Enterprise Information System in University

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***Abstract*— Enterprise Information Systems (EIS) refers to integrated software applications used by organizations to manage their business processes and operations. This paper explores the use of EIS in universities by looking at its features, implementation, pros and cons, and example use cases by UNIVERSITI TEKNOLOGI MALAYSIA (UTM). We examine how they affect performance and decision-making, and also how they function in academic institutions. This highlights the importance of EIS in universities to make their operations more efficient and effectively support their goals and objectives.**

***Keywords*— Integrated software applications, Organizations, Academic institutions, UNIVERSITI TEKNOLOGI MALAYSIA, Lean Principles**

I. INTRODUCTION

The modern business environment gives businesses a growing number of challenges in handling their operations. Enterprise Information Systems (EIS), which provide integrated solutions to simplify various business processes, which serve as essential tools for overcoming these challenges. EIS, which consists of a collection of technologies and software programs, acts as a central hub for data management, decision-making, and communication throughout business structures.

Enterprise Information Systems (EIS) are essential to enterprises and academic institutions to traverse changing settings successfully. They improve resource optimization, risk management, and opportunity maximization by giving users access to real-time data. Additionally, EIS promotes cooperation across multiple departments, improving operational effectiveness. In sectors such as banking, government, healthcare, and retail, without information systems, tasks like processing payments in banks, collecting taxes for governments, treating patients in hospitals, and managing inventory in supermarkets would be extremely challenging. Therefore, global, and local businesses have viewed EIS as a way to standardize and integrate their essential business operations and information resources [2].

II. EIS IMPLEMENTATION STRATEGY IN UNIVERSITY

Implementing Enterprise Information Systems (EIS) in a university setting requires a carefully planned strategy to ensure successful integration and adoption. Clear objectives must be defined which aligns closely with the university's strategic priorities and mission.

This starts with a detailed evaluation of the university's current systems, processes, and IT infrastructure, encompassing academic, administrative, and operational functions. It is important to include key stakeholders to learn about their requirements, concerns, and goals concerning the implementation of the EIS. These stakeholders include teachers, staff, administrators, and IT people. For instance, staff employees require access to administrative, financial, and facilities systems. The same goes with faculty members who require access to course preparation and research data management systems, and students who require access to course information and registration.

The choice of vendor is important, leading to thorough research and assessment of EIS providers and solutions created especially for universities. Higher education institutions (HEIs) must take their time to fully comprehend the advantages that the ERP system would bring to their organization, students, and their academic programmes. When comparing and evaluating vendors, HEIs must consider the long-term and see them as potential partners [3]. Elements like cost-effectiveness, user-friendliness, customization possibilities, scalability, and support services must be considered. Following the university's requirements, it is crucial to incorporate suppliers in demonstrations, conversations, and reference checks.

Customization and configuration are other crucial aspects. It is important to work closely with the selected vendor to customize the EIS solution to the specific requirements and processes of the university. The system setup needs to be seamlessly integrated with the infrastructure, databases, websites, and apps currently in place at the institution. Creating resources and training materials specifically for various user groups makes adoption and transition easier

The next step is pilot testing. Pilot testing of the EIS solution with a select group of users, such as department heads, administrative staff, and faculty members, allows for gathering feedback and insights to identify any issues or challenges. Before a complete deployment, this phase enables the fine-tuning of the system installation and the solving of issues.

Training and support are needed for faculty, staff, or other users to effectively use the EIS. This helps to address user inquiries, troubleshoot problems, and optimize system performance. Furthermore, a phased rollout strategy ensures the

gradual introduction of the EIS solution across different departments, campuses, or user groups. Minimizing disruption and ensuring buy-in is achieved by open communication with stakeholders on the deployment plan, timing, and expectations. For example, throughout the deployment process, tracking developments, gathering feedback, and making the necessary modifications helps to ensure a smooth transition.

Lastly, evaluation and continuous improvement. Through surveys, feedback and performance metrics can be gathered to identify areas of enhancement. Continuous updates based on feedback, technical developments, and changing institutional needs. This ensures that it maintains to serve the university's mission of academic achievement and innovation

III. EIS IMPLEMENTATION CHALLENGES AND BENEFIT IN UNIVERSITY

There exist several challenges and benefits when the EIS implementation happens inside the university settings. As the world revolves more towards technology, specifically as the government pushes the University to improve their efficiency and performance [1], the needs of centralizing various tools become crucial, thus will trigger much reaction from various people in creating some sort of challenges and benefits.

For challenges, as the system was implemented by educational institutions, one of the main challenges that the institutions faced are complexity of the system itself and the resistance of people towards changing the system.

1. Complexity of the system

   Albeit the flexibility of the system, the system does come with hard implementation as the implementer of the system needs to fully understand the system that they want to implement. They need to understand each function of the implementation whether they are suitable to the business domain, in our case the University [4]. This is because it is hard to connect each business requirement to one complex puzzle. The educational institution needs to understand whether each department can combine.

2. Resistance to change

   Changes in implementing a new system in any organization requires tedious tasks as new changes will create instability of the current structure of the organization [5]. The resistance can also be understood as opposing the new reformation of the idea. Main reason for this is because the lecturer and the staff need to learn the new system from scratch while doing their current job. This will make them not have enough time to do it as they have enough plate to deal with. To deal with this problem, the leader of the institution needs to understand the key major of why they resist the change itself [5].

For benefit of implementing the system, one of the main benefits are increasing efficiency in various process and enhancing communication and collaboration

1. Process efficiency

   Implementing the system will make the administrative as well as student process become easier. This is because they can access everything through one system only. The way they do it is by using the lean principle [6]. The process helps the flow of information as the administrative process becomes complex. By doing it this way, the user of the system can take advantage of what the system can offer thus improving the time they need to do certain tasks. For example, UTM website has everything a student and staff need. From, financial inquiry, report, and result. Anything can be retrieved from one website.

2. Better communication

   With rapid increasing the field of knowledge as well as technology improvement has brought information management become more important [7]. By centralizing all the information to one place, all the users of the system can access it in one place. It will also create transparency in information as the information can be accessed by all, so, there will not be any fraud information happening. This in turn will make the communication between each department of the University better, for example, the Academic Department and Financial Department can communicate better as the Academic department has the information of the student, meanwhile the financial department has the information of the student’s financial information. This is crucial to any institution as it will ease any process that the user wants to do.

IV. CASE STUDIES OR REAL LIFE EXAMPLES

One compelling case study of Enterprise Information Systems (EIS) implementation can be found at the UNIVERSITI TEKNOLOGI MALAYSIA (UTM).

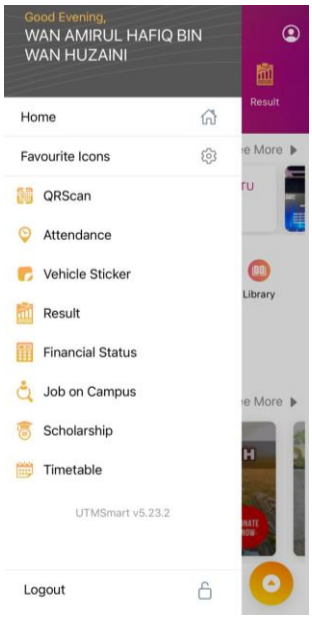

Fig. 1 Snapshot of UTM-Smart application

This application has various functionalities in which they integrate from different departments of UTM. This helps the student to retrieve and send necessary information in one place. This EIS example shows that it is possible to streamline all the information in one system, thus, creating a seamless experience to the student.

UTMSmart has multiple functions:-

1. **QRScan**: allow the student to record their attendance digitally. Lecturers can access the record in real-time attendance records
2. **Attendance**: allow the student to track their previous attendance record
3. **Vehicle Sticker**: allow the student to apply and retrieve Vehicle sticker to permit them to enter University compound
4. **Result**: allow the student to track their previous result of their exam
5. **Financial Status**: allow the student to keep track of their student debt as well as the option to pay for it
6. **Job on Campus**: allow student to find any job they can do inside the university
7. **Scholarship**: allow the student to apply scholarship as well as track their current scholarship status
8. **Timetable**: allow the student to create their own schedule.

Different functionalities can be done by combining different departments' functionalities, for example, the Security Department allows the student to access the vehicle sticker. The Academic Department allows the student to access their academic performance. This combined system can only be done by implementing EIS. This is the ultimate benefit of it.

V. CONCLUSION

In Summary, this research has uncovered various implementation strategies, benefits, challenges, as well as case studies or real life examples of implementing EIS in university. It is certainly possible to implement the EIS in any institution, in our case, University setting. It requires thorough studies to ensure implementation is smooth as well as the ease of user experience.

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