UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF COMPUTING

INDUSTRIAL TRAINING REPORT

AGROBIZ DASHBOARD

By

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2024/2025

BACHELOR OF COMPUTER SCIENCE
(BIOINFORMATICS)

TRAINING PLACE :   TEMADIGITAL SDN BHD
LOT NO.69, INTERMEDIATE LOT, SECOND
FLOOR, PLAZA 333, JALAN PINTAS
PENAMPANG, 89500 PENAMPANG, SABAH

TRAINING PERIOD :   30th SEPTEMBER 2024 – 14th FEBRUARY 2024

SUPERVISORS :   DR. NURFAZRINA BINTI MOHD ZAMRY

CHONG VUN HUNG

REPORT DATE :   30th JANUARY 2025

ACKNOWLEDGEMENT

ABSTRACT

This report contains comprehensive documentation for the 20-week industrial training that took place at Temadigital Sdn Bhd, under the supervision of the organization supervisor, Mr. Chong Vun Hung, the technical project manager of the company, and monitored by the faculty supervisor, Dr. Nurfazrina Binti Mohd Zamry, a senior lecturer from the Faculty of Computing, University Teknologi Malaysia. The focus goal of the internship was to gain practical experience in data analytics, software development, and automation, with an additional focus on the development and automation of a dashboard based on one of the websites that Temadigital developed. Key objectives were to integrate data sources, automate data processing workflows, and provide live data visualization for the decision-making process. The technologies employed throughout the internship included VSCode, FME Desktop for data processing, M.App Hexagon for dashboard visualization and Laravel for website development. The internship offered valuable exposure to real-world data challenges and improved both technical skills and professional competencies in data-driven projects.

ABSTRAK

Laporan ini mengandungi dokumentasi lengkap bagi latihan industri selama 20 minggu yang dijalankan di Temadigital Sdn Bhd, di bawah penyeliaan penyelia organisasi, Encik Chong Vun Hung, pengurus projek teknikal syarikat, serta dipantau oleh penyelia fakulti, Dr. Nurfazrina Binti Mohd Zamry, pensyarah kanan dari Fakulti Komputeran, Universiti Teknologi Malaysia. Matlamat utama latihan industri ini adalah untuk memperoleh pengalaman praktikal dalam analisis data, pembangunan perisian, dan automasi, dengan penekanan tambahan pada pembangunan serta automasi papan pemuka berdasarkan salah satu laman web yang dibangunkan oleh Temadigital. Objektif utama merangkumi integrasi sumber data, automasi aliran kerja pemprosesan data, dan penyediaan visualisasi data secara langsung bagi menyokong proses membuat keputusan. Teknologi yang digunakan sepanjang latihan industri ini termasuk VSCode, FME Desktop untuk pemprosesan data, M.App Hexagon untuk visualisasi papan pemuka, dan Laravel untuk pembangunan laman web. Latihan industri ini memberikan pendedahan yang berharga terhadap cabaran data dalam situasi dunia sebenar serta meningkatkan kemahiran teknikal dan kecekapan profesional dalam projek berasaskan data.

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LIST OF ABBREVIATIONS

WC   –   WooCommerce

GA   –   Google Analytics

M.App   –   Mapping Application

DOA   –   Department of Agriculture

FME   –   Feature Manipulation Engine

UTM   –   Universiti Teknologi Malaysia

API   –   Application Programming Interface

Sdn Bhd –   Sendirian Berhad (Private Limited Company)

CHAPTER 1

INTRODUCTION

1.1   Introduction

As part of the Bachelor of Computer Science (Bioinformatics), students are required to complete 20 weeks of industrial training in a relevant field, which is equivalent to 12 credit hours. This chapter outlines the profile of the company where the industrial training was undertaken, including details of the company supervisor, the organizational structure, and the Gantt chart for the industrial training program.

The main goal of industrial training is to engage students in actual work environments, allowing them to apply their academic knowledge in practical situations. This experience not only improves their understanding of how information and skills are applied in professional environments but also offers relevant exposure to the industry. By participating in industrial training, students gain firsthand knowledge of workplace circumstances, assisting them in honing their professional objectives and enhancing their comprehension of potential career paths.   Additionally, this training enhances the knowledge gained from coursework, providing perspectives on organizational frameworks, business operations, and the managerial roles within the sector.

1.2   Organization Structure

Temadigital Sdn Bhd, established in 2019 and based in Penampang, Sabah, is a company that focuses on geospatial solutions and insights derived from data. Through the use of advanced geospatial technology, the company helps businesses and governmental organizations in making better decisions by precise data analysis and visualization.

The company offers a variety of services, such as consulting, training, and application development, customized to address the requirements of different sectors. It offers knowledge in geospatial data management, assisting organizations in gathering, analyzing, and interpreting location-oriented information to enhance efficiency and strategic planning. Temadigital also focuses on incorporating solutions such as the FME Platform by Safe Software, Hexagon Geospatial Solutions, and FOSS4G (Free and Open-Source Software for Geospatial) to improve data handling and decision-making.

Focusing on innovation and accuracy, Temadigital partners with public and private sectors guarantee clients receive customized, high-quality solutions. By consistently broadening its expertise and being on the most recent developments of geospatial technology, Temadigital enables organizations to transform complex data into valuable information, resulting in better decision-making and enhanced operational efficiency.

Currently, the firm employs about 12 people, all of whom contribute to its development and success. Under the leadership of Managing Director Ms. Judith I. Pudin, the organization's structure, depicted in Figure 1.2, outlines the responsibilities of the employees. Figure 1.1 shows the company logo of Temadigital Sdn Bhd.

Figure 1.1   Logo of Temadigital Sdn Bhd

ORGANIZATIONAL STRUCTURE CHART

Judith I. Pudin
Managing Director

Tong Vui Lip @ Andrew Tong
Business Development Director

Lo Jing Lu
Chief Operating Officer

Chong Vun Hun
Technical Project Manager

Valentina Primus
Senior Project Manager

Wong Kin Sin
Software Engineer

Eddie Ngai
Software Engineer

Siti Nur Harisyah
Binti Mohammad
Data Analyst

Mohammad Al Amir
AS Khairullah
Geospatial Analyst

Annette M. Saiman
Office Manager

Nurhamsyitah Binti
Mohammad Mursyd
Software Engineer

Malleylene Peneh
Data Analyst (Intern)

Figure 1.2   Organizational structure chart of Temadigital Sdn Bhd

Temadigital's organizational structure, as shown in Figure 1.2, is led by Managing Director Ms. Judith I. Pudin, with key roles including Tong Vui Lip as the Business Development Director and Lo Jing Lu as the Chief Operating Officer (COO). The COO oversees a project management division led by Technical Project Manager Mr. Chong Vun Hun, who manages Software Engineers Eddie Ngai and Nurhamsyitah Binti Mohammad Mursyd, Data Analysts Siti Nur Harisyah Binti Mohammad and Malleylene Peneh (Internship Student), and Geospatial Analyst Mohammad Al Amir AS Khairullah. Senior Project Manager Valentina Primus reports to the COO, managing Office Manager, Annette M. Saiman, while Software Engineer Wong Kin Sin also reports to the COO. This structure reflects the company's focus on technology, software development, and geospatial services.

1.3   Division Info

Temadigital's Technical Project Management Division plays an important role in transforming unstructured data into insightful information that supports strategic decision-making. Led by Technical Project Manager, Mr. Chong Vun Hung, who also serves as my organization supervisor, the team is responsible for application development, data processing, and geospatial solutions. Managing the entire data lifecycle, from collection and processing to analysis and visualization, this division ensures data accuracy and usability, helping both internal teams and clients leverage the data effectively in making a well-informed decision. The team includes Software Engineers, Data Analysts, as well as Geospatial Analyst, all working together to develop high-quality reports, dashboards, and data-driven solutions.

As a data analyst intern under the guidance of Mr. Chong Vun Hung, responsibilities include data collection, integration, analysis, and visualization and support for web application development. Through collaboration with colleagues to help transform complex datasets into actionable insights that improve business operations and decisions. This will give hands-on experience with real-world industry difficulties, which increases the knowledge of technical project management while also supporting the company's mission of providing effective and creative solutions to clients.

1.4   Gantt Chart

The industrial training program lasts 20 weeks, occurring from 30 September 2024 to 14 February 2025. During this period, I will undergo practical training to enhance my technical skills and gain industry experience. My designated organization supervisor for the internship is Mr. Chong Vun Hung, who will oversee my progress and provide guidance throughout the training. My primary responsibility is developing a company dashboard, involving data collection, processing, visualization, and automation. Figure 1.3 shows the Gantt chart of the internship schedule, outlining tasks that I will manage independently according to the set timeline.

Task Name/Week	SEPTEMBER 2024 - FEBRUARY 2025																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Report Duty	█																			
POI Sabah Data Collection	█	█																		
Agrobiz Dashboard		█																		
FME Licensing			█																	
Data Collection			█	█																
GA Authorization				█																
WC Data Extraction					█															
Data Processing using FME						█	█	█												
Dashboard Development for Data Visualization									█	█	█	█								
LaiRa Website Contribution													█	█	█	█	█	█	█	█
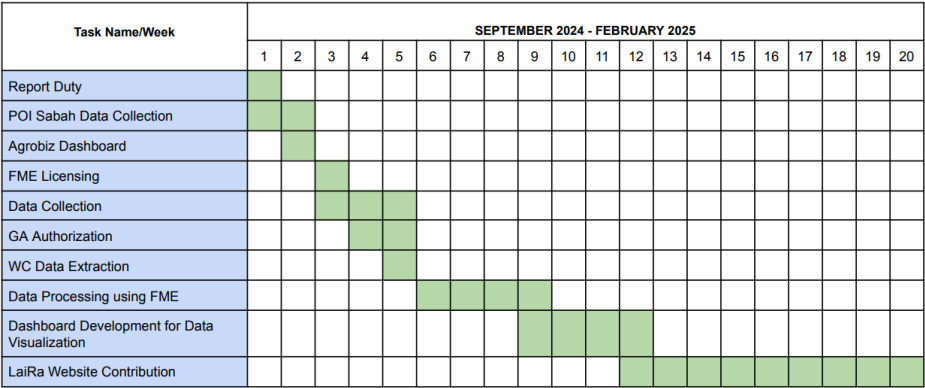
Figure 1.3   Gantt Chart

1.5   Internship Program

The industrial training program at Temadigital is designed to enhance students' technical and analytical skills over a 20-week period. This program is structured with a series of tasks that are assigned weekly, providing hands-on experience and exposure to various aspects of data management, processing, and visualization. The training is adaptive, with tasks evolving based on the company's ongoing project requirements, ensuring that trainees gain a comprehensive understanding of different operational areas.

Key activities throughout the internship include data scraping, the development of dashboards such as the Agrobiz Dashboard, and utilizing APIs like Google Analytics and WooCommerce for data retrieval and integration. Additionally, tasks involving the use of FME software for data processing, Python for automation, and the creation of dynamic visualizations using Google Extensions are incorporated. The Gantt chart outlines the weekly breakdown of these tasks, ensuring a systematic approach to skill development and contributing to the overall goals of the organization. This internship provides valuable exposure to the application of data analytics in real-world business settings, preparing students for future career opportunities in the tech industry.

CHAPTER 2

SPECIFIC DETAILS ON TRAINING

2.1   Introduction

This chapter will provide a detailed look at this 20-week internship program, covering the elaboration of the main tasks and side tasks that were accomplished. Furthermore, this chapter will also provide a brief overview of the system and project that the intern is involved with, including hardware and software used, theoretical and practical knowledge gained, and problems encountered throughout the internship program that contributed to shaping and enhancing the overall experience.

2.2   Objectives

This section consists of the objectives of the training and the main project. The objectives help to provide a clear guidance about what is expected during the industrial training program. It appears as a purposeful guide, leading the education process, corresponding with learning objectives, and strategically preparing students for their future careers.

2.2.1 Training Objectives

The training objectives are:

1. To enhance and develop technical and professional skills that are relevant to the industry.

2. To expose to the project-based work to further understand project management processes.

3. To enhance the ability to identify, analyze, and solve real-world problems.

2.2.2 Project Objectives

The project objectives are:

1. To gain hands-on experience in data collection, processing, and ensuring data consistency.

2. To develop and automate dashboards for efficient reporting and decision-making.

3. To advance programming skills, API integration, and data analysis capabilities

4. To apply theoretical concepts from Computer Science to solve real life industry challenges.

2.3   Main Internship Task – Agrobiz Dashboard

This section outlines the primary internship tasks during the internship period. The main objective was to optimize workflows and improve the efficiency of project deliverables for Temadigital Sdn Bhd. Primary responsibilities involved enhancing procedures, improving tools, and supporting the overall goals of the organization. A summary of the project execution and outcomes is provided in the following sections.

2.3.1   Project Overview

The core focus of the internship at Temadigital was on a data processing and visualization project aimed at enhancing the Agrobiz Dashboard, a dashboard designed to provide real-time insights into agricultural business operations. This project is connected to the Agrobiz Sabah website, an eCommerce portal by the Department of Agriculture (DOA) Sabah, which was also developed by Temadigital. The portal tracks sales transactions and website traffic, with the data needing to be processed into a comprehensive report and dashboard. This dashboard will be published and available for the public to view on the Smart Tani Portal Sabah.

The primary task was to simplify and automate the company's data collection, analysis, and reporting processes for this information. The project involved several phases, starting with data collection, followed by the creation of automated workflows for processing that data. The final goal was to develop an interactive dashboard that can display key metrics, such as daily and monthly transaction counts, customer behavior trends, and sales patterns, to assist stakeholders in making data-driven decisions.

The Agrobiz Dashboard was designed to function as an automated and interactive tool for displaying essential metrics, including daily and monthly transaction totals, customer behavior trends, and sales trends. The successful execution of this project required the integration of API data from Google Analytics (GA) and WooCommerce (WC). As such, the project required not only the implementation of a user-friendly interface for stakeholders but also the development of back-end systems to process large data efficiently. Figure 1.4 shows the Agrobiz Sabah website.

Figure 2.1   Agrobiz Sabah website

2.3.2   Project Execution

The project execution involved multiple phases, starting with data collection, followed by data processing, dashboard development, and real-time integration. Each process was important in ensuring correct data extraction, transformation, and display so that stakeholders could get relevant information. This section provides a detailed explanation of each phase involved in the project execution.

2.3.2.1 Data Collection Phase

The project execution began with data collection, which formed the foundation for the entire process. The task involved extracting data from the Agrobiz Sabah website, using APIs provided by GA and WC. The data was extracted and collected using FME, which facilitated the automated retrieval and processing of large datasets from these API sources.

A key component of this phase was the use of a JSON structure to organize and structure the data extracted from GA, ensuring that it met the analysis requirements. Additionally, before utilizing the GA API in FME, API authorization was successfully completed, ensuring secure access to the necessary data. The combination of these sources, alongside FME's capabilities, was aimed at providing a comprehensive view of consumer behaviour, sales trends, and overall business performance.

2.3.2.2 Data Processing Phase

After the data collection phase, the next step was data processing, which was carried out using FME Desktop. The goal of this phase was to prepare the data for analysis by resolving inconsistencies, missing values, and errors in the datasets. FME workflows were designed to automate several key tasks such as data cleaning, merging, and formatting, ensuring consistency and reducing human error.

The data was processed through the extraction, transformation, and loading (ETL) workflow, enabling the integration of multiple data sources into an organized structure format. Missing values were handled and removed, errors and inconsistencies were filtered out, and normalization and standardization were performed to maintain consistency across the dataset. The objective was to format the data into a usable structure suitable for analysis and visualization, ensuring that the data could be accurately represented in the dashboard and reports. This thorough processing was important for providing stakeholders with reliable, precise insights into business performance. Figure 2.2 shows the FME Workbench for processing datasets of daily visitors for Agrobiz Sabah website.
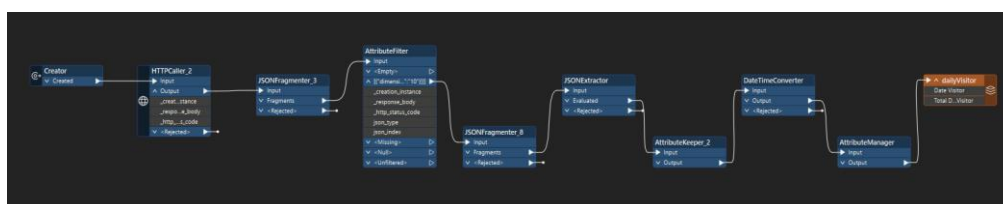
Figure 2.2   FME Workbench of daily visitor datasets

2.3.2.3 Dashboard Development Phase

Following the data processing phase, the development of the Agrobiz Dashboard was developed by utilizing the M.App Hexagon platform. The platform supports the development of an automated, interactive dashboard that displays real-time data, including transaction counts, sales numbers, and consumer behavior trends.

To improve user interaction, various features were incorporated, including filtering options, time-based visualizations, and dynamic updates that ensured the dashboard reflected the most current data without requiring manual intervention.

2.3.2.4 Visualization and User Interaction

In the M.App Hexagon platform, several widgets were utilized to create an engaging and informative experience for viewers. Graph widgets such as heatmap, line, row, bar chart, and compound were used to represent data visually, making it easier for stakeholders to interpret trends and patterns of the Agrobiz Sabah website. Additionally, display widgets such as data tables, number displays, tabbed charts, and temporal widgets were implemented to show various types of data. These interactive features allowed users to explore the data in more depth, providing an extensive overview of the most important indicators. Figure 2.3 shows the use of widgets in M.App Hexagon platform.
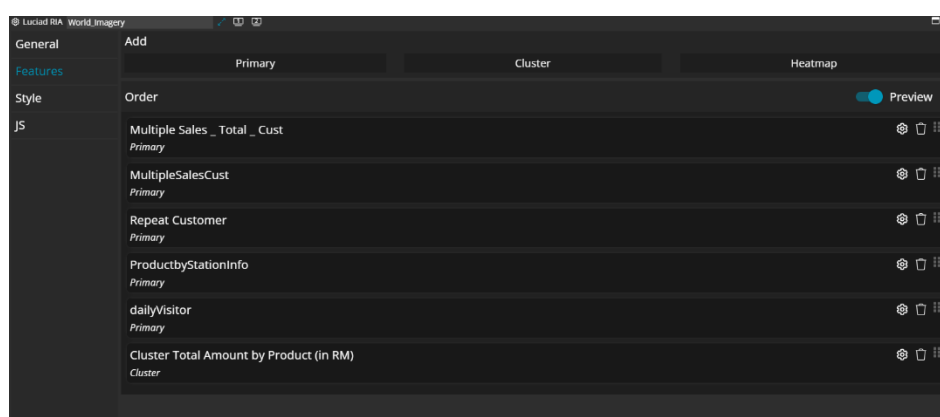
Figure 2.3   Widgets used in M.App Hexagon platform

2.3.2.5 Real-Time Data Integration & Automation

The integration of real-time data from Google Analytics and WooCommerce APIs was essential in ensuring the dashboard stayed up to date with customer activity and sales trends. Custom Python scripts were written to call the APIs all at once, reducing the need to use the FME transformer tools many times. This optimized approach enabled effective communication between the dashboard and these APIs. The integration allowed for the retrieval of live data, ensuring that stakeholders could easily access the latest information.

2.3.3 Project Output

The project delivered an automated Agrobiz Dashboard with real-time insights into sales trends, customer behavior, and transactions. It was integrated with Google Analytics and WooCommerce APIs, allowing for automatic changes. Featuring interactive visualizations and automated data processing, the dashboard provided stakeholders with precise and accessible business insights to help them make better decisions. Figure 2.4 and figure 2.5 shows the output of Agrobiz Dashboard.
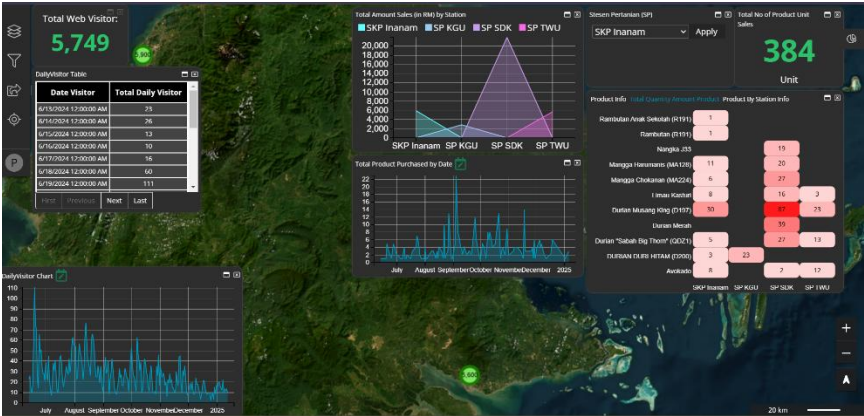
Figure 2.4   Agrobiz Dashboard first output
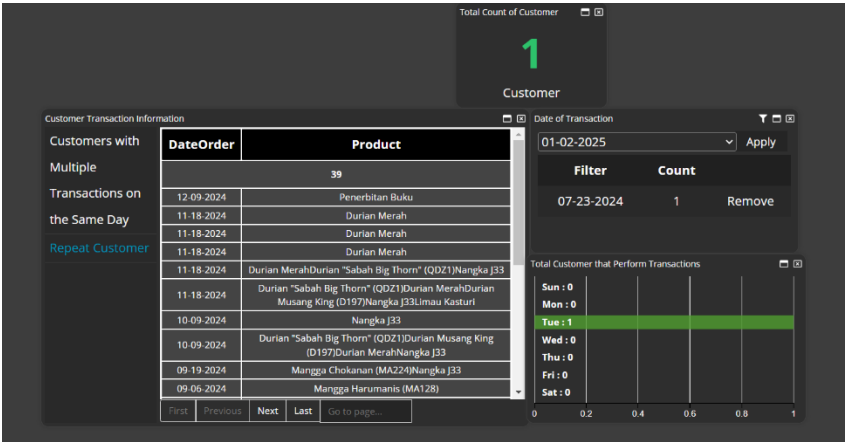
Figure 2.5   Agrobiz Dashboard second output

2.4   Side Task

In addition to the core responsibilities outlined in the Agrobiz Dashboard project, I also took on supplementary tasks that contributed to the overall functioning of the organization.

2.4.1   Data Collection for Points of Interest (POI) Sabah

During the first two weeks of the internship, data collection was conducted for Points of Interest (POI) in Sabah, with a focus on gathering longitude and latitude coordinates for key locations such as police stations in each district. Ensuring complete and precise data was a priority to support future analysis and mapping applications.

Strict attention to detail was maintained in order to guarantee data integrity, and all collected information was systematically organized for efficient use in future projects. This task reinforced essential skills in geospatial data handling, accuracy in data collection, and quality control methods, all of which are critical components of data-driven decision-making.

2.4.2 Booth Assistance at the 8th Sabah International Surveyors Congress

Temadigital took part as a booth exhibitor at the 8th Sabah International Surveyors Congress, highlighting the company's projects and services to professionals and stakeholders in this industry. Assistance was provided in setting up and managing the booth, ensuring that all display materials were well-organized and presented efficiently.

Throughout the event, engagement with visitors was essential for showcasing the company, answering questions, and sharing information about its different projects. Promotional materials were shared to promote awareness of the company's initiatives, and feedback was gathered from participants to grasp industry interests and possible collaboration opportunities.

This experience improved communication and presentation abilities, offering valuable exposure to industry networking and professional interaction. Moreover, it provided understanding of how businesses showcase their efforts in public venues, enhancing engagement with stakeholders in actual environments.

2.4.3 Attendance at the Data Policy Workshop at Digital Government Division (DGD) Sabah

Participated in a Data User Policy Workshop at DGD Sabah as part of the Temadigital project. Served as a note taker, documenting key discussions and insights related to data governance, compliance, and policy implementation.

The workshop provided a comprehensive understanding of data usage regulations relevant to ongoing projects. Collaborated with colleagues to make sure policy compliance and project objectives. This experience broadened the knowledge of data governance frameworks and highlighted the importance of compliance in data management and public sector digital initiatives.

2.4.4 Contribution to the Development of the LaiRa Website

The LaiRa website is an initiative by the DOA Sabah, focused on improving digital accessibility and features. Contributions to the website's development involved collaborating with team members to improve its overall framework, resolve technical issues, and implement enhancements for better user experience and performance. Bahasa Malaysia (BM) translation services were provided to improve accessibility and ensure clear communication for a wider audience.

Version control and collaboration were managed using GitHub Desktop that facilitates repository handling and project coordination. Additionally, the VS Code GitHub plugin extension was utilized to improve in code management, version tracking, and conflict resolution within the development process.

Hands-on experience with the Laravel framework was gained, focusing on fundamental aspects such as routing, middleware, MVC architecture, and database interactions. Contributions included debugging, feature implementation, and optimizing the website's backend functionality, further strengthening technical proficiency in modern web application development.

This task provided valuable experience in website development, version control, and collaborative software development while reinforcing technical skills in Laravel and GitHub-based workflows.

2.5   Tools and Technologies Used

In this section, an overview of the tools, including hardware and software, is used to carry out both major and additional tasks throughout the internship program.

2.5.1   Hardware

The hardware used in the project is as follows:

Table 2.1   Details of hardware used.

Name	Specification
Laptop	Processor: Intel Core i7 Memory RAM: 20GB Memory ROM: 512GB OS: Windows 11 64 bit

2.5.2   Software

The software used in the development of the projects is as follows:

Table 2.2   Details of software used.

Name	Description
FME Desktop	Used for automating data processing, ensuring efficient extraction, transformation, and loading (ETL) of datasets.
M.App Hexagon	Facilitated the development of interactive dashboards, allowing dynamic and user-friendly visualizations for stakeholders.
Visual Studio Code	Served as the primary code editor for developing scripts and working on web-related tasks.
phpMyAdmin	Used for managing MySQL databases, providing an easy interface for database manipulation.
XAMPP	Used to set up a local server environment for testing and development of web applications.
Laragon	Provided a fast and efficient local development environment for PHP and MySQL applications, streamlining the web development process.

2.6 Time Period to Complete All Task

The Gantt chart displayed below indicates the time allocated to complete the project and tasks given. Figure 2.6 shows the Gantt chart throughout the internship training program.

Task Name/Week	SEPTEMBER 2024 - FEBRUARY 2025																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Report Duty	■																			
POI Sabah Data Collection	■	■																		
Agrobiz Dashboard		■																		
FME Licensing			■																	
Data Collection			■	■	■															
GA Authorization				■																
WC Data Extraction					■															
Data Processing using FME							■	■	■											
Dashboard Development for Data Visualization									■	■	■	■								
LaiRa Website Contribution													■	■	■	■	■	■	■	■

Figure 2.6   Gantt Chart

2.7 Theoretical and Practical Knowledge

To fulfill the project requirements, proficiency in Python, Exploratory Data Analysis (EDA), HTML, and CSS were essential. The internship provided an opportunity to utilize academic knowledge in practical tasks, enhancing insights into data analytics, web development, and automation. Learning these concepts at university made it easier to use tools like FME and Python for data management and processing, as well as applying machine learning and database techniques.

The internship allowed for applying academic knowledge to real-world tasks, improving understanding of data analytics, web development, and automation. Learning these concepts at university made it easier to use tools like FME and Python for data management and processing, as well as applying machine learning and database techniques.

Key tasks included making API calls, data scraping, and processing information from sources like Google Analytics, WooCommerce, and government websites, giving valuable experience in data integration. Working with platforms like M.App Hexagon helped turn complex data into simple, clear insights, which relate to university lessons on data visualization and dashboard creation.

The internship also offered hands-on experience with Laravel for website management and GitHub for version control. These tools reinforced lessons learned in university about application development, teamwork, and code management. Troubleshooting and problem-solving during the internship reflected real-world challenges in system integration and data processing, which helped apply academic problem-solving methods.

2.8 Problem Faced

Throughout the internship, a variety of difficulties required creativity and problem-solving skills. Initially, the plan was to automate data updates using Google Sheets, but this approach proved unsuitable. Therefore, an alternative method was explored by linking FME to external APIs, such as Google Analytics. However, this created an issue with complex authorization procedures, causing delays in data collection. The problem was resolved by troubleshooting and investigating different FME connection possibilities, ensuring smooth integration while maintaining data accuracy.

Another problem was retrieving customer data from the WC API, particularly looping through paginated results to get over 100 records. This issue was tackled by using customized PHP code to call the API in a single page, which reduced the process and allowed for efficient data retrieval.

Visualizing data in M.App Hexagon also posed difficulties, such as connecting datasets and properly displaying them on heatmaps and charts. These difficulties were dealt with through several adjustments to ensure that the data was presented in a useful and straightforward way. Other than that, automating live server updates for the Agrobiz Dashboard required integrating the system with an external web server. This was resolved using effective integration techniques.

All of these issues were effectively resolved with the assistance of the supervisor and colleagues. A strong curiosity and readiness to ask questions were necessary for overcoming these challenges and finishing the job efficiently.

2.9   Conclusion

In conclusion, Chapter 2 provides a detailed overview of the internship experience, highlighting the various tasks and projects undertaken at Temadigital Sdn Bhd. The internship allowed for the application of theoretical knowledge in real-world scenarios, particularly in the development and automation of the Agrobiz Dashboard. By engaging in both main and side tasks, valuable skills were gained in data collection, processing, programming, and visualization, using industry-standard tools such as FME Desktop, M.App, and various APIs. The structured project timeline facilitated steady progress, with dedicated phases for prototyping, development, and feedback gathering. This hands-on experience significantly enhanced my technical abilities and prepared me for future challenges in the field of data analytics and software development. The internship not only provided practical exposure to advanced technologies but also allowed for personal and professional growth through active involvement in the company's key projects.

CHAPTER 3

OVERALL INFORMATION OF INDUSTRIAL TRAINING

3.1   Introduction

This chapter aims to highlight the significant benefits of industrial training, focusing on its transformative effect on both myself and the wider industry. Industrial training serves as a crucial link between academic knowledge and its practical application in the real world. Consequently, this chapter explores the numerous advantages I gained from completing a 20-week industrial training program.

3.2   Skills Improvement

The 20-week industrial training program offered a remarkable chance for improving both technical skills and soft skills which are essential for future professional progression. In addition to developing crucial soft skills like communication, critical thinking, and flexibility, major progress was achieved during this time in areas like programming, problem-solving, and data processing. This hands-on experience bridged the gap between theoretical knowledge and practical application, empowering the intern to approach real-world challenges effectively. The following sections detail the main technical skills and soft skills gained during this internship.

3.2.1   Adaptability and Learning

Throughout the training, **adaptability** and the ability of **fast learning** skills were very important when learning new software. Working with tools like FME, WooCommerce, and APIs require pushing past the comfort zone and dedicating time to self-learning through experimentation, tutorials, and documentation. This proactive approach ensured progress despite facing new and challenging technologies.

The need to adapt to shifting project requirements further developed problem-solving skills, as each new tool or challenge demanded a solution. By embracing the discomfort of learning something new, the ability to adapt quickly became a valuable skill, leading to more efficient task completion and greater confidence in using advanced software and technologies.

3.2.2 Technical Skills Gained

During the industrial training, major progress was made in core technical skills. In data collection and analysis, proficiency in extracting, cleaning, and analyzing data from various sources was developed, ensuring data integrity and applying statistical methods to derive actionable insights. This enhanced decision-making and contributed to the development of the Agrobiz Dashboard.

In data processing and automation, workflows were optimized through automation tools, reducing manual effort and improving efficiency. This also minimized errors, allowing for scalable, real-time data processing systems. Programming skills were further honed by working with APIs, which facilitated seamless data retrieval, processing, and integration from external sources, enhancing the flexibility and functionality of existing systems.

In addition, the Laravel framework was learned properly, which allowed for a better understanding of web development and backend programming. The framework helped on the creation of more stable applications by providing greater control over routing, data management, and user authentication. Finally, dashboard development and visualization skills were improved by designing interactive, user-friendly dashboards.

3.2.3   Soft Skills Gained

During training, attention to detail was essential to making sure quality in activities such as data analysis, API integration, and dashboard development. This helped with the early detection of problems, which produced a high-quality result.

Breaking down difficulties like glitches or data inconsistencies into smaller, manageable components improved problem-solving and critical thinking, resulting in better solutions and adaptation to advancements in technology.

Prioritizing tasks, setting deadlines, and breaking down projects into manageable phases helped to improve project management skills, which resulted in timely and outstanding task completion.

The company's weekly meetings, which included planning and update sessions, greatly improved teamwork and collaborative skills. These meetings helped frequently cooperation and clear communication, ensuring that everyone knew their roles and responsibilities. This consistent interaction and consistency contributed to more efficient issue solving, idea sharing, and cooperation.

3.3   Reference Materials

The main sources of information used for the assigned task are online materials and tutorials. Reference materials, such as documentation for software tools like FME Desktop, M.App Hexagon, and various APIs, were essential in understanding the technical aspects of the tools used in the projects. These materials provided a deeper understanding of the underlying principles behind data processing and visualization techniques, which were applied to the internship tasks.

3.4   Constructive Comments

The internship provided a comprehensive learning experience, allowing for both technical and personal growth. The primary tasks, including the development of the Agrobiz Dashboard, were executed according to the schedule. However, there were some challenges in terms of data integration, particularly when dealing with inconsistencies in data sources. Despite these challenges, guidance from supervisors and colleagues was valuable in overcoming these obstacles and the tasks were completed on time, and the system was developed with high attention to detail. One area for improvement would be refining the communication process between the team and external stakeholders to ensure quicker feedback during the revision phase. This would enhance the overall efficiency and speed of the development process.

3.5   Conclusion

This chapter offered a summary of the internship program at Temadigital Sdn Bhd, where hands-on training was essential for cultivating both soft and technical skills through real-world practice. Reference materials, including software documentation and online tutorials, along with helpful feedback, were essential for improving   performance   and   supporting   further   professional   growth.

CHAPTER 4

CONCLUSION

4.1 Introduction

This chapter will conclude the discussion of the industrial training experience by thoroughly examining the key achievements gained throughout the program. Following this, a section will be dedicated to outlining the challenges faced, along with constructive suggestions for improving and enhancing the internship program.

4.2 Overall Achievement

The industrial training at Temadigital was an invaluable experience that provided hands-on exposure to the practical application of data analytics and software development. The primary achievement of this internship was the successful development and launch of the Agrobiz Dashboard, which integrated various data sources of APIs to deliver actionable insights to stakeholders. This project significantly enhanced my technical skills in data processing, programming, API integration, and visualization. It also improved my understanding of practical data challenges, such as data consistency and integration issues.

In addition to strengthening my technical expertise, the experience allowed me to develop key project management and communication skills. Working closely with supervisors and stakeholders provided valuable insights into the circumstances of client interaction and collaboration. Overall, the training helped me build a solid foundation in data analytics, programming, and software development, equipping me with a well-rounded skill set that will be beneficial for future career opportunities.

4.3   Problems and Execution

One of the key challenges faced during the internship was handling inconsistent data from various sources. While tools like FME Desktop helped automate much of the data processing, some data inconsistencies required manual intervention. Additionally, API limitations, particularly with paginated results, posed a challenge in retrieving complete datasets. Time management was another issue, especially when balancing the main tasks with side tasks. Despite these obstacles, the trainee gained significant value from the kind assistance and guidance of colleagues and supervisors, who shared their expertise and provided valuable advice to accelerate the learning process. These challenges provided valuable learning experiences in problem-solving and creative ability.

4.4   Opinion and Suggestions

Overall, the industrial training was a valuable experience, but there are areas where improvements could be made. One recommendation is to establish more structured and frequent feedback sessions with clients and stakeholders that could improve the revision phase and ensure faster implementation of changes. Additionally, providing more hands-on training with the tools used in the internship, such as advanced features of FME Desktop or M.App Hexagon, would greatly enhance the learning experience, enabling trainees to become more skilled in their roles.

Another area for improvement is offering clearer documentation and examples for handling specific challenges, specifically in data integration issues. Providing detailed guides or case studies could better equip future trainees to address complex problems more efficiently. This suggestion for improvement would support trainees in effectively navigating technical complexities, accelerating their learning process, and help them navigate technical complexity with simplicity.

4.5   Conclusion

In conclusion, the industrial training at Temadigital Sdn Bhd was a really rewarding experience that provided valuable practical insights into data analytics and software development. This internship enhanced my technical skills in data processing, API integration, and visualization, while also developing my project management and communication abilities. Overall, the experience provided exposure to industry-standard tools and workflows, giving me with a broad range of skill set that will be beneficial for my future career.

REFERENCES

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   https://mae.hexagon.com/docs/dashboards/

APPENDIX

INDUSTRIAL TRAINING CHECKLISTS (PLACEMENT)

No.	Activities/Tasks	Tick (√)	Endorse by and date
1.	Report Duty To The Organization Approved by faculty	√	
2.	Perform Report Duty Verification on ITS, verified by organization supervisor.	√	
3.	Contact faculty supervisor to inform the job scope and organization information	√	
4.	*Update of Industrial Training site (address). Inform faculty supervisor and JKLI, if any changes.*	√	
5.	Updating Industrial Training Logbook online – daily basis	√	
6.	Ensure that the organization supervisor is able to login to ITS successfully (Organization supervisor gets ITS userid and password).	√	
7.	Faculty Supervisor Visit. Date (physical): 21 January 2025	√	
8.	Industrial Training Presentation.	√	
9.	Performance evaluation by organisation supervisor in ITS	√	
10.	Submission of Industrial Training Logbook.	√	
11.	Submission of Industrial Training Report with checklist and achievement form as Appendix.	√	
12.	Fill in Industrial Training Performance Evaluation by student in ITS.	√	
13.	End Industrial Training	√	

INDUSTRIAL TRAINING ACHIEVEMENTS

(This form must be filled by student and must be attached in the Industrial Training report)

Student's Name : Malleylene Peneh

Organisation   : Temadigital Sdn Bhd

No.	Task (List all tasks have been completed)	Month of Task Achieved				
		Month 1	Month 2	Month 3	Month 4	Month 5
1.	Software installation and setup	√				
2.	Data collection	√				
3.	API authorization and integration		√			
4.	Data processing			√		
5.	M.App Hexagon visualization and dashboard creation				√	
6.	Dashboard Finalization				√	
7.	Laira website development and assistance				√	√

Deliverable/Training reflection
(Outcomes that have been achieved)
  - Installed and set up the FME, Laravel, and GitHub tools that are required for development and automation.   - Collected, scraped, and processed structured datasets for Agrobiz Dashboard development.   - Successfully integrated APIs and automated data retrieval using FME.   - Designed and finalized an interactive Agrobiz Dashboard using M.App Hexagon.   - Assisted in LaiRa website development and translation for better accessibility.

Student Signature: _____   Date: 24 January 2025

Approval

Organisation's Supervisor: Faculty Supervisor :

....
   (Signature)   (Signature)

Name: Chong Vun Hung   Name: Dr. Nurfazrina Binti Mohd Zamry
Date: 3 February 2025   Date: