

Optimizing User Interface and User Experience of E-Zakat Systems Using User-Centered Design

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Abstract:

The rapid advancement of technology in the 21st century has influenced mosque management, particularly in optimizing zakat and alms administration. In the Society 5.0 era, mosque management is expected to innovate through digital solutions that ensure efficiency, transparency, and accountability while remaining aligned with Islamic values. However, challenges such as low digital literacy, inadequate infrastructure, and concerns regarding security and transparency often hinder public participation in digital zakat services. This study aims to design a user-friendly interface for a digital zakat application that can be accessed by diverse user groups, including those less familiar with digital technologies. The research employs the User-Centered Design (UCD) approach, following ISO 9241-210:2019, through iterative stages: understanding the context of use, specifying user requirements, developing user flows and low-fidelity wireframes, and creating high-fidelity prototypes using Figma. To evaluate the effectiveness of the design, usability testing was conducted using the System Usability Scale (SUS) method. The evaluation results show that the E-Zakat application achieved the category of Good Usability (Grade B), with a score of 76 from muzakki users and 79 from administrators. These findings indicate that the proposed interface effectively addresses user needs and enhances usability.

Keywords: E-Zakat, User Centered Design, User Experience, User Interface.

Introduction

In the 21st century, technological advancement, globalization, and social change have brought significant transformations in mosque management [1], [2]. The challenges of the Era 5.0 require mosques, through their management boards (DKM), to innovate by utilizing technology in mosque management--not merely to follow trends, but also to ensure alignment with Islamic values [1]. Zakat management has become crucial to maintaining efficiency, transparency, and accountability. Digital transformation enables the collection, management, and distribution of zakat to be carried out more effectively, thereby reaching more mustahik (zakat recipients) and strengthening the trust of muzakki (zakat payers) [3][4].

Although digitalization in zakat management has brought many benefits [5], various challenges and problems remain at the provincial level, particularly in West Java, including the Bekasi region [6]. These challenges include low levels of digital literacy among the community, inadequate technological infrastructure, as well as concerns regarding security and transparency in digital transactions [7]. These issues result in relatively low public participation in digital zakat services.

This study holds high urgency considering the importance of optimizing zakat fitrah and sedekah (alms) management through the use of digital technology. The main challenge in developing a zakat application lies in creating a user-friendly interface that can be accessed by diverse community groups, including those less familiar with digital technology [4][8]. Therefore, this research is essential to ensure that the design of the e-Zakat application interface is truly effective and acceptable to the community.

As a systematic approach, User-Centered Design (UCD), standardized in ISO 9241-210:2019, emphasizes an iterative cycle: understanding the context of use, specifying requirements, producing design solutions, and evaluating against those requirements [9][10][11]. UCD adopts an interface design concept that focuses on the user [12]. By applying this approach, the application is designed based on the needs, characteristics, and direct feedback of users, thereby enhancing usability, efficiency, and user satisfaction [13][14]. Several popular methodologies in UI/UX development include Lean UX, Double Diamond, Design Thinking, and User-Centered Design. Research [15][16] indicates that UCD is the most suitable choice because of its emphasis on user needs,

comprehensive documentation, and focus on digital processes and interfaces making it highly relevant to this development .

The UCD approach can thus serve as an effective solution for designing the e-Zakat application interface according to user needs. This method emphasizes the user experience in interface design, ensuring that the resulting interface aligns with user requirements [10], [12]

Digital transformation in zakat management has become a central focus to ensure efficiency, transparency, and public trust [3][17][18]. UCD places the user at the core of the interface design process, aiming to create solutions that match user needs and characteristics [12]. Such an approach has been shown to increase user motivation and comfort in using web-based zakat applications [19], [20]. Usability evaluation is a crucial step to ensure that the designed interface meets standards of ease of use and user requirements [21], [22]. Appropriate evaluation can identify areas that require improvement and enhance the overall user experience [23][24].

Digital transformation in zakat management has gained increasing attention to improve efficiency, transparency, and accountability. Previous studies explored different approaches, such as Lean UX for website complexity [15], Design Thinking for BAZNAS system redesign [25], and mobile zakat applications focusing only on professional zakat [8][26].

While these studies highlight the role of digitalization, most are limited in scope, either focusing on specific zakat types or lacking systematic user-centered evaluations. This research offers new contributions in several aspects: Integration of UCD in E-Zakat Applications, namely the application of UCD in designing the e-Zakat interface tailored to user characteristics and needs, which remains underexplored. The study will produce a user-friendly interface for e-Zakat users; Comprehensive Interface Design Evaluation, going beyond design to include thorough usability evaluation, ensuring that the developed e-Zakat application meets user needs and attracts greater public participation in digital zakat payments. This research is expected to contribute to the advancement of e-Zakat application development while enriching the literature on digital transformation in zakat management through a user-focused approach.

Method

The data collection stage was carried out through several approaches, namely literature review, interviews, and observation. The literature review was conducted by studying various references relevant to the research theme, including journals and books. Observation was carried out by examining the objects and subjects of this study, while interviews were conducted through direct discussions [27]. This literature study has already been conducted as an effort to gain a deeper understanding of the digital zakat and almsgiving management system.

Data collection through interviews and direct observation aimed to identify the current conditions of zakat fitrah and almsgiving management as well as to explore the main challenges in the implementation of digital technology in zakat management.

For the user interface (UI) design stage, the User-Centered Design (UCD) approach was applied to produce a user-friendly prototype focusing on user needs [28], [29]. Several stages are

involved in the UCD approach: understand context of use, specify user requirements, design solutions, and evaluate against requirements [9], [12], [30], each consisting of different activities as illustrated in Figure 1.

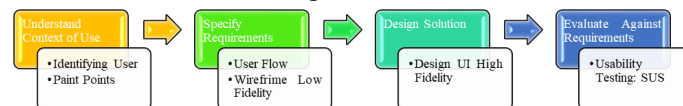


Figure 1 Research Framework

Understand context of use: This stage identifies users who will later use the product [28][31]. Here, user pain points are identified as obstacles encountered by each user.

Specify user requirements: At this stage, the main features of the application [32] are determined based on collected user needs, to ensure the application meets their expectations. This includes setting typography, font size, color schemes, display icons, and supporting features. Solutions to user problems are then outlined, followed by the design of user flow and low-fidelity wireframes [33].

Design solutions: This stage produces wireframes and an initial prototype of the e-Zakat application interface. The outcome is a high-fidelity user interface design developed using Figma [15][34].

Evaluate against requirements: This stage tests the design using usability testing and iterative improvements based on user feedback [20]. The goal of usability testing is to assess effectiveness, efficiency, and user satisfaction. Usability refers to the evaluation of user ease when interacting with a product, whether the interface or its functions, based on quality measures [22]. Usability testing is an appropriate method to capture real user experiences by observing user interactions with the application [21].

Evaluation and validation were conducted to measure the effectiveness and feasibility of the e-Zakat application design, ensuring it meets user needs and is easy to use. At this stage, the System Usability Scale (SUS) technique and follow-up interviews with users were employed to gather final feedback. SUS is a questionnaire-based usability testing method [15] used to evaluate a system [35][36]. SUS adopts a five-point Likert scale ranging from strongly disagree to strongly agree. The SUS scoring procedure is as follows [30]: a) For odd-numbered questions, the score is calculated as the respondent's score minus one; b) For even-numbered questions, the score is calculated as five minus the respondent's score; c) The final SUS score is obtained by summing all scores and multiplying the result by 2.5.

Result and Discussion

The outcome of this study is a user interface (UI) design prototype for the e-Zakat application, developed using the User-Centered Design (UCD) method. This section discusses the results of each UCD stage, including understanding the context of use, specify user requirements, design solutions, and evaluate against requirements.

Understand Context of Use

At the initial stage of the e-Zakat interface design, the primary focus was on understanding the usage context from the perspective of the users. This phase included an analysis of how each actor interacts with the system and the obstacles they face in managing zakat and sedekah within the mosque environment.

Based on interviews and observations, two main actors were identified as Muzakki: individuals who pay zakat and sedekah; Administrators/Mosque Managers: those who act as intermediaries and coordinators in the collection and distribution process.

Field findings revealed several issues, such as: Limited access for worshippers to donate at any time, Non-optimal recording system for zakat transactions, Lack of transparency in the distribution of zakat to mustahiq (recipients), The need for a simple, informative, and easy-to-understand interface that can be accessed by users from different backgrounds.

These insights form the foundation of the Understand Context of Use stage in UCD. The main objective is to ensure that the interface design truly aligns with the real needs of both muzakki and mosque administrators. Activities in this stage included identifying target users and analyzing pain points in current zakat and sedekah practices at mosques.

From the initial identification, two direct user groups were determined Muzakki are individuals obligated to pay zakat and sedekah and Administrators/Mosque Managers are responsible for recording, managing, and distributing zakat and sedekah in a transparent and organized manner. In addition, an indirect user group also emerged Mustahiq or zakat recipients, whose names and eligibility data would be listed in the system. Each group has distinct roles and requirements in their interactions with the application. Identifying user pain points is crucial as it serves as the basis for designing solutions, ensuring that the e-Zakat system addresses user problems while offering a transparent, efficient, and user-friendly service. Table 1. Identified Pain Points of Users.

Table 1 Paint Points

User Group	Pain Points
Muzakki	Must come directly to the mosque to pay zakat or sedekah, often hindered by time and busy schedules. Manual calculation of zakat (income, gold, corporate) is confusing. Proof of payment is limited to simple receipts that are easily lost and difficult to track. No existing application or website facilitates zakat or sedekah payments.
Mosque Administrators	Manual recording of zakat and sedekah, making it difficult to compare across months. Difficulty in checking the latest transactions, as they must be verified one by one. Friday donations and expenses are manually recorded, with reports lacking detail due to no categorization. Manual financial reports in Excel/Word require significant time and effort.

Specify User Requirements

This stage focuses on analyzing user needs based on the findings from the previous phase, particularly the identified users and their pain points. The information obtained was then used to formulate potential solutions and design the user flow to clarify the interaction paths within the e-Zakat system. Subsequently, a low-fidelity wireframe was developed as an initial representation of the interface layout. All these steps were conducted to ensure that the UI design truly reflects the needs of muzakki, mustahiq, and mosque administrators, while

addressing shortcomings of the existing zakat management system to achieve better accessibility, transparency, and efficiency.

From the initial identification, two groups of direct users were involved in interacting with the system, each with distinct needs and challenges. Therefore, the solutions designed were tailored to the context of each user group (Table 2).

Table 2 Proposed Solution

User Group	Pain Points	Proposed Solutions
Muzakki	Must come directly to the mosque to pay zakat/infah, often hindered by limited time. Manual calculation of zakat on income, gold, and corporate earnings is confusing. Proof of payment is only a simple receipt that can be easily lost. No dedicated application or website to facilitate zakat/sedekah payments.	Provide online zakat/infah payment options through app/web with multiple methods (bank transfer, e-wallet, QRIS). Integrate an automatic zakat calculator for easier and more accurate calculation. Provide a digital transaction history with downloadable proof of payment. Develop a simple, clean UI focusing on the core zakat features.
Mosque Administrators	Manual recording of zakat/sedekah, difficult to compare across months. Difficulty tracking latest transactions individually. Manual Friday infah recap and expenses, reports lack details due to no categorization. Manual financial reporting in Excel/Word is time-consuming. Lack of structured data visualization/dashboard.	Provide a centralized digital recording system for zakat and sedekah. Develop an automated monitoring dashboard with real-time updates. Provide a digital mustahiq database integrated with population data. Enable automatic financial reports that can be shared and audited. Develop automated classification for zakat fitrah, zakat maal, and mustahiq categories (e.g., poor, needy, etc.).

The user flow was designed based on the analysis of user needs from both mosque administrators and muzakki. This step aimed to ensure that every feature and page in the e-Zakat system could be used intuitively and efficiently, simplifying zakat, infah, and financial reporting processes, minimizing confusion, and enhancing overall user experience.

Muzakki User Flow three primary pages were designed login page, zakat calculator, and zakat/sedekah payment page. On the payment page, users can select the type of activity (zakat fitrah, sedekah, etc.), choose whether to display their identity or remain anonymous, and complete the payment using their preferred method.

Administrator User Flow several pages were designed login, statistics dashboard, Friday sedekah tracking, expenditure records, and financial reports. The statistics page presents infographic data on zakat and sedekah collection, while the expenditure page allows admins to record and report fund distribution to mustahiq in a transparent manner.

Figure 2 presents the designed user flow from the perspective of the muzakki as the party responsible for paying zakat or making donations. On the zakat or donation page, users

can select the activity they wish to perform. The muzakki may also choose whether to display their name or remain anonymous when donating. Furthermore, this page allows users to make payments directly by selecting the preferred payment method.

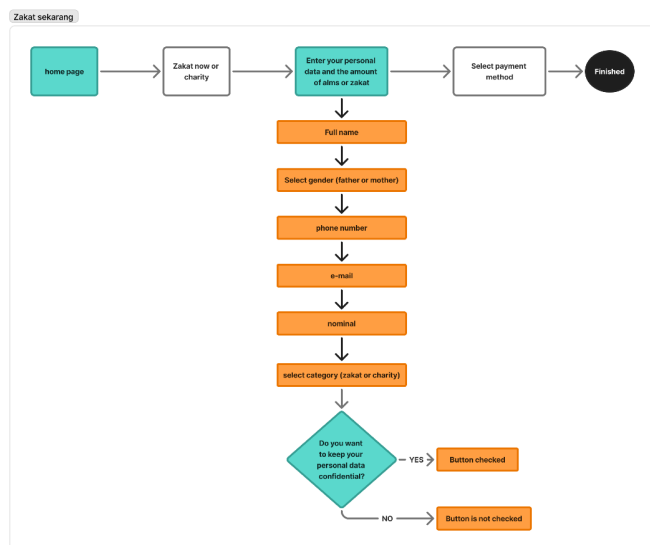


Figure 2 User Flow Muzzaki

Figure 3 illustrates the designed user flow from the perspective of the administrator, namely the mosque management, for the statistics menu page. This page displays infographic data related to the management of zakat and donations recorded in the system. Since zakat and donations are closely related to fund distribution, the application assigns the administrator the role of recording and reporting the disbursement of zakat and donation funds received.

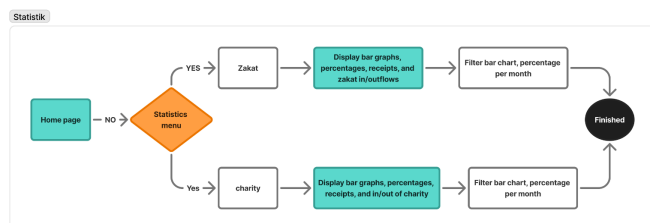


Figure 3 User Flow Admin: Statistics Menu

Figure 3 shows the designed user flow for the expense recording menu page.



Figure 4 User Flow Admin: Expense Menu

Following user flow development, low-fidelity wireframes were created to visualize the page layouts without detailed visual elements. The purpose was to map out the structure of the main application pages for both muzakki and admins.

Home Page (Muzakki) (Figure 5) displays the main slogan, summary of zakat data (number of muzakki, mustahiq, total funds), a "Pay Zakat" action button, Qur'anic motivational verses, and main features such as zakat payment, sedekah, and zakat calculator. The footer includes institution contact information.

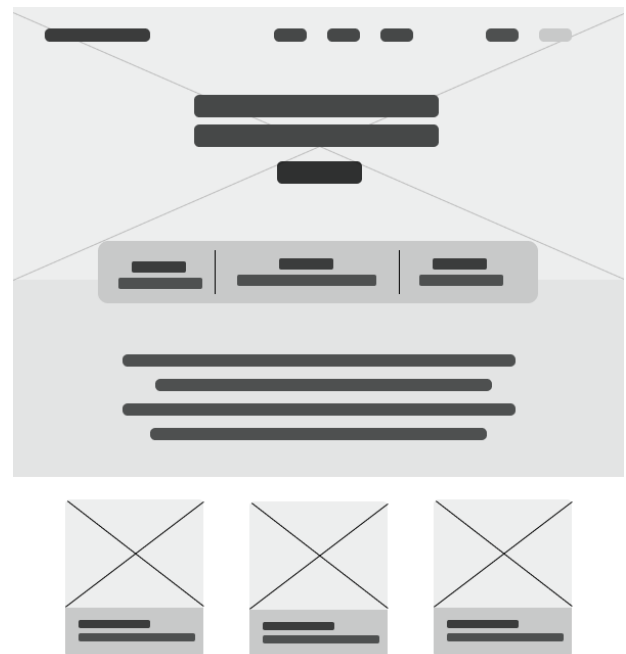


Figure 5 Wireframe Home Page (Muzzaki)

Zakat Payment Page (Muzakki) includes input forms for zakat amount, zakat type (fitrah, maal, profession, etc.), payment methods, and a "Pay Now" button. A payment summary is displayed for review before submission. Figure 6 illustrates the designed low fidelity for zakat payment page.

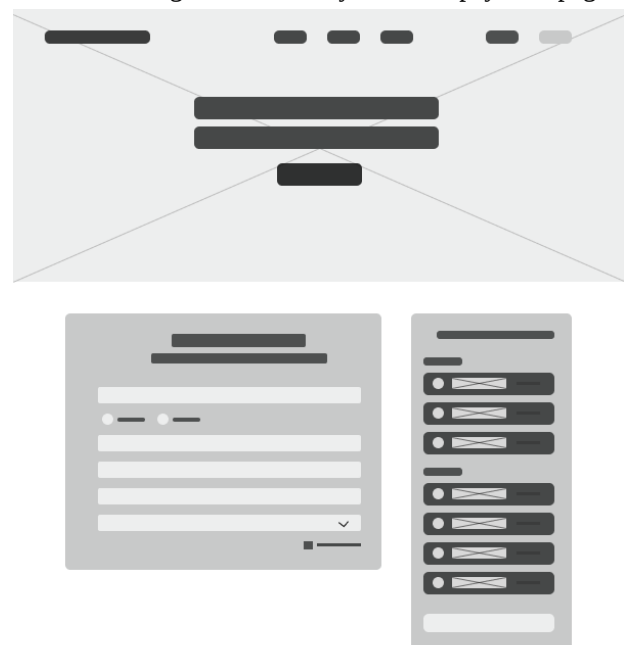


Figure 6 Zakat/Alms Payment Page (Muzzaki)

Dashboard User (Muzakki) central hub showing profile, zakat history, transaction status, and total zakat. Quick navigation to the zakat calculator and sedekah is also provided

illustrated Figure 7.



Figure 8 Dashboard Muzzaki

Statistics Page (Admin) presents graphical data on zakat and sedekah collection and distribution. Fund Distribution Page (Admin) allows recording and tracking of zakat distribution to mustahiq with categorized data. Financial Report Page (Admin) summarizes income and expenses (zakat, infaq, sedekah, and mosque operations), with both tabular and graphical displays for easy monitoring and transparent reporting. Wireframe low fidelity for admin user illustrated Figure 9.

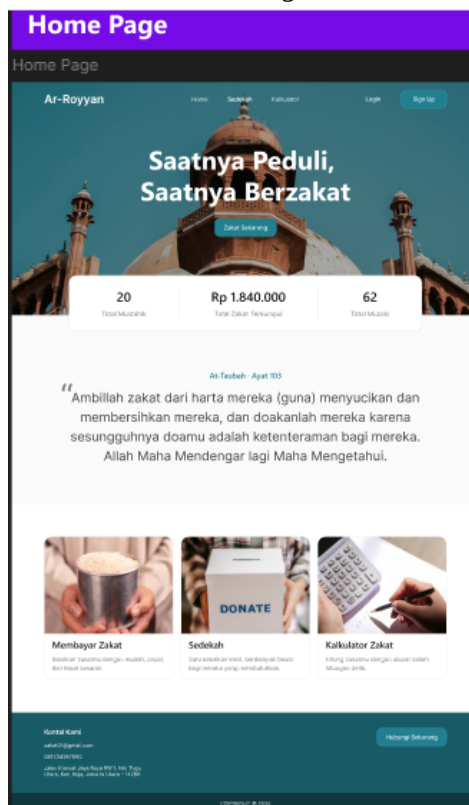


Figure 9 Financial Report (Admin)

Design Solutions

This section explains the stages of implementing the design solution developed based on the results of user needs analysis, pain points, as well as the outcomes of the previous user flow and wireframe processes. The design solution represents the concrete application of the User-Centered Design (UCD) approach implemented in the earlier stages.

High-fidelity design, which presents a visual design that closely resembles the final system interface and prototype development, which serves as an initial interactive model representing the workflow and main features of the E-Zakat application. The prototype is used to visualize the user experience in a more realistic manner before entering the final development stage. Each element within the prototype is tailored to the needs of each user group, ensuring that the resulting design solution is truly user-centered and capable of addressing the previously identified pain points.

The purpose of this phase is to produce an interface design solution that is intuitive, functional, and aesthetically pleasing, thereby enhancing user comfort and efficiency in using the application. The application used in the high-fidelity design process is Figma.

The high-fidelity design serves as a visual representation that closely reflects the final form of the E-Zakat application's interface. Unlike the wireframe stage, which focused on the basic structure, the high-fidelity prototype presents more complete and detailed visual elements, including color schemes, typography, icons, images, and user interactions such as buttons and navigation. The design is structured based on the results of user needs analysis and the user flow developed in previous stages, with the aim of providing a more realistic and intuitive user experience.

Figure 10 presents the high-fidelity design of the main dashboard page of the web-based E-Zakat application. On this dashboard, users accessing the E-Zakat website will be able to view information related to financial funds, the number of muzakki, and the number of mustahiq.

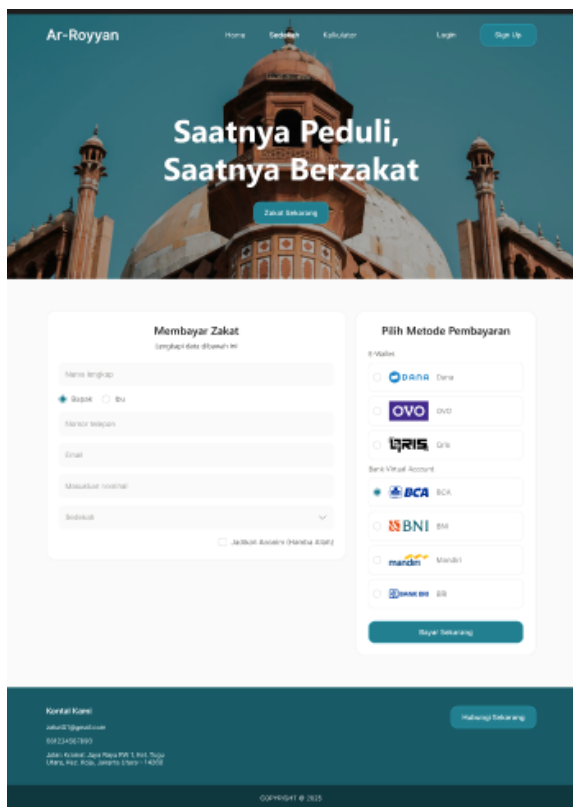


Figure 10 High Fidelity: Dashboard Page

Figure 11 presents the zakat or donation page, where users (muzakki) can directly make donations through the E-Zakat application. On this page, users can complete payments using various electronic payment methods. In addition, users may choose whether their name will be displayed or hidden (anonymized with the title "Servant of Allah") when making a donation.

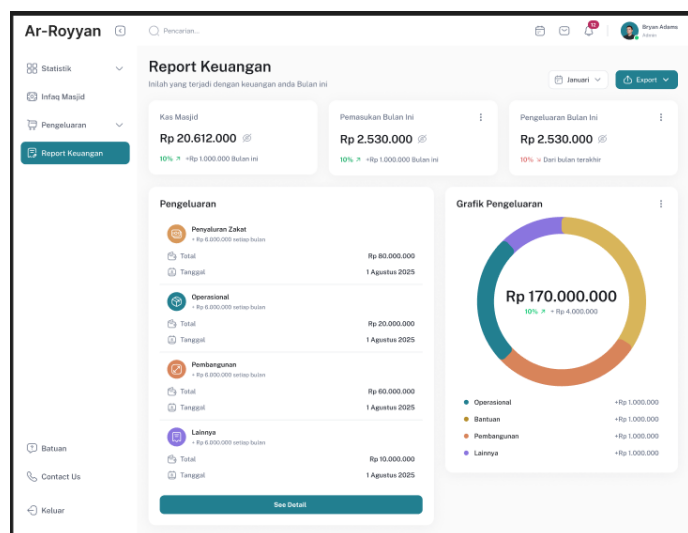


Figure 11 High Fidelity: Zakat / Alms Payment (Muzzaki)

The zakat and donation statistics page from the administrator's perspective. This page neatly records zakat and donation management data and provides infographics in the form of bar charts displaying financial reports. It also includes tabular information related to zakat or donation contributors, along with the amount donated and the payment method used by the muzakki. Zakat distribution page, the administrator plays a role in carrying out zakat distribution activities by entering data related to mustahiq or the eligible recipients of zakat and

donations. The financial reporting page provides a record of financial management aimed at ensuring transparency in mosque fund utilization. Through this application, both income and expenditure records are documented in detail. Figure 12 illustrated the high fidelity design interface for financial reporting.

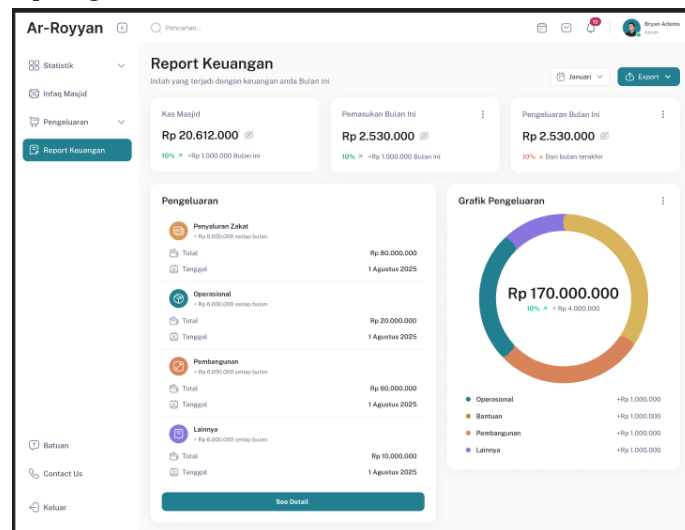


Figure 12 High Fidelity: Financial Reporting (Admin)

Evaluate Against Requirements

The design evaluation was conducted to assess the extent to which the prototype of the user interface design meets users' expectations and needs. The main objective of this evaluation is to ensure that the prototype design is not only visually appealing but also easy to use for various categories of users. In this evaluation, the System Usability Scale (SUS) was employed as a measurement tool to assess the level of comfort and practicality in using the UI and the available features of the prototype [37]. The SUS method was applied to measure user comfort and satisfaction after interaction.

This study involved both muzakki (zakat payers) and mosque administrators in the evaluation process. Each participant was asked to test the prototype by completing a set of tasks tailored to their respective roles. After designing the task scenarios, the next step was to prepare a questionnaire to obtain user feedback regarding the prototype interface. The purpose of this questionnaire was to identify the extent to which the website's interface and features provide a comfortable experience, attractive appearance, and easily understandable language [38]. A total of 10 questions were included in the questionnaire, using a Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree, as presented in Table 3.

Tabel 3: SUS Questionnaire

Table 3 Caption...

No	Questions	1	2	3	4	5
1	I think that I would like to use this e-Zakat application frequently.					

No	Questions	1	2	3	4	5
2	I found this e-Zakat application unnecessary complex.					
3	I thought this e-Zakat application was easy to use.					
4	I think that I would need the support of a technical person to use it.					
5	I found the various functions in this e-Zakat application well integrated.					
6	I thought there was too much inconsistency in this e-Zakat application.					
7	I would imagine that most people would learn to use this app very quickly.					
8	I found this e-Zakat application very cumbersome to use.					
9	I felt very confident using this e-Zakat application.					

No	Questions	1	2	3	4	5
10	I needed to learn a lot of things before I could get going with this app.					

The respondents in this study were divided into two groups: muzakki and mosque administrators, with a total of 40 participants [39]. All data collected were analyzed using the SUS method. The SUS scoring procedure was conducted by subtracting 1 from the score of each odd-numbered item and calculating 5 minus the score for each even-numbered item. The resulting values were then summed and multiplied by 2.5 to obtain the final SUS score for each respondent. The interpretation of results followed the criteria: >80.3 = Excellent (A), 68-80.3 = Good (B), 51-68 = Fair (C), and <51 = Poor (D/E) [40][41].

The results of the usability testing of the e-Zakat application's interface design using the SUS technique showed that the muzakki group achieved an average score of 76, indicating that the application is usable and well accepted by users. For the administrator group acting as mosque managers, the average score was 79, showing that the interface design was also well received. Thus, the e-Zakat application can be categorized as having "Good Usability" (Grade B) based on the evaluation results from both muzakki and administrators.

Conclusion

The main challenge in developing a zakat application lies in creating a user-friendly interface that can be accessed by diverse groups, including those less familiar with digital technology. This study designed the user interface for zakat and donation management by applying the User-Centered Design (UCD) approach. At the understanding context of use stage, the results included the identification of the main application users and the mapping of pain points. This was followed by the specified user requirements stage, where user flows and low-fidelity wireframes were developed. In the design solutions stage, high-fidelity prototypes were produced using Figma. The design solutions were then evaluated in the evaluate against requirements stage by conducting usability testing with the System Usability Scale (SUS) technique. The evaluation results indicated that the E-Zakat application could be categorized as having "Good Usability" (Grade B), based on assessments from both the muzakki group (score of 76) and the administrators (score of 79). However, this study has certain limitations regarding the evaluation process. Future research could apply other evaluation techniques such as USE, Heuristic Evaluation (HE), or alternative usability assessment methods.

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