

Data Handling & Business Intelligence
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London

August 2023

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Introduction

There have been notable advancements in business intelligence (BI) field in recent years, which has largely transformed organisations' strategic directions. Thus, businesses need to stay ahead of the competition by making informed decisions.

The process of organising and interpreting all of an organisation's information for the aim of deriving a legitimate output from that information is known as "data handling," and it is the most critical part of the process. Business intelligence is another significant feature under which firms throw attention on obtaining correct data and producing valid outcomes from the same¹. Ingestion of business data and presentation of that data in user-friendly formats, such as reports, dashboards, charts, and graphs, are the primary functions of software designed for business intelligence. Users of business intelligence tools are granted access to a variety of data formats, including semi-structured and unstructured data, as well as historical and current data, data sourced from third parties and data generated in-house, and semi-structured data.

With the quick technological advancements and the ever-changing data complexities, firms need to be updated with the latest BI trends, which will help them to remain competitive (Tripathi, Bagga, and Aggarwal, 2020). This report aims to assess five current business intelligence trends and their business implications. The trends discussed in this report are data security and discovery, integrating artificial intelligence (AI) with business intelligence, mobile business intelligence, autonomous business intelligence, and analytical databases. Understanding these trends will enable businesses to adopt them for operations optimisation, facilitating data-driven decisions and promoting the company's competitive edge.

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Data Security and Discovery

Significant concerns about the need for sturdy data governance practices and data security in the BI field have been raised regarding the augmented growth of data. Organisations have prioritised data cleanliness, protection, and integrity as they continue to garner vast amounts of data. According to Hassan et al. (2022), data security and discovery are the major crucial components of effective business intelligence strategies. Organisations need to implement firm security measures like encryption, access controls, and monitoring mechanisms to maintain the integrity and accuracy of data (Hassan et al., 2022). These measures are crucial for the business since they safeguard it against breaching data and unauthorised access and ensure confidentiality of sensitive information. In addition, data discovery techniques like data lineage and cataloguing are vital since they extract useful insights and identify valuable data. Once these techniques are implemented, an organisation will gain a deeper understanding of its data landscape, which will lead to informed decision-making based on high-quality, reliable data. Organisations prioritising data security and discovery can comply with data privacy regulations, establish trust with stakeholders, and mitigate emerging risks. Alawida et al. (2022) postulate that the foundation for reliable and accurate business intelligence analysis is secure and clean data since they enable organisations to make informed decisions based on reliable information.

Integration of Artificial Intelligence (AI)

Business intelligence has been integrated with artificial intelligence to form a transformative trend that has massively propelled the success of businesses. Abdoune et al. (2022) postulate that BI tools powered by AI can uncover hidden patterns, facilitate predictive analytics, and automate data preparation. AI uses algorithms capable of processing big data dimensions very quickly to enable more reliable and faster data analysis. AI-driven systems for BI use natural language processing and machine learning techniques to develop clear and actionable insights from unstructured and very complex data sources. In addition, businesses can optimise resource allocation, streamline their operations' performance, and enhance customer experiences by leveraging AI in BI (Ouyang et al., 2023). For example, businesses can integrate AI-powered chat bots in business intelligence dashboards, allowing users to make data-driven decisions and obtain insights through conversational interfaces. While integrating AI-driven business intelligence systems, businesses and organisations must consider the potential biases and ethical considerations associated with these systems, such as insensitive responses of chat bots to queries (Pai et al., 2022). The insights generated by AI should be critically interpreted to

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ensure proper validation with the domain expertise for more responsible and reliable decision-making.

Mobile BI

Mobile devices have been recording a remarkable rise in popularity, transforming how people access information, with the BI field affected significantly. Mobile BI is the ability to access and analyse data using tablets and smartphones. Organisations have recognised the need for real-time insights into their considerations of the noticeably increasing mobile-centric business environment. According to Adeyelu, Kalema, and Bwalya (2018), mobile BI has enabled decision-makers to access critical data efficiently and make well-informed decisions. In addition, this trend has heavily supported the proliferation of mobile applications designed mainly for BI purposes. The applications have provided dashboards and interactive visualisations optimised for mobile devices as per their responsive design and intuitive user interfaces. A study by Edirisinghe (2022) on BI trends highlights some of the benefits of mobile business intelligence as productivity enhancement, increased accessibility, and improved decision-making efficiency. A business that has embraced BI keeps gaining a competitive advantage as mobile devices dominate the digital landscape; hence, the decision-makers are being empowered to move towards data-driven insights (Edirisinghe, 2022).

Analytical Databases

Organisations aiming at deriving valuable insights must be able to efficiently manage, analyse, and store large amounts of information in the era of big data. As one of the key trends in business intelligence, analytical databases have offered enhanced ways for data processing and analysis at large. These databases enable organisations to gear their data power and support complex analytical queries for strategic decision-making. Zulkifli Abai et al. (2019) argue that analytical databases are crucial in any business since they enhance scalability and query performance. The authors add that integrating analytical databases in BI boosts support for advanced analytics techniques since they use several technologies in their operation, including indexing, columnar storage, and different algorithms for improved data analysis (Zulkifli Abai et al., 2019). Further, leveraging analytical databases can enable businesses to make decisions faster and improve data processing speed.

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Autonomous BI

The emergence of autonomous business intelligence is due to the growing demand for real-time information and the increasing data systems complexity in the current world. Janiesch et al. (2022) define autonomous intelligence as a more advanced type of AI that can operate accurately without humans' direct supervision, input, or intervention. It involves integrating machine learning techniques and artificial intelligence into the business intelligence systems to enable them to generate insights, make crucial recommendations, and automate data analysis. Through the autonomous BI trend, the reliance on manual analysis has been dramatically reduced, which has empowered decision-makers to have real-time actionable intelligence. The system automatically uses AI algorithms when discovering trends and patterns within large datasets, enabling organisations to encourage data-driven decision-making by identifying hidden insights. Trieu (2022) explored the benefits of autonomous BI and highlighted reduced time to develop new insights, enhanced decision-making agility, and improved data accuracy. Autonomous BI enables businesses to leverage advanced algorithms and automate routine tasks.

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Conclusion

In conclusion, the field of business intelligence has demonstrated considerable improvements, which necessitate the need for businesses to have an up-to-date knowledge of the most recent trends in BI in order to continue to be successful and competitive. Mobile business intelligence, analytical databases, data security and discovery, autonomous business intelligence, and the integration of artificial intelligence (AI) are some of the most important trends in business intelligence. In addition, companies need to apply these trends since they offer greater data accuracy, streamlined operations, enhanced efficiency in decision-making, increased accessibility, and maintained security. All of these benefits may be achieved through the implementation of these trends. The adoption of these trends helps businesses to capitalise on the power of data to drive innovation and achieve a competitive advantage in the current state of the business environment.

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