### 1.0 Introduction

## ABX is a collegiate university, consisting of the central University with different colleges. The central University has more than 9,000 students and 900 employees in four (4) faculties which are the Faculty of Arts and Creative, the Faculty of Business and Law, the Faculty of Computing and Engineering and the Faculty of Tourism. There are 5 independent education institutions in ABX University. In this research, the decentralized systems used by ABX University is discussed.

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### 2.0 Information System used in ABX University

### 2.1 ID Card System

This system is considered the most vital system among the others as it manages and identifies the student and personnel credentials. For example, it differentiate all the ABX University students into different groups like Computing , Business, Law and more. Furthermore, every students in ABX University are given a student ID card that has their name, photo and course that they’re studying and as well as intake on the card. Students and personnel are required to wear student ID card all the time for security purpose to access to restricted rooms to collect supplies or tools or the doors of entering the university.

### 2.2 Library Management System

This system is critical to every university’s library as there are countless books stored in the library and as well as numerous type of books to be categorized. Therefore, it is difficult for the staffs to manage all the books in the library. The objective of this system is to manage daily operation such as keeping track of the number of the books, managing the reservation of the books and discussion rooms. Hence, all the information of the books and students who borrowed will be recorded in this system to ensure all books are returned.

### 2.3 Online Feedback Management System

The online feedback management system determines the wellbeing of the university. This system abolishes all manual paper-based survey from collecting the feedback from the student and employees and it is time consuming to do so, as there are more than 9,900 individuals in ABX University. The online feedback management system allows the university to manage all the feedbacks and make quality decision for further improvement. For example, every end of semester, students will have to evaluate how well does the lecturer teach by filling up the online feedback form provided by the feedback management system.

### 2.4 Inventory Management System

Inventory management is the ongoing process of moving parts and products into and out of a company’s location (System and Price, 2018). This system includes aspects such as controlling and overseeing ordering inventory, storage of inventory (Tradegecko.com, 2018). ABX University uses this system in Faculty of Arts and Creative, and Faculty of Computing and Engineering. For example, tools and part in Faculty Engineering such as Printed Circuit Board, wench, saw and hammer are managed by this system, thus keeping track of ABX University’s asset to avoid losses.

### 2.5 Extenuating Circumstance System (EC)

The purpose of this system is to submit Extenuating Circumstances (EC) by students whom might have personal problems, medical or family problems that are outside of their control and are negatively affecting academic performance (University of Reading, n.d.). Students who’ve submitted EC form is allowed to take the examination as a first attempt instead of being considered as a resit (Asia Pacific University, 2018). Those whose EC are rejected for lack of evidence will have to retake module with attendance or take a resit paper. For an example: a student from ABX university could not attend the examination at the last moment due to personal issue. The student have to submit Extenuating Circumstance form alongside with relevant documentary evidence after the examination. Those EC claims are upheld will be allowed to take respective module papers.

### 2.6 Consultation/Appointment Booking system

The Consultation/Appointment Booking system is used to manage the interactive between the lecturer, personnel and student such as student booking a consultation with the lecturer. Furthermore, this enhances the convenience of students as they don’t have to physically go make an appointment with the lecturer. Besides that, lecturers can upload their available slot to meet with their student in their free time via this system, however, lecturer can cancel the session or change the venue and time. In ABX university, if students have doubts in their studies, they can book a consultation with the specific lecturer to have discussions about the studies.

### 2.7 Attendance Management System

Attendance is the action of student being present at a classroom or event. However, taking attendance manually in paper is time consuming if there is large number of students in the class. Therefore, by implementing attendance system, it will help save time by eliminating a great deal of manual processes involved in attendance and calculating hours attended. Attendance system also eliminates duplicate data entry and errors in time and improve visibility to track and manage student attendance and absenteeism across multiple faculties. These are prone to human errors and are obsolete when it comes to marking and capturing accurate attendance for multiple shifts (Abhilash, 2017). Lecturers in ABX are advised to take attendance after or before class to make sure no student is truant.

### 2.8 Accounting and Finance System

An accounting and finance system is a system that an organisation uses to oversee and govern its income, assets, and expenses with the objectives of maximizing profits and ensuring sustainability (Rouse, 2012). This system also ensures university has enough money in the bank to pay the staff on time and having enough capital to grow opportunity. This system includes cash flow to keep accurate tabs on regular expenses and income, being resourceful enough to have alternative sources of funding available in case of emergencies. Finance officer in ABX University plays a huge responsibility to keep accurate records for all daily transactions (Workable, n.d.)

### 2.9 Human Resource System

Human Resource system is a system that captures, stores and share information related to the practices and management of human resources in an organisation (Chinn, 2017). A human resource system helps an organization to keep track of Key Performance Indicator (KPI) of employees and determine the wellbeing of the organization. This system is able to identify the company whether the manpower is sufficient. For example, the staff in ABX University couldn’t complete the work in time and claiming overtime work hours, this has indicate that the department is lacking of manpower and this will decrease the productivity of the university.

### 2.10 Academic Management System

ABX University provide top-notch academic materials which is available for the students to use. Furthermore, certain academic materials are only accessible by certain students only. For instance, students who take business course in ABX University are only applicable to access to business course materials and students who take computing course are not eligible to access to the business course materials. Furthermore, student need to log in to the academic management system before accessing to the academic materials. Apart from that, students also able to download their academic materials so that they can study without connected to the Internet.

### 2.11 Class Reservation System

When conduct class replacement, lecturer needs to make reservation for the class they intended and must register one week earlier via the reservation system. Furthermore, lecturer needs to provide their ID and state the duration clearly that the lecturer needed before reserving the class. The informations written there must be clear and accurate as it is recorded into the database. After the lecturer registered, the admin staff will check the database of the reservation system, they will paste the reservation at the door that the lecturer desire. The reservation form contains date and duration which is occupied and not available for others lecturer.

### 2.12 Fees Management System

When student wants to pay for their academic course fees, they will have to visit the admin counter to pay. Therefore, admin will record the transaction via the fees management system. However, students who did not pay for their course fees will be shown above the fees management system and those students are banned from accessing to the course materials and they are charged with penalty fees for every week they did not pay. If they wants to access to the academic course materials, they will require to pay for their fees which also included penalty fees in order to re-access to their academic course materials.

### 2.13 Result Management System

ABX University has 9000 students which required a lots to time when comes to distribute the exam paper manually. Therefore, ABX University has implemented result management system. Result management system mainly use to display student’s academic performance throughout the year which students can view them online. In this case, lecturer will list out the grades in the result management system once the students have completed their exams which wsave up the time and papers..

### 2.14 Clock-In Management System

There are 900 employees working under ABX University in four different faculty. In this scenario, ABX University has large amounts of employees which is difficult to manage. Therefore ABX University implemented clock-in management system in order to monitor employees working hour to ensure that they are working according to the schedule. For instance, employees need to take their punch card and clock in before work which will be available at their department. After they have finished their work, they are allow to go back once after punching the card. Therefore, these actions are to ensure that their working schedule is able to be monitored and employees failed to clock in will be given warnings.

### 2.15 Timetable Management System

In every education organization, timetable management system is one of the most common system to these organization, used to arrange student’s daily class timetable, lecturer’s timetable. exam timetables and scheduling students or lecturers to individual classes. For instance, every end of the week, the scheduler will update the latest timetable for the students and lecturer including time and venue through email or application and if there are amendments or cancellation of the class will be updated instantly to avoid confusion. For an example, scheduler in ABX University uses timetable management system to manage classrooms and time for a specific intake. Then students will refer to the timetable.

### 3.0 Drawbacks of Current System

### 3.1 Complexity of the system

In every organisation, information systems are considered as a must in part of the business. However, without knowing how to use the system could greatly costs issues in the process. Therefore, it is necessary to be familiar with the functionalities of the system, thus, this will be a challenge for those who are not familiar with information technology due to the confusing interfaces to understand and as well as various systems have various way of using it. Hence, training classes must be conducted in the run to affirm the employees know how to operate the information system to support daily operations, however these training classes are not cheap and could cost a lot in a long run. For example, a student enquired about their results and CGPA, the administration staffs who are in charge should be aware of what system to use like using Result Management System could check the student’s result and able to print their CGPA, also able to determine whether he could proceed to next level of studies.

### 3.2 Data redundancy

Data redundancy is defined as same piece of data is held in two separate places and eventually combine into a single database. Currently ABX University is having a lot of information systems which most of the systems are classified as functional information system. Sufficient of data and updated data can help ABX University to make better decision. However, the system of the central university is not integrated with the other five universities. For instance, student’s academic information is collected from the other five universities to the central university to provide recognition of the students’ qualification, however there may occur data redundancy due to human error as there are large amount of information coming from the other five universities. Furthermore, if there are any corrections of the student’s information is needed, the admin must change one by one from the system, and after changing the information the latest updates must be also in the other systems as well. Hence, there will not occur data redundancy.

### 3.3 Maintenance

System maintenance is a process of monitoring, evaluating, and modifying of existing information systems to make required or desirable improvements. The modification of a system is important to improve performance. System maintenance carries an ongoing activity such as removing program, updating user support, and updating documentation. However, system maintenance may have expected failures which would result in unavailable materials and therefore delay the time to repair. When the system fails to repair within a given time, it can be costlier, causing users to have dissatisfaction. For an example, university needs to ensure bugs appeared in program and antivirus are up to date to maintain an acceptable level of security and keep running at optimal levels.

### 3.4 Inflexibility

System flexibility normally refers to the ability for the solution to adapt to possible or future changes in its requirement (Hill, 2011). In this case, ABX University’s system may be not flexible or too difficult to change after installing the system. A system that is not flexible may force an adopter to change their business processes to fit the system model (Carpenter, 2016). This requires a re-engineering of steps needed to complete business tasks and retraining of employees. People inherently do not like change, and this will create resistance and delays for any organization.

### 3.5 Data Inconsistency

Data inconsistency most likely to occur when there is data redundancy. It often occurs when a similar data kept in multiple databases and some database may contain incorrect information of the data. In ABX University's systems don't share a single database and each system has its own database. However, this has caused data inconsistency as students are required to give information to different faculties multiple times to store into different database. Moreover, it is very inefficient to do so as human errors are bound to happen, such as staff accidentally keyed in the wrong student ID or student may filled in the wrong student ID. For example, the student ID was TP042155 and it was written in TP042156.

### 4.0 Enhancement

Enterprise system is the combination of computer hardware and software that a business uses to organize and run its operations (BusinessDictionary.com, 2018). All the modules will be integrated into one system to increase productivity and the market value of the organization.

### 4.1 Synchronization Benefit

The purpose of implementing Enterprise System to ABX University is to synchronize the functions of different department. In this case, ABX University has more than 10 operating system with different database. Therefore, it is time consuming to transfer information from one to another department. Enterprise system will eliminate this issue as it has only one database in the system. For example, the system can determine whether the student is eligible for exam dockets without communicating with different departments.

### 4.2 Security

Informations of ABX University will be insecure if there is no data security. As enterprise system has firewall features which helps to block unauthorized users and data theft. Furthermore, admin can provide authorize access to certain authority to gain access to the data. For instance, authority is given unique username and password to gain access to the internal system.

### 4.3 Higher Scalability

Structured ERP systems allow the addition of new users and functions to grow the initially implemented solution over time LLC, W. (2018). Therefore, enterprise system able to adapt 9000 of students and 900 employees and if there is further addition of students or staff in ABX University, enterprise also should be able to facilitate the growth as enterprise system has high scalability

### 4.4 Save Cost

Enterprise system able to save up the maintenance cost as functional systems tend to be separate and contains diverse informations which results to many database created in ABX University. However, the consequences of having many database is higher maintenance fees and enterprise system able convert all the separate systems into one centralized database which able to reduce cost of maintenance.

### 4.5 Efficiency

Having a good enterprise system can save time and more efficient. With enterprise system implemented in ABX University, productivity can be increased so that the employees have more time to work on other pressing projects and tasks (workwise, n.d.). The employees will also be able to work easier since the solution was designed for ease-of-use. This is made possible because ERP system eliminates repetitive processes, and greatly reduces the need to manually enter information. The system will also streamline business processes, and makes it easier and more efficient for companies to collect data (workwise, n.d.).

### 5.0 Conclusion

The implementation of Enterprise System is beneficial for ABX University as the security is more strict, high scalability to grow more opportunities, and most importantly it can save a lot of cost for maintenance. With the help of enterprise system, information can flow seamlessly across the university. From the physical and logical diagram, we can also see that how would each users with different roles use the modules implemented within the enterprise system. However, there are many as many difficulties in enterprise system such as complexity of the system, system inflexibility and the data inconsistency. Therefore, many steps need to be taken to make sure such difficulties do not occur and affect the business process within the university.

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