
12	0	1	0	4	5	**86%**
13	0	0	0	4	6	**92%**
14	0	0	0	4	6	**92%**
15	0	0	0	2	8	**96%**
16	0	0	0	6	4	**88%**
17	0	1	1	2	6	**86%**
18	0	1	0	5	4	**84%**
19	0	1	0	2	7	**90%**
20	0	0	2	4	4	**84%**
21	0	0	0	3	7	**88%**
22	0	0	1	4	5	**88%**
23	0	0	0	6	4	**88%**
24	0	1	0	2	7	**90%**

Key findings from the usability testing:

1. Addition of tooltips and interactive guides enhanced the shopping experience.
2. Improvements in color usage, icons, and layout created a more cohesive experience.
3. Enhanced product images and page layouts facilitated easier navigation.
4. The application improved error prevention and provided clear notifications when needed.
5. Features such as product search, filters, and recommendations were enhanced for user efficiency.
6. Support for experienced users was improved through shortcuts and quick actions.

These improvements significantly enhanced the user experience, providing an intuitive, consistent, and secure environment for online shopping activities. Users expressed higher satisfaction and motivation to continue using the application.

IV. CONCLUSIONS

Through thorough research and User-Centered Design (UCD) principles, the redesigned UI/UX of Datascripmall offers significant advantages. The integration of relevant features for both B2B and B2C segments reflects a deep understanding of user needs. The intuitive layout, clear icons, appealing colors, responsive feedback, and seamless content integration enhance user engagement and information delivery.

This study shows how UCD principles improve UI/UX for diverse markets, demonstrating that user-centered approaches boost satisfaction and engagement. Managerially, the findings provide practical insights for businesses to enhance digital interfaces, improving user experience, retention, and sales. The study underscores the importance of user feedback and iterative design processes.

However, the research had limitations. Time constraints restricted the depth of user interaction studies and feedback. Focusing only on design prototypes may not capture real-world complexities.

Future research should allow more time for data collection and deeper user exploration. Repeated interaction studies with functional prototypes are recommended to understand user journeys better. Extending beyond prototypes to full-scale implementation and real-world testing would provide a more comprehensive view of UI/UX effectiveness.

REFERENCES

[1] D. Sholihah, "Pengaruh Islamic Marketing Mix Terhadap Loyalitas Pelanggan Dalam Pembelian Baju Muslim Melalui Situs Belanja Online (E-Commerce) Perspektif Ekonomi Islam (Pengguna Shopee Masyarakat Kabupaten Jember)," *Pengguna Shopee Masyarakat Kabupaten Jember)(Doctoral dissertation, Universitas Islam Negeri Kiai Haji Achmad Siddiq Jember)*, 2021.

[2] N. Abdallah *et al.*, "Determinants of M-commerce adoption: an empirical study," *J Theor Appl Inf Technol*, vol. 98, no. 9, pp. 1480–1488, 2020.

[3] A. R. Pradana and M. Idris, "Implementasi user experience pada perancangan user interface mobile e-learning dengan pendekatan design thinking," *AUTOMATA*, vol. 2, no. 2, 2021.

[4] A. W. Siyal, H. Chen, S. J. Shah, F. Shahzad, and S. Bano, "Customization at a glance: Investigating consumer experiences in mobile commerce applications," *Journal of Retailing and Consumer Services*, vol. 76, p. 103602, 2024.

[5] H. AlFahl, "Mobile commerce adoption," in *Network Security and Its Impact on Business Strategy*, IGI Global, 2019, pp. 170–184.

[6] M. S. Nodirovna and A. S. Sharif o'g'li, "E-Commerce Trends: Shaping The Future of Retail," *Open Herald: Periodical of Methodical Research*, vol. 2, no. 3, pp. 46–49, 2024.

[7] I. A. Adha, A. Voutama, and A. A. Ridha, "Perancangan UI/UX Aplikasi Ogan Lopian DISKOMINFO

Purwakarta Menggunakan Metode Design Thinking," *JOISIE (Journal Of Information Systems And Informatics Engineering)*, vol. 7, no. 1, pp. 55–70, 2023.

[8] R. B. Solichuddin, "Perancangan User Interface Dan User Experience Dengan Metode User Centered Design Pada Situs Web" Kalografi"," 2021.

[9] Sugiyono, *Metode penelitian kuantitatif, kualitatif, dan R&D*, vol. 3. Bandung: Alfabeta, 2021.

[10] S. P. M. S. Dr. R. A. Fadhallah, *Wawancara*. UNJ Press, 2021. [Online]. Available: https://books.google.co.id/books?id=rN4fEAAAQBAJ

[11] A. A. Puji and V. Engraini, "Perancangan User Interface Website E-Commerce Pada Usaha Kuliner Menggunakan User Centered Design," *Jurnal CoSciTech (Computer Science and Information Technology)*, vol. 2, no. 1, pp. 1–8, 2021.

[12] H. Himawan and M. Yanu F, "Interface User Experience." Lembaga Penelitian dan Pengabdian kepada Masyarakat UPN Veteran Yogyakarta, 2020.

[13] A. K. Nisah and H. Ajie, "Perancangan berbasis User Experience pada Modul Admin Sistem Informasi Akademik Universitas Negeri Jakarta," *PINTER: Jurnal Pendidikan Teknik Informatika dan Komputer*, vol. 5, no. 2, pp. 56–64, 2021.

[14] D. L. Kaligis and R. R. Fatri, "Pengembangan Tampilan Antarmuka Aplikasi Survei Berbasis Web Dengan Metode User Centered Design," *JUST IT: Jurnal Sistem Informasi, Teknologi Informasi dan Komputer*, vol. 10, no. 2, pp. 106–114, 2020.

[15] B. Harijanto, I. K. Putri, and H. N. Javier, "Penerapan Metode User Centered Design (UCD) Katalog Online Berbasis Web di Rumah Makan Alfa Lesehan Kabupaten Blitar," in *Seminar Informatika Aplikatif Polinema*, 2021, pp. 147–156.

[16] P. Z. Dinata, M. A. Urwah, M. R. Rahmawan, and E. Junaeti, "Perancangan UI/UX Web e-Commerce 'Hallo Coffee'Menggunakan Metode User Centered Design," *Jambura Journal of Informatics*, vol. 5, no. 1, pp. 45–58, 2023.

[17] M. A. Dzaky and I. A. Musdar, "Analisis Dan Perancangan UI/UX Pada Startup Renovaction Menggunakan Metode User Centered Design," *KHARISMA Tech*, vol. 17, no. 1, pp. 16–30, 2022.

[18] D. A. Fatah, R. M. Yusron, I. D. Febrianti, and O. M. A. Husnah, "Penerapan Metode User-Center Design (Ucd) Untuk E-Commerce Industri Kreatif," *Jurnal Simantec*, vol. 10, no. 1, pp. 31–40, 2021.

[19] A. A. Yunanto, F. F. Putri, D. I. Permatasari, F. F. Hardiansyah, U. Sa'adah, and A. S. Aziz, "Design and Implementation the Prayer Reminder Application using KISS Principle based on User Centered Design," *Procedia Comput Sci*, vol. 234, pp. 1484–1491, 2024.

[20] E. K. Wati, H. H. Santoso, and A. Laksono, "IOT-Based Water Level Monitoring System of Situ Rawa Besar," *MSJ: Majority Science Journal*, vol. 2, no. 1, pp. 219–231, 2024.

[21] H. W. Alomari, V. Ramasamy, J. D. Kiper, and G. Potvin, "A User Interface (UI) and User eXperience (UX) evaluation framework for cyberlearning environments in computer science and software engineering education," *Heliyon*, vol. 6, no. 5, 2020.

[22] S. M. Muhtar, A. S. Amir, and N. Amir, "Utilizing Social Media For Public Health Advocacy And Awareness In Digital Health Communication. Majority Science Journal (MSJ). Vol. 2No. 1, February 2024."

[23] I. K. Sukarma, "Ethnoscience Analysis In Science Learning in Primary Schools (Elementary School)," *MSJ: Majority Science Journal*, vol. 1, no. 4, pp. 164–171, 2023.

[24] M. Iqbal, G. I. Marthasari, and I. Nuryasin, "Penerapan Metode UCD (User Centered Design) pada Perancangan Aplikasi Darurat Berbasis Android," *Jurnal Repositor*, vol. 2, no. 2, 2020.

[25] C. Lim, A. C. Sumarlie, F. Fernando, and D. A. Haris, "Perancangan Ui/Ux Aplikasi Absensi 'Jikan' Dengan Metode User Centered Design. Computatio: *Journal of Computer Science and Information Systems*, 5 (1), 16." 2021.

[26] A. D. Adam and E. Trisna, "Pengaruh Servicescape, Kualitas Komunikasi Pelayanan Dan Kepercayaan Nasabah Terhadap Kepuasan Dan Dampaknya Pada Relationship Intention Nasabah Bank Syariah Di Surabaya," *Develop*, vol. 3, no. 1, p. 43, 2019.

[27] Aorinka Anendya, "Pengertian Usability Testing: Metode dan Manfaatnya bagi Bisnis," Dewaweb. Accessed: Mar. 17, 2024. [Online]. Available: https://www.dewaweb.com/blog/pengertian-usability-testing/

[28] T. K. Situmorang, H. M. Az-Zahra, and A. D. Herlambang, "Evaluasi Usability Pada Aplikasi m-KantorPos dengan Menggunakan Metode Usability Testing," *Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer*, vol. 3, no. 5, pp. 4349–4356, 2019.