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Business Intelligence and Analytics are Used to Analyse Data and Gain Domain Knowledge for Strategic Competencies

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Abstract

This study was motivated by the need in company management for capabilities that enable all decision-makers and organisational leaders to autonomously put their BI and A knowledge and skills to use. This study intends to give evidence of potential gaps, patterns, and emphasis on domains of strategic leadership competences in BI and A by analyzing the evolution of scientific production during the last 20 years. There were two methodological stages to the investigation. Application of informetrics analytical techniques is the first stage of the methodology. Second phase of methodology machine learning and natural language processing. On August 16, 2021, 1231 articles were collected from the Web of Science and Scopus databases.

Keywords: Informetric • Intelligence and analytics • Competencies • Capacities • Machine Learning (ML) • Formalization of domain knowledge

Introduction

Business Intelligence and Analytics (BI and A) is a general term that is frequently used to refer to technology, systems, and procedures for gathering, storing, accessing, and analyzing data to assist users in making better decisions, as well as best practices for information analysis. Real-time, integrated information is now produced by BI and A instead of static reports. The three phases of BI and A are conceptually separated. The core of BI and A 1.0 was descriptive analytics, where data were organised and gathered from within businesses. With the introduction of big data in BI and A 2.0, a new strategic phase for comprehending market needs was added. BI and A developed rapidly, giving rise to BI and A 3.0, which poses the difficulty of working with unstructured data. This is due to the increasing development of IT the surge in web and mobile devices. The broad use of analytics by traditional organisations, which has the ability to revolutionise their business models and culture, is the distinguishing feature of BI and A 3.0 analytics. During this phase, businesses develop large-scale data and analytics based solutions, and analytics activities industrialise more and more, frequently utilising thousands of Machine Learning (ML) models. This has sped up the development of Artificial Intelligence (AI), which is now receiving more attention as a result of the vast amount of data that is now accessible. Predictive analytics with AI can be performed more quickly, intelligently, and effectively. It has the capacity to process enormous amounts of data in real time, providing the opportunity for highly accurate findings. Four important issues are addressed in our contribution: Given that there are no studies that report on this, we first develop an analysis of the scientific output of the previous 20 years on the competences required by professionals who manage organisations by managing using BI and A. Second, since all previous studies in the field of BI and A have only used bibliometrics, scientometrics, and informetrics, and none of them have verified their findings with the use of unsupervised AI algorithm techniques, the methodological design involved the use of two techniques for the development of the analysis.

Description

The ability to forecast the future and make accurate strategic evaluations of the organization's resources and skills depends on the ability to create and implement a new vision for future strategy based on the opportunity seen through BI and A. The ability to adapt, innovate, and transform ideas into new and improved products, processes, and internal and external services is known as intellectual agility, and it is thought to be a crucial component of BI and A. Depending on the stage of organisational growth, CEOs who manage organisations need to be both knowledgeable with BI and A and have an appreciation for it. Although it is not necessary to have a background in statistics, such leaders must comprehend the theory

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underlying various quantitative methodologies and the necessity of providing personnel with substantial training.

Due to this, a metric analysis was created, in which a search protocol was used to gather data from the Web of Science (WoS) Core Collection and Scopus, the two most widely used multidisciplinary database platforms, without regard to time. The metrics related to scientific activity, such as scientific collaboration, structural analysis, and thematic structure, were the main emphasis of the analysis that corresponded to the informetric methodological stage (stage 1). The three document typologies that were examined, as shown by the results of scientific activity according to document typology, were reviews, articles, and conferences. Over the past 20 years of research, the latter two have each exhibited an increased tendency, whereas reviews have over the same time span shown a significantly downward trend. Generally speaking, conferences produce more than publications. There are 658 conferences and 561 papers in total. Reviews accounted for 80 and 83 papers in 2018 and 2020, respectively, demonstrating growing interest.

Conclusion

According to the findings of our study, which combined Machine Learning (ML) and Natural Language Processing (NLP) techniques, eight topics with high scores were identified. These topics were concentrated on empirical industrial domains that dealt with the processing of unstructured big data that was targeted at the company, market, and customer. The remaining issues (8 and 0), which most likely evolved as a result of the COVID-19 revisions, can be stated to be focused on predictive analytical approaches and examinations of a company's technological infrastructure and architecture to support the evolution of BI and A. BI and A techniques are related to logistics and distribution on the one hand, and to health issues on the other.

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