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Front End Design of Asset Sales Information System with Human Centered Design (HCD) Approach

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Abstract-As digital technology advances, online competition intensifies, yet many SMEs lack reliable, user-friendly systems. SME development often skews toward back-end optimization, while user-centered front ends remain underexplored. This study addresses that gap by designing and evaluating the front end of CV Bello Design's digital design-asset sales platform and distilling UI/UX decisions transferable to similar SMEs. Using a Human-Centered Design (HCD), we mapped problems with the owner, staff, and past buyers, translated insights into personas and user flows, and iterated prototypes for customer and admin roles. Usability was assessed through user testing measuring effectiveness and satisfaction. In addition, a Heuristic Evaluation was conducted by experts to identify usability issues and opportunities for improvement. Test results show customer effectiveness of 93.75% and admin effectiveness of 95%. Relative efficiency reached 0,02948 goals/second for customers and 0,00939 goals/second for admins. Overall, users reported positive satisfaction. Heuristic findings highlighted needs for a login form, clearer transaction details and history, consistent currency symbols, richer product detail views, clear required-field cues, and an FAQ. Implemented fixes clarified transaction pages, standardized currency symbols, added required-field indicators, and provided an FAQ. Overall, the HCD-based interface measurably improves task completion and offers reusable design patterns for SME, web-based asset-sales platforms.

Keywords: Human-Centered Design, Usability, Heuristic evaluation

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1. Introduction

Architectural consulting services are increasingly in demand as they provide functional, aesthetically pleasing, safe, and cost-effective design solutions for consumers [1]. These services cover various aspects such as land selection, layout planning, interior design, material selection, and technology integration [2]. However, at the SME scale, attention to user-centered front-end design remains limited, many projects instead emphasize the back end. As a result, the purchase flow especially during checkout becomes complicated, making users reluctant to transact on the site and shifting them to manual ordering, for example via WhatsApp. This option may feel easier, but it is inefficient. The process is slower, harder to track, and prone to errors.

CV. Bello Design, a company based in Buleleng, Bali, offers three main services: design, construction, and custom interior. Currently, the company sells its collection of 3D design assets, site plans, and Budget Plan (RAB) files manually through WhatsApp. Average monthly sales are only 1–2 transactions, which does not meet the company's targets. According to an interview with the owner CV Bello Design, they are seeking to develop their own online sales platform to avoid administrative fees and profit deductions associated with third-party marketplaces. The company already has a website, but it only displays product information and does not include purchase features. Key needs highlighted include transaction efficiency and security, ease of purchasing various building-related 3D assets, as well as interactive 3D previews, complete product descriptions, effective search and filters, and a variety of payment options. A user-friendly interface, comprehensive product information, a fast and secure checkout process, and user reviews are seen as important factors in purchase decisions. This study

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prioritizes user-centered design to deliver a clear and seamless shopping experience from product discovery to checkout thereby increasing user trust and satisfaction. The buying and selling process also becomes more efficient.

To better align with user needs, this study employ the Human-Centered Design (HCD) approach, which aims to create a system that is useful and usable. This method focuses on users, their needs, and comfort [3]. HCD emphasizes user involvement throughout the design process to ensure the final system effectively meets user needs [4]. This approach is crucial in crafting user-centered systems as it prioritizes user preferences, behavior, and pain points, resulting in a product that aligns with user expectations. Thus, this research not only follows the proven effective HCD methodology but also focuses on developing an online sales system specifically tailored to the needs of CV Bello Design, distinguishing it from previous studies that were more general.

Human-Centered Design can be applied to a wide range of products, from digital to physical [5]. A relevant case study on the development of the Thriftdoor website using the HCD approach [6] resulted in a prototype that was evaluated using a questionnaire. The study found that 50.5% of 107 respondents rated the user interface as good, while 49.5% rated it as fairly good. The relevance of this study lies in the shared methodology of using HCD for system and interface design, highlighting its effectiveness in creating user-centered solutions. Research [7] used HE as an evaluation method for a game application. Research by [8] also employed Heuristic Evaluation (HE) and Think Aloud (TA) methods to improve user experience, demonstrating the effectiveness of these evaluation techniques. In their study, HE required 3 to 5 evaluators, while TA involved 10 respondents, highlighting the depth of user testing needed for thorough evaluation. A similar approach was used to assess the usability of the Padiciti mobile application [9], where 40 priority issues were identified using both Think Aloud and Heuristic Evaluation methods.

The main difference between this study and previous work is the addition of quantitative metrics: effectiveness measured by task success rate, and efficiency measured by time-based efficiency. User satisfaction is evaluated qualitatively through Retrospective Think-Aloud (RTA), a brief interview after participants complete task scenarios on the prototype. Beyond the user perspective, this study also conduct Heuristic Evaluation (HE) by experts to identify heuristic violations and recommend improvements, thereby covering both user and expert viewpoints. This study aims to map needs and pain points in the manual processm, design a front-end sales interface based on user findings, and evaluate usability (effectiveness, efficiency, satisfaction) while identifying heuristic issues for improvement. Research questions: (RQ1) How is the front-end design of a 3D asset sales system implemented using the Human-Centered Design approach? (RQ2) What are the usability evaluation results using Heuristic Evaluation and Retrospective Think-Aloud for the front-end design of the 3D asset sales system?

2. Method

Human Centered Design is an approach that focuses on human-centered solutions at every stage of the design process. [10]. Its basic principles include a human-centered focus, where users are always considered because their interaction with the product will determine the success of achieving the goal in addition, it is important to find the core problem and solve it first so that other problems can be addressed. Each part of this process is part of a larger system, so it should not just be stuck on one aspect of the user experience, but rather should look at the overall picture. Validating the design through user testing is also very important, as their feedback will be used to improve the design. Human Centered Design puts the user at the center of the design, starting with understanding their needs and problems [4]. The research flow used in this study can be seen in Figure 1.

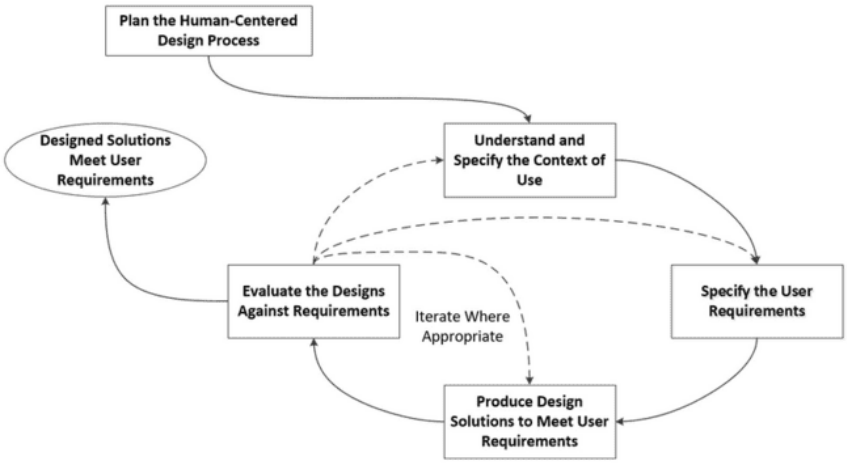


Figure 1. Research Flow

1) Plan the Human-Centered Design Process

The Human-Centered Design Process plan consists of two stages. The first stage is observation and interview, where direct observations are made at the work site, and interviews are conducted with the company owner, employees, and potential users who have transacted at Bellodesign. Interviews were conducted with the owner of CV Bello Design, employees, and four customers who had previously purchased 3D assets. Ten questions were prepared to explore the needs of users, owners, and admins. Interviews were formative to map initial needs in early HCD stage. Interviews were conducted in a formative manner to map initial needs during the early stage of HCD. Purposive sampling was applied to key roles such as the owner to elicit business goals, policies, and risks, and the staff to capture operational workflows and daily constraints, while simple random sampling was applied to four customers drawn from the most recent buyer list to elicit their purchasing experiences covering flow, barriers, and preferences. A small sample can be adequate when the research focus is specific, informants are relevant, and interviews are in depth, which aligns with the information power principle in qualitative studies [11]. In early formative usability design contexts, classic literature also shows that most major issues typically emerge with a small number of participants, about five to eight users [12], [13]. Random selection of customers reduces selection bias, and the combined perspectives of the owner, staff, and customers provide sufficient information to strengthen the basis for early design decisions before subsequent iterations. The second stage is the Literature Study, which aims to obtain a theoretical foundation through references such as books, journals, and related articles. Some of the topics used as references include the Human-Centered Design (HCD) method, Heuristic Evaluation, Think Aloud, comparisons between HCD and UCD, and design principles.

2) Understand and Specify the Context of Use

At the Understand and Specify the Context of Use stage, information about users of the asset-sales system is analyzed. The data collected cover user characteristics, tasks, goals, needs, and the system use environment. The outcome of this analysis is the creation of personas that support design solution development. The steps to create personas include collecting the necessary data, summarizing data from participants, transferring the data into a persona format, and adding fictional names and photos to the personas. In addition, idea prioritization is conducted in a simple manner by grouping interview and observation findings according to similar issues. Priority is assigned to themes that appear most frequently and have the greatest impact on completing core purchase tasks, with high-impact and low-effort items placed at the front of the implementation queue.

3) Specify the User Requirements

In the Specify User Requirements stage, user requirements and website functionalities are identified and specified. These requirements serve as the basis for subsequent design decisions. Observation techniques are employed to directly examine users and their environments [10]. The

final output of this stage is a user-flow diagram that depicts the sequence of user interactions with the system [14].

4) Produce Design Solutions to Meet User Requirements

At the Produce Design Solutions to Meet User Requirements stage, the system design process was carried out in detail based on the previously defined user requirements using a Human-Centered Design approach. The design covered all aspects of the user interface and focused on front-end development. It was first realized as a high-fidelity prototype such as covering layout, visual hierarchy, interactions, and microcopy, and then implemented as a front-end interface using HTML and CSS to enable more realistic testing. The resulting system design subsequently became the subject of the next stage, namely the evaluation of the design results. A single design iteration was conducted to follow up on the initial findings.

5) Evaluate The Design Against Requirements

The At the Evaluate the Designs Against Requirements stage, an initial evaluation of the designed interface was conducted. The results were used to identify usability issues and refine the specification of user requirements. The evaluation included user testing that measured the three ISO 9241-11 usability aspects, namely effectiveness, efficiency, and satisfaction. Effectiveness was quantified using task success rate. Efficiency was quantified using time-based efficiency. User satisfaction was gathered qualitatively through Retrospective Think-Aloud (RTA). Participants were divided into two role-based groups namely admin and customer and selected using purposive sampling [15]. The admin group consisted of two respondents, while the customer group included eight respondents. In addition to user testing, expert assessment was carried out through Heuristic Evaluation (HE) to complement the findings and provide a more comprehensive appraisal [16].

6) Designed solution meet user requirements

After obtaining the results from the evaluation phase, the next step is to refine the interface based on the data gathered during the evaluation. This refinement process will involve addressing any usability issues identified and incorporating user feedback to enhance overall functionality and user experience. Following these refinements, a focus group discussion was conducted with customer and admin respondents to validate the design changes, confirm that they resolved the observed issues, and capture any remaining suggestions. These improvements are the final outcome, ensuring a seamless, user-aligned system.

3. Result

3.1 Results Plan the Human-Centered Design Process

In the Plan the Human-Centered Design Process phase, observations and interviews are conducted. The observations focus on the Bello Design website and their office workspace, while interviews are held with six people: four customers who have purchased 3D assets and two members of BelloDesign namely the owner and an employee. These interviews yield functional and non-functional data, which are then transformed into user personas in the next phase, Understand and Specify the Context of Use. The goal of this step is to ensure that the system design aligns with user needs and behaviors. Findings from the observations and interviews are documented in a requirements sheet, then coded and thematically grouped (search and filtering, product information, 3D preview, checkout and payment, order status), briefly validated with the informants, and used as the basis for developing personas, user flows, and test criteria for the subsequent stage.

3.2 Results Understand and Specify the Context of Use

The initial stage in understanding the needs of potential users, namely understanding and specifying the context of use, begins with building user personas. This process is crucial in designing a website because it helps explore the needs, goals, and behaviors of users. By creating user personas, the design team can develop a more optimized and user-focused website, thereby improving the overall user experience, as summarized in Table 1.

Table 1. Collection of User Persona Data Results

User	Core Needs
U1	• Shipping by email • Multiple payment options • Customer service available
U2	• Easy purchase process • Detailed information and verification • Efficient delivery and access • Multiple payment options
U3	• Transaction security • Interactive 3D preview feature • Various payment options
U4	• Detailed features, variety options, and customer support • Flexible payment options • Variety of 3D asset types
U5	• Simple and easy to understand interface • Intuitive and hassle-free system • Focus on simplicity and user-friendliness • Flexible payment options
U6	• Simple interface and easy to understand navigation • Security and reliable payment methods • Advanced search features and fast purchase process

This table helps the designer understand the various user needs, so as to design an interface that is more responsive and in line with user expectations. For example, U1 and U2's need for a variety of payment options and efficient delivery should be integrated into the checkout process. In addition, attention to transaction security (U3) and a simple interface (U5 and U6) are essential for creating a positive user experience. By understanding the core needs of each persona, the designer can ensure that the front-end design meets user expectations and creates an interface that is not only functional but also comfortable to use.

3.3 Results Specify the User Requirements

Findings from personas U1–U6 were grouped thematically and then prioritized based on their frequency of occurrence and their impact on core tasks such as product discovery, evaluation, checkout, and post-purchase. The priorities were translated into concrete features: multiple payment methods with consistent currency symbols and required-field indicators; delivery via email with secure download links and a transaction history; clear product specifications and licensing; security badges and concise cancellation policies; a three- to four-step flow with clear visual hierarchy and microcopy; search and filtering by asset type, format, category, and price; a 3D viewer; and an FAQ and contact channel. Requirement traceability was maintained by mapping from persona to theme, to feature, to task scenario, and to evaluation metrics such as success rate, time-based efficiency, and RTA feedback.

The prioritized outcomes were then elaborated into user flows for customers and admins. The customer flow covers finding and filtering assets, reviewing details and 3D previews, adding items to the cart, choosing a payment method, completing checkout, and receiving download access via email as well as viewing transaction history. The admin flow covers managing the asset catalog and product information, monitoring orders, verifying payments, sending download access, and reviewing feedback for interface improvements. This diagram is a visual representation that shows the user's journey when interacting with the product, including navigation, choices, actions, and pages visited.

- User Flow Diagram Admin

The figure 2 shows the user flow for the Admin view in the design asset sales system. Users who do not have an account must create one before they can login. Upon successful login, users are directed to the dashboard, where they can manage data or logout. If managing data, users can perform CRUD operations or view transaction history. The managed data will be stored in the database.

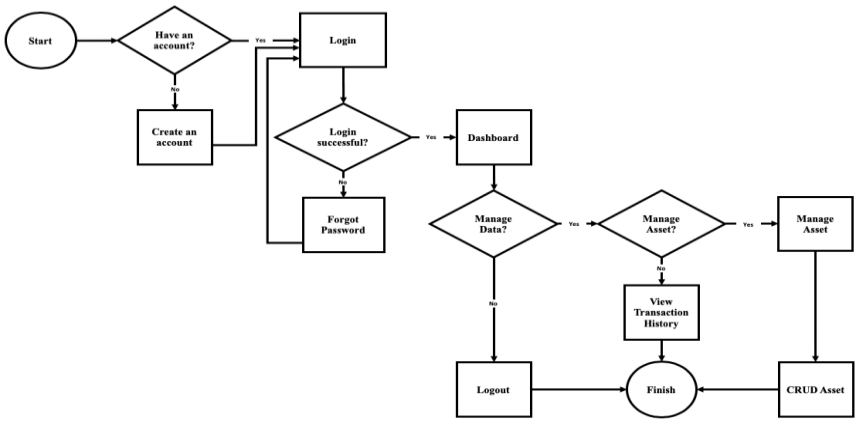


Figure 2. User Flow Admin

- User Flow Diagram Customer

The figure 3 shows the user flow for the customer view in the design asset sales system. Customers are directly directed to the dashboard to select an asset. After selecting, they proceed to checkout and fill out the buyer identity form. After that, the customer selects a payment method, and the system verifies the payment via email. If the payment is successful, a drive link with the design asset will be sent to the customer's email for download; if it fails, the transaction will be canceled.

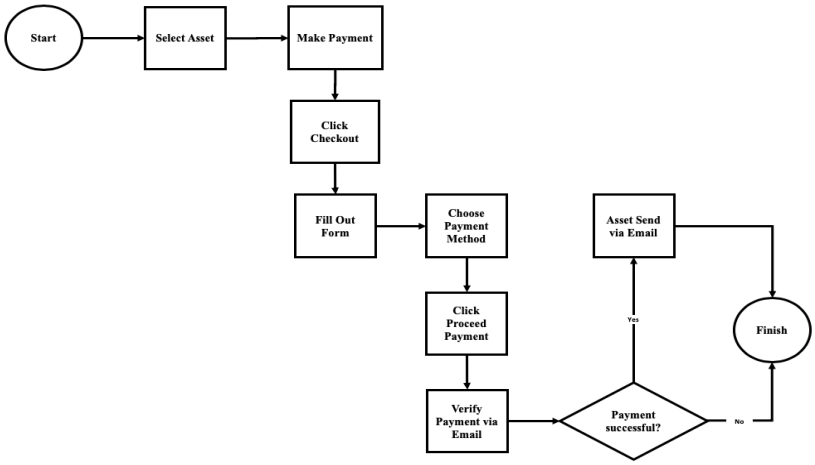


Figure 3. Customer User Flow

3.4 Results Produce Design Solutions to Meet User Requirements

The results of the front-end design, which aims to meet user needs, are based on the stages of determining the context of use and requirements specification. From these two stages, functional and non-functional requirements are obtained through interviews, user personas, and user flowcharts. After the data is collected, the next step is to come up with a design solution. The system offers two types of

front-end: for admins and customers. The admin front-end features 3D asset data management, including data entry and payment history monitoring. Meanwhile, the customer front-end is designed to provide an easy 3D asset purchasing experience, allowing users to search, select, and perform transactions smoothly.

1) Admin Front-End Design
   - Login

     On the admin login page, users are prompted to enter their previously registered email and password through the sign-up feature. This page also provides access to dashboard features through "login to dashboard," a "recover password" option to recover a forgotten password, and a "sign-up" feature to register a new account. The admin login page can be seen in Figure 4.

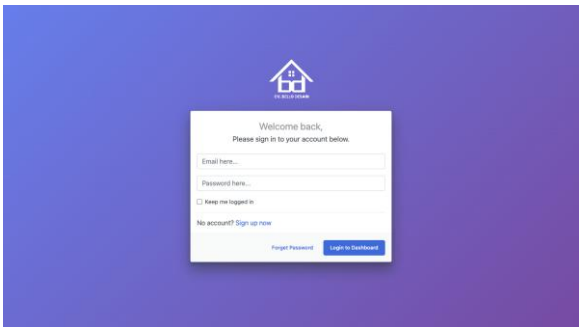


Figure 4. Login Page

   - Sign-Up

     The sign-up page serves to create an admin account, where users fill out a form with their email, username, password, and password repetition, and agree to the terms and conditions. This page also gives access to features such as sign-in, recover password, and create a new account. The admin sign-up page can be seen in Figure 5.

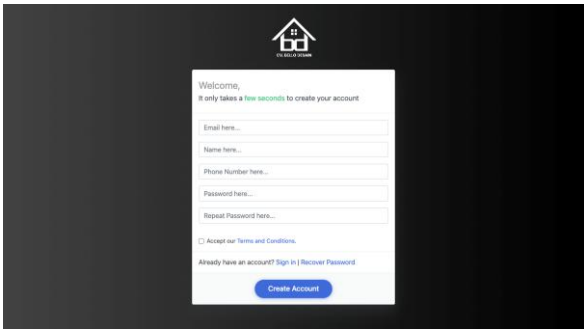


Figure 5. Sign-up Page

   - Dashboard

     The Dashboard page displays information about 3D assets that have been inputted. On this page there are features such as data input, edit data, delete data, view data, payment history, and logout. The admin dashboard page can be seen in Figure 6.

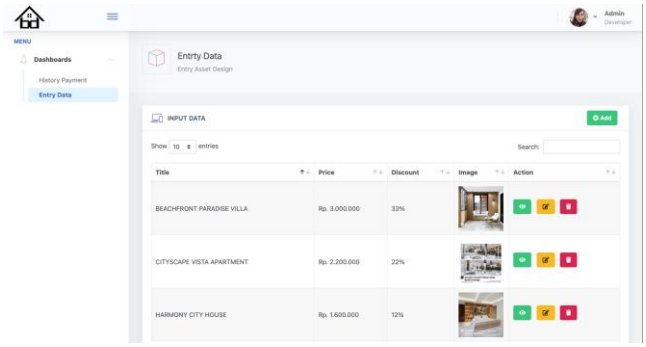


Figure 6. Dashboard Page

- Data Input

The data input page serves to input 3D assets to be sold. Users are required to fill in the form with information such as title, price, discount, drive link, product details, and images. Meanwhile, additional information and further details are optional. The admin data input page can be seen in Figure 7.

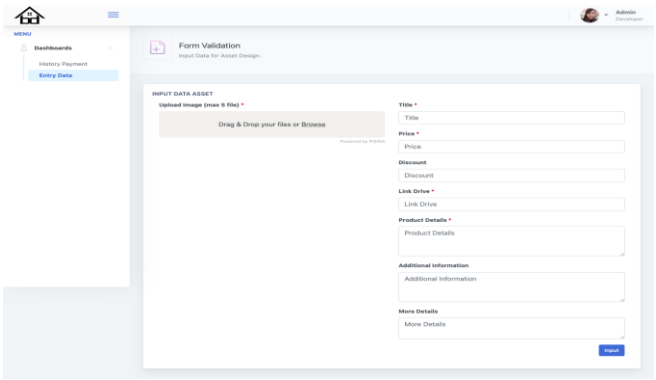


Figure 7. Input Data Page

- Payment History

The payment history page functions to view the status of 3D asset purchase transactions. The information displayed includes time and date, order ID, transaction type, payment type used, transaction status, asset selling price, and email of the user who made the purchase. The admin payment history page can be seen in Figure 8.

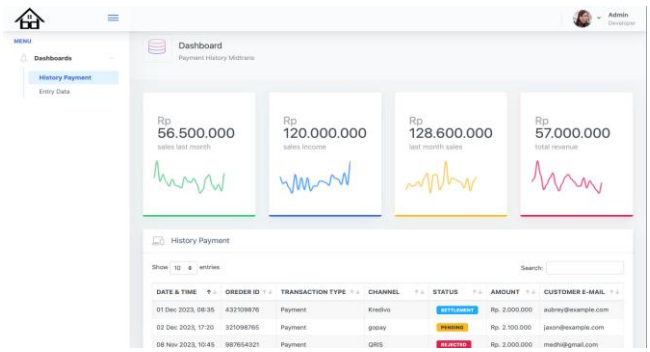


Figure 8. Payment History Page

2) Customer Front-End Design

- Login

On the admin login page, users are prompted to enter their previously registered email and password through the sign-up feature. This page also provides access to dashboard features through "login to dashboard," a "recover password" option to recover a forgotten password, and a "sign-up" feature to register a new account. The customer login page can be seen in Figure 9.

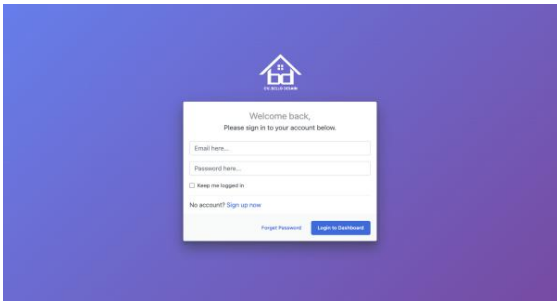


Figure 9. Login Page

- Sign-Up

The sign-up page serves to create an admin account, where users fill out a form with their email, username, password, and password repetition, and agree to the terms and conditions. This page also gives access to features such as sign-in, recover password, and create a new account. The customer sign-up page can be seen in Figure 10.

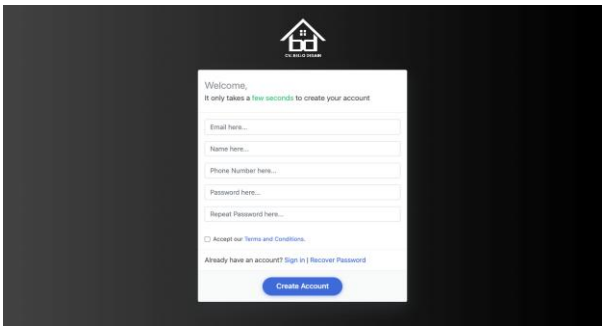


Figure 10. Sign-up Page

- Selecting an Asset

The 3D asset page serves to display 3D assets for sale. This page is equipped with a search feature to make it easier for users to find the desired asset. The customer asset page can be seen in Figure 11.

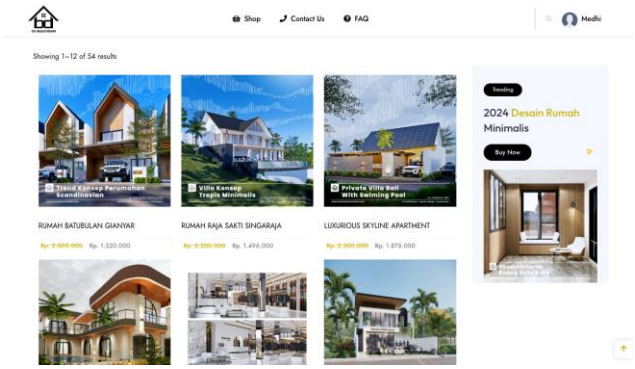


Figure 11. Asset Page

- Checkout

The checkout page serves to continue the process after the user has selected a 3D asset. On this page, users will receive information about the selected asset, including asset name, price, image, product details, additional information, and further details. In addition, there are also product recommendations for popular or frequently purchased 3D assets. The customer checkout page can be seen in Figure 12.

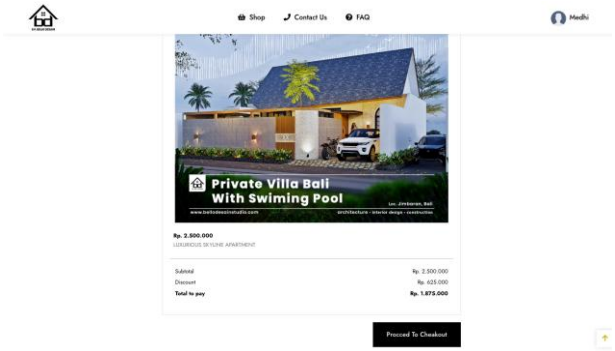


Figure 12. Checkout Page

- Payment

The payment page aims to select a payment method. Users are given options such as credit cards and other payment methods, which include virtual accounts, e-wallets, and over the counter. After selecting one of the methods, the system will process it and send a verification to the user's email. The customer payment page can be seen in Figure 13.

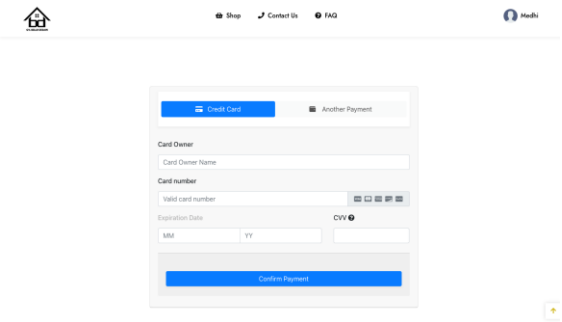


Figure 12. Payment Page

- Contact

The contact page displays the number that can be contacted and the company address. This page is also equipped with a feature that directs users to Indrabellodesign's main website. The customer contact page can be seen in Figure 14.

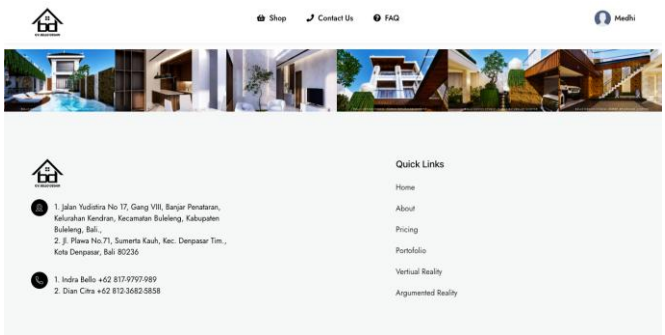


Figure 13. Contact Page

3.5 Results Evaluate the Design Against Requirements

3.5.1 Effectiveness

Effectiveness was calculated as the number of successful attempts divided by the total number of attempts, multiplied by 100 percent. Scores were assigned as follows: successful = 1, partially successful = 0.5, and failed = 0. In the customer group, the evaluation covered four tasks and involved eight respondents, yielding 32 task attempts. Task 1 (selecting an asset) was completed successfully by all respondents. Task 2 (checkout) was partially successful for respondents R3 and R7. Task 3 (payment) was partially successful for respondents R6 and R7. Task 4 (finding contact information) was completed successfully by all respondents. Apart from those partial outcomes, all other attempts were successful. In total, there were 28 successful tasks and 4 partially successful tasks, which is equivalent to 30 successes out of 32 attempts. The resulting effectiveness was 93.75 %, classified as effective. In the admin group, the evaluation covered ten tasks and involved two respondents, yielding 20 task attempts. Two tasks were rated partially successful by respondent R2 — account registration (Task 1) and adding asset data (Task 4) — while the remaining tasks were successful. With the assigned weights, this equals 19 successes out of 20 attempts, giving an effectiveness of 95 %, classified as highly effective.

3.5.2 Efficiency

Efficiency was measured by the time required to complete each task using the time-based efficiency formula. For the customer group, the overall average was 0.02948 goals/second across four tasks. These values mean that, on average, customers complete 1 goal in 33.9 seconds (1 ÷ 0.02948 = 33.9). For the admin group, the overall average was 0.00939 goals/second across ten tasks. These values mean that, on average, admins complete 1 goal in 106.5 seconds (1 ÷ 0.00939 = 106.5). A goal is a successfully completed task. The higher the goals-per-second value, the faster participants complete tasks. During testing, admin respondent R2 required considerably more time on Task 1 (account registration) and Task 4 (adding data) due to errors in task execution and device-related issues. Based on these results and constraints, the customer flow is approximately 3.1× faster than the admin flow (33.9 seconds vs. 106.5 seconds per goal), which is reasonable because admin tasks tend to be heavier (more inputs/validation) and were also hindered by device-related issues.

3.5.3 User Satisfaction

To assess user satisfaction, follow-up interviews were conducted after participants completed the task scenarios. The method used was Retrospective Think-Aloud (RTA). RTA is a usability technique in which participants first perform tasks without verbalizing, then immediately afterward review what they did—often with the aid of screen recordings or notes—and verbalize their thoughts, feelings, and difficulties. This approach reduces disruption to task performance while still capturing rich qualitative insights. Based on the RTA results from the customer side, R1 suggested reducing animation in the search bar; R2, R5, and R7 wanted an easier way to select a payment method; R3 and R8 recommended clearer asset visualization and improved descriptions for credit-card payments; and R6 suggested adding icons to the navigation bar (navbar) for greater convenience. From the admin side, admin respondent R9 considered the term “password recovery” inappropriate, and admin respondent R2 wanted the discount field to be optional.

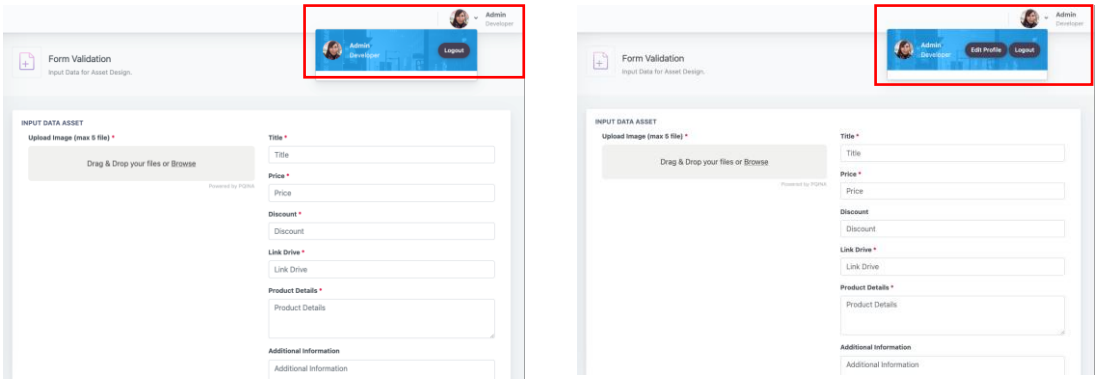
3.5.4 Heuristic Evaluation Testing

This Heuristic Evaluation (HE) was conducted to obtain expert assessments of the website’s appearance and design flow, categorized by severity. The feedback helped improve the user interface. The evaluation involved three UI/UX experts. Based on the HE results, the experts recommended several improvements, especially those rated severity 3 (major usability problem) and severity 4 (usability catastrophe), including: (H1) highlighting all mandatory form fields and improving form-input feedback, (H3) analyzing the need for and presence of a login feature on user-facing pages, (H4)

ensuring consistent currency symbols, refining the admin interface (including property-data forms), repositioning the delete button in the property-photo preview to be more intuitive (H7), adding a transaction-detail menu, tracking transaction status on the admin page, providing user transaction history, a profile-edit feature, and saved searches, and (H10) providing an FAQ and help to facilitate problem solving.

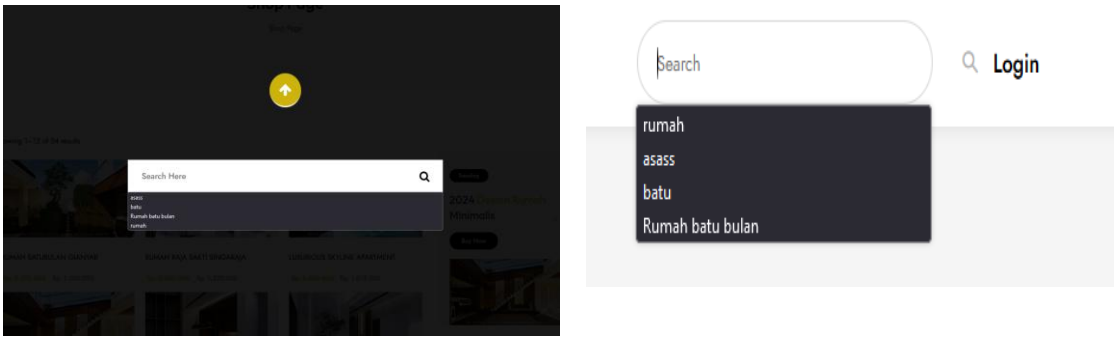
3.6 Design Solution Meet User Requirements

A series of interface improvements were implemented based on findings from task scenario testing, Retrospective Think-Aloud, and Heuristic Evaluation. On the customer side, a login feature, purchase history, an FAQ page, and a saved-search feature were added, excessive animation in the search bar was reduced, the payment button's visibility was improved, asset images on the dashboard were differentiated for clarity, and the navbar was updated with icons to ease navigation. On the admin side, currency-symbol consistency was standardized, the product view page was refined, a profile-edit feature was added (also available to customers), the term "password recovery" was replaced with "forgot password" for better clarity, and the discount field in the form was made optional because it is not always needed. Figures 15, 16, 17, 18, and 19 below are examples of design improvements that were implemented.



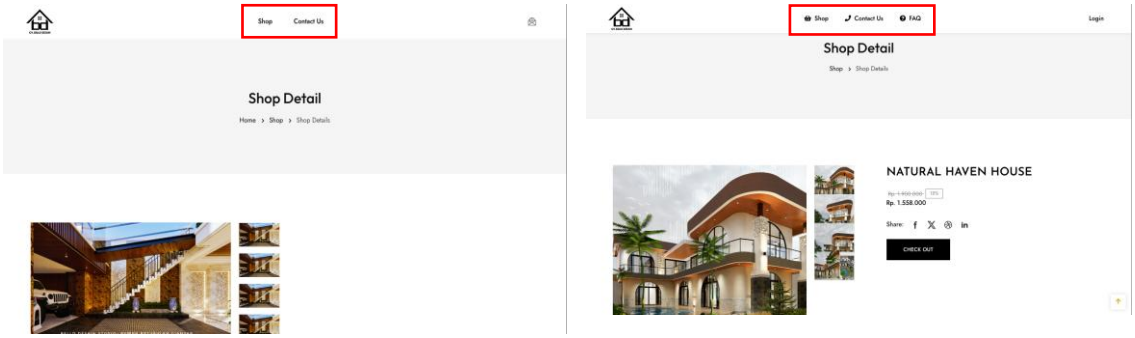
Before After

Figure 15. Edit Profile



Before After

Figure 16. Search Bar



Before After

Figure 17. Nav Bar



Before After

Figure 18. Transaction History

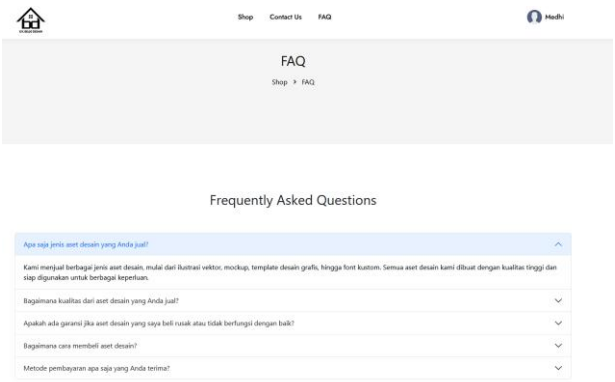


Figure 19. Product View

After the design improvements, a focus group discussion was conducted with both users and experts to gather their opinions on the changes. The results indicate that the design aligns with user needs and meets heuristic criteria.

4 Discussion

This study applied the Human-Centered Design (HCD) approach in developing the front-end of an asset sales system for CV. Bellodesign. The results show a high level of usability, with an effectiveness rate of 93.75% for users and 95% for administrators, indicating that most tasks could be successfully completed by participants. Efficiency was also strong, with an average of 0.02948 goals/second for users and 0.00939 goals/second for administrators. These findings demonstrate that the developed system effectively supports users in achieving their goals and aligns with the definition

of usability according to ISO 9241-11 [4]. The achieved levels of effectiveness and efficiency were made possible through the systematic application of HCD principles throughout all design stages. By involving users from the outset through interviews, persona development, and user flow mapping, the interface—particularly for both customers and administrators—was ensured to align with real user needs. This reinforces the findings [3], which emphasize that continuous user involvement enhances system usability and acceptance. In addition, the interface design's clear visual hierarchy and simplified flow helped minimize user errors and improve their understanding of the system, consistent with the Nielsen Norman Group's *Minimize Cognitive Load* guidelines [17].

The findings of this study are also consistent with previous research that employed the HCD framework in digital platform development, such as studies [7] [18] both of which demonstrated that combining HCD with Heuristic Evaluation provides insights from both user and expert perspectives to enhance interface clarity and user satisfaction. Several improvements were implemented, including the addition of login, FAQ, and saved search features, as well as refinements in currency symbol consistency and transaction history display. This demonstrates that the combination of user-based and expert-based evaluations yields more comprehensive results in improving interface quality. Practically, this study shows that applying HCD principles within small and medium enterprises (SMEs) can enhance digital transaction efficiency and build customer trust in online platforms. By designing interfaces that focus on user needs, the purchasing process becomes faster, simpler, and error-free. Theoretically, this study contributes to the HCD literature by providing empirical evidence that usability metrics—such as effectiveness, efficiency, and satisfaction—can serve as measurable indicators for iterative design validation [19].

5 Conclusion

This study applied a Human-Centered Design process that spanned the planning stage with interviews, the understanding and specification stage through personas, the requirements specification stage via user flows, and the production of design solutions for the admin and customer front ends. Usability testing showed high effectiveness: 93.75% for customers and 95% for admins. Time-based efficiency reached 0.02948 goals/second for customers and 0.00939 goals/second for admins. RTA findings emphasized reducing search-bar animation, clarifying payment selection, sharpening asset visuals and credit-card descriptions, adding icons to the navbar, changing the term to "forgot password", and making the discount field optional. HE identified priority issues under H1, H3, H4, H7, and H10 (some with severity 3–4). As follow-up, improvements included adding customer login, purchase history, an FAQ, and saved search, standardizing currency symbols, refining the admin product view, adding edit-profile on both sides, reducing search animation, increasing payment-button visibility, differentiating dashboard asset images, updating the navbar with icons, renaming "password recovery" to "forgot password", and making the discount field optional. Overall, these changes align the system with user needs and heuristic principles, delivering measurable gains in task success and completion speed.

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