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EXPLORING THE DESIGN & DEVELOPMENT OF THE TRAINING EVALUATION SYSTEM

Nor Hanum Yusoff[1]
Mohamad Rahimi Mohamad Rosman[2]
Mohd Syarill Mat Zain[3]
Nik Nur Izzati Nik Rosli[4*]

[1] Faculty of Information Science, Universiti Teknologi MARA Kelantan Branch, 18500 Machang, Kelantan, Malaysia (2023119127@student.uitm.edu.my)
[2] Faculty of Information Science, Universiti Teknologi MARA Kelantan Branch, 18500 Machang, Kelantan, Malaysia (rahimimr@uitm .edu.my)
[3] Tok Bali Supply Base Sdn Bhd (TBSB), Kelantan, Malaysia (syarill@tbsb.my)
[4] Faculty of Information Science, Universiti Teknologi MARA Kelantan Branch, 18500 Machang, Kelantan, Malaysia (izzati1233@uitm .edu.my)
*Corresponding author: izzati1233@uitm .edu.my

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Abstract: *Training assessment is one of the important roles of human resource management. However, due to multiple reasons, many organizations still cannot afford to use a computerised assessment evaluation method and are still relying on traditional paper-based evaluation. Therefore, this research focuses on the development of a web-based Training Evaluation System used by TBSB employees to evaluate training that has been attended, update training information, and record work experience. The development of this system aims to replace manual methods in training evaluation management, which often cause problems such as data loss, difficulty in analysis, and time-consuming management processes. This system is designed to allow employees to provide feedback on training online, while the administration or human resources can manage training data and generate reports systematically. In addition, this system also provides information update functions, such as employee experience, to ensure that records are always up-to-date and organized. The waterfall methodology was adopted, involving several process such as planning, user needs analysis, design, implementation, and maintenance -with a goals to ensure maximum system operation. Findings indicated that the proposed systems able to fulfill the organizational needs, as well as improve training management performance and efficiency. At the same time, it also embedded the evaluative approach into the new organizational standard operating procedure. Overall, the development of this Training Evaluation System assists organizations in managing employee training more efficiently, systematically, and in line with the digitalization needs of modern organizations.*

Keywords: *System Training Evaluation, Training Evaluation, Web-Based System, Training Management, System Development, Employees, Organizational Digitalization*

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Introduction

System Background and Context

The emergence of technology has spearheaded and transformed various industries, particularly in the use of digital systems in human resource management (HRM) practices. The adoption of information systems is becoming more widespread, and it's capable to improve efficiency, data accuracy, and the effectiveness of organizational operations (Bal et al., 2022; Gerhart, 2007; Goswami, 2018; Nica, 2013). One of the important aspects of human resource management is training evaluation, which aims to evaluate the effectiveness of training programs that have been attended by employees and to record the continuous development of their skills and experiences. A training program is not over until techniques and outcomes have been assessed and in order to ensure training programs to success consistently, a thorough approach to measurement and evaluation is necessary (Dahiya & Jha, 2011).

Based on current practices, most organizations still rely on manual methods such as physical logbooks, printed forms, Excel files and Google Forms to record training participation and employee feedback (Ojonugwa et al.; Prakash, 2025). These methods often cause various problems such as the risk of data loss, difficulty in analysis, inconsistent records and time-consuming information update processes.

Therefore, to enhance the capability and efficiency of the organization, this paper will look into the development of information systems that are specifically built to helps organization manage their human resource management and subsequently helps organization to be more competitive and efficient. This project aims to develop a web-based Training Evaluation System that allows employees to evaluate the training they have participated in, update training records that have not been registered in the system and update their work experience. In addition, this system also provides a display of detailed employee information and the facility to download resumes directly through the system. From an information technology perspective, this system supports digital transformation, centralized data management, and the use of databases to improve the accuracy and reliability of organizational information.

Problem Statements

Although training is a very important element in developing skills and improving employee performance, the current training management and evaluation methods still have many significant weaknesses. One of the main causes of this problem is that most employees will continue to leave the training session or course as soon as it ends without completing the training evaluation process. This situation occurs because the evaluation process used still relies on manual methods or platforms that are not integrated, causing employees to be less motivated and take the importance of training evaluation lightly (Phillips & Phillips, 2016; Urbancová et al., 2021).

Additionally, the use of manual records and decentralized systems such as physical logbooks, Excel files, and separate online forms makes it difficult to systematically store, search and manage training data (Rosman et al., 2021; Rosman et al., 2020). Training feedback that should be collected consistently is often incomplete, out of date or missing, especially when staff do not complete post-training evaluation forms (Diamantidis & Chatzoglou, 2014; Mathews et al., 2001). This results in training data that is not comprehensive and cannot be used effectively for analytical purposes.

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In addition, the process of updating staff training and work experience records was also found to be inefficient. Staff faced difficulties in updating the training they had attended, especially training that was not officially recorded by management. Without a specific system, staff had to rely on manual processes or requests from specific parties to update their information, which ultimately resulted in incomplete training and experience records and not in line with the staff's actual development.

This problem also affects management in analyzing and monitoring the effectiveness of training. Without an integrated system, management faces difficulties in assessing the impact of training on staff performance, identifying staff development trends, and making strategic decisions based on accurate and up-to-date data. The manual analysis process is not only time-consuming but also prone to calculation and data interpretation errors. Besides, manual data management also increases the risk of information loss and human error. Training records stored in physical form or in separate files are vulnerable to loss, damage, accidental deletion, and data security issues. The loss of this training data can affect an organization’s ability to assess employee development history and plan more effective training programs in the future. Overall, these problems clearly demonstrate the need for an integrated, systematic, and user-friendly digital system. Thus, the development of a dedicated Training Evaluation System can ensure that staff complete training evaluations before leaving the course, facilitate training and experience updates, and support more effective and data-driven management of staff training and development. By automating the analysis of training data, the required staff labor is reduced and data accuracy also can be improved (Calicdan & Fabregas, 2022) .

System Objectives

Initial analysis was conducted using three methods: document analysis, observations, and prior system experiences. Each organization's documents and reports were analysed, interpreted, and summarized. Moreover, research also observed the current scenario and standard operating procedure adopted by the organization, as well as based on the experience of the staff. Therefore, based on the in-depth analysis of the current scenario and in line with the need of the organization, the main problems identified in the management and evaluation of staff training are as follows:

Failure of Staff to Complete Post-Course Training Evaluations

The main problem identified is that most staff will continue to leave a training session or course as soon as it ends without completing the training evaluation. This happened because the evaluation process still relies on manual methods such as physical forms, logbooks or separate platforms that are not systematically required. This results in training feedback not being fully collected and affects the overall evaluation of training effectiveness.

Use of Manual Records and Decentralized Systems

Training management that still uses physical logbooks, separate Excel files and online forms results in training data not being stored centrally. This situation makes it difficult to systematically store, search and manage training information. In addition, data that is stored separately is often not uniform and difficult to combine for analysis purposes.

Inefficient Training and Experience Record Update Process

Employees face difficulties in updating their training and work experience records, especially for training that is not officially recorded by management. Without a dedicated system, the

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update process has to be done manually and is time-consuming, resulting in incomplete training and experience information that does not reflect the actual development of employees.

Difficulties in Analyzing and Monitoring Training Effectiveness

The lack of an integrated system makes it difficult for management to analyze training effectiveness, identify staff development trends and make data-based strategic decisions. The manual analysis process is inefficient, time-consuming and prone to calculation and data interpretation errors.

Risk of Data Loss and Human Error

Manual management of training data increases the risk of information loss due to physical document damage, storage errors, accidental deletion and data security issues. This loss of training data can affect an organization's ability to evaluate training history and plan future employee development programs.

Overall, the identified problem statement highlights the main weaknesses of the existing system, which is still manual, not integrated, and not user-friendly. The most critical problem is the failure of staff to complete post-course training evaluations, which directly affects the quality of data and the effectiveness of training evaluations. Therefore, the development of a Training Evaluation System is needed to ensure that the evaluation process, training updates, and staff data management can be implemented more systematically, efficiently, and data based.

Scope

The scope of this project covers the limits and focus of the development of the Training Evaluation System to ensure that the developed system meets the needs of users and the objectives of the project. This scope is divided into two main components, namely the system scope and the user scope.

System Scope

The scope of the system includes the development of a web-based system that functions as an integrated platform for the management and evaluation of staff training. This system allows staff to record and evaluate the training they have participated in through the online evaluation form provided. To address the problem of staff not completing post-course evaluations, this system is designed so that the evaluation process can be done more easily, quickly and systematically before or after training.

In addition, this system also provides facilities for employees to update training records that have not been registered in the system, as well as update their work experience independently. All this information will be stored in a centralized database to ensure that the data is organized, secure, and easily accessible. This system also displays detailed employee information, including personal information, a list of trainings that have been attended, and recent work experience.

As an added value, this system provides a function to automatically generate and download resumes based on training and experience information recorded in the system. This function helps employees prepare the latest resumes without having to prepare them manually. In addition, this system supports user management, access control, and data display in the form of reports to support monitoring and evaluation of training effectiveness.

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User Scope

The second group is the administrator or human resource management (Admin/HR). This party is responsible for monitoring training records, viewing training evaluation feedback, accessing employee information and using data provided by the system for the purpose of analysis and improvement of training programs. This user scope ensures that each role has a level of access appropriate to their respective responsibilities.

Literature Review

Digital translation is a challenging process, as suggested by Irwansyahputra and Khairot (2025), and Enaifoghe et al. (2024). Digital technology brings old business methods and procedures up to date and make them more efficient (Khlutkova, 2022). Implementation of technology such as artificial intelligence, Big Data, and human resource information systems will help organizations to enhance the management of their human resources with greater efficiency (Priyana, 2025). Previous study suggested that most of organizational data is unstructured (Castellanos et al., 2017; Chaterera-Zambuko, 2026; Rosman, 2020a, 2020b), and moving from manual to digital systems can increase data accuracy and cut processing time by 40%. Digital systems make it possible to keep participant data, courses, and assessment outcomes in a single, conveniently accessible database. Content Manageemnt System (CMS) like Moodle, Google Classroom, and TalentLMS are increasingly widely used by corporations to document training and assess program efficacy. In addition to storing data, these systems offer participant performance analysis and automatic reporting capabilities.

The significance of employing analytics to determine the efficacy of training based on participant input and multiple training facets was highlighted in a study by Wong et al. (2025). They suggest that holistic approaches may help to influence the efficiency of individual self-evaluation. Additionally, several studies showed that user satisfaction and utilization are increased by systems with user-friendly interfaces (Al-Emadi et al., 2021; Senevirathne & Manathunga, 2021). This is crucial to guarantee that participants and employees can engage with the system without requiring extensive training.

However, despite the availability of existing platforms, many current systems are either too generic, costly, or complex for small organizations and training providers. Some systems focus more on course delivery rather than structured training evaluation and feedback analysis. This creates a gap for a dedicated training evaluation system that emphasizes efficient feedback collection, automated reporting, and ease of use. Therefore, the proposed system aims to address these limitations by providing a more focused, user-friendly, and efficient solution tailored specifically for training evaluation purposes.

Methodology

The study adopted the waterfall model throughout the process of system development. The methodology was selected due to it easiness to identified the goal of the project, and the project is not likely to have a surprising outcome due to it generalizability. The waterfall model follows a series of processes – planning, analysis, design, implementation, and maintenance.

System Planning and Analysis

During the planning process, data and system requirements were collected via several methods – document analysis, observations, and prior experience. The researchers were given the task to identify potential stakeholders, opportunities, constraints, and threats that will help to shape the project development process.

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System Design, Implementation, and Maintenance

System design is the most important stage where the system will be developed. It will start with layout sketches to communicate the potential output and outcome to the project stakeholders. Obtaining project stakeholders' agreement is very important – as it will likely lead to fewer changes throughout the development process. Among the layout developed in this phase include the landing page, dashboard, login, training management, human resource management, and e-resume management.

Next, the process will proceed with the development of a context diagram, data flow diagram, and an entity relationship diagram. This process is very crucial to define the boundary and constraints of the system. It also helps the developer to identify the important processes and how data will flow throughout the information system.

Findings

The following subsection shows the context diagram and data flow diagram of the proposed system.

Context Diagram

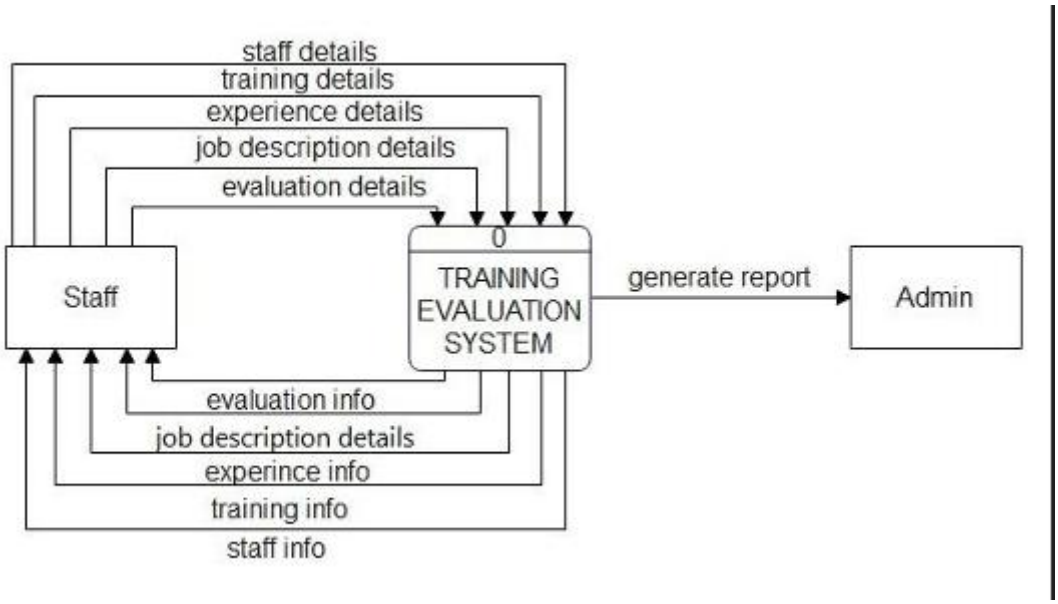

Figure 1: Context Diagram

Figure 1 presents the Context Diagram of the proposed Training Evaluation System. The figure provides the overview of the proposed system based on 2 entities, which is STAFF and ADMIN. In system development, the context diagram plays the rules as the system constraints and its boundaries, and helps the system developer to design and develop the features for the proposed system.

Based on the figure, the STAFF entity carried out several important functions, such as accesing evaluation form, submitting the evaluation form, updating training records, managing work experience, knowledge sharing, as well as resume management. The flow of data shows and ensures that data will be properly managed and recorded throughout the entire lifecycle.

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On the other hand, the ADMIN/HRM functions as the management for the entire process, specifically to monitor the process of data entry and data analysis. They are capable to view staff's training records, evaluation feedback, and at the same time capable to analyse staff's information properly.

Data Flow Diagram

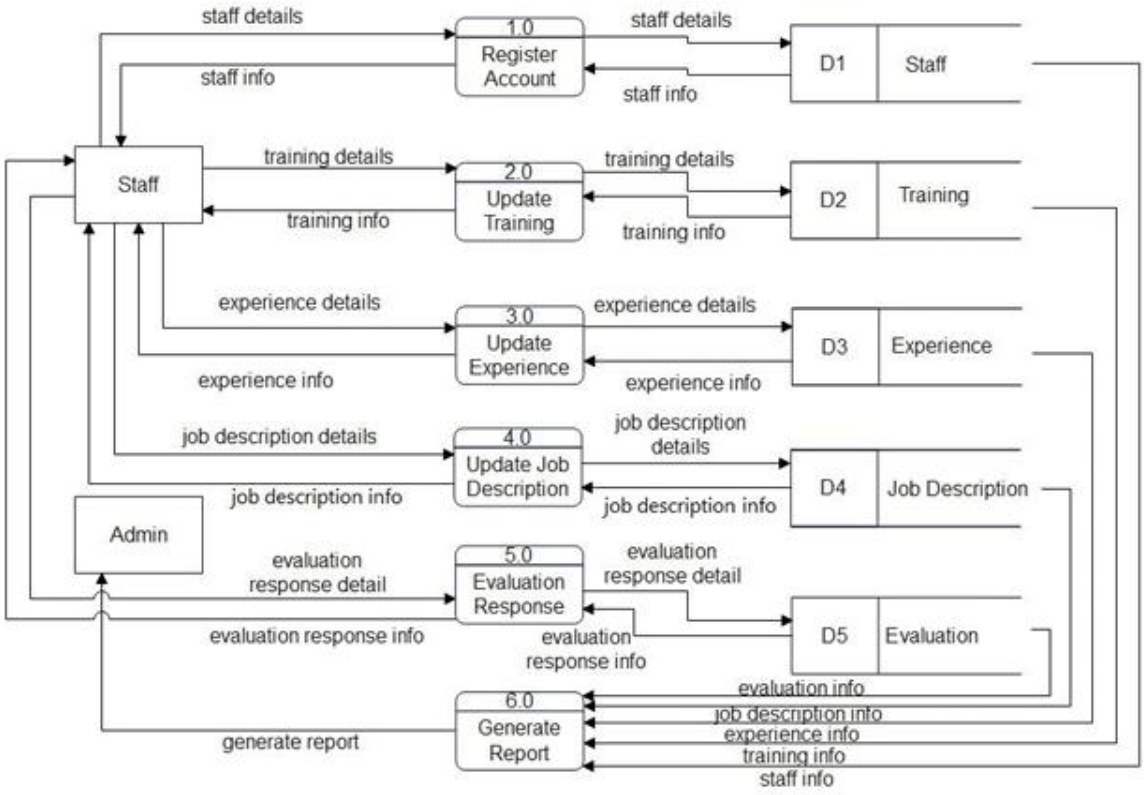

Figure 2: Data Flow Diagram

Figure 2 shows the data flow diagram (DFD) of the study. DFD is used to illustrate the way data and information flows from and to the data store, and eventually develops the entirety relationship diagram for the proposed system. A total of 5 data storage areas were suggested – staff, training, experience, job description, and evaluation. On the other hand, a total of six processes were identified as crucial to the system architecture.

Conclusion

The purpose of the paper is to illustrate the development of training evaluation systems. A system development methodology was adopted and discussed, alongside the development of contextual diagrams and data flow diagrams. Upon completion, a further study was conducted, and the successful deployment of the system was proven with increased efficiency, faster decision-making, and effective training measurement. The proposed system was able to help the organization to keep track of employee training and potential training needs for the future strategic planning process.

However, several limitations were also identified throughout the process. First, due to the nature of a web-based system, a stable Internet connection is mandatory. Second, even though the

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system features are minimal, an adequate level of literacy in computers is still needed. Third, there is a need for expertise to maintain the system in the long run. Fourth, the usage of certain programming languages makes the lifespan of the system, depending on the technology currently used by the organization. Therefore, we suggest future studies to look into more stable approaches, such as using up-to-date coding, improving IT facilities, and training on a computer literacy program. In addition, there is a need for more emphasis on AI literacy programs, especially the use of AI in system development via Vibe Coding Approaches.

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