

Guest Editorial Preface

Reviewing Information Systems and Analytics – Past, Present and Future

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Over the past few years, analytics (or “business analytics”) has gained attention from scholars and practitioners in many business disciplines. The most common goal in its use is to help businesses grow. Business Analytics (BA) has gained traction in every realm, whether marketing, sales, human resource, information technology, medical sciences, operation management, teaching and learning, behavioral studies and other fields. The growth of this promising area can also be judged by the academic world starting to offer traditional credit courses and short-term non-credit courses. Further, researchers are exploring it in different contexts and publishers are launching journals dedicated to BA. Practitioners are hiring graduates and even building their entire business on the principles of BA. While studies rely on the fundamentals of Davenport and Harris’ (2007) seminal definition for understanding analytics, recent studies have matured from that definition grounded in data that is equally important as oil is. We can also say that BA is more of a contextual application of operations research and data science. In simple terms, it is a combination of descriptive, prescriptive, and predictive modeling.

While businesses are busy churning data, academic researchers are trying to understand how multiple theoretical perspectives explain the application of analytics in different applications (Behl, 2020; Behl et al., 2019). Some of the recent studies have also attempted to address this concern. Dubey et al. (2019) used a resource-based view theory to understand enhancements in a firm’s performance, while Duan et al. (2020) discuss using a theoretical lens to understand the importance of BA in a firm’s innovation success. Similarly, Hazen et al. (2016) reviewed eight theories to examine the role of big data and predictive analytics on supply chain sustainability. Information systems (IS) scholars are working mainly in two dimensions: theory-focused and practice-focused. Information Systems (IS) scholars have critiqued the rate at which there is a paradigm shift in information systems and analytics; it is essential to review the field and the body of knowledge quite often.

The growth of information systems and trending applications of analytics in business functions have gathered attention (Mendon et al., 2021). While there have been numerous studies being done in the field from the lens of theory and practice, it is important to record the journey in the form of a systematic review. The advantage of reviewing papers over other categories is that it can sum up research on any topic/theme over a significant time duration.

This Special Issue publishes six interesting and diverse studies that contribute to the area of analytics. The first paper, “Consumers’ Green Consumption Behavior: A Myth or Reality in the Information Age? A study Based on Bibliometric Analysis Approach,” assesses research activities in green consumption behavior where the flow of information is helping consumers to mold their minds towards green consumption. Bibliometric analysis has been applied for the current study using 1,447 research papers on green consumption behaviors from Scopus Indexed journals for the 2015 to 2020 period. This research adds to the current literature on the behavior of green consumption in the edge where information is floating in many ways. The current study provides the first baseline

data on this subject, which will be used to develop green consumption plans for future comparisons and policymakers.

The second study, “Data Analytics in Small and Medium Enterprises (SME): A Systematic Review and Future Research Directions,” discusses the growth of data analytics in the SME sector. Despite the growing importance of SMEs and increasing research in data analytics, the existing literature lacks an integrated view of the phenomena. A systematic literature review of 42 published research studies from peer-reviewed journals from 2010-2021 related to data analytics and SME is performed to bridge this gap. After classification, categorization, and synthesis, four broad themes are addressed: enabling factors, restraining factors, investing SMEs, and performance indicators. Further, research gaps identified thrust research areas, and insights for future research directions are presented.

The third study, “Deep Learning Techniques for Demand Forecasting: Review and Future Research Opportunities,” categorizes research on the applications of deep learning techniques in demand forecasting and suggests further research directions. This study is based upon 56 papers published between 2017 and April 2021 in international peer-reviewed elite journals. The primary objective of this paper is to identify the major problem domains in demand forecasting. The authors conducted a literature review that utilizes deep learning techniques for demand forecasting and proposed directions for future research. The study classifies the literature into nine major problem domains based on different issues discussed in the literature.

The fourth study, “Information Processing and Data Analytics for Decision Making: A Journey From Traditional to Modern Approaches,” discusses the evolution of computerized decision support, considering the: (a) Model-Driven (b) Data-Driven (c) Communication Driven (d) Document Driven and (e) Knowledge-Driven decision support systems. The study considers all three different business levels: Operational, Tactical, and Strategic in the context of decision support systems. The traditional data analysis-based approaches have been compared with the latest data analytics approaches, including social media analytics and web analytics. Examples from the different industry sectors have been incorporated for better illustrations of decision support.

The fifth study, “Non-Functional Requirements Analysis Based on Application Reviews in the Android App Market,” proposes a loop matching classification technique (LMC). The three classification techniques of LMC, BOW (Bag of Words), and TF-IDF (term frequency-inverse document frequency) were used to classify user comments. The accuracy, recall rate, and F-measure of the results of the three classification techniques were compared. It was found that the Precision value of the LMC classification technique was superior at 74.2%, the Recall was 82.5%, and the F-measure was 78.1%.

In the sixth paper, “Blockchain-Based Incentive Compatible Reputation Management System in Vehicular Networks,” the authors put forward a Blockchain-based incentive-compatible trust management system. It provides a concise and practical incentive mechanism to stimulate vehicles to broadcast road-related emergency information and vicinity vehicles to evaluate its timeliness. They also propose a novel method to calculate the reputation score to reflect the history behavior better. The transactions on the reputation scores are recorded in a consortium Blockchain consisted of Road Side Unit (RSU). The system has been experimentally validated to have a lower time delay and higher accuracy, and more accuracy reputation scores in Vehicular Networks.

The guest editors believe that the Special Issue would instigate new research areas in the domain of business analytics. The published papers offer a theoretical, practical, and thematic classification of the topic and suggest valuable areas of future research.

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