Data-Driven Decision Making: The Role of Data Analytics in Business Development at UIN Bukittinggi

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Abstract. This research investigates the role of data analytics in business development at State Islamic University (UIN) Bukittinggi. With the significant growth in data volume generated by higher education institutions and the complexity of decision-making in the context of higher education, data analytics has become increasingly important. The aim of this research is to understand the use and comprehension of data analytics among faculty, students, and administrative staff at UIN Bukittinggi and to analyze its impact on local business and economic decision-making. Research methods include surveys, interviews, and secondary data analysis. The results indicate that the level of understanding of data analytics varies among respondents, with faculty having a lower comprehension compared to students. While the hardware infrastructure at UIN Bukittinggi is adequate, the availability of data analytics software is still limited. Additionally, there is a need for improvement in data analytics skills among faculty and administrative staff. The research also identifies that the use of data analytics in business decision-making at UIN Bukittinggi is still limited, although some efforts have been made to integrate it into strategic planning. However, business development at UIN Bukittinggi has had a positive impact on the local economy, creating jobs and increasing local income.

Keywords : business development; data analytics; data-driven; decision making

1. Introduction

The use of information and communication technology (ICT) has brought significant changes to various aspects of human life, including business and education(Agit et al., 2024). One notable change is the shift from decision-making based on intuition or subjective experience to data-driven decision-making (DDDM), which has become a fundamental approach in various industries and sectors. Particularly in the higher education environment, universities and colleges have begun implementing DDDM as a tool to enhance the management and development of various aspects, including education and business (Blayney & Sun, 2019).

State Islamic University (UIN) Bukittinggi, located in West Sumatra, Indonesia, is one of the higher education institutions that has embraced the concept of Data-Driven Decision Making (DDDM) in its business development (Sonita et al., 2022). UIN Bukittinggi is deeply committed to enhancing the quality of education, facilitating student success in the business and entrepreneurship realms (Harfandi et al., 2022), and making positive contributions to

the local community(Shonia Az Zahra et al., 2023). In this context, the role of data analytics is highly pertinent, offering profound insights into various aspects such as student performance, business trends, and local development opportunities(Rosihana et al., 2024).

The integration of data analytics in business development at UIN Bukittinggi has demonstrated significant potential in optimizing campus operations, enhancing resource efficiency, and improving the quality of teaching and learning (Angraini & Yasyak, 2023; Ridhah et al., 2023; Widianita et al., 2023). DDDM enables a better understanding of student profiles, encompassing engagement levels, program preferences, and academic challenges (Sonita & Febrimansyah, 2023). Moreover, data analytics can pinpoint local business opportunities, foster innovation and entrepreneurship, and strengthen relationships with external stakeholders, including local companies and industries (Basyirah et al., 2023; Rosihana et al., 2024).

Nevertheless, the implementation of DDDM at UIN Bukittinggi encounters several challenges. One of the primary obstacles is ensuring adequate technological infrastructure and the availability of skilled personnel proficient in data analytics. Additionally, it is imperative to guarantee that the data used in decision-making is accurate, relevant, and compliant with privacy regulations. Therefore, in-depth research and the formulation of appropriate strategies are necessary to ensure the effective integration of DDDM in the business development processes at UIN Bukittinggi (Sonita et al., 2021).

A major challenge that may be encountered is the lack of understanding of the concept and potential of data analytics among faculty, students, and administrative staff at UIN Bukittinggi (Jamaludin et al., 2023). This lack of comprehension could serve as a barrier to adopting DDDM. Insufficient technological infrastructure, including data analytics software and access to quality data, could hinder the effective collection, management, and analysis of data. Moreover, the absence of data analytics skills among faculty and students might impede the university's ability to make data-driven decisions (Syarifah & Nabhan, 2022).

As part of their commitment to improving the quality of education and contributing to local economic development (Mariska et al., 2023), UIN Bukittinggi is determined to understand and apply DDDM effectively. Therefore, research investigating the role of data analytics in business development at UIN Bukittinggi will provide valuable contributions to the practical and academic understanding of how DDDM can be effectively applied in the higher education context in Indonesia, potentially serving as an example for other educational institutions (Rais et al., 2023). Thus, this research will attempt to answer important questions about how the use of data analytics can shape business development in the academic environment and potentially have a positive impact on the community and the local economy.

2.   Methods

In this research, we applied descriptive statistical analysis methods to comprehend the characteristics and trends of data related to the understanding of data analytics among faculty, students, and administrative staff at UIN Bukittinggi. This method enabled us to provide a detailed description of the data concerning the research issues.

2.1 Research Design

The type and source of data in this research are primary data, collected from various sources, including surveys distributed to respondents and interviews conducted with some participants. The survey contained questions designed to measure the level of understanding of data analytics concepts, barriers to adopting data analytics, and the availability of technology infrastructure and data access at UIN Bukittinggi. Following the data collection, the first step in the analysis was to calculate basic descriptive statistics, such as the mean, median, and mode, and standard deviation to understand the extent to which data deviates from the averagePopulation and Sample.

The population in this research comprises the academic community of UIN Bukittinggi, including faculty, students, and educational staff. To address the research questions, the researcher employed purposive sampling, a technique that involves selecting samples based on specific considerations such as the characteristics of the population or known traits (Notoatmodjo, 2010).

2.2 Data Collection

In our quest to unravel the complexities surrounding data analytics adoption within the academic community of UIN Bukittinggi, a meticulous research methodology was employed. Rigorous efforts were made to gather insights and perspectives from the diverse stakeholders - faculty, students, and educational staff. The data collection process, a cornerstone of our study, involved employing a range of methodsData were collected through various methods, including: Interviews with faculty, students, and educational staff at UIN Bukittinggi; Surveys, to measure their understanding of data analytics and its use in business decisions; Secondary Data, including academic data, business data, and local economic data.

2.3 Data Analysis

Data analysis was conducted using qualitative data analysis of interviews employing content analysis methods, allowing us to derive valuable insights and discern meaningful patterns from the responses provided by the participants. This in-depth examination provided a rich context for understanding the perspectives and experiences shared during the interviews, contributing significantly to the depth and comprehensiveness of our findings.

3.   Results and Discussion

3.1 Result

The results of the descriptive analysis indicate variations in the understanding of data analytics concepts among faculty, students, and administrative staff. The average level of comprehension differs significantly within these groups. To enhance the presentation of this data, we utilized tables and graphs, providing a visual representation of the distribution of understanding levels.

One of the primary challenges identified is the lack of familiarity with data analytics concepts among faculty, students, and administrative staff. Many individuals lack a background in data analytics and find complex analytical techniques challenging to grasp. This limitation in understanding is pervasive across the surveyed academic community.

The survey results shed light on the overall level of understanding within the sample, revealing the widespread challenges faced by the academic community in comprehending data analytics concepts.
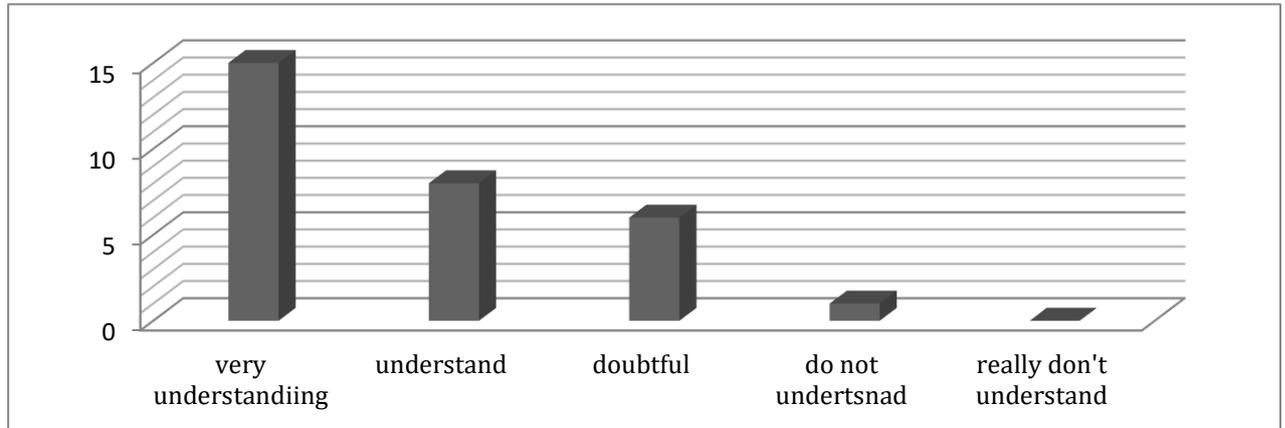

Figure 1 Level of Understanding of Data Analytics Among Students
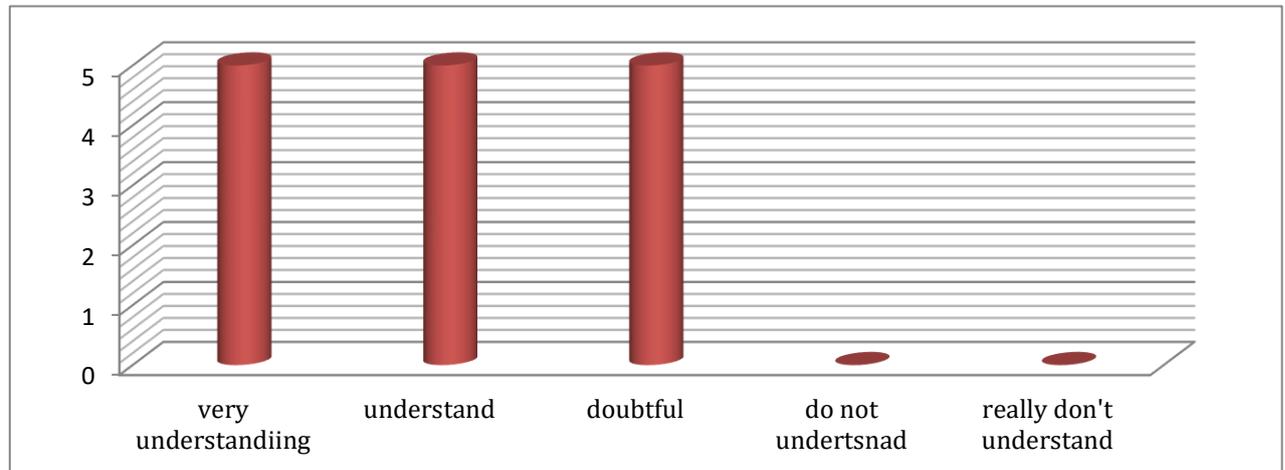
Source: Processed primary data

Figure 2 Level of Understanding of Data Analytics Among Faculty
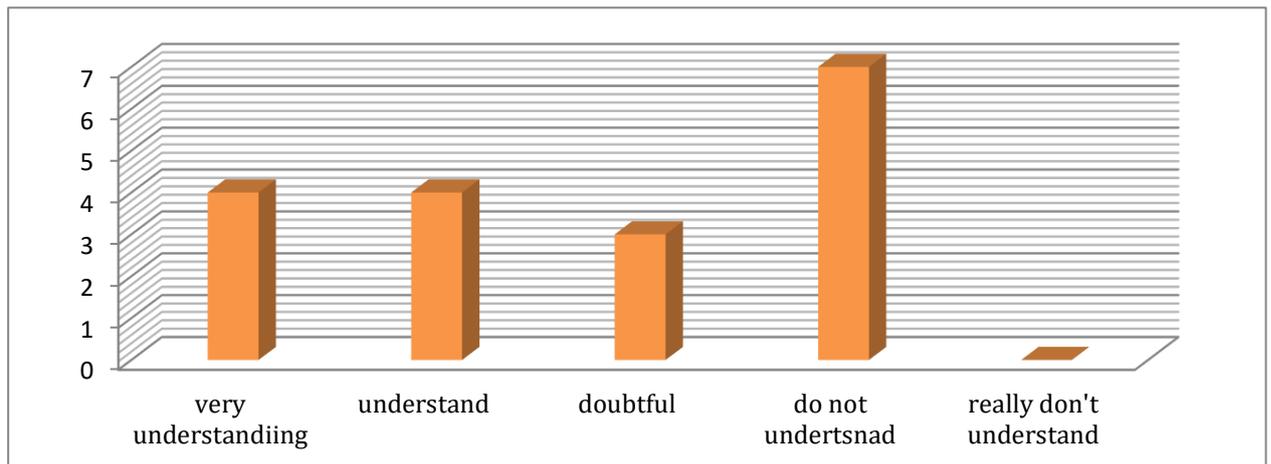
Source: Processed primary data

Figure 3 Level of Understanding of Data Analytics Among Administrative Staff

Source: Processed primary data

The survey results reveal that the level of understanding of data analytics among faculty at UIN Bukittinggi is relatively low, with only 30% of respondents feeling they have an adequate understanding. In contrast, students exhibit a higher level of understanding, with 50% of them acknowledging their sufficient grasp of data analytics.

Several respondents pointed out that limited access to the hardware and software required for data analytics acts as a significant barrier. Currently, UIN Bukittinggi lacks fully available adequate technological infrastructure necessary for effective data analytics.

Upon examining the technological infrastructure, it becomes evident that UIN Bukittinggi possesses satisfactory hardware infrastructure. However, the essential data analytics software is still lacking. Fortunately, plans are underway to enhance this infrastructure in the near future.

The survey results regarding the availability of technology infrastructure at UIN Bukittinggi indicate:
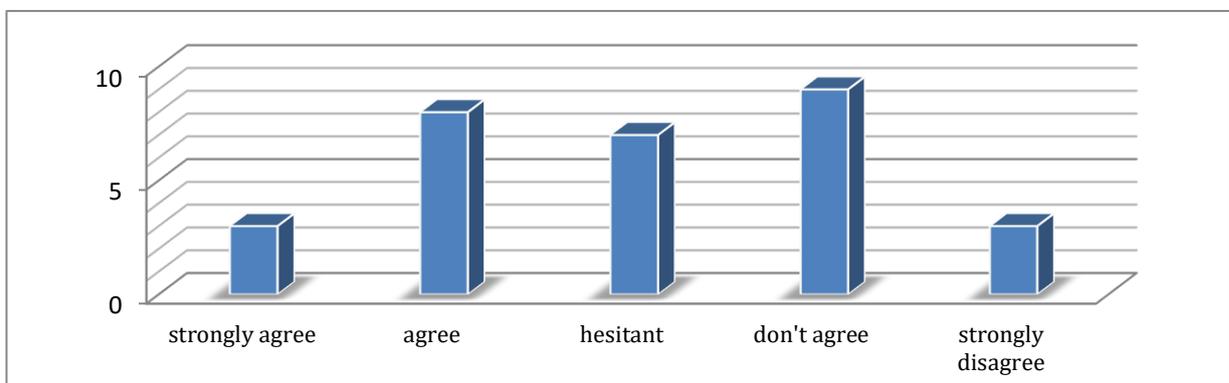

Figure 4 Student Assessment of the Completeness of Technology Infrastructure.
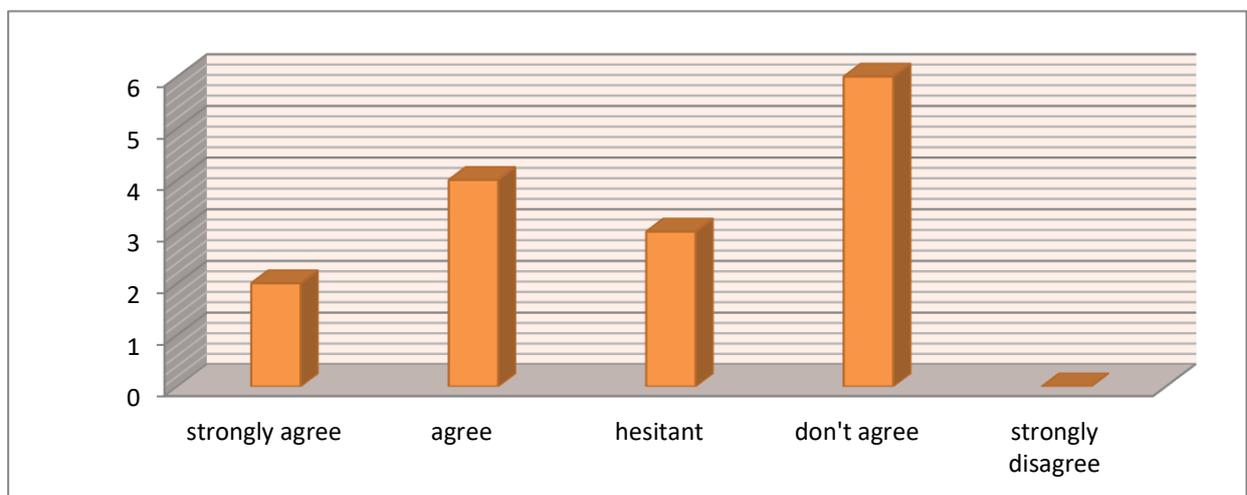
Source: Processed primary data

Figure 5 Faculty Assessment of the Completeness of Technology Infrastructure
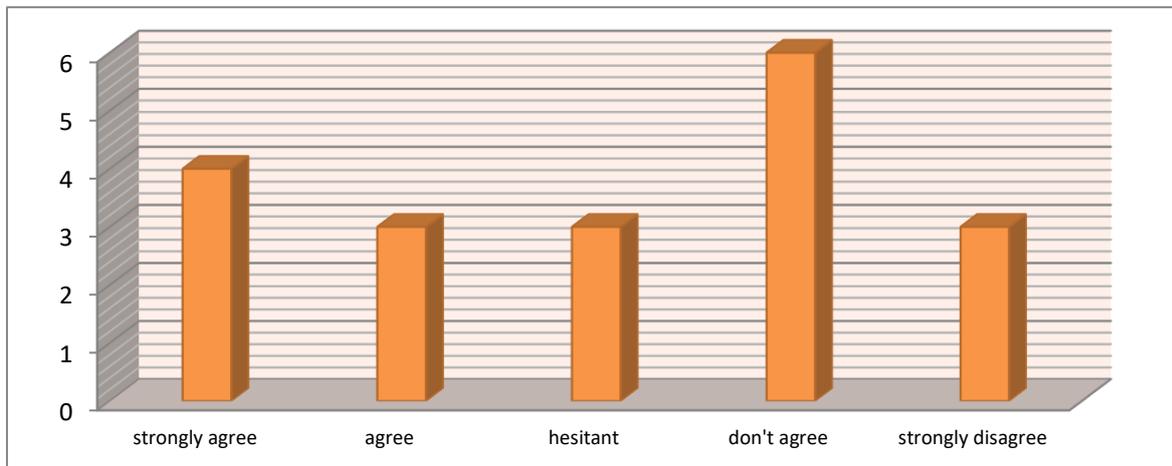
Source: Processed primary data

Figure 6 Administrative Staff Assessment of the Completeness of Technology Infrastructure
Source: Processed primary data

3.2 Discussion

The survey results regarding the completeness of technology infrastructure available at UIN Bukittinggi indicate that, overall, the academic community believes the existing technology infrastructure is insufficient for business development activities at the university. Interview results reveal that the majority of faculty and administrative staff at UIN Bukittinggi lack adequate data analytics skills. Some expressed an interest in receiving training in this area.

Regarding students' proficiency in data analytics skills for business development, approximately 45% stated they do not possess adequate skills. In contrast, faculty assessment indicated that only about 25% have data analytics skills, while administrative staff exhibited a mastery rate of approximately 20%. This study reveals that data analytics has not been fully integrated into business decision-making at UIN Bukittinggi, although some initiatives have been taken to incorporate data analytics into strategic planning.
Furthermore, we examined the frequency distribution of the level of understanding by calculating the percentage of respondents falling into specific categories, such as low, moderate, or high understanding. This analysis helped us identify the varying levels of understanding among respondents.

Additionally, cross-analysis was conducted to identify significant differences in the understanding levels among faculty, students, and administrative staff. Utilizing the descriptive statistical analysis method, we were able to depict a clear picture of how the understanding of data analytics concepts was distributed among our respondents. These results are instrumental in addressing research questions related to the understanding of data analytics at UIN Bukittinggi and its impact on the use of data analytics in business development at the institution.

The full integration of data analytics into the organizational culture of UIN Bukittinggi's business decision-making processes remains a challenge. Many respondents find data analytics too complex and difficult to understand. They express the need for a simpler

approach and clear guidance to comprehend and effectively apply data analytics. A less supportive organizational culture serves as a hindrance to data analytics initiatives, making it necessary to promote this cultural change to integrate data into business decision-making. The research findings illustrate that adopting data analytics in the context of business development at UIN Bukittinggi is a challenging endeavor. Continuous efforts are required to enhance understanding, skills, and the organizational culture surrounding data analytics.

4.   Conclusions

In wrapping up this research, we've carefully examined the data and patterns to draw meaningful conclusions. These conclusions are like puzzle pieces coming together, helping us see the bigger picture. In simpler terms, there are some conclusions that we can have from this research: Understanding of Data Analytics: The level of understanding of data analytics among the teaching staff at UIN Bukittinggi is relatively low, with only 30% of respondents feeling that they have adequate understanding. In contrast, students have a higher level of understanding, with 50% of them claiming to have sufficient knowledge of data analytics, Challenges in Understanding Data Analytics: The primary challenge in understanding data analytics is the limited access to the required hardware and software. Adequate technological infrastructure is not yet fully available at UIN Bukittinggi, Evaluation of Technological Infrastructure; Despite having adequate hardware, UIN Bukittinggi lacks the necessary data analytics software. There are plans to enhance this infrastructure in the near future. Readiness for Business Development; The academic community assesses that the availability of technological infrastructure is insufficient to support business development activities at UIN Bukittinggi. Most teaching staff and administrative personnel lack adequate data analytics skills, Integration of Data Analytics in Business Decision-Making; Data analytics has not been fully integrated into the business decision-making process at UIN Bukittinggi. Some initiatives have been taken to use it in strategic planning, Challenges in Data Analytics Usage; Some respondents find data analytics too complex and difficult to comprehend. They require a simpler approach and clear guidance. The organizational culture that does not strongly support data analytics initiatives is a hindrance.

Based on the conclusions, we can recommend that sustainable efforts are needed to enhance understanding, skills, and the organizational culture related to data analytics usage. Improvements in technological infrastructure should be prioritized. Cultural changes within the organization that support the use of data analytics in business decision-making should be promoted.

Thus, the research findings indicate that UIN Bukittinggi has significant work to do in harnessing the potential of data analytics for business development. Efforts to improve understanding, technological infrastructure, and organizational culture should be a priority to effectively integrate data analytics into business decision-making.

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