Editorial

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Biographical notes: Angappa Gunasekaran is Professor of Operations Management in the Department of Management at the Charlton College of Business, University of Massachussetts-Darmouth (USA). Dr. Gunasekaran has 175 articles published in 40 different peer-reviewed journals. He has presented over 50 papers and published about 50 articles in conferences. Dr. Gunasekaran is on the editorial board of 20 journals. He edits journals in operations management and information systems areas. Dr. Gunasekaran is currently interested in researching benchmarking, information technology/systems evaluation, technology management, logistics, and supply chain management.

Welcome to the inaugural issue of IJBIS

I am pleased to introduce this inaugural issue of the *International Journal of Business Information Systems* (IJBIS). IJBIS proposes and fosters discussion on the development and applications of Business Information Systems (BIS). BIS can be defined as a system that integrates information technology, people and business. BIS brings business functions and information modules together to establish effective communication channels which are useful for making timely and accurate decisions. Considering the globalisation of markets and operations, a journal focusing on BIS is of supreme importance. Moreover, this paradigm shift leads to global outsourcing, strategic alliances and partnership in order to be competitive in terms of price, quality, flexibility, dependability and responsiveness. This places a tremendous pressure on organisations to develop suitable BIS in order to facilitate effective communication along the supply chain and in turn contribute to organisational productivity and competitiveness.

New enterprise environments demand an appropriate, innovative, effective design and use of business information technology/systems to serve business needs. The problems/issues facing Business Information Technology/Systems professionals highlight the importance that IT and IT strategy play in meeting business needs, including concerns regarding areas such as the economics of software development, decision support system development and supply chain management, among others. Solutions to these problems are no longer the domain of a single functional area of business. In fact, modern business

problems call for the integration of the disciplines of computer science, economics, organisational science, cognitive science and organisational, social and cognitive psychology for the development of effective and efficient solutions. BIS facilitates the integration of diverse functional areas using various information technologies which include Electronic Data Interchange (EDI), internet, World Wide Web (WWW), Enterprise Resource Planning (ERP), and Radio Frequency Identification (RFID).

The BIS manager's function includes building information systems and managing information system resources. Developing BIS requires knowledge in programming and scripting concepts, conceptual data modelling, database management, and XML. BIS manager should also be familiar with e-business system development using appropriate enabling technologies, object-oriented principles, representing objects in software, object analysis and design and use of modern programming language and advanced database technology for web-based application development. BIS implementation requires managing the implementation team; developing a project plan for the implementation; measuring the implementation process, user training and systems maintenance. BIS managers should be responsible for the management of information systems which includes performance evaluation data of data processing managers, technology and cost trends, software cost estimation, capacity planning, short-term utilisation, queuing and associated externalities and issues in the centralisation and decentralisation of the information system facilities. These functions of the BIS manager pose a great challenge in the networked economy and supply chain environment. Integration has become a key issue in a physically distributed enterprise and operations environment.

There is a growing importance of BIS in the new economy and enterprise environment that is characterised by strategic alliances, global outsourcing, physically distributed operations environments, and global business partnership. Business information systems will include software applications, system analysis, design, development, and management of business and office information and decision support systems. Some of the major research topics should include e-business, knowledge management, enterprise and Information Technology (IT) architecture, Information System (IS) quality, IT spending, IT/IS productivity, strategic information systems, executive information systems, decision support systems, computer-supported cooperative work, data mining and warehousing, artificial intelligence and expert systems, information resource management, and object-oriented programming and systems.

This inaugural issue of IJBIS contains 11 articles discussing a range of issues dealing with the design, development and applications of business information systems. While there is no unifying theme for the articles, each makes a unique contribution to the extant literature in the field. A brief overview of the 11 papers is provided below.

Increasingly, information systems use has moved from being an optional means of enhancing productivity to a required part of organisational jobs. However, prior research on technology acceptance has largely focused on volitional systems and on individual, rather than organisational, factors that could influence technology acceptance and use. As a result, little is known about how management may be able to influence user attitudes toward use of mandatory systems. In their paper, 'Organisational influences on attitudes in mandatory system use environments: a longitudinal study', Ward, Brown and Massey examine the impact of organisational level influences on individual user attitudes toward system use *over time*. Their study is set in the context of a major mandatory system implementation at a multibank holding company. The results of the study suggest that

subjective norms, top management commitment, and perceived organisational benefits are important to users at different times in the implementation process. The results also highlight the significant role played by the direct system experience in determining which factors are important and when.

King, in his paper 'Communications and information processing as a critical success factor in the effective knowledge organisation', develops a conceptual framework and an architecture for an Effective Knowledge Organisation (EKO) that emphasises the important role of Communications and Information Processing (CIP) in enabling the EKO and in facilitating the creation of a dynamic knowledge capability, which is the essence of an EKO. The architecture links 'core' Knowledge Management (KM), intellectual property management, individual learning, organisational learning, and innovation modules with CIP as the hub, or linchpin. The organisation's need to distinguish among these components of an EKO is argued by comparing and contrasting the different conceptual bases, objectives, processes, systems, performance measures and culture of each module. The EKO can be realised only when these differences are recognised and the models are integrated in a manner that does not assume that, because they have some common elements and are enabled by the same technology, the integration process can be done without careful analysis and planning. This viewpoint integrates many concepts and applications from various literatures, but it is somewhat contrary to the conventional wisdom that has the tendency to de-emphasise the significance of communications and information technology in knowledge management. Instead, according to this view, CIP is a critical success factor for the EKO.

Information systems in organisations are built to assist human actors to engage in goal-directed work activities. There is a certain traditional approach to information system design that has crystallised in the standard Information Engineering Methodologies that are widely promulgated by practitioners, consultants and educators. Johnston, Waller and Milton in their paper, 'Situated information systems: supporting routine activity in organisations' argue that this traditional approach is informed by a particular theory about the nature of human goal-directed action which emphasises the role of mental representation and deliberation as mediators of action. This theory of action has recently been criticised for its inability to explain the fluid, unreflective, real-time action characteristic of skilled routine activity. An alternative theory stressing action as a direct response to situations in structured environments has emerged. The paper reports their attempt to theorise an alternative to the traditional conception of information systems, which we call 'situated information systems', and to embody it in an analysis and design methodology based explicitly on this situational theory of action. It also reports a system design case in which the authors applied their methodology in a commercial organisation. The methodology proved effective for identifying enhancements to the company's operational systems and particularly for understanding the nature of existing problems. The case also resulted in several enhancements of the methodology and a clarification of the theory. The work is significant because the unique characteristics of routine action are underemphasised in the information systems discipline, so a set of analysis and design methods based on an authentic theory of this aspect of work is likely to produce systems that are more effective in organisational setting where work is complex but largely a matter of routine.

Sheffield, in his paper, 'Systemic knowledge and the v-model', presents a simple but surprisingly useful system of inquiry to elicit and validate systemic knowledge. *Systemic knowledge* is the holistic understanding of interpersonal expectations or norms, the technical system, and the relationships between the two. General systems concepts, such as hierarchy and intentionality, are employed to generate a new *V-Model* that incorporates the familiar concepts of 'top down' design and 'bottom up' implementation. The V-Model validates systemic knowledge by testing the strength of a chain of evidence that emerges from the application of design principles to a practical knowledge management problem.

The complex and problematic relationship between software development methods and practices is well documented. Methods are difficult to adopt. There are several barriers towards successfully bringing methods to practice and resultant practices are by the end of the day quite different from the prescribed methods. Methods are, however, continually developed and organisations spend considerable resources trying to improve practices through adoption of new methods. Relatively little is known about the long-term dynamics involved in such adoption efforts. The paper, 'Managing knowledge in software method adoption', by Mathiassen and Vogelsang is based on a three-year effort within an IT department of a large multinational company in which a new method was first introduced, then used to support projects organisation-wide, and subsequently extended based on emerging practices. The study applies two complementary knowledge management perspectives, those of network and networking, to interpret the experiences from the case. The study reveals how method perceptions and approaches shift radically through different stages of software method adoption.

The focus of the paper, 'The Sarbanes-Oxley Act and the changing role of the CIO and IT function', by Sutton and Arnold is on the changing role of the Chief Information Officer (CIO). In a time when there is an increasing focus on corporate governance and enterprise risk management, the competencies required of CIOs are evolving, causing a shift to a proposed third era of the CIO. This shift is being accelerated and influenced by the passage of the Sarbanes-Oxley Act of 2002 in the USA. This Act mandates detailed reporting of internal controls over financial and related systems, and has consumed the energy and the budgets of the IT function in the past few years. In the coming years, the Act will likely impact the success of CIOs and the competencies desired by organisations hiring CIOs. These issues are explored in detail. The article concludes with an agenda for research on CIOs in this new era.

Valuing IT investments in hypercompetitive business environment remains an elusive task as traditional valuation tools fail to model inherent uncertainty. Real options analysis presents a viable alternate to traditional valuation tools in planning and valuing IT investments in uncertain business environments. While much has been written about the quantitative and valuation aspects of Real Options, its use as a strategic tool to inculcate broader thinking about IT investment has been understated. Raman and Grover in their paper, 'Communicating the value of uncertain information technology investments using an options approach', illustrate how decision-makers can use such thinking to articulate IT value in an environment characterised by high levels of uncertainty. They discuss cumulation, dynamism and complexity as three major characteristics of uncertain IT-investment decisions and illustrate the use of a strategic real-option framework in each scenario. They hope to stimulate a mode of thinking that can facilitate better communication regarding *IT* investment and valuation in times of rapid growth and change.

Automated identification services, such as *RFID* and self-serve checkouts, require many different technological components in order to successfully operate and be accepted in a B2C (Business-to-Customer) environment. When implementing RFID, retailers must consider the various aspects they need to incorporate in their operations and the necessary changes they need to undertake for its successful implementation. In theory, using self-checkouts as a proxy for RFID applications allows for an investigation of potential consumers' acceptance of self-service technology to be determined when applied to a retail environment. Smith in his paper, 'Exploring the inherent benefits of RFID and automated self-serve checkouts in a B2C environment' discusses the implications of RFID in a B2C environment. In terms of factor analysis and PCA (principal components analysis) results, three independent constructs were found from the pool of interval Likert-type and binary discrete variables from the questionnaire data. The three major constructs that were generated from the factor loadings, renamed based on the variables loaded with loadings equal to greater than 0.5, included: positive experience, privacy and demographics, and acceptability of technology. The independent constructs of Positive Experience ($t = 6.296$, $p = 0.000$) and Acceptability of Technology ($t = -2.478$, $p = 0.016$) were the most important factors in predicting the frequency of use of such automated technologies in a retail grocery setting.

Electronic commerce (e-commerce) applications are developed to allow companies to communicate with their partners, suppliers and consumers on the internet. The migration from traditional business to e-commerce requires fundamental changes in business operational systems. It is not sufficient to focus on the development of web-based interfaces only. The front-end of a system for e-commerce should be supported by the backend infrastructure. A Workflow Management System (WFMS) is important for linking front-end and backend applications to automate business processes. In the paper, 'Application of the workflow management system in electronic commerce: a case study' by Ngai, Leung and Wong propose a generic model of a WFMS in e-commerce. Based on the proposal model, a specific WFMS model was developed and implemented in a company for a case study. The case study illustrates and highlights the benefits and advantages of the system. The user survey results from the case study showed that the users responded positively to the WFMS.

Business information systems have radically transformed business processes with the emergence of new digital communication forms. However, employees still communicate verbally and on paper as well. In the study, 'Patterns and measures of digitalisation in business unit communication', Tyrväinen, Kilpeläinen and Järvenpää investigate the internal and external communication of three business units through an analysis of 60 to 150 communication genres in each. According to the results, 51 to 59% of internally stored communication was digital, adding up to 52–58% when external communication was included. The degree of internal digitalisation correlated better with outbound rather than with inbound communication. In one case, a publication pattern dominated the communication. In another case, the internal verbal coordination and the publication pattern were both present. These results suggest that the dominating patterns have a major impact on media selection in organisations and guide the digitalisation and emergence of new business information systems.

The LOBI Framework is a methodology that facilitates the creation of an Information Technology (IT) plan and the design of IT architecture for a business. The LOBI Framework derives the plan and the architecture on the basis of the business objectives through a detailed analysis of the people, process, and technology mix of a business. The paper, 'The Ladder of Business Intelligence (LOBI): a framework for enterprise IT planning and architecture', by Cates, Gill and Zeituny shows how the LOBI framework forces alignment between the business strategy and the IT strategy through a step wise methodology that inductively proceeds from vision, through mission and core processes to IT initiatives. The LOBI Framework also allows business intelligence to be defined in an operational sense, and shows how the effectiveness of utilising business intelligence can be measured, and how it is possible to differentiate between effectiveness and efficiency as a measure of intelligence value. Finally, the LOBI Framework facilitates mapping of all IT Technology used in a business to six levels of intelligence.

Invitation to IJBIS

The *IJBIS*, a fully refereed journal, covers the general areas of business information systems. New strategies, techniques, tools and technologies for developing suitable BIS will be the main focus of *IJBIS*. The journal aims to shape the future of business information systems taking into account the dynamics of business environments. The main objective of *IJBIS* is to promote the research and practice of new strategies, tools, techniques and technologies for the design, development and implementation of BIS. This will help improve organisational competitiveness in both the service and manufacturing industries around the world. *IJBIS* aims to help professionals working in the field of BIS, academic educators, industry consultants, and practitioners to contribute, to disseminate and to learn from each other's work. A global dimension is emphasised to overcome cultural and national barriers and to meet the accelerating technological changes and challenges in the global economy. *IJBIS* aims to act as a forum for exchanging innovative ideas and sharing research and practical experiences in BIS. *IJBIS* will publish high-quality articles in all areas of BIS. *IJBIS* aims to help professionals, academics, researchers, practitioners and policy makers, working in the field of BIS, to discuss the important ideas, concepts in BIS and to disseminate these information and to learn from each other's work.

IJBIS publishes original papers, review papers, technical reports, case studies, conference reports, management reports, book reviews, notes, commentaries, and news. Also, *IJBIS* will publish system development and applications papers. Special issues devoted to important topics in BIS will occasionally be published. IJBIS particularly encourages papers of applications on industrial experience on the validation of prototype implementations. The list of topics of interest to *IJBIS* includes but not limited to:

- economic models for information systems
- data mining, data warehousing and information logistics
- database systems, applications and management
- geo-BIS
- data structures and algorithms in information systems

- language technology for BIS
- mobile e-business
- legal information systems
- business intelligence
- business data communications and networking
- web services for e-business
- knowledge management
- decision support systems
- management of IT/IS
- strategic information systems
- artificial intelligence and expert systems
- accounting information systems
- balanced scorecard
- IT/IS evaluation
- multimedia
- e-commerce
- enterprise resource planning and supply chain
- internet standards, protocols and communication systems
- virtual organisations
- marketplaces
- customer relationship management
- business aspects of e-learning
- e-government and information society
- Information Retrieval and Filtering (IRaF) for business applications
- ontologies for business information systems
- project management of business information systems
- software engineering for business applications
- performance measures and metrics.

Academics and practitioners are invited to forward their contributions in the design, development and applications of BIS for possible publication in the journal. The editors also encourage papers on industrial experience or on the validation of prototype implementations. Potential editors are also welcome to guest-edit special issues in emerging areas of BIS. Please direct all your communication to the Editor-in-Chief.

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