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THE APPLICATION OF POWER BI IN PLANNING FOR NEW STUDENTS APPLICATION IN THE POST-GRADUATE PROGRAMS OF SUAN SUNANDHA RAJABHAT UNIVERSITY, THAILAND

Abstract:

The primary objective of this research was to develop the decision support system for the Academic Section that helps with new student admission in the post-graduate programs of the Graduate School, Suan Sunandha Rajabhat University, Thailand. This decision support system is expected to help in the analysis of the possibility of the program application and it also provides clear guideline for related staff members to work. Moreover, it can help with the development and modification of the marketing strategies so that the university can compete with other universities more efficiently. In conducting this research, students' information in each program from the registration section of the Graduate School as well as the Academic Service Department of the university between 2013-2017 was gathered. The decision system was developed by utilizing Microsoft SQL Server 2016 which was used to collect and stored the students' information. Apart from that SQL Server Business Intelligence Development Studio in the part of Integration Service was used to retrieve, modify and enter the data in the ETL process. Then, the data were examined for their relationship via Analysis Service. The result of this research was a data cube in which multiple dimensions of information can be retrieved and the Business Intelligence Program, known as 'Power BI' which could present report in a form of a dashboard via internet. With these innovations, the university administrators could view the overall data. This study also evaluated satisfaction towards the use of this program from ten users and found that they were satisfied with its capability in supporting the decision, its accuracy and its function. The overall satisfaction was rated at a high level with a mean score of 4.07 and standard deviation of 0.64.

Keywords:

Database, Business Intelligence

JEL Classification: Y80

Background and Significance of the Research

At the present time, many organizations have been facing with the problem of transforming a large amount of raw data into valuable information that can be utilized for the benefits of the organization. Employing a complete information system can support the operation of the organization as it can help every section within the organization to gain access to the data more easily, faster, and more accurately. Such data can help in the decision-making process of the organization (Patcharakamjaikul, and Jiravichitchai, 2015).

Accessing and using the data for the purpose of facilitating the decision-making process is one form of the utilization of the data for the benefits of the organization operation. This needs to be performed quickly and efficiently therefore routine data base seems not suitable for this operation. This is because the routine data base does not store previous data but making a decision sometimes need previous data to help predict the likelihood that may happen in the future. Additionally, a query for decision making is a specific query which requires the users to have certain technical knowledge. Such query requires complex entries which may affect the efficiency of information system that is it may lower the efficiency or it may cause unpredictable results. With this reasons, it is not suitable for the online analysis Patcharakamjaikul, and Jiravichitchai, 2015).

Business Intelligence or BI in short is a software that utilizes existing data to create a variety form of reports that are appropriate for conducting an analysis, showing relationship, and predicting the likelihood that may happen. Such capabilities of BI are consistent with the needs of the organization in using the data to facilitate its decision making and plan the strategies. BI can be defined as a set of process and data structure utilized to facilitate the understanding and analysis of business environment of the organization. It can be used to support an analysis, and develop strategies for the organization. Moreover, it can be used to support the decision making of the organization administrations in certain issues (Noonkrajai, 2008)**.**

To respond to the advance in technology, this research was conducted with the aim to propose the utilization of a computer software called "Power BI" or Power Business Intelligence, also known as a report software for the administrators, in the organization. This software program could enable the organization to utilize existing data for the maximum benefits with less time used for creating a report. The report received from this software program could be developed in a variety of forms according to the demand of the users. This program was expected to facilitate a decision making for the management of the organization.

Research Objectives

The primary objective of this research was to develop the decision support system for the Academic Section that helps with new student admission in the post-graduate programs of the Graduate School, Suan Sunandha Rajabhat University, Thailand.

Research Methodology

This research was conducted according the following process:

1. Studying and collecting the data from existing system used by the Graduate School: it was found that the Graduate School did not utilize any information system to manage the data. In order to solve this problem, certain standards need to be developed so that data can be gathered systematically and these data needs a certain mean to gain access easily so that they can be used to facilitate a decision making and the operation of the organization. Upon realizing this problem, two processes of working were developed which were the process of creating a data base and a process of preparing a business report. These two processes could be further developed to create an intelligent business system that facilitated a decision making for the organization with the most efficient and effective results.

2. Analyzing and designing a system: the researcher utilized the data of the Registration and Evaluation Section of the Graduate School to create a data base in a form of relationship by using the Microsoft SQL Server 2016 and create a data cube by using the SQL Server Business Intelligence Development Studio. Once the needs of the users had been determined, a data flow to explain the process of working was developed. This data flow enabled the users and related staff members to have better understanding in the system.
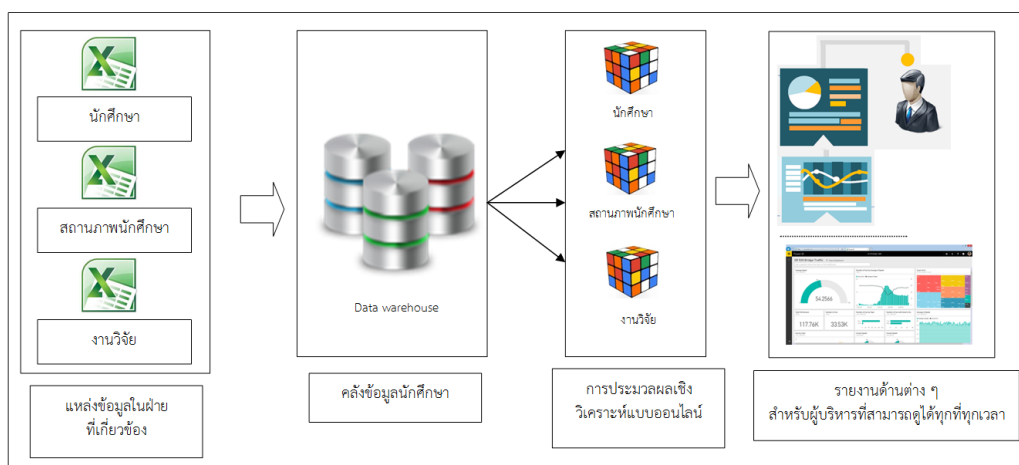

Figure 1: Newly developed working system

3. Developing a new system: In developing a new system, the Microsoft SQL Server 2016 and the SQL Server Business Intelligence Development Studio were used. As for the preparation of reports, the Microsoft Power Bi was used. This system was a significant tool that enabled an access to the data from the data cube in a form of multiple dimensions. This study developed an intelligent business system in a form of Schema by creating a relationship of the tables in a form of 'Snowflake Schema' as shown below.
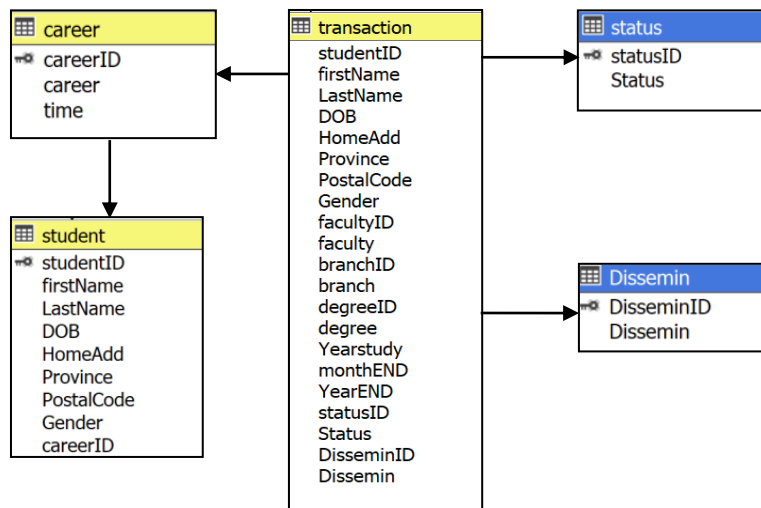

Figure 2: The design of a data base

4. Testing the new system: the researcher had tested the whole new system to check whether it could work according to the determined aim. After that, ten selected users were allowed to test the new system and they were asked to evaluate their satisfaction on this new system. The results showed that the users' satisfaction was rated at a high level, with a mean score of 4.07 and a standard deviation value was at 0.64.

The Research Results

As a result of this research, the users could gain access to and utilize the data from the developed data base and create an intelligent report in a form of a dashboard which could provide various views for the benefit of an analysis that met with the needs of the administration and the users.
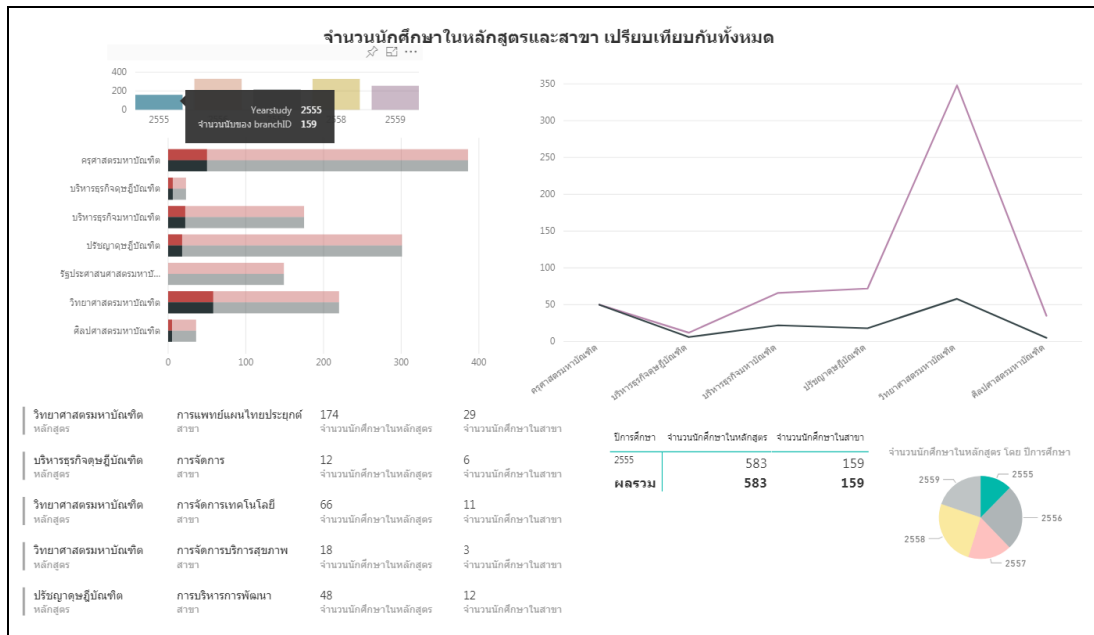
Figure 3: A report in a form of a dashboard

Figure 3 showed an example of an intelligent report which could provide data on the number of students, the programs, and others. This report could provide the data on various views and forms, both in a drill down form and a roll up form.

The results gained from the test of the newly developed system done by ten selected users were shown in Table 1 below.

Table 1   The users' satisfaction on the new system

Items	Satisfaction		
	$\overline{x}$	S.D.	Interpretation
Capability of the system in facilitating a decision making	4.10	0.61	High
Accuracy of the system	4.20	0.68	High
Performance of the system	3.90	0.63	High
Total	4.07	0.64	High

Conclusion

After employing the newly developed intelligent business to facilitate a decision making of the Graduate School, Suan Sunandha Rajabhat University by creating a

database from the data of the Registration and Evaluation Section, it was found that the operation of the organization was more efficient. The administrators could gain access to the data more conveniently and could use them to analyze and manage the work more effectively. It also lessened unnecessary steps in working in certain tasks. This system was easy to use and could create reports in various forms for the administrators.

As for the satisfaction of the users, it was found that the overall satisfaction was at a high level ($\bar{x}$ = 4.07, S.D. = 0.64). The satisfaction on the accuracy of the system had the highest mean score ($\bar{x}$ = 4.20, S.D. = 0.68), followed by the capability of the system in facilitating a decision making ($\bar{x}$ = 4.10, S.D. = 0.61), and the performance of the system ($\bar{x}$ = 3.90, S.D. = 0.63).

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