



Laravel-Based Career Portal for DISNAKER ESDM Bali

I Kadek Agus Surya
Candra*

Institut Teknologi dan Bisnis
STIKOM Bali,
Indonesia

Riski Harisandri

Institut Teknologi dan Bisnis
STIKOM Bali,
Indonesia

I Gede Harsemadi

Institut Teknologi dan Bisnis
STIKOM Bali,
Indonesia

I Made Bhaskara
Gautama

Institut Teknologi dan Bisnis
STIKOM Bali,
Indonesia

***Corresponding author:**

I Kadek Agus Surya Candra, Institut
Teknologi dan Bisnis STIKOM Bali, Indonesia.
[✉220030670@stikom-bali.ac.id](mailto:220030670@stikom-bali.ac.id)

Article Info:

Article history:

Received: July 17, 2026

Revised: August 27, 2026

Accepted: August 30, 2026

Available Online: September 11,
2026

Keywords:

Black Box Testing; Career Portal;
Information System; Laravel;
Usability Evaluation.



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Abstract

Background: The Department of Manpower and Energy and Mineral Resources (*DISNAKER ESDM*) of Bali disseminated training and vacancy information through channels that were not yet integrated, limiting centralized public access.

Objective: This study developed a *Laravel*-based career portal and evaluated its functional conformity and perceived usability.

Methods: A system-development research design employed the *Waterfall* stages of requirements analysis, design, development, testing, and maintenance planning. The portal was developed using PHP with *Laravel*, HTML, CSS, JavaScript, and MySQL. Functional conformity was examined through 30 black-box test scenarios. Perceived usability was assessed following task-based use by 45 participants (35 job seekers, 7 company representatives, and 3 administrators) using a 15-item, positively worded Career Portal Usability Questionnaire. Because this instrument differs from the standard 10-item System Usability Scale (SUS), its normalized 0–100 index was interpreted descriptively and not as a standard SUS score.

Results: All 30 functional test scenarios produced the expected outputs in the local test environment. The usability index had a mean of 79.70, a median of 76.50, a standard deviation of 11.38, and a range of 60–100. These findings indicate favorable perceived usability among the participants, although the unbalanced role distribution limits role-specific generalizability.

Conclusion: The prototype centralized training, vacancy, application, certificate, reward, and administrative functions and met the specified functional test scenarios. Further validation should use a psychometrically tested instrument, balanced role samples, independent acceptance testing, and evaluations of security, performance, compatibility, and public deployment.

To cite this article: Candra, I. K. A. S., Harisandri, R., Harsemadi, I. G., & Gautama, I. M. B. (2026). Laravel-Based Career Portal for DISNAKER ESDM Bali. *Journal of Business, Social and Technology*, 7(4), 1812-1830. <https://doi.org/10.59261/bustechno.v7i4.798>

INTRODUCTION

Current information technology is advancing rapidly and has a major impact on various aspects of life, including public services. The use of web-based technology enables information to be delivered more quickly and effectively and to be accessed by the public anytime and anywhere (Galushi & Malatji, 2022). In an organization, information systems play an important role in supporting data management and the structured dissemination of information. An information system itself is a combination of people, hardware, software, communication networks, and databases used to collect, process, store, and disseminate information within an organization to support decision-making processes.

The Department of Manpower and Energy and Mineral Resources (DISNAKER ESDM) of Bali is a government institution responsible for providing public services related to employment. One form of service provided is the dissemination of information regarding job training, workforce competency development, and job vacancies. This information is particularly important for the public, especially job seekers who need access to various employment opportunities and training programs that can improve their skills. However, in practice, the dissemination of information related to training and job vacancies is not yet optimally integrated, resulting in difficulties for the public in obtaining information quickly and accurately.

In addition, limitations in the available information media make information dissemination less effective and prevent it from reaching the broader community (Hargittai, 2018; Verwiebe & Hagemann, 2025). Many people are unaware of available training programs or job opportunities because this information has not been centrally disseminated through a digital system. Therefore, a system capable of managing and delivering information in an integrated manner is needed so that the public can easily access various types of employment-related information.

One solution that can be implemented is the development of a web-based career portal information system (Garvilles et al., 2026; Hamid et al., 2021). This system is designed to provide various types of information related to job training, job vacancies, and community competency development programs. Through this system, users can access information online through several main menus, such as Home, Training, Job Vacancies, Rewards, and About, as well as login and user registration features.

The career portal was designed to provide several training categories, including Information Technology, Design and Creative, Hospitality and Tourism, MSMEs and Entrepreneurship, Engineering and Manufacturing, Administration and Office, and Digital Marketing. During the initial implementation phase, however, only the Design and Creative category was active, offering training in areas such as mascot design, logo design, and digital illustration. The remaining categories were still under development and were therefore marked as coming soon. This condition indicates that, although the prototype had begun to centralize employment and training information, its service coverage had not yet been fully implemented.

The development of such an integrated platform is consistent with previous research on web-based career information systems. Khaliq et al. (2022) demonstrated that Laravel and MySQL can support the integration of job-vacancy publication and job-seeker access within a web-based career system. However, previous studies have primarily focused on system development and core employment functions, with limited attention to institution-specific integration and evaluation involving multiple user roles. From a broader digital-government perspective, Manoharan et al. (2021) further emphasized that effective public portals require more than online availability; they should also consider accessibility, security, useful content and services, and citizen-oriented engagement (Korde & Sukthankar, 2026).

Within the DISNAKER ESDM Bali context, the documented problem concerns the absence of a single career portal for centrally managing training and job-vacancy information. This limitation is also reflected in the prototype development stage, in which several training categories remained unavailable. Nevertheless, the available research data do not provide baseline measures of information requests, processing time, information reach, or user complaints before the portal was developed. Therefore, the urgency of this study lies primarily in the need to provide centralized access to employment information and role-based management functions, while claims regarding improvements in public-service effectiveness require further

evaluation using operational data after deployment.

Against this background, a research gap remains in the development and evaluation of an integrated Laravel-based public employment portal that accommodates job seekers, companies, and administrators within the specific service context of DISNAKER ESDM Bali. The novelty of this study is therefore contextual and architectural rather than algorithmic. The proposed portal integrates training, competency-development activities, certificates, rewards, job vacancies, applications, company approval, and administrative content management within a single role-based system. In this respect, the study extends previous career-system development research ([Garvilles et al., 2026](#); [Hamid et al., 2021](#); [Khaliq et al., 2022](#)) by incorporating a broader set of employment-related services and multiple user roles, while recognizing that further empirical validation in a production environment remains necessary.

Accordingly, this study aimed to develop a Laravel-based career portal that centralizes the specified employment-information functions and to evaluate its functional conformity and perceived usability. The study contributes a role-based prototype integrating training, job vacancies, applications, certificates, rewards, company functions, and administrative content management within the DISNAKER ESDM Bali service context. Consistent with the scope of the evaluation, the study does not claim improvements in public-service effectiveness, as such outcomes were not directly measured.

METHOD

This system-development study used the Waterfall model to produce and evaluate a web-based career portal. The development stages comprised requirements analysis, system design, development, functional testing, and preparation of a maintenance plan. The system was evaluated based on two outcomes that were measured in the study: functional conformity with predetermined black-box scenarios and participants' perceived usability. The research object was the delivery of job-training and job-vacancy information by DISNAKER ESDM Bali. Observations of the existing information-delivery process informed the functional requirements; the study did not measure pre-post service effectiveness or deploy the prototype to a public production server.

Waterfall Model

The Waterfall model organized the work sequentially from requirements analysis to design, development, and testing. Maintenance was limited to a post-evaluation plan because the prototype had not entered public production. Each stage produced an auditable output: identified user and functional needs; sitemap, flowchart, DFD, ERD, database, and interface designs; a locally executable Laravel prototype; and results from functional and perceived-usability evaluations ([Pargaonkar, 2023](#)).

Requirements (Needs Analysis)

The requirements-analysis stage identified the functions, information flows, and user needs that the career portal had to support ([Cheng et al., 2026](#); [Widodo et al., 2021](#)). Observations of the existing dissemination process were translated into requirements for centralized training information, vacancies, registration, applications, certificates, rewards, company access, and administrative content management. Completion of this stage was evidenced by the system models and functional scenarios presented in the subsequent sections.

Design (System Design)

The design stage was the system-design phase that aimed to describe the structure and architecture of the system before the development process was carried out ([Allen & Garlan, 1997](#); [Zhou et al., 2026](#)). System design was carried out to ensure that the system being built met user needs and had an organized structure. In this study, the system-design process included the creation of a sitemap, flowchart, Data Flow Diagram (DFD), Entity Relationship Diagram (ERD), and User Interface (UI) design.

Development (System Development)

The development stage was the system-implementation phase based on the design created in the previous stage. At this stage, the system was built using various programming technologies that supported web-based application development ([Lévano Caverio et al., 2025](#); [Pop & Altar, 2014](#)).

The programming languages used to develop this system included HTML, CSS, JavaScript, and PHP. The framework used was Laravel, which facilitated code-structure management. The database management system used was MySQL to store and manage data in the career portal system. In addition, the system was run using the Apache Web Server as a local server during the development process.

In the software-development process, the researcher used Visual Studio Code (VS Code) as an Integrated Development Environment (IDE) to write and manage program code. In addition, phpMyAdmin was used as a database client to manage the database structure and perform data-processing tasks in the system.

Testing (System Testing)

The testing stage was the system-testing phase conducted to ensure that the developed system operated according to user needs. System testing aimed to identify errors in the system and ensure that each feature functioned properly ([Baresi & Pezzè, 2006](#); [Marlowe et al., 2026](#)).

Functional testing used a black-box approach that compared user inputs and actions with predetermined expected outputs without examining the internal source-code structure. Thirty scenarios covered authentication, training, quizzes, certificates, rewards, vacancies, and administrative access. The scenarios were executed in the local development environment and recorded as valid when the observed output matched the expected result. The available research record did not identify an independent tester, test date, browser, device, or reproducible evidence log; accordingly, the results established scenario-level functional conformity only and did not constitute independent acceptance, security, performance, or compatibility testing.

In addition to functional testing, perceived usability was evaluated quantitatively after participants used the principal features. The study employed a 15-item Career Portal Usability Questionnaire with positively worded statements rather than the standard 10-item System Usability Scale (SUS). This distinction was necessary because the standard SUS has ten alternating positive and negative items and a specific scoring procedure ([Hertzum, 2026](#); [Lewis, 2018](#)).

Maintenance (System Maintenance)

Maintenance was not executed as a longitudinal operational phase because the prototype remained in local development and evaluation. The study therefore produced a maintenance plan covering defect correction, performance monitoring, security updates, completion of inactive training categories, and future feature enhancement. Actual maintenance outcomes must be assessed after deployment and sustained use.

Usability Evaluation

Perceived-usability evaluation examined participants' assessments of ease of understanding, navigation, interface organization, and principal feature use. Forty-five participants took part: 35 job seekers, 7 company representatives, and 3 administrators. Because the manuscript did not report a probability-sampling frame, the participants were treated as a role-based convenience sample recruited to represent the three available system roles. Inclusion required experience completing the relevant role-based tasks before answering the questionnaire. The sample size reflected the available evaluators during prototype testing rather than a statistical power calculation; consequently, the results were descriptive, and generalization was limited, especially for the company and administrator roles.

Participants evaluated the system only after attempting role-relevant tasks. Job seekers accessed the homepage, registration and login, training content, certificates, rewards, vacancies, and applications; company representatives examined vacancy and applicant-management functions; and administrators examined content- and account-management functions. This procedure linked each response to direct interaction with the prototype while recognizing that

not every participant used every role-restricted function.

Participants responded to 15 positively worded statements on a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). For each participant, one point was subtracted from every response, the 15 adjusted values were summed, and the total was multiplied by $100/(15 \times 4)$ to obtain a normalized 0–100 usability index. Descriptive analysis reported the mean, median, standard deviation, minimum, and maximum. Because the instrument was not the standard SUS and no item-level validity or reliability coefficients were reported, the index was interpreted only for this sample and was not compared with SUS benchmarks or adjective grades.

Design

The system design in this study was represented in the form of several diagram models to provide a systematic overview of the structure and operating mechanisms of the web-based Career Portal Information System being developed.

Sitemap

The sitemap was used as a structured list or plan of all pages on a website and helped visitors navigate the site more easily.

Figures 1–4 present the sitemap for guest, job-seeker, company, and administrator roles.

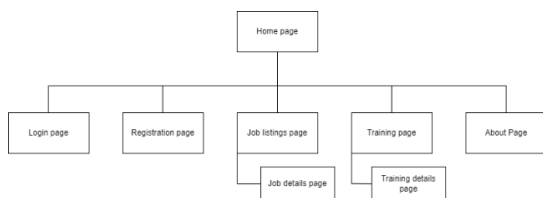


Figure 1. Guest Sitemap (before login)

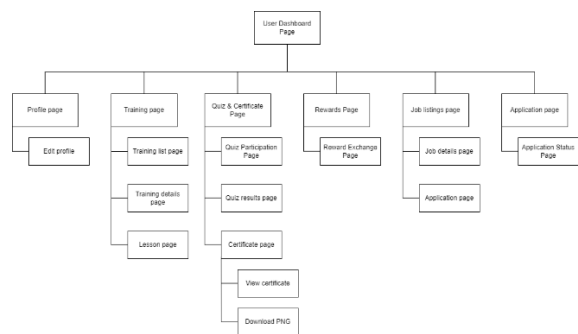


Figure 2. User Sitemap

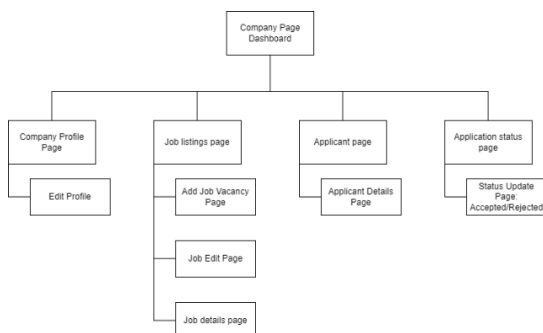


Figure 3. Company Sitemap

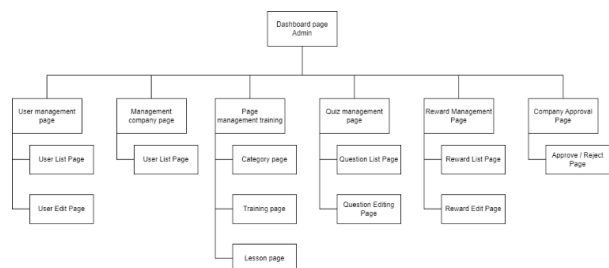


Figure 4. Admin Sitemap

Flowchart

The flowchart was used to visualize steps, workflows, or logical processes systematically.

Figures 5–12 present the principal process flowcharts for authentication, training, rewards, applications, vacancies, applicants, and company approval.

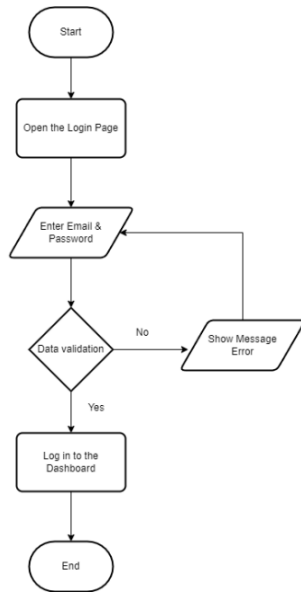


Figure 5. Login Process Flowchart

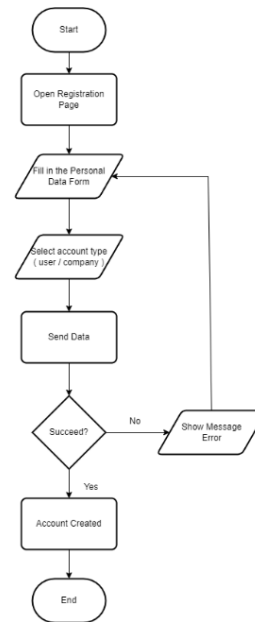


Figure 6. Registration Process Flowchart

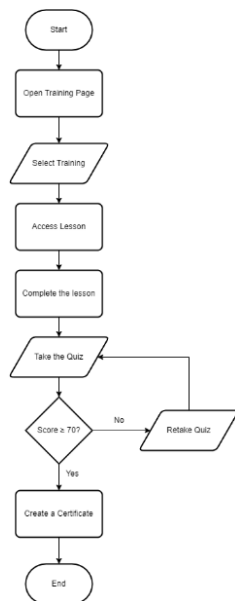


Figure 7. Join Training Flowchart

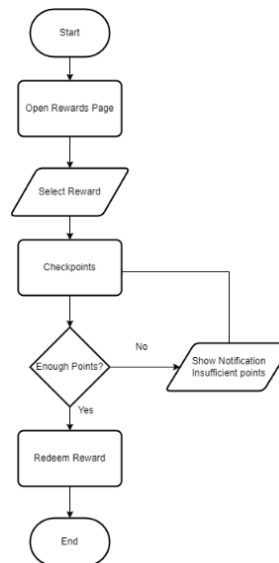


Figure 8. Reward Exchange Process Flowchart



Figure 9. Job Application Process Flowchart

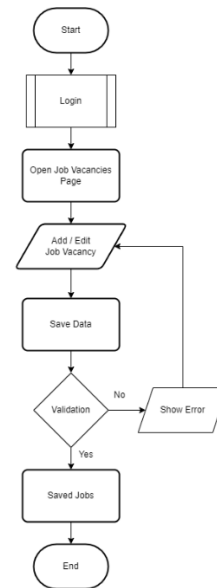


Figure 10. Manage Vacancy Process Flowchart

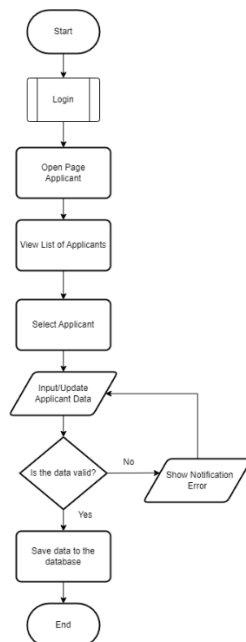


Figure 11. Manage Applicant Process Flowchart

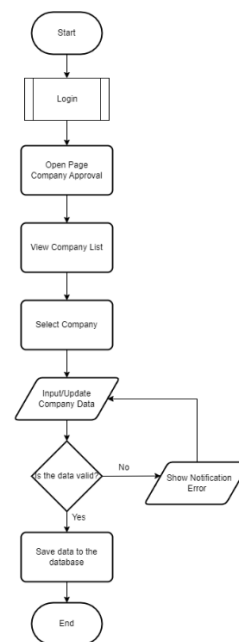


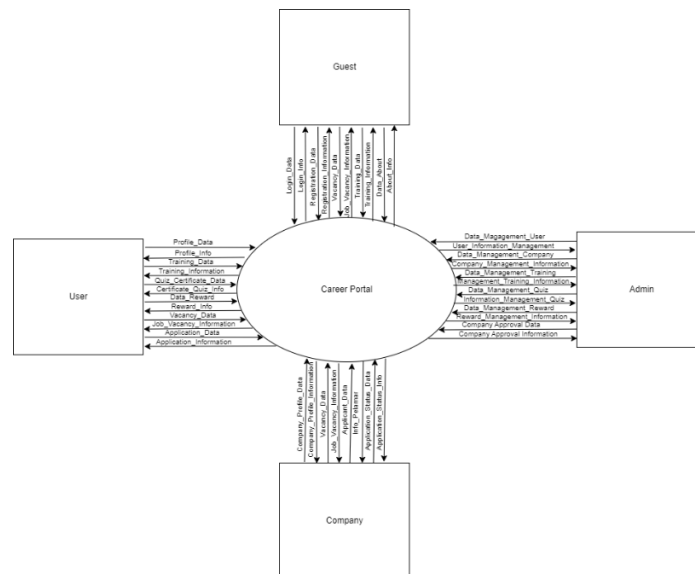
Figure 12. Company Approval Process Flowchart

Data Flow Diagram

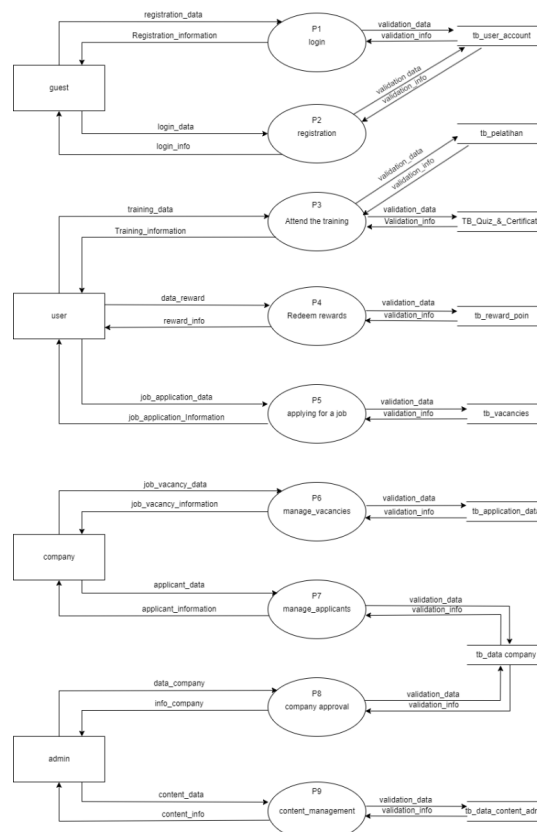
A Data Flow Diagram (DFD) was used to describe the flow of data and processes that occurred within a system and the entities involved in them (Tao & Kung, 1991; Wetter et al., 2022). System design using a Data Flow Diagram (DFD) was divided into several levels, starting from the highest level, which described the data flow in general, to the lowest level, which described the data flow in greater detail. The following presents the results of the Data Flow Diagram (DFD) design.

Context Diagram

Figure 13 presents the context diagram, showing the overall data flow between the computerized system and its external entities.



DFD Level 1



Database Design

Database design specified the data structures required by the career portal (Skavantzios & Link, 2025; Teorey et al., 1986). Figure 15 and the accompanying table structures describe the entities, relationships, attributes, and keys used for guest, job-seeker, company, and administrator data.

Entity Relationship Diagram (ERD)

Figure 15 presents the Entity Relationship Diagram (ERD) for the Laravel-based career portal at DISNAKER ESDM Bali. It models guest, job-seeker, company, and administrator entities and their one-to-many relationships.

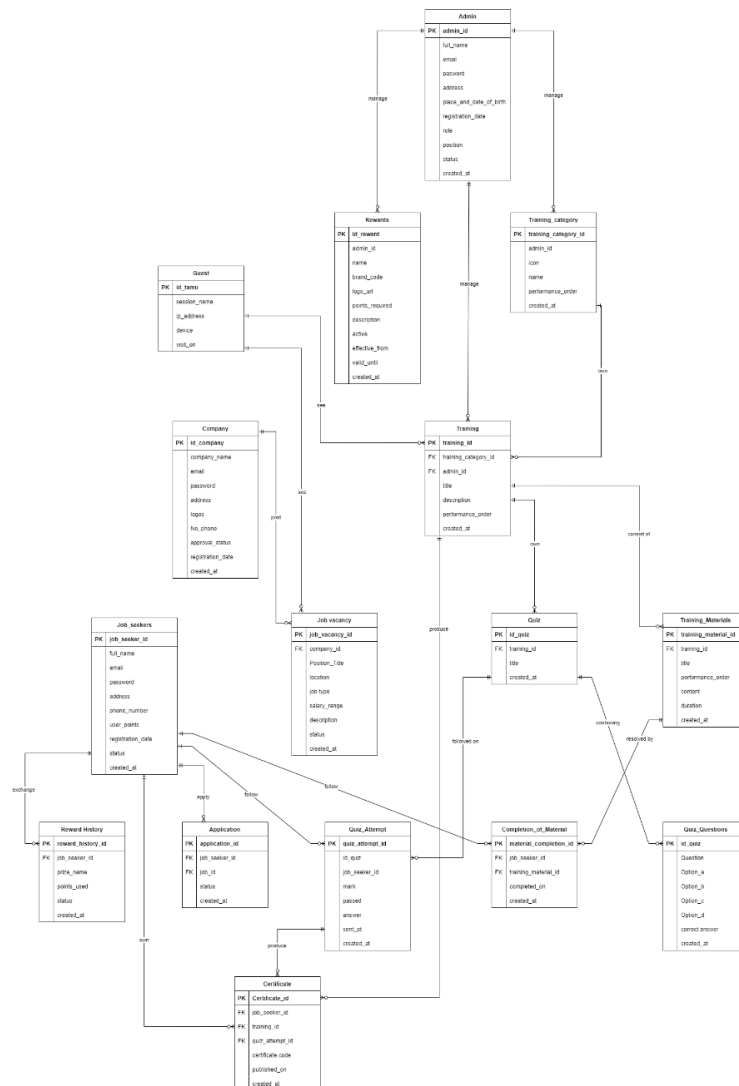


Figure 15. Entity Relationship Diagram (ERD)

Table Structure

The table structures define how career portal data are stored and related in the MySQL database. The following descriptions cover the guest, job-seeker, administrator, and company tables used by the Laravel-based career portal at DISNAKER ESDM Bali.

Guest Table

The guest table stores data related to visitors who access the career portal. The `id_guest` field serves as the primary key and uniquely identifies each visitor record. The stored attributes include visitor name, address, device information, pages visited, visit time, and record-creation time. These data support the monitoring and analysis of visitor activity within the career portal.

User Table

The user table stores data for registered job seekers who access the career portal. The `id_user` field serves as the primary key and uniquely identifies each registered user. The stored attributes include full name, email address, password, telephone number, address, date of birth, profile photo, accumulated points, account status, and registration and update timestamps. This table supports authentication, profile management, and role-based access to job-seeker functions.

Admin Table

The admin table stores data for administrators responsible for managing the career portal. The `id_admin` field serves as the primary key, while the relevant foreign keys establish relationships with associated records in other tables. The stored attributes include full name, email address, password, address, place and date of birth, role, position, account status, and registration and update timestamps. This table supports administrator authentication, authorization, and management functions.

Company Table

The company table stores data for companies registered in the career portal. The `id_company` field serves as the primary key, while `id_admin` functions as a foreign key linking company records to the relevant administrative data. The stored attributes include company name, email address, password, telephone number, address, logo, company description, business sector, approval status, and registration and update timestamps. This table supports company authentication, profile management, approval status, vacancy publication, and applicant-management functions.

Black Box Testing

Black-box testing aimed to identify incorrect functions, interface errors, and data-structure errors. This testing focused solely on conformity between input data and system output and on ensuring that the user interface (UI) functioned properly.

Table 1

Black Box Testing

No	Testing	Test Case	Expected Result	Result	Conclusion
1	Authentication – Login with valid data	Email: admin@gmail.com, Password: password → click Login	Redirect to dashboard according to role	Valid	Valid
2	Authentication – Login with invalid password	Valid email, password: wrong123 → click Login	Display message “Email or password is incorrect”, no redirect	Valid	Valid
3	Authentication – Login with unregistered email	Email: notfound@mail.com, password: anything → click Login	Display error message, form not processed	Valid	Valid
4	Authentication – Login with empty email	Email left empty, password filled → click Login	HTML5 validation prevents submit, form not sent	Valid	Valid
5	Authentication – Register as new user	Fill all valid fields, role: user → click Register	Account successfully created, redirect to user dashboard	Valid	Valid
6	Authentication – Register with existing email	Email already in DB, fill other fields valid	Display message “email already used”, no new account created	Valid	Valid
7	Authentication – Register with mismatched password	Password: abc12345, Confirm: xyz99999	Display password confirmation does not match	Valid	Valid
8	Authentication – Register as company	Fill valid data, role: company → click Register	Account created with company_status: pending, redirect to company dashboard	Valid	Valid

No	Testing	Test Case	Expected Result	Result	Conclusion
9	Authentication – Logout	User logged in → click Logout	Session deleted, redirect to homepage with message “You have been logged out”	Valid	Valid
10	Training Access – training category page	Click Training menu → select “Design & Creative” category	Category page displayed with list of published training	Valid	Valid
11	Training Access – training detail	Click one training from category page	Training detail displayed: title, description, material list, progress bar	Valid	Valid
12	Training – Mark material as complete	User logged in → open material → click “Mark as complete”	Material marked complete, progress bar increases, button changes to “Completed”	Valid	Valid
13	Training – Mark already completed material (duplicate)	User clicks “Mark as complete” on already completed material	Display info “This material has already been marked complete”, no duplicate data	Valid	Valid
14	Training Access – material without login	User not logged in → open training detail page	“Mark as complete” button not displayed, CTA login/register appears	Valid	Valid
15	Quiz – Access – quiz after all materials complete	User completes all materials → click “Take Quiz”	Quiz page displayed with multiple choice questions	Valid	Valid
16	Quiz – Submit – quiz with passing score (≥70)	Answer ≥10 out of 15 questions correctly → click “Submit Answers”	Redirect to training page with pass message, certificate generated, +30 points	Valid	Valid
17	Quiz – Submit – quiz with failing score (<70)	Answer <10 out of 15 questions correctly → click “Submit Answers”	Redirect to training with score insufficient message, certificate not generated	Valid	Valid
18	Quiz – Pass – quiz second time (duplicate certificate)	User already has certificate → take quiz again and pass	Certificate not duplicated, points not added again (only once)	Valid	Valid
19	Certificate – View certificate list page	User logged in → click Certificate menu	List of completed training displayed with “View & Download” button	Valid	Valid
20	Certificate – Download	Click “Download Certificate (PNG)” button on certificate	PNG certificate file downloaded to user	Valid	Valid

No	Testing	Test Case	Expected Result	Result	Conclusion
21	PNG certificate Certificate Access certificate not owned	page - User accesses URL of training certificate not completed	device Redirect to certificate list page with error message	Valid	Valid
22	Reward Exchange reward with sufficient points	- User has 100 points → exchange 70-point reward (Caramel Latte)	Exchange successful, points reduced to 30, transaction recorded as success	Valid	Valid
23	Reward Exchange reward with insufficient points	- User has 20 points → try to exchange 70-point reward	Display message "Points insufficient", points not reduced, transaction recorded as failed	Valid	Valid
24	Reward Exchange expired reward	- Click exchange reward with expired valid_to	Display message "Reward not valid or has expired", button disabled	Valid	Valid
25	Job Vacancy Apply for job	- User logged in (role: user) → open vacancy → click "Apply"	Application sent, button changes to "Already applied", data saved in DB	Valid	Valid
26	Job Vacancy Apply for already applied vacancy	- User clicks "Apply" on already applied vacancy	Display info "You have already applied for this vacancy", no duplicate	Valid	Valid
27	Job Vacancy Company posts new vacancy	- Login as company (approved) → fill vacancy form → click Post	Vacancy successfully created with active status, appears in vacancy list	Valid	Valid
28	Job Vacancy Company not approved posts vacancy	- Login as company (pending) → try to post vacancy	Display message "Your company account has not been approved by admin"	Valid	Valid
29	Admin CMS Approve company	- Login as admin → open Company Management → click "Approve" on pending company	Company status changed to "approved", company can post vacancies	Valid	Valid
30	Admin CMS Access admin page without rights	- Login as regular user → access URL /admin/dashboard directly	Redirect to homepage with message "Access denied. Only users with CMS access"	Valid	Valid

Across the 30 black-box scenarios in Table 1, the observed outputs matched the predetermined expected outputs. The scenarios covered authentication, training, quizzes, certificates, rewards, vacancies, and administrative access. This result supported functional conformity under the documented local test conditions. It did not, by itself, establish production readiness because independent acceptance testing, security testing, performance testing, browser

and device compatibility testing, and public-server deployment were outside the scope of the study.

Specification-based black-box testing was appropriate for verifying externally observable behavior, but stronger coverage required explicit, repeatable test specifications and complementary non-functional evaluation. Recent work on automated black-box testing similarly emphasized reproducible test generation and execution records (Felício et al., 2023). The uniformly valid outcomes in Table 5 should therefore be interpreted as evidence that the listed paths met their expected outputs, rather than as proof that unlisted faults or production risks were absent.

RESULTS AND DISCUSSION

Results

System Implementation

The implementation stage translated the design artifacts into a locally executable Laravel prototype. The system integrated account management, training information, vacancy publication, applications, certificates, rewards, and administrative content management into a single interface. This integration directly addressed the initial fragmentation problem at the prototype level by providing a single access point and shared database. However, operational improvements at DISNAKER ESDM Bali were not measured using pre- and post-implementation service indicators.

The website-based architecture supports access through network-connected devices and separates functions by user role. This capability is consistent with digital public-service research emphasizing accessibility, self-service, information completeness, and user support as complementary design attributes (Chan et al., 2021; Korde & Sukthankar, 2026). In the present study, these attributes were demonstrated through the available system functions and participants' perceptions rather than through population-level service outcomes.

Role-based interfaces restricted each user to relevant tasks: administrators managed training, vacancies, user accounts, and content; companies managed vacancies and applicants; and job seekers accessed training, certificates, rewards, vacancies, and applications. This role separation operationalized the requirements identified earlier and reduced the need to navigate unrelated administrative functions.

Registration and login enabled authenticated access to personalized functions. Navigation consistency and information clarity were reflected in the 15 questionnaire items, while the black-box test scenarios demonstrated that the corresponding routes and input validations behaved as specified. Claims about efficiency or service quality remain provisional because task-completion time, error rates, role-specific satisfaction, and organizational performance were not measured.

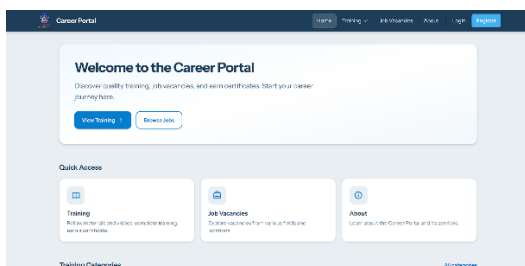


Figure 16. General Dashboard (public/guest)

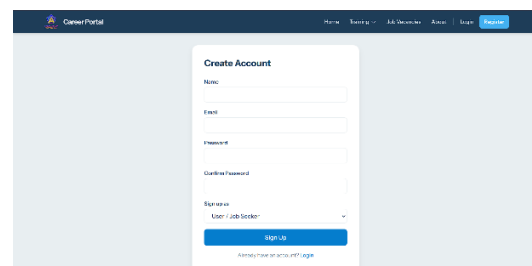
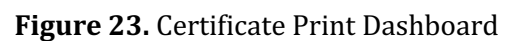
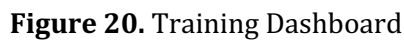
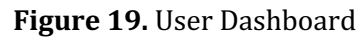
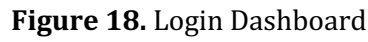


Figure 17. Registration Dashboard

Laravel-Based ...



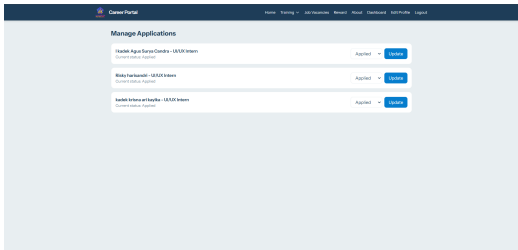


Figure 28. Manage Applications Dashboard

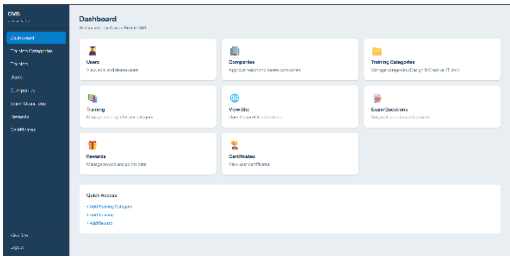


Figure 29. Admin Dashboard

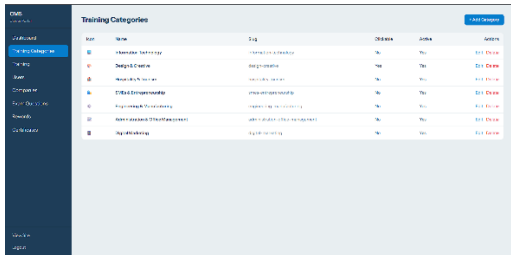


Figure 30. Training Category Dashboard

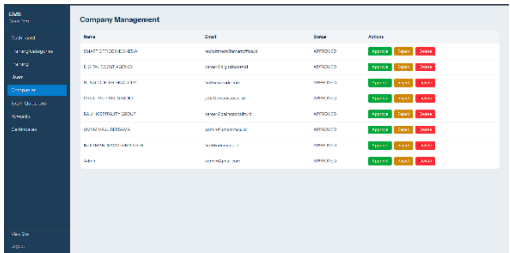


Figure 31. Company Management Dashboard

Discussion

Respondent Characteristics

Table 2 presents the distribution of participants across the three system roles.

Table 2

Respondent Characteristics

Role	Number
User	35
Company	7
Administrator	3

Of the 45 participants, 35 (77.78%) were job seekers, 7 (15.56%) were company representatives, and 3 (6.67%) were administrators. The overall usability index therefore primarily represents the job-seeker perspective. Responses from company representatives and administrators provide limited contextual input but are insufficient to support robust role-specific inferences.

The large job-seeker subgroup is relevant because these users interact with the training, assessment, certificate, reward, vacancy, and application functions. Nevertheless, pooling all roles may obscure differences in workflows and access privileges. Future evaluations should use balanced or stratified samples across user roles and report both item-level and role-specific results.

Accordingly, the combined result should be interpreted as an overall descriptive assessment of this participant group rather than as comprehensive evidence that all user categories accepted the portal to the same degree.

Usability Evaluation Using the Career Portal Usability Questionnaire

The study used a 15-item Career Portal Usability Questionnaire covering first-use comprehension, navigation, registration and login, information findability, visual organization, training, competency assessment, electronic certificates, rewards, and vacancies. All items were positively worded and rated on a five-point Likert scale. The questionnaire is distinct from the standard 10-item System Usability Scale (SUS), which uses alternating positively and negatively worded items and a prescribed scoring procedure that must be retained for direct SUS interpretation (Hertzum, 2026; Lewis, 2018). Table 3 therefore documents the study-specific instrument rather than an adaptation of the SUS with established psychometric equivalence.

Table 3

Career Portal Usability Questionnaire (15 Items)

No	Question	Type
1	The Career Portal website is easy to understand when first used.	Positive
2	The menu navigation on the website is easy to use.	Positive
3	The registration and login process runs smoothly.	Positive
4	The information displayed on the website is easy to find.	Positive
5	The overall flow of website usage is not confusing.	Positive
6	The website appearance looks visually neat.	Positive
7	The website layout is clearly and structurally organized.	Positive
8	The website display supports ease of understanding information.	Positive
9	The menu and category structure on the website is easy to understand.	Positive
10	The training video watching feature is easy to access and use.	Positive
11	The competency exam feature runs well without issues.	Positive
12	The E-Certificate generation feature works properly without textual errors.	Positive
13	The points and points exchange feature for available merchants is easy to understand and use.	Positive
14	The job vacancy feature is easy to understand and use.	Positive
15	Overall, the features on the website help in improving competency and make it easier to meet the needs of job seekers.	Positive

Responses were transformed into a normalized 0–100 usability index by subtracting 1 from each of the 15 item scores, summing the adjusted values, and multiplying the total by $100/(15 \times 4)$. Table 4 reports the descriptive statistics. This linear transformation facilitates interpretation within the present dataset but does not make the resulting measure equivalent to a standard System Usability Scale (SUS) score.

Table 4

Descriptive Statistics of the 15-Item Usability Index

Parameter	Value
Number of Respondents	45
Mean	79.70
Median	76.50
Standard Deviation	11.38
Minimum Value	60.0
Maximum Value	100.0

The 15-item usability index produced a mean of 79.70, a median of 76.50, a standard deviation of 11.38, and a range from 60 to 100. These statistics indicate generally favorable perceptions among the 45 participants, while the standard deviation indicates meaningful variation in the responses. The previously stated “Good–Excellent” proportion and comparison with the SUS threshold of 68 are not retained because the questionnaire and scoring procedure differ from the standard SUS, and no independent classification source was established.

The favorable descriptive index is consistent with the prototype’s concentration of related services within a single role-based interface. Earlier research on Laravel-based career systems likewise reported the practical value of connecting job seekers and employers through web-based vacancy functions (Khaliq et al., 2022). The present prototype extends this functionality by integrating training, assessment, certification, rewards, company approval, and administrative content management. Its contribution is therefore broader feature integration within a provincial public-service context, although the study does not provide comparative performance data against the earlier system.

The results also align conceptually with evidence that citizens’ experiences of e-government depend on a combination of core-service accuracy and completeness, facilitating attributes such as accessibility and support, and supporting attributes such as transparency (Chan et al., 2021; Korde & Sukthankar, 2026). The career portal implements several of these design

principles through centralized information, role-based access, and self-service functions. However, privacy protection, security, user-support quality, and transparency were not independently measured; therefore, the alignment is limited to design relevance rather than confirmed service quality.

Instrument interpretation is a central limitation. The standard SUS is a validated 10-item questionnaire with alternating positively and negatively worded items, whereas the present questionnaire contains 15 positively worded, feature-specific items ([Hertzum, 2026](#); [Lewis, 2018](#)). The normalized 0–100 calculation preserves the relative distribution of responses within this sample but does not establish equivalence with SUS benchmarks. Future work should either administer the unmodified SUS or validate the current instrument through content validity, construct validity, and internal-consistency analyses before assigning categorical labels.

Several system and evaluation limitations remain. Only the Design and Creative training category was active, while other categories were marked “coming soon,” and the portal had not been deployed to a public server. Functional testing was conducted in a local environment without reported independent testers, test dates, device/browser matrices, security assessments, load testing, or operational acceptance testing. The respondent distribution was also unbalanced, with only seven company representatives and three administrators. These conditions restrict the conclusions to prototype functionality and descriptively perceived usability.

Future evaluation should deploy the portal in a controlled operational environment, document test evidence and configurations, and measure task completion, errors, response times, accessibility, security, and satisfaction by user role. A balanced or stratified sample would permit meaningful comparisons among job seekers, companies, and administrators. This staged validation is particularly important because digital public-service quality depends on both technical performance and citizens’ experiences of accurate, accessible, secure, and supported services ([Chan et al., 2021](#); [Korde & Sukthankar, 2026](#); [Manoharan et al., 2021](#)).

CONCLUSION

This study developed a Laravel-based career portal prototype for DISNAKER ESDM Bali that integrates training, job vacancies, applications, certificates, rewards, company functions, and administrative content management within a role-based system. The functional evaluation showed that all 30 documented black-box testing scenarios produced the expected outputs in the local test environment. In addition, the 15-item Career Portal Usability Questionnaire yielded a normalized mean usability index of 79.70, indicating generally favorable perceptions among the 45 participants. However, because the instrument was not the standard System Usability Scale (SUS) and the participant distribution across user roles was unbalanced, these findings should be interpreted descriptively and should not be considered evidence of equal acceptance across roles or improved public-service effectiveness.

The findings provide a basis for the continued development and operational evaluation of the career portal rather than establishing its production readiness. Future development should prioritize the completion of inactive training categories and deployment in a controlled public-server environment, followed by independent acceptance testing and a more robust usability evaluation using a validated instrument and balanced, role-based samples. Further assessment of security, performance, accessibility, and browser and device compatibility is also required to determine whether the portal’s integrated functions can contribute to measurable improvements in employment information services at DISNAKER ESDM Bali.

ACKNOWLEDGEMENT

The authors acknowledge DISNAKER ESDM Bali and all participants who provided access, contextual information, and usability feedback during the development and evaluation of the career portal. This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

AUTHOR CONTRIBUTION STATEMENT

All authors contributed to the conceptualization, requirements analysis, system design and development, data collection, analysis, manuscript preparation, and final approval. All

authors are accountable for the accuracy and integrity of the work.

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