**CHAPTER 4**

**Project Technical Description, Results, and Discussion**

## **Project Technical Description**

### **Software Requirements**

The Student-Centric Teacher Evaluation System was developed using various software tools to ensure efficiency, security, and usability. The following software components were utilized:

* **Visual Studio Code** – The code editor used for system development.
* **React (TypeScript)** – The front-end framework used to build an interactive and dynamic user interface.
* **FastAPI** – The back-end framework used to ensure efficient API handling and secure data transmission.
* **PostgreSQL** – The database management system used for storing evaluation records securely.
* **Docker** – Used for containerizing the system, ensuring smooth deployment and scalability.
* **AWS RDS (PostgreSQL)** – The cloud database service used to enhance security and reliability.
* **Windows 11** – The operating system used for development and testing.

### **Hardware Requirements**

For the proper functioning of the system, the following hardware components were utilized:

* **Laptop** – Used for system development and testing.
* **Monitor** – For a clear display of the user interface and system functionalities.
* **Keyboard and Mouse** – Essential input devices for coding and testing.
* **Server Machine** – Used for hosting the system and managing evaluations securely.

## **Project Structured Organization**

This section provides a detailed visual representation of the Student-Centric Teacher Evaluation System, including screenshots displaying each page of the system. The system includes user authentication, evaluation forms, report generation, and administrative controls.

## **Project Limitations and Capabilities**

### **Capabilities**

* Allows students to provide anonymous feedback on teachers.
* Generates summary reports of evaluation results.
* Supports an OTP verification system via email for security.
* Enables administrators to review and analyze feedback data.
* Ensures data privacy and encryption of student responses.

### **Limitations**

* The system is limited to educational institutions implementing online evaluation.
* It does not cover feedback mechanisms for non-teaching staff.
* The study does not include the integration of AI-based sentiment analysis.

## **Project Evaluation**

### **Functionality Indicators**

| **Indicator** | **Mean** | **Interpretation** |
| --- | --- | --- |
| Work smoothness according to expected load | 4.85 | Very Good |
| Stable system performance | 4.70 | Very Good |
| Accuracy of functions | 4.80 | Very Good |
| Effectiveness in handling and managing data | 4.80 | Very Good |
| **Average Mean** | **4.79** | **Very Good** |

### **Usability Indicators**

| Indicator | Mean | Interpretation |
| --- | --- | --- |
| User-friendliness | 4.60 | Very Good |
| Convenience | 4.75 | Very Good |
| Ease of understanding | 4.65 | Very Good |
| Capability of being learned and used | 4.80 | Very Good |
| **Average Mean** | **4.70** | **Very Good** |

### **Graphic Design Indicators**

| Indicator | Mean | Interpretation |
| --- | --- | --- |
| Modern graphic design | 4.65 | Very Good |
| Uniformity and consistency of format | 4.85 | Very Good |
| Appropriate color scheme | 4.90 | Very Good |
| Clarity of user interface | 4.70 | Very Good |
| **Average Mean** | **4.78** | **Very Good** |

### **Reliability Indicators**

| Indicator | Mean | Interpretation |
| --- | --- | --- |
| Data backup capability | 4.70 | Very Good |
| Maintains performance level | 4.90 | Very Good |
| Ability to produce correct processes | 4.75 | Very Good |
| Capability of handling errors | 4.85 | Very Good |
| **Average Mean** | **4.80** | **Very Good** |

### **Security Indicators**

| Indicator | Mean | Interpretation |
| --- | --- | --- |
| Prevention of unauthorized access | 4.70 | Very Good |
| Strong authentication measures | 4.90 | Very Good |
| **Average Mean** | **4.80** | **Very Good** |

## **Data Interpretation**

Based on the evaluation results, the system demonstrated **excellent functionality**, with an average rating of 4.79. The majority of respondents (80%) rated the work smoothness, accuracy, and effectiveness of data handling as excellent, while 20% rated them as very good. System performance was also praised, with 65% rating it as excellent and 35% as very good.

For **usability**, 60% of respondents found the system user-friendly, while 40% rated it as very good. Convenience and ease of understanding were also rated highly, with 70% of users rating the system as excellent in terms of usability.

The **graphic design** of the system was well-received, with 80% of respondents rating uniformity and clarity as excellent. The color scheme was particularly praised, with a 90% excellent rating.

In terms of **reliability**, 95% of respondents rated the system’s ability to maintain performance as excellent, while its ability to produce correct processes and handle errors was rated highly by 85% of users.

Security measures, including **authentication and access control**, were also well-received, with a 70% excellent rating for preventing unauthorized access and a 95% excellent rating for enforcing strong authentication measures.

## **Project Cost Analysis**

### **Development Cost**

| Role | Monthly Salary (PHP) | Daily Rate (PHP) | Hourly Rate (PHP) |
| --- | --- | --- | --- |
| System Programmer | 20,300 | 780.8 | 97.60 |
| UI Designer | 16,800 | 646.16 | 80.77 |
| Database Analyst | 20,200 | 776.96 | 97.12 |

### **Operating Cost**

| Description | Cost (PHP) |
| --- | --- |
| Installation Fee | 500 |
| Training Fee | 500 |
| Maintenance | 20,000 |

## **Conclusion**

The Student-Centric Teacher Evaluation System successfully met its objectives, providing an efficient, reliable, and user-friendly platform for gathering student feedback. The system demonstrated high functionality, usability, reliability, and security based on user evaluations. Future improvements may focus on AI-based feedback analysis and broader institutional integration.