

Implementing Power BI for Report Management in Graduate School

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Abstract

The objective of this research was to modify the report format and summarize the report of the Graduate School of Suan Sunandha Rajabhat University by utilizing Business Intelligence through the Microsoft Power BI program. The study comprised a sample of 30 administrators and graduate school staff, and open-ended questionnaires were used to gather data. The findings indicated that the majority of the samples were female, and 24 individuals were aged between 31-40 years old. Moreover, 17 respondents reported being single, and their income fell within the range of 15,000 - 25,000 baht. Intelligent reports (Dashboard) were created using data from the information system, which can be customized in analytical views, aiding in quick and accurate decision-making. The satisfaction assessment demonstrated a mean score of 4.15, with a standard deviation of 0.67. This reporting method enables executives to make swift decisions and reduces the need for multiple presentations. The results can be presented in a more diverse format.

Keywords : Power BI / Report Management

INTRODUCTION

Information technology has become increasingly important in the modern workplace as rapid changes continue to occur in various areas. With businesses becoming more competitive, organizations need to rely on modern and timely information to support quick decision-making. Senior executives can use this information to plan and respond to business problems in a timely manner. Collecting a significant amount of data is necessary to obtain such information, which may include both internal and external data from competitors or other organizations in the same business sector. It is crucial to select valuable information from this vast amount of data to ensure that the information system developed meets the needs of the organization's top management. Overcoming these obstacles requires a system that provides insight and valuable information about business activities to the organization. Consequently, many organizations are now recognizing the importance of information technology in supporting their work, management, and executive decision-making process to gain a competitive advantage and access valuable information (Carr, 2004). In order to maximize the benefits of decision-making, there has been a significant increase in global investment in business intelligence technology. Many organizations are willing to pay for such technology to enhance their overall business performance. Thailand has also been making efforts to boost the competitiveness of small and medium enterprises (SMEs), particularly by promoting the adoption of information technology in the management of industrial businesses. These initiatives have been highlighted in the literature by Bruque and Moyano (2007) as well as Peppard and Ward (2004, p. 189).

The application of technology within organizations results in direct and indirect changes, posing a challenge for executives to utilize technology for maximum benefit to the business. Information technology was first introduced for use within organizations in Thailand in 1964 (Kamonchanok Yaipangkaew, 2009, p. 4). In today's highly competitive business environment, information technology has become a widely used tool in organizations to facilitate decision-making, leading to greater efficiency and success in management (Sarayut Soonthornnan, 2016, page 1).

Trends in using Business Intelligence (BI) have grown steadily over the past decade. Many organizations are integrating BI into their business activities, such as purchasing ready-made software to manage databases, outsourcing work system, developing for critical tasks such as income-expense accounting systems, warehouse systems, and customer management systems (Davis et al., 2006). However, research suggests that two-thirds of enterprise BI adoption fails due to various factors that affect the adoption of BI to support business processes. These factors are not limited to technological factors alone (Kamel & Samia, 2002).

Upon analyzing the provided information, it becomes apparent that many organizations are increasingly recognizing the significance of employing Business Intelligence (BI) to support their business activities. However, it should be noted that the high failure rates of BI implementation cannot be ignored (Kamel & Samia, 2002). The effective utilization of BI in an organization cannot solely rely on technological factors. Numerous environmental factors can significantly influence the use of BI, including personnel, organizational culture, and various information technology tools used by organizations to manage data and information. Hence, the objective of this research is to investigate the

application of Power BI in generating reports that enable executives to make informed decisions efficiently. The implementation of Power BI can also reduce the consumption of paper resources, and executives can access reports on their mobile phones anytime, anywhere, enhancing the accessibility and speed of report review.

RESEARCH OBJECTIVE

to alter the report format and provide a summary of the Graduate School's activities at Suan Sunandha Rajabhat University.

Literature review

Microsoft Power BI

David Iseminger (2016) describes Power BI as a suite of business analytics tools that enable users to analyze data and share insights. The Power Dashboard provides business users with a 360-degree view of the most important metrics in one place, updated in real-time, and accessible across all devices with a single click. The intuitive tools provided within Power BI make exploring the information behind the dashboard easy, and users can create a simple dashboard to connect to more than 50 connections. In today's business organizations, information flows dynamically across multiple directories. Particularly in systems that use large amounts of data, such as industrial enterprises, systematic data management is crucial. The digital storage of large volumes of data is usually achieved through databases. However, some organizations may have multiple database formats due to different application implementations, such as Microsoft SQL, MySQL, and Excel, among others. Retrieving these data and presenting the results in a report can be complicated and confusing. Many people responsible for managing

reports may adopt a step-by-step approach and combine each section of information into a report. However, this method is time-consuming and may lead to errors in the report presentation.

The key features of Power BI

1) Power BI provides a Dashboard system that facilitates the creation of user-friendly reports. Additionally, it includes a report package that streamlines the report creation process, saving time and effort.

2) Power BI has the ability to handle various types of data for analysis by categorizing data into different types including;

- Data in a text file format such as Text, Excel, CSV, and XML;
- Data stored in databases such as PostgreSQL, MySQL, DB2, Sybase, Oracle, SQL Server, and Access Database;
- and cloud-based data sources, which are typically accessed through Microsoft Azure services.

Administration concepts and theories

Definition of administration

The term "administration" refers to a set of actions performed by the executive branch of government. Nevertheless, similar to other concepts within the social sciences, there is no widely accepted definition of "administration" (Maneethorn, 2008, p. 1).

However, contemporary scholars adopt a broader perspective towards administrative resources by recognizing that there are additional factors beyond the four mentioned above. For instance, William T. Greenwood (1965) suggests that administrative resources should comprise at least seven aspects: man,

money, materials, formal authority, time, job satisfaction, and support services. This underscores the significance and necessity of formal authority and time management in administration. It is noted that effective administration, be it in the public or private sector, requires a proper exercise of formal authority and the allocation of sufficient time that matches the nature and requirements of the task at hand. As the emphasis shifts towards business administration, management experts place additional importance on other factors, including man, money, materials, methods, markets, and machinery, which are collectively referred to as the 6Ms.

Related research

Wichitra Patcharakamchaikul and Niwet Jiravichitchai (2015) conducted a research study on the development of business intelligence systems for product sales planning for distributors. The study utilized a case study from a large-scale distribution database, namely the Northwind Relation Database, which was transformed into a data warehouse. The developed system was designed based on the Star Schema structure principle and employed the Multidimensional Data Analysis (OLAP) technique to facilitate prompt data input and retrieval for executives' decision-making processes. The significance of this applied research lies in the system's ability to utilize available data to generate reports in various formats that are suitable for analyzing, correlating, and predicting potential trends to meet the organization's strategic planning needs effectively. Based on the evaluation of the system's quality by users in all aspects, the average rating was found to be 4.07 with a standard deviation of 0.61. These results suggest that the developed system is of good quality and can be effectively applied in practical settings.

Research Methodology

This study employed quantitative research methodology.

Population and sample

The study population consisted of 30 people who held administrative and staff positions within the Graduate School.

Data collection methods and procedures

1) The researcher prepares an adequate number of questionnaires to correspond with the targeted sample size.

2) The researcher distributed the questionnaire to a randomly selected sample, ensuring that each participant received clear instructions and an explanation of the study objectives before beginning to answer the questionnaire. The researcher collected the completed questionnaires over a period of approximately one month. Subsequently, the researcher collated and organized the data for analysis.

Data analysis

The basic statistical analyses included percentages, means, and standard deviations.

Research Findings

Part 1: Demographic Characteristics of Respondents

Table 1: Number and Percentage of Respondents by Gender

Gender	Number	Percentage
Male	6	20.00
Female	24	80.00
Total	30	100

Based on the data in Table 1, it can be concluded that the majority of the respondents were female, accounting for 80 percent of the sample, while the male respondents accounted for 20 percent.

Table 2 Number and percentage of respondents' personal information classified by age

Age	Number	Percentage
20 - 30	1	3.33
31 - 40	22	73.33
41 - 50	4	13.33
51 and over	3	10.01
Total	30	100

Table 2 presents the number and percentage of respondents' personal information classified by age. The results showed that the majority of the respondents fell into the age range of 31-40 years, accounting for 73.33% of the total participants. The second-largest age group was 41-50 years, comprising 13.33% of the respondents.

Table 3 Number and percentage of respondents' personal information classified by marital status

Marital status	Number	Percentage
Single	17	56.66
Married	13	43.34
Divorce	-	-
Total	30	100

According to Table 3, the analysis of respondents classified by marital status revealed that the majority of individuals were single, accounting for 56.66 percent of the sample. In contrast, 43.34 percent of respondents reported being married.

Table 4 Number and percentage of respondents' personal information classified by average monthly income

Monthly income	Number	Percentage
15,001-25,000 Baht	26	86.67
25,001-35,000 Baht	4	13.33
35,001-45,000 Baht	-	-
45,001 Baht or more	-	-
Total	30	100

Table 4 shows the number and percentage of respondents classified by average monthly income. The majority of respondents reported an average

monthly income between 15,001-25,000 baht, representing 86.67% of the sample, followed by respondents reported an income between 25,001-35,000 baht, representing 13.33% of the sample.

Part 2: Assessing Power BI Applications

Table 5. Satisfaction evaluation results of the Power BI smart business system.

Assessment Items	Level of demand		
	\bar{X}	S.D.	Level
The speed and accuracy of data import into the BI system	3.87	0.68	high
The processing speed of the BI system	4.13	0.86	high
The system's ability to update information as needed	4.27	0.64	high
The variety of display formats by the BI system	4.17	0.65	high
The accuracy and reliability of the BI system	4.17	0.53	high
The visual appeal and attractiveness of the system	4.20	0.61	high
The clarity and ease of understanding of the analytical report format	4.23	0.68	high
The display resolution of the data analysis provided by the system	3.90	0.76	high
The ease of use of the BI system	4.23	0.73	high
The system's ability to support decision-making	4.33	0.61	high
Overall Satisfaction Assessment Summary	4.15	0.67	high

According to the results presented in Table 5, the overall satisfaction assessment of the Power BI smart business system was found to be high ($\bar{X}=4.15$, S.D. = 0.67). Moreover, upon examining the individual components of the system, the system's ability to support decision-making was evaluated at the highest level ($\bar{X}=4.15$, S.D. = 0.67). In contrast, the speed and accuracy of data import into the business intelligence system were assessed at the lowest level ($\bar{X}=3.87$, S.D. = 0.68).

Conclusion

The objective of this research is to examine the procedures and fundamental principles of integrating business intelligence to facilitate executive decision-making. Additionally, this study aims to assess the level of user satisfaction in relation to the utilization of executive decision support with the assistance of business intelligence, specifically through the Microsoft Power BI program. The information system in place employs an Excel database, which facilitates both system development and efficient data management practices. This research can utilize available data to generate reports in multiple formats that facilitate the analysis of data correlations, contributing to effective business strategy planning. Based on the results of the system satisfaction questionnaire completed by 30 users, the mean satisfaction score was 4.15 with a standard deviation of 0.67. These findings suggest that the implementation of business intelligence is effective in supporting executive decision-making.

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