TUTORIAL: IS guided Logistics and Supply Chain Management Systems and Knowledge Management

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Abstract

In Supply Chain Management System (SCM) scenarios, data accumulated in various geographic locations are either as structured or unstructured. Types of data are even associated with applications in distributed system environments. These data sources are amassed up in volumes, varieties online, and offline in spatial-temporal dimensions worldwide. Emerging innovative artefact designs, technologies and modern economies bring new business opportunities with the scope of revisiting the existing data sources, associated with SCM. Due to heterogeneity and multidimensionality, we call for new constructs and methods of modelling to address data integration challenges. In recent years, the big data tools are emerging to support and organize challenging SCM, with added leading-edge data science solutions. New technologies motivate us in examining the feasibility and applicability of Integrated Project Management (IPM) in multiple industries. An integrated articulation is proposed with IS guided SCM as a digital ecosystem. The domain-, data-modelling, schema design, data warehousing and mining, visualization and interpretation artefacts are suggested to accommodate within an integrated framework. Metadata is generated using the unified framework from which data views are extracted for visualization and interpretation. Integrated SCM information systems offer new digital data solutions to large size IPM that involves multiple industries.

Keywords: Big Data, supply chain management, digital ecosystem, knowledge management.

1 INTRODUCTION

Data, information and knowledge are crucial ingredients of big-data linked multiple industries, especially while resolving and managing the data heterogeneity and multidimensionality. Data modelling approaches need a new direction, particularly when information sharing and access among various users are necessitated in big-data guided industries. Besides, data integration, data mining, visualization and interpretation are prerequisites for evaluation and implementation of big data systems in the SCM environment. Supply chain management systems thus emerge as the manifestation of digital ecosystems for which the big-data paradigm may play a critical role. Further, the use of knowledge-based models guided by semantic technologies may be an evaluable property of representing, mappable terminologies and vocabularies across multiple domains, thus connectable to SCM systems. The authors realize the significance of building ontologies, their use and reuse in different knowledge-based systems. Ontology models and implementing them in multiple domains, contexts and applications, have importance in knowledge-based business models that guide the SCM information system development. Testing of semantic data models that engage the multidimensional data examines the implementation of structured information in multiple domains. Integrated frameworks, developed based with syntactic, semantic and schematic foundations, further facilitate data mining, visualization and interpretation artefacts. The tutorial prepared based on innovative logistics and applications relevant to SCM system development appears to provide new insights into the role of multiple industry scenarios with successful business alignments.

2 TARGET AUDIENCE

SCM researchers, data analysts, system analysts, professionals in academia and industries.

2.1 Special requirements

(√) Computers
(√) Internet access

2.2 participants

Maximum number of participants: _15_____

3 TUTORIAL DESCRIPTION AND OBJECTIVES

Utmost importance is given to data, information and their integration that provide us with new interpretative knowledge and for cognitive business alignments in large organizations, including associated subsidiaries. Big data in these organizations are either of commercial or technical nature. As a front-end user, we often ignore magic the black box. Back-end application is as crucial to a user, to know what exactly is inside and how the magic box works. The basic facts are big-data, type of information and attribute dimensions and domains. Data are transformed into meaningful information to interpret in different knowledge domains using holistic and integrated methods. Data integration process involves, capturing multidisciplinary data in various domains, integrating them in data repositories and analysing the depositories. Data characterization, representation and modelling are critical in the process. Overall objectives of the tutorial are:

- Engaging students/researchers in learning new technologies, aimed at education-centric.
- New approaches to address data management challenges faced by industries and their business alignments.
- To equip and impart students, researchers and industry workers with new skills and knowledge.
- Identifying SCM data management issues in the Integrated Project Management (IPM) contexts.
- Modelling elements and processes of SCM in industry contexts.
- Industry practice, feedback on new methods and anticipated performance of SCM models.

3.1 Format of the session:

It is presentation to academic and industry audience including group discussions. It is a presentation including Q&A. We intend to discuss several case studies and invite participant-discussions on the core ideas of each case study.

3.2 Presentation format:

PowerPoint and group discussions.

3.3 Ways in which the audience is encouraged to participate:

Engaging through explicit visual displays and case studies, to be able to share their ideas and knowledge through interaction between participants and involving researcher communities through group discussions are some ways and means of encouragement.

3.4 Outcome measures:

1. Great opportunity to familiarize with new ideas, beneficial to both academic and industry.
2. It can establish a relation between new training methods and employee engagement in the industry.
3. Problem based learning, developing collaborative, cognitive and team skills.
4. Engaging in discussions and presentations to develop confidence while preparing proposals for IPM development and collaborating with SCM in industry contexts.

4 REFERENCES

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PRESENTERS

Dr Shastri L Nimmagadda is currently a research fellow at the School of Management, BIS, Curtin Business School. Shastri worked for several petroleum operating and service companies in India, Australia, Uganda, Kuwait, Abu Dhabi, Egypt, Malaysia, Colombia, Indonesia, USA and Russia. He completed his M Tech and PhD in Exploration Geophysics from the Indian Institute of Technology, Kharagpur. He obtained his Master of Information Technology with distinction and PhD in Information Systems from the Curtin University of Technology, Australia. His industry research interests include big data modelling, data integration, warehouse modelling, data processing, interpretation and knowledge mapping including research in domain applications in Supply Chain Management (SCM) systems. Shastri has published and presented more than 130 research articles in various international journals and conference proceedings.

Dr Torsten Reiners is a Senior Lecturer in Logistics and Supply Chain at the School of Management and director of the Logistic Research Cluster exploring the implication of the urban expansion on logistics infrastructure and agricultural supply chains. With the background in operations research, simulation, mathematical modelling, algorithm development, data visualisation, and data analytics using, among others, clustering, logic analysis of data, and sentiment analysis, his research is exploring cross-ˇdisciplinary challenges and the application of theoretical frameworks in new, academic or business, contexts. Current research involves, among other, the use of virtual reality and phenomenology in health and safety training in logistics, sentiment analysis to counteract the bull-

ˇwhip effect in supply chains, event-ˇstudies on recalls and sustainable energy, sustainable information systems in oil and gas, and waste prevention in food supply chains. Recent publications (published and in revision) include work on ontologies in oil and case, sentiment analysis in the supply chain, event studies, and logic analysis of data

Dr Lincoln C Wood is a Senior Lecturer at the University of Otago (New Zealand) and an Adjunct Research Fellow at Curtin University (Western Australia). He earned his PhD at the University of Auckland and received the Council of Supply Chain Management Professional's (CSCMP) Young Researchers Award in 2009. His research follows two broad themes, first, examining sustainable and consumer-focused outcomes through supply chain practices, with a particular focus on applications in the construction sector. This includes examining a range of sustainable supply chain practices and consideration of ethical and privacy issues when using supply chain technologies and the management of operational disruptions. Second, investigating dynamic logistics relationships and the use of technology with a focus on 3PLs and logistics service providers

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