Guest Editorial Preface

Special Issue on Intelligent Decision Support Systems for Supply Chain Management System

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As the business environment of organizations is changing constantly, it is evident that intelligent and strategic Decision Support Systems (DSS) are required for successful and tactical management of organizations and sustaining competitive advantages. Some of the common threats that are imposed on current managers and decision makers include availability of a number of choices regarding demand conflicts, product order priorities, exploring new risks and opportunities. The adoption of intelligent DSS frameworks and alignment of artificial intelligence as well as machine learning techniques to the system are improving the overall organizational performance. The novel intelligent DSS frameworks are being considered to capable of not only managing information and material flow but also understanding and fulfilling customers' requirements to attain their satisfaction. Moreover, the advent of data analytics has made decision making easier, faster and more accurate. Integration of various data analytics techniques into Decision Support Systems enables it to further explore and analyze real-time data and generate insights to assist managers in making significant decisions regarding various contexts. Supply Chain Management is one of the significant yet crucial areas of an organization which contributes to the customers' satisfaction. Thus recently, it has received a lot of attentions from researchers to overcome limitations strategically.

Supply Chain Management systems can be both product and service oriented. The interdependency in relationships among multiple organizations as well as multiple stakeholders makes management of supply chain networks more complex. Again, the existence of dynamicity among the interaction of different components of the supply chain network complicates it further. Some of the complex contributors of the supply chain network involve collaboration among the components and co-operation along the distribution chains, design of several business processes, management of life cycle of several operations, various KPIs, operational and strategic drivers and finally the service level agreements that are responsible for successful management of supply chains. Thus, managing these components over a dynamically changing environment leads to successful completion of organizational processes. The challenge of addressing the complexity existing between these dynamic components can be managed by emphasizing on real-time data and information generated by the supply chain network as the product/service progress through the network. However, the enterprise based supply chain networks generates huge amount of data from sensor-based devices, computers and smart phones. This huge amount of data is widely termed as Big Data which creates opportunities to derive new insights from these data that can add value to critical decisions. Monitoring and consistent analysis of this timely and effective information about current status of the components is vital for making decisions regarding

further course of action in the supply chain network. Also, other significant metrics can be defined to measure the performance of individual components as well as overall network.

The first article in this issue, "Blockchain Technology in Food Supply Chain: Empirical Analysis," by P. Victer Paul et al., is to explain the feasibility of Blockchain Technology (BCT) adoption in food organization. It helps the organizations to achieve integrity among peer-to-peer nodes, such as maintaining proof of work, reducing intermediaries and traceability. It can be applied in BCT at different levels of Supply Chain Management processes (SCM). The empirical study was conducted with the help of the primary data and data was collected from food industry managers who had knowledge about the BCT in their process of supply chain management. The questionnaire was prepared which focused on the different supply chain activities like procurement, pre-processing, logistics, warehousing, inventory management, distribution, retailing, processing, and marketing activities among farmers and consumers. It is concluded based on the data analysis, the BCT had the greatest advantages in cost reduction, traceability, time-saving, immutability, authentication and proof of work. The major weaknesses were identified among the present employees are lack of knowledge, limited scalability, complexity in usage, and high initial cost.

the second article in this issue, "Management Principles for the Appraisal and Diffusion of Information Systems: Case of SMEs in Ghana," by Hongjiang Zhao et al., brings to light the issue of appraising and diffusing information systems by small and medium scale enterprises (SMEs) in Ghana. A framework is developed for management principles, which is crucial to the successful appraisal and diffusion of information systems in SMEs. The framework of the study is developed based on approaches found in technology management literature: management principles for disruptive technology, information system strategy, technological decision making, and the technology acceptance models. The empirical data was gathered through an online survey from 312 SMEs in Ghana. All these enterprises are registered members of the association of Ghanaian Industries (AGI) and are confirmed users of information systems. The survey result reveals that most SMEs in the country are likely to skip key practices significant to the successful diffusion of information systems. Further, most of these SMEs rely on the knowledge of the chief executive officers (CEOs) to diffuse information systems. Consequently, our developed framework highlights four key interrelated stages (monitoring, initiation, valuation, and implementation) required for the successful appraisal and diffusion of information systems in SMEs. This challenges SMEs to involve management, motivated employees, and experts in information system diffusion decisions.

The third article in this issue, "Construction of Knowledge Service Model of Guizhou Supply Chain Enterprises Based on Big Data," by Boren Gao, analyzes the sources of big data of collaborative innovation of supply chain. A basic framework of knowledge innovation platform of Guizhou supply chain enterprises under the environment of big data is proposed. The effect of big data technology on supply chain logistics mode is analyzed, and the current situation of logistics industry modernization in Guizhou province is discussed. The bottleneck of logistics industry modernization is established, which concludes low efficiency, poor market competitiveness, high social logistics cost and poor logistics information platform. The mathematical model of big data processing is designed, and an example is simulated to validate the advantage of the proposed method, the proposed method can reduce output bit error rate of the network.

The forth article, "HealthCare EHR: A Blockchain-Based Decentralized Application," by Amrutanshu Panigrahi et al., focuses on developing a decentralized application Healthcare EHR for storing and sharing medical data among the patient and the doctor.Blockchain technology is currently becoming a more safe and effective way to share information in a variety of domains, including the financial sector, supply chain management in numerous industries, and the field of IoT. In addition to these industries, blockchain technology is currently playing an important role in the healthcare system (HCS). The HCS application's interoperability and security allow patients and vendors to communicate information seamlessly. The absence of such traits reveals the patient's difficulties in gaining access to his or her own health status. As a result, incorporating blockchain technology will eliminate this disadvantage, allowing the HCS to become more effective and efficient. These potential benefits enable blockchain technology to be applied in various aspects such as patient data

handling, EMR of medical equipment and pharmaceutical things, billing and telemedicine systems, etc. In recent years the decentralized applications or Dapps have been rapidly emerged as the hot research topic and being adopted by various fields such as banking, medical and business, etc. The Dapps are nothing but digital applications which run on a peer-to-peer network outside the purview and control of a single controlling body.

The fifth article, "Milk-Run Collection Monitoring System Using the Internet of Things Based on Swarm intelligence," by Yassine et al., is to design a new smart decision method using the internet of things and big data to optimize the milk run logistics, reduce the cost of transportation and improve collection density. In Morocco, several dairy factories are placed in rural regions with a bad road network, which means that milk collection has a significant impact on profit, affecting milk transport costs. Actually, the milk run logistics process has been transformed from a traditional farm to the new cheese factory, so it needed efficient methods and models to improve the process of production and collection of milk from those units. For that, applying new technologies such as the internet of things (IoT) and big data to collect and analyze this information to optimize the milk delivery process. This method will be based on the swarm artificial intelligence concept to find and calculate the shortest path between units to optimize the collection of milk.

The sixth article, "Design of Remote Fitting Platform Based on Virtual Clothing Sales," puts forward an online fitting system of user-personalized body type based on the virtual technology to improve the convenience and effect of fitting process. Firstly, develop the fitting system with Java as the development language, and construct the human model, spinning motion model and virtual clothing model; then, divide the relevant model creation based on the body, generate the personalized body type, and design the slab model, representing by triangular patch, while all points in same one gender model keep the spatial position relation with each other to simplify the interpolation process; finally, verify the efficiency of developed system through the factor analysis and cluster fitting design.

I am sure the reader shall gain immense knowledge from these papers.

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Srikanta Patnaik is a Professor in the Department of Computer Science and Engineering, SOA University, Bhubaneswar, India. He has received his Ph. D. (Engineering) on Computational Intelligence from Jadavpur University, India in 1999 and supervised 22 Ph. D. theses and more than 50 M. Tech theses in the area of Machine Intelligence, Soft Computing Applications and Re-Engineering. Dr. Patnaik has published more than 60 research papers in international journals and conference proceedings. He is the author of 2 text books and edited 55 books and some invited book chapters, published by leading international publishers like Springer-Verlag, Kluwer Academic, etc. He is the editor-in-chief of International Journal of Information and Communication Technology and International Journal of Computational Vision and Robotics published from Inderscience Publishing House, England and also the editor-in-chief of Book Series on "Modeling and Optimization in Science and Technology" published from Springer, Germany.

Jian Wang is an Associate Professor of Computer Science and Master Degree Student Supervisor in Kunming University of Science and Technology. He received his B.S. degree in Computer Application from Kunming University of Science and Technology in 1999, M.S. degree in Computer Science from Tsinghua University in 2002. He has joined a number of projects funded by Natural Science Foundation of China and other national level projects, won 1 grant from Yunnan province natural science foundation, 1 grant from natural science foundation of education department of Yunnan province, and participated in many other basic research projects. He has published 30+ academic papers, 20+ of which are indexed by SCI/EI and holds numerous patents and copyrights.

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