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Business Intelligence

Introduction

Business Intelligence (BI) is a set of techniques and tools organizations use to collect, store, access, and analyze data to support their decision-making processes. In the past decade, advances in data storage, processing, and analytics have led to a proliferation of BI tools and applications that can help organizations gain new insights into their data and make data-driven decisions. Recently, BI has proliferated as organizations have recognized the benefits of using data to gain a competitive advantage and make better decisions.

Survey on Recent Business Intelligence and its Applications

BI has a wide range of applications in various industries. The retail industry uses BI to analyze customer behavior, optimize inventory management, and improve supply chain efficiency (Babakus & Yavas, 2019). In the healthcare industry, BI improves patient outcomes by analyzing electronic health records and identifying patterns in patient data (Khan et al., 2018). In the financial industry, BI detects fraudulent activities and improves risk management (Das et al., 2016). In the manufacturing industry, BI is used to improve production efficiency, reduce costs, and increase customer satisfaction (Jiang et al., 2016).

A recent survey by Forrester Research (2020) found that organizations are increasingly turning to BI to gain a competitive edge. The survey found that organizations use BI to improve customer experience, optimize operations, and drive innovation. Forrester also found that organizations are increasingly using cloud-based BI platforms, which can help to reduce costs and improve scalability.

A recent survey by Gartner (2020) found that BI and analytics are among the top technology priorities for organizations. The survey also found that organizations increasingly use BI to improve their decision-making processes and gain a competitive advantage.

Impact of BI on the Quality of Decision Making

BI significantly impacts the quality of decision-making by providing organizations with the ability to access, analyze, and use data to make informed decisions. According to (Davenport, 2018), BI enables organizations to identify patterns, trends, and relationships in data that would otherwise be difficult to detect. This can help organizations to identify new opportunities, improve performance, and make better decisions. A study by Harvard Business Review (2019) found that

organizations that use data-driven decision-making are more likely to achieve better outcomes and outperform their peers. BI can help organizations make more accurate and data-driven decisions by providing access to real-time data and advanced analytics tools.

One of the key ways in which BI can improve decision-making is through the use of dashboards and visualizations. These tools allow managers and other decision-makers to quickly and easily understand key metrics and trends in the data. For example, a retail organization may use BI to track sales data and identify which products are selling well and which are not. This information will in turn be used to inform decisions about inventory and marketing.

Another way in which BI can improve decision-making is through the use of predictive analytics. Predictive analytics uses statistical techniques to identify patterns in the data and make predictions about future outcomes. For example, a financial organization may use predictive analytics to identify customers at risk of defaulting on their loans. This information can then be used to decide loan approvals and collections.

Another way in which BI can improve decision-making is through the use of augmented analytics. *Augmented analytics* is a new BI tool category that uses machine learning to generate insights and recommendations from data automatically. This can help organizations to make faster and more accurate decisions by providing access to insights that may not be immediately obvious. Additionally, augmented analytics can be used to automate the data exploration process and make it more accessible to non-technical users.

Evaluation and Performance Assessment of BI Systems

Evaluating and assessing the performance of BI systems is crucial for organizations to ensure they are getting the most value from their investment. A study by the Journal of Management Information Systems (2018) suggests that organizations should evaluate BI systems based on the system's ability to access and analyze data, the data's accuracy, and the system's usability for end-users. Additionally, organizations should regularly assess the system's performance to ensure it meets its goals and objectives.

There are various methods for evaluating and assessing BI systems, such as the Balanced Scorecard (BSC) method, the Data Warehouse Capability Maturity Model (DWCMM), and the Business Intelligence Maturity Model (BIMM) (Kerremans & De Haes, 2014). These methods provide organizations with a framework for evaluating and assessing the performance of their BI systems, including factors such as data quality, system functionality, and user satisfaction.

One way to evaluate a BI system's performance is by using key performance indicators (KPIs). These metrics are used to measure the performance of the system and the organization as a whole. For example, a retail organization may use KPIs such as sales per square foot, customer acquisition cost, and return on investment to measure the performance of its BI system. Additionally, organizations can use metrics such as user adoption and data quality to evaluate the performance of their BI systems.

Another way to evaluate the performance of a BI system is through the use of A/B testing. A/B testing is a method of comparing two versions of a system to determine which is more effective. This can be done by comparing the versions to determine which is more effective. This is used in evaluating the performance of a BI system by comparing the results of a BI system to those of a manual analysis.

Additionally, organizations can use usability testing and user feedback to evaluate the performance of their BI systems. These can be used to gather end-user feedback on the system's usability and effectiveness. This feedback can then be used to make improvements to the system and ensure that it meets the organization's needs.

Challenges and Issues in BI Implementation

Despite the potential benefits of BI, organizations may need help in implementing and maintaining BI systems. A study by the Journal of Business Research (2020) found that the most common challenges faced by organizations include a lack of data quality, inadequate infrastructure, lack of user adoption, and a lack of understanding of the business requirements. Another challenge is data integration, as organizations need to integrate data from various sources, such as databases, spreadsheets, and external sources, to provide a comprehensive view of their data (Elshaer et al., 2018). Additionally, organizations may face challenges in keeping their BI systems up to date and incorporating new data sources and technologies.

One of the most significant challenges is data quality, as organizations must ensure that the data they use is accurate, complete, and relevant (Wang et al., 2019). For a BI system to be effective, the data must be accurate, complete, and consistent. However, many organizations need help with data quality issues, such as missing or incorrect data, which can lead to inaccurate or misleading insights.

Another challenge is user adoption, as organizations must ensure that their employees are trained and motivated to use the BI system effectively (Al-Mashari et al., 2003). Many organizations need help to get their employees to use the BI system, leading to a lack of buy-in and a lack of value from the system. This can be addressed by providing training and support and involving end-users in the design and development of the system. Additionally, organizations may face challenges with scalability and flexibility as their data grows over time, and the system needs to be able to handle this growth (Kerremans & De Haes, 2014).

Additionally, organizations may face challenges in ensuring data security and compliance with regulations such as the General Data Protection Regulation (GDPR) and the Health Insurance Portability and Accountability Act (HIPAA). This can require significant investments in technology and processes to ensure that the organization complies with relevant regulations and that data is adequately protected.

Another issue that organizations may face in BI implementation is integrating data from various sources. In order to gain a complete and accurate picture of the organization's data, it is often

necessary to integrate data from various sources such as databases, spreadsheets, and cloud-based services. This can be a complex and time-consuming task, requiring significant resources and expertise to ensure that data is properly integrated and the system is functioning correctly.

In conclusion, BI is a critical tool for organizations to gain a competitive edge and to make data-driven decisions. However, implementing and maintaining BI systems can be challenging, and organizations must overcome challenges such as data quality issues, user adoption, and integration with other systems. By evaluating and assessing the performance of BI systems and addressing these challenges, organizations can ensure that their systems provide value and support better decision-making.

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