

# Using Data Analytics for Effective Organizational Budget Planning

Kannika Sripanamvan <sup>1\*</sup>, Anchalee Hiranphaet<sup>2</sup> and Nutnicha Lekburut<sup>3</sup>

<sup>1,2</sup>College of Logistics and Supply Chain, Suan Sunandha Rajabhat University, Bangkok, Thailand

<sup>3</sup>Bangkok Thonburi University, Bangkok, Thailand

e-Mail: <sup>1\*</sup> kannika.sr@ssru.ac.th, <sup>2</sup> anchalee.hi@ssru.ac.th, <sup>3</sup>nutnicha.lek@bkkthon.ac.th

\*Corresponding author

## Abstract

This study on the effective use of data analytics in organizational budget planning aims to examine the application of data analytics in the organizational budget planning process and to evaluate the effectiveness of using data analytics in budget management in terms of speed, accuracy, transparency, and support for managerial decision-making. The sample group consists of personnel involved in budget preparation and management within organizations, selected using purposive sampling. The research instrument is a questionnaire, and data analysis employs descriptive statistics including frequency, percentage, mean, and standard deviation.

The overall application of data analytics in organizational budget planning is high, particularly in budget control and monitoring, budget preparation, and supporting management decision-making. This reflects the effectiveness of data analytics in improving budget management efficiency, reducing errors, and increasing transparency in organizational resource utilization. Furthermore, the most important success factor is management support, while the main limitations are personnel and skills in using data analysis tools. The results of this study can be used as a guideline for developing a systematic, data-driven organizational budget planning process that aligns with the concept of digital-era public sector management, leading to efficient, transparent, and sustainable budget management.

## 1. Introduction

In today's rapidly changing economic and social environment, both public and private organizations need to adapt to challenges and uncertainties, especially in budget allocation, a crucial mechanism for driving organizational missions and strategies. Effective budget planning not only ensures operations meet planned targets but also reflects the efficient, transparent, and responsive use of resources to stakeholders at all levels. However, many organizations still struggle with budget planning due to reliance on traditional methods that rely only on partial quantitative data and forecasts based on operational experience. This can limit accuracy, flexibility, and responsiveness to constantly changing situations. Decision-making under insufficient information results in budget allocations that do not align with actual needs, potentially leading to losses in both cost and opportunity for the organization. Over the past decade, advancements in Information and Communication Technology (ICT) have given rise to new tools capable of efficiently collecting, analyzing, and processing vast amounts of data. One widely recognized tool is data analytics, which helps organizations transform raw data into valuable information and knowledge, leading to more accurate and effective strategic

decision-making. Research by Wanida Suwannipon et al. (2022) from the Faculty of Management Science, Suan Sunandha Rajabhat University, found that analyzing behavioral data and decision-making in the digital economy enhances understanding of behavioral patterns. It also supports data-driven decision-making, reflecting the role of technology and analytical data in effectively applying it to organizational management processes.

The use of data analytics in the budget planning process is crucial because it helps organizations to:

1. More accurately predict revenue and expenditure trends,
2. Analyze risks and identify factors affecting budget utilization,
3. Identify areas where cost savings can be achieved without compromising operational quality, and
4. Prioritize projects or activities based on empirical data, rather than solely on personal judgment.

The College of Logistics and Supply Chain, Suan Sunandha Rajabhat University, has a key mission in education, research, and academic service. Efficient budget utilization is a crucial factor in supporting the college's operations and achieving its strategic goals. However, the current budget planning process faces limitations due to the use of unsystematic data, a lack of data linkage between departments, and project evaluation that relies more on discretion than empirical data. As a result, budget allocations may not align with actual needs.

Therefore, applying Data Analytics to budget planning is a vital approach to improving budget management efficiency by analyzing data from multiple sources to support strategic decision-making. This research is significant both academically and practically, as it contributes to the development of knowledge in the use of Data Analytics in educational institutions and can be used to improve the budgeting process, making it more transparent, flexible, and aligned with digital government policies and sustainable development.

## **1.2 Research Objective**

- 1.2.1 To study the importance of Data Analytics in organizational budget planning.
- 1.2.2 To analyze the processes and tools of Data Analytics used in budget management.
- 1.2.3 To evaluate the impact of using Data Analytics on the effectiveness of budget management.
- 1.2.4 To propose guidelines for applying Data Analytics to make budget planning more effective.

## **2. Literature review**

This review of concepts, theories, and research related to budget management and the use of data analytics covers budgeting concepts and theories, public sector budget planning concepts, the context and characteristics of budget management within the College of Logistics and Supply Chain, and data analytics concepts. Data analytics is the process of analyzing quantitative and qualitative data to support strategic decision-making. Relevant research reflects that the application of data analytics enhances the accuracy, transparency, and efficiency of budget management, while reducing risks and errors compared to traditional

methods. This literature therefore serves as a crucial knowledge base for developing the conceptual framework of this research.

### 3. Methodology

This research is a descriptive study aiming to investigate the importance of data analytics, analyze the processes and tools used in budget management, evaluate the impact on budget management efficiency, and propose guidelines for applying data analytics. The sample group consisted of 10 support staff working in planning and budgeting at Suan Sunandha Rajabhat University. Data was collected using a questionnaire. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to analyze the data.

### 4. Results

Analysis of opinions regarding the use of Data Analytics and the effectiveness of organizational budget management.

Table 1: Overview of opinions regarding the use of Data Analytics and budget management.

รายการ	$\bar{x}$	S.D.	Level
Using Data Analytics in the Budget Planning Process	3.91	0.69	A lot
Tools and Techniques Used in Budget Management	3.54	0.79	A lot
Impact on Budget Management Efficiency	4.23	0.61	A lot
Success Factors and Obstacles	3.70	1.79	A lot
total	<b>3.82</b>	<b>0.97</b>	A lot

Overall, the survey respondents expressed a high level of opinion (mean = 3.82), indicating that the application of Data Analytics is accepted and viewed as a useful tool for budget management. Considering each aspect individually, the impact on budget management efficiency had the highest mean (mean = 4.23), indicating a high level of opinion. This reflects respondents' belief that data analysis plays a crucial role in improving the efficiency, accuracy, and cost-effectiveness of budget utilization. This was followed by the use of Data Analytics in the budget planning process, which had a high mean (mean = 3.91), demonstrating the perception of the benefits of analytical data in supporting budget decision-making.

Regarding success factors and obstacles, the mean was at a high level (mean = 3.70). However, the standard deviation was relatively high (S.D. = 1.79), reflecting differing opinions among respondents regarding obstacles, particularly concerning personnel skills and the readiness of the information system. Meanwhile, the tools and techniques used in budget management had the lowest mean (mean = 3.54), but still remained at a high level.

In conclusion, the research results indicate that the application of Data Analytics in budget planning and management can help increase the accuracy of budget forecasting, reduce budget preparation time, and increase transparency. It also effectively supports strategic decision-making by management. However, organizations should still focus on developing employee skills and improving information systems to further enhance the effectiveness of applying data analytics.

## 5. Conclusion

This research on the effective use of Data Analytics in organizational budget planning aims to study the application of data analysis in organizational budget planning and management. The research findings indicate that the application of Data Analytics plays a significant role in enhancing budget management efficiency in terms of speed, accuracy, and transparency, as well as supporting more effective managerial decision-making.

Furthermore, the study highlights key success factors such as management support, the availability of data systems, and data analysis skills among personnel. Limitations identified include a shortage of specialized personnel and incomplete data integration between departments.

In conclusion, the application of Data Analytics in budget planning can help organizations manage resources efficiently, transparently, and in line with the concept of digital-era public sector management. The research findings can serve as a guideline for developing budgeting processes in educational institutions and other government agencies with similar contexts to support future changes and sustainable development.

## Acknowledgment

This research report, "Using Data Analytics for Effective Organizational Budget Planning," part of the Routine to Research (R2R) project for the fiscal year 2025, has been successfully completed thanks to the kind assistance and support of the Research and Development Institute, Suan Sunandha Rajabhat University. The author would like to express sincere gratitude to them.

Special thanks also go to the support staff working in planning and budgeting at the university for their cooperation in completing the questionnaires, which provided crucial data for the success of this research.

## References

- Mingkhwansakul, C., & Rungsawanpho, D. (2024). Factors affecting the disbursement efficiency of graduate schools, Suan Sunandha Rajabhat University. In Proceedings of the International Conference on Technology, Education, Management, and Sustainability (ICTEMS), 106–110
- Wongprajan, N., & Nilaphornkul, N. (2022). Factors of budgeting process and budget management that influence the efficiency of the Royal Thai Air Force annual budget disbursement. *Academic Journal of North Bangkok University*, 11(1), 60–69.
- Pattaradapa, T., Chindapol, W., & Huanprapai, P. (2023). Implementing Power BI for report management in graduate school. *SSRU Journal of Business Administration and Educational (SSJABE)*, 1(1), 1–13.
- Mingkhwansakul, C., & Rungsawanpho, D. (2024). Factors affecting the disbursement efficiency of graduate schools, Suan Sunandha Rajabhat University. In Proceedings of the International Conference on Technology, Education, Management, and Sustainability (ICTEMS), 106–110.
- Suwunniponth W., (2022). Consumer Behavior and Online Purchasing Decisions for Community Products in the Digital Economy Era. *Ssru Journal of management science*, 9(1), 38-53

- Gulick, L. (1937). Notes on the theory of organization. New York, NY: Institute of Public Administration.
- Paphatsarakanch. S., (2003). *Public finance*. Bangkok, Thailand: Chulalongkorn University Press.
- Likhitthamroj. P., (2007). *Public finance and budgeting*. Bangkok, Thailand: Thammasat University Press.
- Trakansirinan. P., (2005). *Public sector budget administration*. Bangkok, Thailand: Ramkhamhaeng University Press.