Proceedings of the 2nd International Conference on Information Management and Evaluation

Ryerson University
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Edited by
Professor Kenneth Grant
Ryerson University
Toronto
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<table>
<thead>
<tr>
<th>Paper Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
</tr>
<tr>
<td>Biographies of Conference Chairs, Programme Chair, Keynote Speaker and Mini-</td>
</tr>
<tr>
<td>track Chairs</td>
</tr>
<tr>
<td>Biographies of contributing authors</td>
</tr>
<tr>
<td>Performance Management of the NHS’ Mental Health Care Service Delivery in</td>
</tr>
<tr>
<td>England: The Role of the Service’ Actors’ (Clients) Collaboration Through</td>
</tr>
<tr>
<td>Dialogism</td>
</tr>
<tr>
<td>The Acceptance and Use of Educational Technology in Kingdom of Bahrain</td>
</tr>
<tr>
<td>Comparison of Feature Selection Techniques Using Fully-Controlled Simulation-</td>
</tr>
<tr>
<td>Based Datasets</td>
</tr>
<tr>
<td>A Delphi-Multi-Criteria Decision Making Approach in the Selection of an</td>
</tr>
<tr>
<td>Enterprise-Wide Integration Strategy</td>
</tr>
<tr>
<td>Selection, Implementation and Post Production of an ERP System</td>
</tr>
<tr>
<td>Evolution of eProcurement Model in the Italian Public Sector: From</td>
</tr>
<tr>
<td>Government Centralisation to Regional Delocalisation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kwesi Korsa Aggrey</td>
</tr>
<tr>
<td>Jafilah Al-Ammary</td>
</tr>
<tr>
<td>Suzan Arslanturk, Mohammad Siadat, Theophilus Ogunyemi, Ishwar Sethi and Ananias Diokno</td>
</tr>
<tr>
<td>Tridip Bardhan, James Ngeru, and Richard Pitts</td>
</tr>
<tr>
<td>Imran Batada and Asmita Rahman</td>
</tr>
<tr>
<td>Clara Benevolo and Renata Paola Dameri</td>
</tr>
<tr>
<td>Paper Title</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>ICTs as Weapons of Mass Interaction - Motivations and Implications of Mediated Control</td>
</tr>
<tr>
<td>Investigating the Factors Inhibiting SMEs from Recognizing and Measuring Losses From Cyber Crime in South Africa</td>
</tr>
<tr>
<td>Sharing Knowledge – The CoP way</td>
</tr>
<tr>
<td>An Empirical Framework of key Success Factors for Software Process Improvement</td>
</tr>
<tr>
<td>Assessing Information Management Competencies in Organisations</td>
</tr>
<tr>
<td>A Semiotic Approach to Analyse the Influencing Factors in Knowledge Transfer</td>
</tr>
<tr>
<td>Exploring the Emotional Exhaustion of Healthcare Providers Using an In-Hospital Employee Communication Network</td>
</tr>
<tr>
<td>The Implementation of RSS-Based Clinical Reminders</td>
</tr>
<tr>
<td>Factors Determining the Adoption of ICTs in Healthcare Service Delivery: A Developing Country Context</td>
</tr>
<tr>
<td>Evaluation of Application Embedded Knowledge Migration Issues</td>
</tr>
<tr>
<td>Paper Title</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Motivations for IT Outsourcing in Public Sector Local Government</td>
</tr>
<tr>
<td>Documenting Innovation: A Methodological Proposal and Application</td>
</tr>
<tr>
<td>Legal, Privacy, Security, Access and Regulatory Issues in Cloud Computing</td>
</tr>
<tr>
<td>Interoperability Monitoring for eGovernment Service Delivery Based on Enterprise Architecture</td>
</tr>
<tr>
<td>Enterprise Resource Planning Implementation Differences Within the Same Methodology - Case Study From West Europe and Turkey</td>
</tr>
<tr>
<td>A Meta-Analysis of how the Adoption of Innovative Web 2.0 Tools Like Digital Business Ecosystems can Lead to Improved SME Collaboration</td>
</tr>
<tr>
<td>Ideas About Profitability in Research and Development and the Selective Pressure From Management Accounting</td>
</tr>
<tr>
<td>Distortion Free Algorithm to Handle Secondary Watermark Attack in Relational Databases</td>
</tr>
<tr>
<td>Paper Title</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Engineering Change Through the Domains of Enterprise Architecture</td>
</tr>
<tr>
<td>Free and Open Source Software for Public Sector Enterprise Applications in Sri Lanka</td>
</tr>
<tr>
<td>Evaluating the Success of Customer Relationship Management (CRM) Systems</td>
</tr>
<tr>
<td>Toward a Novel Methodology for IT Strategic Planning</td>
</tr>
<tr>
<td>Applying an Innovative Information System to Improve the Effects of Community Health Promotion</td>
</tr>
<tr>
<td>The use of RFID and Web 2.0 Technologies to Improve Inventory Management in South African Enterprises</td>
</tr>
<tr>
<td>Paper Title</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Modeling the Genetic Schemes of Human Memory Information in the Process of Production and Reparation of Knowledge</td>
</tr>
<tr>
<td>Copyright Protection for GIS Vector Map Based on Wavelet Transform</td>
</tr>
<tr>
<td>Evaluation of IT Investment Methods and Proposing a Decision Making Model</td>
</tr>
<tr>
<td>Critical Factors in the use of Mobile Learning by “Digital Natives” on Portuguese Teaching</td>
</tr>
<tr>
<td>A Framework for Information Systems Innovation: A Case of Competitive Intelligence in Organisations</td>
</tr>
<tr>
<td>RFID: A Review of its Relevance and Application in South African Retailing Systems</td>
</tr>
<tr>
<td>User Adoption of the New Health Information System - Individual and Organizational Determinants</td>
</tr>
<tr>
<td>Relationship Between Organizational Factors and RFID Adoption in Iranian Gas Company Central Warehouses</td>
</tr>
<tr>
<td>Paper Title</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Business Intelligence as Decision Support in Business Processes: An Empirical Investigation</td>
</tr>
<tr>
<td>Assessing Future Value of Investments in Security-Related IT Governance Control Objectives – Surveying IT Professionals</td>
</tr>
<tr>
<td>Evaluation Information Extraction for Health Text Categories Using C4.5 and Naïve Bayes</td>
</tr>
<tr>
<td>Optimizing Information Technology Value Governance Framework Based on Val IT</td>
</tr>
<tr>
<td>Developing an Outpatient Electronic Medical Record System in Taiwan From a Physicians’ Perspective</td>
</tr>
<tr>
<td>MTN Foundation's Digital Library Project in Nigerian Universities: An Evaluative Study</td>
</tr>
<tr>
<td>Cloud Computing-Based IT Solutions for Organizations With Multiregional Branch Offices</td>
</tr>
<tr>
<td>The Impact of Software Test Constraints on Software Test Effectiveness</td>
</tr>
<tr>
<td>Paper Title</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Strategic Considerations for the Effective Mapping of Educational Technology to Academic Outcomes</td>
</tr>
<tr>
<td><strong>PhD Research Papers</strong></td>
</tr>
<tr>
<td>Evaluating the Performance of ERP Systems in Saudi Arabian Higher Education: A Stakeholders’ Perspective</td>
</tr>
<tr>
<td>The Benefits of ICT Adoption: An Empirical Study of Nigerian SMEs</td>
</tr>
<tr>
<td>Establishing the Suitability of Dynamic Web Applications Development Platforms for Learning web Techniques in Tertiary Institutions</td>
</tr>
<tr>
<td>Human Resources Transformation Beyond Boundaries in Outsourcing Business Models– Expatriate Benchmarking</td>
</tr>
<tr>
<td>The Diffusion of Mobile Phones for Business and Information Management in Kenya</td>
</tr>
<tr>
<td>Querying DTI Analysis Results Within Deep Perisylvian Area</td>
</tr>
<tr>
<td>Towards an Evaluation Method for Information Quality Management of Health Information Systems</td>
</tr>
<tr>
<td>Developing a Change Management Model for Iranian Academic Libraries: A Delphi Study</td>
</tr>
<tr>
<td>Paper Title</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Adding Action to the Information Audit</td>
</tr>
<tr>
<td>Business Intelligence Best Practices for Success</td>
</tr>
<tr>
<td><strong>Work in Progress</strong></td>
</tr>
<tr>
<td>The Evolution of IT Governance in Multiple Industry Units and the Business Case for an Outside Partner</td>
</tr>
<tr>
<td>The Relationship Between Quality Management and Knowledge Management in the Service Industries</td>
</tr>
<tr>
<td>Construction and Validation of eSchool Success Model</td>
</tr>
<tr>
<td><strong>Poster</strong></td>
</tr>
<tr>
<td>Goal-Striving Framework for Technology Acceptance</td>
</tr>
<tr>
<td><strong>Presentation Only</strong></td>
</tr>
<tr>
<td>Transforming Information Management - The Role of Education</td>
</tr>
<tr>
<td>Business Intelligence as an Enabler for Evidence-Based Decision Making</td>
</tr>
</tbody>
</table>
Preface

Following on from the continued success of the European Conference on Information Management and Evaluation, we are delighted at the Ted Rogers School of Management, Ryerson University to be able to host the 2nd International Conference on Information Management and Evaluation (ICIME 2011).

ICIME aims to bring together individuals researching and working in the broad field of information management, including information technology evaluation. We hope that this year’s conference will provide you with plenty of opportunities to share your expertise with colleagues from around the world.

This year’s opening keynote address will be delivered by Dr Catherine Middleton, Ted Rogers School of Information Technology Management, Ryerson University, Toronto, Canada.

A second keynote address on day two will be delivered by Gary Davenport, Vice-President of Information Technology, AllStream Inc, Canada.

ICIME 2011 received an initial submission of 180 abstracts. Of this 65 papers have been accepted for these Conference Proceedings as a result of the double blind, peer review process of full paper submissions. These papers come from all parts of the world including Australia, Canada, India, Iran, Italy, Japan, Malaysia, Morocco, Nigeria, Pakistan, Portugal, South Africa, Sri Lanka, Sweden, Thailand, Taiwan, the United Kingdom, the United States of America Zambia and Zimbabwe. So ICIME is set to be a truly international conference!

We wish you a most interesting and enjoyable time in Canada

Ken Grant
Conference Chair
April 2011
Biographies of Conference Chairs, Programme Chairs and Keynote Speakers

Conference Chair

Ken Grant is an associate professor in the Ted Rogers School of Management at Ryerson University. His teaching and research interests are in the areas of Business & Technology Strategy, Innovation & Knowledge Management and Electronic Commerce. He holds the Ted Rogers School of Management Faculty Teaching Chair and is a former Director of the School of Information Technology Management at Ryerson. Prior to becoming part of the Ryerson community, Ken spent over 30 years in industry, mainly as a management consultant. He has held senior partner/vice president positions in major consulting firms, including A.T. Kearney, EDS and KPMG. He holds a BA from The Open University, UK., an MBA from York University, Toronto and is just completing his DBA at Henley Business School, University of Reading.

Programme Chair

Dr Catherine Middleton holds a Canada Research Chair in Communication Technologies in the Information Society. Her research focuses on the development and use of new communication technologies, with specific interests in mobile devices and fixed and wireless broadband networks. She is also interested in how Canadians use (or don’t use) the internet in their daily lives. A member of the GRAND Networks of Centres of Excellence project, she is the Leader of the New Media Challenges and Opportunities research theme and also leads the GRAND Digital Infrastructures project. Catherine teaches Innovation and Organization Theory in the MBA/MMSc program in the Ted Rogers School of Management, and teaches and supervises students in the Communication and Culture graduate program.

Keynote Speaker

Gary Davenport As Vice-President of Information Technology, Gary is responsible for the definition and implementation of transformational business initiatives using information technology for the Allstream business unit of MTS Allstream Inc. In this role, Gary leads a team of dedicated IT professionals focused on improving business capabilities in a very competitive telecommunications industry. He is also the Executive Sponsor for Allstream’s Workplace 2.0 Program enabling much greater levels
of employee mobility, productivity and engagement. Gary has participated on many North American and European CIO Councils and also served on the Board of Directors of the Voluntary Inter-industry Communications Standards (VICS) organization. He is currently a Board Member of the CIO Association of Canada. Gary holds a Bachelor of Arts degree from York University.

Biographies of contributing authors (in alphabetical order)

Kwesikorsa Aggrey is a PhD student of the University of Lincoln, UK. Kwesikorsa research area is in health service delivery, mental health service delivery in particular. His research topic is on collaboration between the NHS Trusts (Lincolnshire Partnership Foundation Trusts) and the Voluntary Sector in Performance of Mental Health Care Delivery in Lincolnshire.

Jaflah Hassan AlAmmary is assistant professor in the Information System Department of the college of the IT at University of Bahrain. She holds PhD from University of Murdoch. Al-Ammary’s research interest focuses on Strategic alignment, Knowledge Management, and E-learning and Educational Technology. She has published many papers on these topics on conferences, journals and books.

Mona Althonayan is a research student at the school of information systems, computing and mathematics, Brunel University, UK, working on ERP systems evaluation.

Al-Mallah Amer is an Assistant Professor at the College of Science, he obtained a Ph.D. degree in Computer Science. Then he worked at the University of Technology. Subsequently, served as M.Sc. students supervisor at the postgraduate studies department. Dr. Amer has published eleven journal articles. His publications reflect his research interests in information security.

Idisemi Apulu is currently a PhD student at the School of Technology, University of Wolverhampton, United Kingdom where she also obtained her Masters degree in Strategic Information Technology Management. She also holds a BSc degree in Computer Science from the University of Abuja, Nigeria.

Suzan Arslanturk is a masters student at the Department of Computer Science, Oakland University. She holds a B.S in Computer Engineering. Her research interests are image processing, pattern recognition and data mining. Suzan’s master research focused on data mining and machine learning.
Rahimi Bahlol, PhD: studied informatics at Linköping University. He is now assistant Professor at Urmia University of Medical Sciences. His research interests are; Individual, organizational and social issues and IT solution, collaborative work through ICT, IT solutions in health care setting, implementation and use and evaluation of integrated HIS, Adoption of IT solution.

Tridip Kumar Bardhan is working as Chairperson and Director of Manufacturing Process Laboratory at the Department of Industrial and Systems Engineering (ISE) of Morgan State University in Baltimore, Maryland, USA. He received his BSc degree in Industrial Arts from Dhaka University and BSIE, MSIE and PhD in Industrial Engineering from Wichita State University, USA.

Imran Batada is a senior IT Professional with over 10 years of experience in the IT industry. As an IT Professional he has worked in USA and Asia. He is currently working in Institute of Business Administration, Karachi Pakistan as Head of Information System Department. He is also responsible for overall ERP Implementation.

Kofi Agyenim Boateng completed his PhD in Information Systems at the London School of Economics and Political Science, UK, in December 2009 and, currently, a lecturer at the British Institute of Technology & E-commerce. Kofi’s research interests fundamentally lie in the innovative application of ICTs and their psychological consequences in organisational strategising.

Sheryl Buckley is Deputy Head of Department in the Department of Business Information Technology (BIT) at the University of Johannesburg (UJ). Her passion lies in the Information Science discipline. She is a committee member of a number of international organisations as well as an active peer reviewer. She has presented and published papers locally and internationally.

Nuntarat Bunditwongrat received her Bachelor’s Degree (2005) in Information Technology for Business from Chulalongkorn University, Thailand. She is now a Master's degree student of Management Information Systems program at the Faculty of Commerce and Accountancy, Thammasat University. She also serves as a Senior Consultant at the Department of Global Business Services, IBM Thailand Company Limited.

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**Ganeshprasad Chandrasekaran** B.E., M. Tech., M.B.A., is an associate of India’s largest Software Company TCS Limited, where he is focused with aligning the IT goals with Business priorities. He has been awarded with Chief Minister Award and University Gold medal for the best academic excellence. Ganesh has been a research scholar in SRM University, India.

**Taurai Chikotie** is a student and researcher at the Cape Peninsula University of Technology in the fields of ICT and Healthcare for Development. He holds a BSc Honors degree in Information Science from the National University of Science and Technology in Zimbabwe and a Masters Degree in Information Technology cum laude from the Cape Peninsula University of Technology.

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**Mitchell Cochran** has been the Information Systems Manager for the City of Monrovia for 14 years. He has also worked in the Court System and for IBM. He is currently working on his Information Systems PhD from Claremont Graduate University and has completed Masters Degrees in Administration and Homeland Security. He has a CISM certification.

**Renata Paola Dameri** is senior lecturer in Business Administration at the Faculty of Economics, University of Genova, Italy. She is professor in Accounting and Information Systems in Genova, visiting professor in IT Governance at Université de Paris Dauphine and Fellow of the SDA Bocconi School of Management, Milano, Italy. Her research interest covers IT investments evaluation, IT governance, IT security and compliance.

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decision and risk analysis professionally and academically for almost 20 years.

**Stefano De Falco** Holds a Degree and a Ph.D degree in electrical engineering, University of Naples Federico II. His research interests concern the modelling and testing of the measures for quality of firms. His publications are present in international congresses and journals. He is the inventor and the advisor of a national magazine “TT-Techology Transfer”.

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**Turan Erman Erkan** is an Assistant Professor at the Department of Industrial Engineering in Atılım University. After a career in management consultancy, he worked as an international SAP consultant and then started a research career. His research and consultancy interests include ERP, BPR, SCM, CRM and performance measurement.

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**Amir Honarpour** is currently a PhD. Student at Faculty of Management and Human Resource Development (FPPMS) University Technology Malaysia. Amir graduated with a M.Sc. in system management in 2009. After graduation, he worked in a project to help Design an integrated research system among Iran's universities. His research interests include: Knowledge Management, Web-based Courseware Tools, Quality Management and Research information Systems.

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**Tiko Iyamu** is a Professor of Information Systems at the Tshwane University of Technology, Pretoria. His research interests include Mobile Computing, Enterprise Architecture and Information Technology Strategy. Theoretically, he focuses on Actor Network Theory (ANT) and Structuration Theory (ST). Iyamu is author of numerous peer-reviewed journal and conference proceedings articles.

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**Srimal Jayawardena** obtained his BSc Engineering from the University of Peradeniya and BIT from the University of Colombo School of Computing, both with first class honours. He has served in the Central Bank of Sri Lanka as an Assistant Director/IT d and at the Information and Communication Technology Agency of Sri Lanka as a Technology Specialist. Having read for his MBA/IT at the University of Moratuwa, he is currently a PhD candidate at the Australian National University.

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**Michael Kyobe** is an associate Professor in the department of Information Systems, University of Cape Town. He holds a PhD and an MBA. Prior to
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**Mouhsine Lakhdissi** is a Partner in a consulting firm specialized in IT Architecture. He received a Master degree in Software Engineering in a leading engineering school in Morocco. He also served as Chief IT Architecture in many companies with international exposure. His research interests include Enterprise Architecture, IT Governance and processes and Software industrialization.

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**Siti Asma Mohammed** is currently a PhD student at National University of Malaysia. She finished Masters of IT specializing in Information Systems at University of Sydney, Australia. She worked as a Test Engineer for one year and Assistant Lecturer in Information Systems for four years before pursuing PhD. Her research interests are IS Evaluation and information quality.

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Mário Carrilho Negas is an assistant professor of management at the Open University (Portugal). He received his Ph.D. in Management. His main research interests include the adoption of systems and information technology in SMEs, strategic planning of information systems and management of Innovation.

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Jonathan Oni is a Post Graduate student and researcher at the Cape Peninsula University of Technology, Cape Town, South Africa, with an interest in e-business. He holds a BSc Honors in Computer Science. Jonathan consults for various Information Technology companies and involved in managing IT projects. He is also a part-time lecturer at a higher educational institution.

Farnaz Rahimi is studying IT management in Alzahra University(MS degree) and work in contract department in Mashhad Gas Company. Farnaz is interested in the field of "knowledge management" and "implementing new IT technologies in organization"

Azhar Rauf received his doctorate degree in computer science from Colorado Technical University, Colorado Springs CO, USA in 2007. Currently he is teaching as Assistant Professor at the Department of Computer Science, University of Peshawar, Peshawar, Khyber Pakhtunkhwa, Pakistan. His areas of interest include Relational Database Watermarking, Fine-
Grained Security techniques in Relational Databases, Encryption, Anonymity and Information Security.

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Abstract: A welfare state has a responsibility to provide health and social services to the citizenry. The state delegates that responsibility to a number of actors, each of which has its own performance management criteria. To ensure coherence, it is important to managing their performances collectively taking into consideration all the actors inputs rather than only that of government or its agent, the NHS This turns out to be difficult task especially that of the mental health care services. The author will be looking at a possible solution to this problem based on the assumption that it is possible to change the way the actors present their stories by bringing them together to share their purposes and common action through the notion of dialogism as way of maintaining plurality of logics: different voices (polyphonic), styles (stylistic), space-time conception (chronotopic), interanimating discourse (architectonics) and the dynamic interplay of different dialogisms (polypi). It is this process of plurality of logic that the researcher termed, the Third Cybernetics Evolution, as a way of sequential processes from the First Cybernetics through the Second Cybernetics to the Third Cybernetics. It is argued that implementing these, allows for improved communication among actors, as a way of achieving high quality service. It is suggested that implementation of these concepts and processes implies the use of storytelling as a facilitatory system. It is shown that all actors in the mental healthcare services delivery make use of this system, albeit often inefficiently. Therefore may lead to dissipation of the system in the future. To prevent such dissipation, the existing structure needs to be improved through spiral relationships via communication (dialogism)

Keywords: third cybernetics evolution, mental health care system, NHS, collaboration and dialogism
The Acceptance and use of Educational Technology in Kingdom of Bahrain

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Abstract: In 2004, King Hamad Schools of Future Project (KHSFP) has been launched by the ministry of education at Kingdom of Bahrain with a goal of establishing a fundamental change in the way teaching and learning take place. The main objective of the project is to change the way in which students and teachers communicate, work and learn by transfer the traditional classroom into an open, interactive environment based on adopting new and more advance technologies. In fact at Kingdom of Bahrain, adopting technologies such as computers, smart board, or interactive board will increase the pressure on the schools to accommodate to these new conditions. This is because there are some schools in particular the elementary schools were only getting access to the technology and many teachers lack the required IT skills and capabilities. As a result, many efforts have been initiated to enhance the necessary skills and facilitate the functional development of the teachers. However, there is still a need to understand the teachers and student’s acceptance of the new technology to cope with KHSFP. Thus, to achieve a technological enhancement of the education system, students and teachers should accept the IT as an effective tool. The current research aims at investigating the acceptance and use of the new educational technology such as computer, interactive board and smart board, by teachers and students in the schools of future at Kingdom of Bahrain. Through an extension of the Technology Acceptance Model (TAM), five factors that influence the behavioral intention to accept and use education technology were examined. These factors include: subjective norms, motivation, computer self efficacy, previous experiences, and computer anxiety. Moreover, previous experiences was investigated to has an indirect effect on perceive ease of use through the computer anxiety. The results show that the computer self efficacy, previous experience, and motivation are the most critical factor for accepting and use educational technology at Kingdom of Bahrain. By considering these factors and investigating other factors, Ministry of Education at Kingdom of Bahrain can enhance the acceptance and use of the new educational technology by both teachers and students among the Kingdom schools.

Keywords: acceptance technology model, computer anxiety, educational technology and previous experience
Comparison of Feature Selection Techniques Using Fully-Controlled Simulation-Based Datasets

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Abstract: Data mining is the discipline of systematically reviewing datasets to determine what patterns, concurrences and/or rule sets can be discovered. In an effort to understand the effectiveness of a proposed mining methodology a well-defined dataset is required for model verification. To this end, a fully-controlled simulation was created by which several different feature selection algorithms were evaluated. In this paper, we present a comprehensive comparison between attribute selection methods when noise, missing values and multicollinearity are in question. Our results show that "Relief" and "information gain" have outperformed other feature selection methods available in Weka when considering both sensitivity and specificity measures. We have evaluated the following features selection methods: J48, Relief, information gain, consistency based feature selection and correlation based feature selection to see which one handles additive noise better. The sensitivity of consistency based feature selection was 11% higher than the average sensitivity of other methods. However, it's specificity was 37% lower than that of the average. It is important to note that sensitivity or specificity alone does not give enough support to a method to say that it is the best way to handle the data. The best method, when both sensitivity and specificity are considered, was information gain. This method outperformed the average of other methods by 1% and 20.5% when we considered its sensitivity and specificity, respectively. Also in this regard, a goal of our study was to see which feature selection method outperforms within the missing set of values. In this case, when looking again at sensitivity and specificities, Relief and information gain proved to outperform the other methods of our study by 7.2% and 12.4%, respectively. Our studies also show that when multicollinearity is embedded into the fully controlled dataset without any noise and missing values, the correlation based feature selection outperforms other methods. In summary Relief and information gain performed the best in all three situations in terms of its sensitivity and specificities.

Keywords: attribute selection, rule extraction, classification, comparison techniques, simulation
A Delphi-Multi-Criteria Decision Making Approach in the Selection of an Enterprise-Wide Integration Strategy

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Abstract: Driven by the need to be competitively effective and agile, the last few decades have witnessed explosive interest in the field of enterprise integration (EI). In spite of a great deal of research and advances in the EI discipline, there still seems to lack a comprehensive decision making framework which can assist decision makers during the crucial task of selecting an appropriate integration strategy that would optimally address most of the organization’s business and technical integration needs. Consequently, this paper attempts to fill the research gap by formulating and illustrating an application of such a framework through a case study. Since selection of an EI strategy can be regarded as a complex multi-criteria decision making problem that involves multiple participants who must weigh in a set of business and technical factors to evaluate different EI strategies, an integrated multi-criteria decision approach which combines Delphi techniques and the Analytic Network Process (ANP) is adopted. The use of the ANP is preferred over other multi-criteria decision analysis methods due to its ease of implementation and it provides a structure that allows for an intensive analysis of the criteria which shows the effects of various criterions to be taken into consideration. The Delphi technique on the other hand helps to ensure a consensus in the decision making process by allowing active participation of various decisions makers and assimilation of their different schools of thought. The formulated framework is then illustrated as a case study of a state government agency that is embarking on enterprise-wide integration. The choice of the case study in the public sector setting was preferred since these organizations are generally divided into several organizational functions; hence, such strategic decisions usually involve different decision makers who represent their functional units. As a result, EI decisions which are generally made at an enterprise-wide level are more challenging in public organizations. The results from the case study indicate that there exists a conflict of interest among decision makers who participate in the EI strategy evaluation and selection process. However, with the application of the proposed model, an effective decision making process can be realized with significant consensus among decision makers. The use of the proposed model in this context is a ground-breaking concept and represents a scientific and systematic approach to decision making that could minimize risks and improve the benefits generally associated with the selection of an enterprise-wide integration strategy.

Keywords: enterprise integration, multi-criteria analysis, delphi technique, analytic network process
Selection, Implementation and Post Production of an ERP System

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Abstract: Enterprise Resource Planning (ERP) is an enterprise level system that integrates all the business processes of an organization into a single database. ERP System enables all the departments of an organization to share and manipulate the data. ERP system has a centralized structure consisting of one single central database which can be accessed by all the department(s). This centralized structure is one of the major reasons of current ERP system's popularity. Selection of an ERP system plays a vital role in the implementation of ERP system. We used AHP method for the selection. Once proper selection has been made, the implementation process begins. This process entails; accurate requirement gathering, user training, technical training, testing, data migration etc. Our research will give an in-depth analysis and recommended approaches for the preparation of RFP document, selection of ERP system, selection of vendor, requirement gathering, system design, testing and final roll-out. The objective of our research is to ensure successful implementation of ERP system. Our research also proposes a potential model for implementing an ERP System. Our model proposes the organization to have two (2) major committees: (1) ERP Implementation Committee (2) ERP Steering Committee. ERP Implementation Committee will drive the complete implementation process. It must include members of all the department of the organization. Since, the system is for the functional users, it is essential that all the stakeholders are part of this committee as well. In addition, the ICT (Information & Communication Technology) department should also be a part of this committee. The other committee is the Steering Committee; this committee should consist of members of top management of the organization. All business process reengineering should be directed to the ERP Steering Committee. Steering committee is also responsible for supervising the overall progress of the implementation. They will also decide the level of customization necessary for the ERP System.

Keywords: ERP Implementation process, selection of an ERP System, RFP development of an ERP system, proposed implementation model of an ERP system
Evolution of eProcurement Model in the Italian Public Sector: From Government Centralisation to Regional Delocalisation

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Abstract: In this work the authors present the results of a survey regarding public eProcurement in Italy. The Italian Government has been starting to drive the introduction of eProcurement practices in the public sector since the end of the twentieth century. Its aim was especially to rationalise the public spending by the benefits offered by eProcurement, that is: more competition between the suppliers, more transparency in carrying on the tenders and auctions, lower prices thanks to higher volumes, speeding up of purchasing process. To quickly reach these goals, the Government opted for a centralised solutions. At that time, it was the best one to support the implementation of a new technology and to reach synergies and scale economies. In a second and more mature phase, the Government decided to encourage a delocalisation of public eProcurement, especially involving the twenty Italian Regions to implement their own eProcurement platform. The aim was to pursue not only quantitative benefits, but also qualitative ones, especially regarding a better alignment between the amount and nature of public spending and the real needs of citizens. The second phase is in progress yet, but surveying the actual implementation of eProcurement all over the twenty Italian Regions some results are already evident. The authors use their research on the Italian case to explore potentials and benefits, barriers and difficulties of public eProcurement implementation in complex administrative organisations, such as the Italian State, with very high level of public spending. Empirical evidences and lessons learned are explored, to define a comprehensive interpretative model of eProcurement in the public sector.

Keywords: eProcurement, public administration, decentralisation, business case study

ICTs as Weapons of Mass Interaction - Motivations and Implications of Mediated Control

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Abstract: Interaction has long been an integral aspect of organisation’s life. Hence, in recent times interactions driven by Information Communications
Technologies (ICT) have gained significant acceptance and momentum in contemporary organisational settings. This is demonstrated by their enormous adoption and wide-ranging employment across the various levels of an organisation’s hierarchy. Consequently, businesses have started to expand their investment in, and broaden the frontiers of, technology-mediated interaction. This has meant the involvement of such communication devices as mobile phones, personal digital assistants (PDA), BlackBerries, laptops, as well as other forms of portable and immovable computing technologies to provide enduring support for both enterprise-wide and external interactions. This study adds to the existing conceptualisations of technology mediated communication by delving into the fundamental rationalities, manifestations and implications of mediated control. To this end, an exploratory study is conducted in a moderately large UK food company that distributes semi-prepared food to small restaurants, and examines the applications of both mobile and stationary technology tools for undertaking different enterprise-wide communication endeavours under dynamic work strategising commitments. The study reveals that first, the application of multiplicity of ICT-driven interaction tools generate diverse social implications, both pleasant and unpleasant to the business organisation. Second, multiple actors have different motivations for the application of varied technology tools in the accomplishment of a given organisational tasks, however similar such tasks may be. Finally, study as a result provides significant managerial and theoretical insights and implications for organisational interaction and the distribution and service delivery businesses in the briskly growing digital market.

**Keywords:** ICT-driven interaction, social presence theory, media richness theory, emotion

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**Investigating the Factors Inhibiting SMEs from Recognizing and Measuring Losses from Cyber Crime in South Africa**

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**Abstract:** The level of cyber attacks on organisations has increased tremendously in recent years. When such attacks occur, organisations need to assess the damage and loss from this crime. While large organisations have the mechanisms to determine such losses, SMEs lack such capability and often ignore the need to implement effective information security measures (Kyobe, 2008; Altbeker, 2000; Upfold and Sewry, 2005). Consequently, their risk exposure to cyber threats and the losses they incur
from these attacks are often high (Ngo, Zhou, Chonka and Singh, 2009). However, the current legislative requirements, costly legal liabilities for non-compliance, and increasing pressure by stakeholders (e.g., lenders, business partners) on SMEs to comply with good practices suggest that SMEs cannot ignore security any longer. In order to ensure accountability and compliance with security requirements, it is imperative for SMEs to identify, account and report cyber incidents and losses resulting from cyber attacks. This study investigated the factors that inhibit SMEs from recognizing and measuring losses from cyber attacks in South Africa. A survey involving twenty organisations from different business sectors was conducted and the results indicate that victimisation, resulting from a lack of awareness of cyber-crime has the greatest influence on SMEs’ ability to recognise and prepare losses from cyber attacks.

Keywords: cybercrime, recognition and measuring losses, SMEs, victimisation

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Sharing knowledge – The CoP way

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Abstract: Managing academics’ knowledge to the benefit of all is a challenge to any institution. One way to share knowledge is through a community of practice. However, knowledge sharing within communities is complex. Challenges such as a lack of trust, a lack of incentives and a poor culture of learning in an institution have an effect on effective knowledge sharing. A questionnaire consisting of open- and closed-ended questions was administered to academics. This article reports on academics’ awareness and views of a community of practice at a higher education institution in South Africa. Empirical evidence shows that academics would be willing to share knowledge. However, time constraints, an unwillingness among academics to share knowledge, and a lack of support or participation from management could become obstacles to knowledge sharing.

Keywords: knowledge sharing, communities of practice, higher education, trust, learning culture, knowledge
An Empirical Framework of key Success Factors for Software Process Improvement

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Abstract: During the last decade, software industry has concerned more about the quality of software process, as indicated by an increasing number of proposed software process improvement (SPI) standards and models. However, the adoption rate of these standards and models in software development is still low and the failure rate of SPI implementations is very high. For these reasons, this paper is aimed at investigating the key success factors for SPI implementation to answer two research questions. The first question is, what factors do respondents think that they have an impact on SPI implementation success?; and the second question is, does the organizational size have moderating effect on the relationship between human factors / organizational factors and SPI implementation success? The conceptual model and hypotheses of this study are proposed by extending and integrating conceptual models from prior research, collecting the human, organizational, and implementation factors associated with SPI implementation in industry. Furthermore, the contextual factor that is organizational size was added to the model to test the sensitivity of the variation in software organizations. Then, a quantitative questionnaire survey was gathered from 23 software organizations in Thailand which apply CMMI (Capability Maturity Model Integration) as their SPI guidelines in order to test the conceptual model and hypotheses of the study. The results indicate that SPI implementation success depends on six factors, i.e. management commitment, staff involvement, allocated resources, pilot projects, setting SPI goals, and defined process model, while organizational size has no moderating effect on SPI implementation success. Finally, the main contribution of this paper is the guidance for SPI practitioners on key factors that practitioners need to focus during an SPI implementation. Moreover, this guidance will be useful in the processes of allocating resources and prioritizing tasks to effectively implement SPI in the organization.

Keywords: software process improvement, SPI, CMMI, key success factors
Assessing Information Management Competencies in Organisations

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Abstract: The history of the management of information systems includes many ideas that were intended to simplify the complexities of the management task, but there is still a great deal of wasted investment that produces no significant benefits. Much of the thinking has been rational and structured, but it can be argued that structured thinking will not solve the problems presented by the ever-increasing scope and depth of information systems, the need for improved responsiveness and agility, and the need to deal with a range of requirements that are sometimes behavioural and sometimes legislative. Three of the more frequently cited frameworks for information management (Zachman, Henderson & Venkatraman, Ward), are briefly reviewed and found to have common characteristics. They are combined into a new, simple arrangement of the central (and critically important) ideas. This new framework has been used as the basis of a survey instrument that is introduced and explained; it works at two levels - the "micro" and "macro" levels. It assesses perceptions of organisational capability to manage information well, as seen by respondents who are normally employees working in different roles with varying responsibilities. The survey instrument comes with an analysis and reporting package that is found to be suitable for the needs of busy managers, and the way in which micro and macro data is presently analysed and presented is demonstrated using data from a reference dataset, a CIO workshop, an investigation within a real estate agency and a large financial services organisation. The contribution of this work to the research programme from which it emanated is summarised and future directions briefly explained.

Keywords: Information management; perceptions; IS/IT strategy; alignment; assessment

A Semiotic Approach to Analyse the Influencing Factors in Knowledge Transfer

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Abstract: With the rapid growth of information and technology, knowledge is a valuable asset in organisation which has become significant as a strategic
resource. Many studies have focused on managing knowledge in organisations. In particular, knowledge transfer has become a significant issue concerned with the movement of knowledge across organisational boundaries. It enables the exploitation and application of existing knowledge for other organisations, reducing the time of creating knowledge, and minimising the cost of organisational learning. In order to achieve their goals and objectives, organisations need to combine knowledge and performance measurement tools such as Key Performance Indicators (KPIs) which are powerful agents of organisational change that help organisations to measure their progress towards achieving their goals. In this paper, we discuss how organisations can transfer knowledge through KPIs effectively by identifying the relationship between knowledge transfer and KPIs. In addition, we analyse localisation factors of knowledge transfer based on a semiotic approach: the organisational containment analysis to scope the influencing localisation factors, and the semiotic framework to analyse the socio-technical aspects of these factors.

Keywords: knowledge management, knowledge transfer, key performance indicator, semiotics

The Implementation of RSS-Based Clinical Reminder

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Abstract: Computer base reminder system can help physicians to get right information and make right decision in daily clinical work. This study presents a RSS-based Clinical Reminding System (RCRS) that was designed and implemented for reminding clinicians to deal with their varied unfinished clinical works. RCRS provides XML-formatted RSS clinical messages through automatically collecting clinical information for every clinician from the hospital information system (HIS). There are two types of system structure in our design, one is stand along module which is working in specific PC, and the other is web-based module, integrated with the CPOE system. According to this design, clinicians will receive and read these messages whenever he/she logs on the HIS. A hyperlink, which connects to appropriate applications and let the clinician easily make some response, was provided by each RSS message. The system can help clinicians focus on patient care without keeping track of clinical chores. Information “Content” of this system
was suggested to modify by system reviewers, but information “Accuracy”, “Formats”, “Ease of use” and “Timeless” of this system is appropriate for system design purposes.

**Keywords**: RSS, CPR, XML, clinical reminder

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**Exploring the Emotional Exhaustion of Healthcare Providers Using an In-Hospital Employee Communication Network**

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**Abstract**: Competition between hospitals in Taiwan is often fierce. Information transparency has replaced the former information asymmetry situation. Healthcare service providers will have to attract patients in new ways. Healthcare service providers need to have a positive attitude. The problems of emotional labor and emotional exhaustion of the front line healthcare givers cannot be over emphasized. It’s important for them to have an emotional support system. Lifestyles have changed with the development of the Internet and Information Technology. Establishment of an employee communication network (ECN) in hospitals is essential. Due to the increasing emotional exhaustion of healthcare providers, this study focuses on one hospital with in-hospital ECN to investigate the extent of healthcare givers’ emotional exhaustion. This study will further discuss the usage and perceived usefulness of healthcare givers who have used the ECN. We also hope to ease healthcare givers’ occupational burnout.

**Keywords**: healthcare providers, nurse, in-hospital employee communication network, emotional exhaustion, perceived usefulness

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**Factors Determining the Adoption of ICTs in Healthcare Service Delivery: A Developing Country Context**

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**Abstract**: The proliferation of Information and Communication Technologies (ICTs) in healthcare service delivery has brought with it great advancements in this sector. This has created the concept of eHealth which is a relatively
new concept in health care service delivery in most developing countries. According to previous research studies, ICT solutions are rapidly changing the way health organizations and stakeholders communicate with each other (Ouma and Herselman, 2008). Many people are using such communication technologies to communicate with others to gather information, with healthcare being one of the most important areas of such applications. It is therefore understandable that the value and importance of ICTs in health has increasingly been recognized worldwide. The literature in innovation adoption notes that there are still inadequacies in identifying the factors that are crucial in promoting eHealth adoption in developing countries (Drury, 2005). Although, in Africa, the advent of eHealth has brought exciting opportunities to reduce or control the growing healthcare inequities, a lot still needs to be done in the adoption of these technologies (UNESCAP, 2007). In a developing country like South Africa, the disparity in the access to ICTs in healthcare service delivery is wide due to the dichotomous demography of first and second economies existing in this country. This has had a negative impact on the adoption eHealth technologies thus, suggesting that even though there has been an appreciation in ICTs in healthcare, very little has been done to ensure the adoption of such technologies. This paper, however attempts to ascertain such factors that determine adoption of ICTs in healthcare service delivery from both the management and patients’ perspectives. Drawing from the theories of innovation adoption in healthcare service delivery, the paper argues for the need to examine eHealth service adoption factors in developing countries and provides recommendations on how to tackle the challenges to adoption. The paper will conclude by recommending further research on issues in a number of key areas that need to be resolved to improve upon the efficient use and adoption of ICTs in healthcare service delivery amongst developing countries. South Africa is used as a case in this paper.

**Keywords:** eHealth, challenges, theoretical models of adoption, ICTs in healthcare, developing countries

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**Evaluation of Application Embedded Knowledge Migration Issues**

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**Abstract:** As computing has matured, more organizations are purchasing best of breed applications as opposed to developing them in-house. From a Knowledge Management point of view, the organizations are renting the use of knowledge that is embedded in the applications. The organizations may
own the data but the host application company owns the intellectual capital that creates the knowledge. For any of a number of reasons organizations will have to move to new applications and in turn new knowledge. It is assumed that the organization will be able to migrate current data and print reports but it does not own the original base knowledge. The issue is to understand what knowledge is imbedded in the old application and how can it be integrated into the new system. As the knowledge is inventoried, the new vendor can then determine if the knowledge will be available in the system. After that determination, the user might have to decide if the information is obsolete or possibly lost data. The migration issue also can put the onus of development on the end user. Consider the conversation of the developer and the end user where the end user asks for a feature that the developer has not seen. The end user is looking for features in the old system and the developer is going to say that it is up to the end user to tell them what they want. The issue is that the end user may now know what they want. The knowledge embedded in the code of the old application provided the information. The information basis is the intellectual property of the outgoing vendor and they may not have any reason to work with the incoming vendor. The paper will evaluate migration issues based on a case study of the migration of a financial application for a small city. The paper will also discuss some of the assumptions of knowledge management and a knowledge inventory to help an organization prepare to move applications to a new vendor.

**Keywords:** knowledge management, application, migration

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**Motivations for IT Outsourcing in Public Sector Local Government**

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**Abstract:** This paper examines the approach taken to Information Technology (IT) outsourcing in four local government councils in the UK. This is important because, whilst outsourcing has become a significant issue in the restructuring of organisations and is increasingly used within both the private and public sectors, there has been a lack of research into IT outsourcing in the public sector and particularly within local government. This paper provides an in-depth study into how outsourcing is managed in local councils and how successful it has been; especially considering its sometimes controversial nature and the mixed press results it receives. To complete this study, interviews, containing both qualitative and quantitative questions, were conducted with key people at the four councils. These interviews examined
the rationale for IT outsourcing. The findings from the interviews were then compared to the current literature on IT outsourcing to identify best practice. This research shows that, whilst cost savings remain important, councils focus on achieving best value when outsourcing IT rather than simply lowest cost. Indeed, it shows that whilst outsourcing can result in improved efficiency, councils that focus primarily on cost savings are often less successful. However, whilst the results revealed that IT outsourcing was more successful at councils who focused on long-term strategic goals, the interviewees considered the strategic benefits of outsourcing less important than improving the service. The structured selection process that is imposed by legislation allows council managers to gain a better understanding of the outsourcing requirements and make informed decisions to achieve best value, however the need for cost efficiency can result in a more short-term focus. The cost of the process and its inflexibility makes it more difficult for councils to focus on long-term goals. The study concludes that, whilst councils recognise that both the contract and trust are important to ensure that outsourcing is successful, the culture of risk aversion in the public sector tends to lead to a ‘play it safe’ mentality resulting in an overemphasis on the contract. This can lead to a short-term focus that could make it difficult for the council and the provider to work together to meet long-term goals. The councils were generally skeptical of developing partnerships; however, the research reveals that councils who focused predominantly on the contract were less successful than those who developed partnerships with their providers. The authors therefore recommend that, in order to achieve greater success, councils should develop partnerships and focus on best value and long-term strategic goals when outsourcing IT.

**Keywords:** Information Technology (IT); Information Systems (IS); outsourcing; public sector; local government

**Documenting Innovation: A Methodological Proposal and Application**

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**Abstract:** Nowadays the business is driven by a constant and ever-changing demand for innovation. In order to remain competitive the companies must know how to present new products, processes and services to respond more quickly and effectively to the needs of consumers. Today as never before, companies have faced a similar challenge, to hone the best of his ability to innovate. In this highly competitive business environment, only those with managers and employees highly motivated and prepared, and can count on a
creative process properly, it can be said to be ready to conquer success. However, if this is the scenario in which to move in order to achieve the objectives of efficaciousness, managers also need to consider efficiency aspects. Often the actions and the projects designed to introduce elements of innovation within companies require a lot of energy. We just refer to this term borrowed from physics that makes the concept of power’s absorption for a certain time corresponding to the different phases of the innovation process with regard to human resources, construction, infrastructure, equipment and financial requirements involved in the innovation process. But this power’s consumption can be optimized and thus reduced, with the same results (or to remain in physical jargon) of charge to be met, through a system of documentation of the actions of innovation introduced over time by the company. In this paper a methodology for documenting innovation, as a strategic key factor for firms, is developed and practical application is provided through the contribution of a young company working on information systems, the “Solvendo Company”(www.solvendo.net) for the construction of an information system finalized to innovation’s documentation. It is also offered an application based on RFID, radio frequency devices, for the process of data acquisition instrumentation, machinery, plant, in order to have a quick reference tool for operating on a single component that aggregates the “query- innovation processes “ activity over time.

**Keywords:** innovation, tracking, tracciability, rintracciability, Rfid

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**Legal, Privacy, Security, Access and Regulatory Issues in Cloud Computing**

Nomusa Dlodlo, CSIR – Meraka Institute, Pretoria, South Africa

**Abstract:** Cloud computing is a sufficiently new research area. Since it is in its development stages, the information on the field is slowly being compiled by the researchers and practitioners from their experiences. Some of the areas in which there is still a gap on reporting on legal, privacy, security, access and regulatory issues. This paper raises an awareness of legal, privacy, security, access and regulatory issues that are associated with the advent of cloud computing. An in-depth literature survey is conducted on these and an analysis is drawn from the issues that are identified through the literature survey. Recommendations are then given on how the issues identified in the analysis can be mitigated. These recommendations centre around the issues of policy interventions, standards, privacy and data protection, traffic and congestion management, business continuity planning,
security and regulation. This research is an advancement of knowledge in that field and is meant to initiate further debate on cloud computing

**Keywords**: cloud computing, security, privacy, regulation, legal issues, interoperability, business continuity planning

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**Interoperability Monitoring for eGovernment Service Delivery Based on Enterprise Architecture**

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**Abstract**: Public administration has to prepare itself to deliver fully integrated eGovernment services. This delivery often requires cooperation via business processes interoperability across two or more departments. In this context, public departments and agencies need to implement interoperability using enterprise architecture techniques to structure business processes, and service oriented models to achieve their integration. Thus, it’s quite interesting to adopt enterprise architecture paradigm and techniques to analyse, track and control the evolution degree of processes interoperability from the existing “as-is” state to the future “to-be” state. The present paper proposes a periodic monitoring approach based on an assessment method which considers three main aspects of interoperation: 1. Potentiality, reflecting the preparation to interoperate. The objective is to foster interoperation readiness by eliminating barriers that may obstruct the interaction. 2. Compatibility, referring to interoperation implementation through adequate engineering process. It aims to study the relation between the external interfaces of processes and the surrounding environment in order to ensure effective interaction. 3. Performance efficiency, focusing on monitoring operational performance. It consists of the availability assessment of the communication infrastructure and the supporting system in general. It considers also end users satisfaction of interoperation in use. The proposed method supporting tool, (IMT) for interoperability monitoring tool, assesses interoperability degree periodically through five steps: (i) Delineating the scope of interoperation; (ii) Quantifying the interoperation potentiality; (iii) Calculating the compatibility degree; (iv) Evaluating the operating performance; (v) Aggregating the degree of interoperability. In addition to its capacity to track the evolution of interoperation degree in time, the IMT measures the required effort to reach a planned degree of interoperability. Finally, to better illustrate how to use the proposed interoperability monitoring approach, we present a practical example of integrated public eService. It’s a
citizen oriented eService proposed by a public hospital that offers special fees for persons covered by social security insurances. It includes government to business collaboration and government to government one.

**Keywords:** integrated public eService, enterprise architecture, interoperability assessment, periodic monitoring, and eHealth

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**Enterprise Resource Planning Implementation Differences Within the Same Methodology - Case Study From West Europe and Turkey**

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**Abstract:** Enterprise Resource Planning (ERP) systems are vital for competitive edge in today’s business world. ERP is an integrated information system that serves all departments within an enterprise. Therefore, business processes should be optimised before ERP implementation in order to catch a perfect implementation. Before year 2000 all the giant firms realised their ERP projects and after that best practises took place. After those trial and error based experiences, ERP vendors need to form an ERP implementation methodology. Big ERP vendors developed implementation methodologies, they were almost the same; starting from project preparation to selection, implementation to maintenance and control. Those project methodologies improved the success rate of ERP implementations. This research is both empirical and qualitative. In fact it consists of two monographic researches. They are both about ERP implementations in the same sector. One of the firms is a national one and other one is a multinational one. Both implementations done by the same consultant team with the same methodology, so the evaluation of the project is more objective than any other questionnaire based ones, which are filled by different implementation teams. The findings of the comparison are surprisingly different from each other within the implementations, although they both used the same methodology. Basic steps of the ERP implementation such as: project preparation, business blueprint, realization, final preparation and go live & support differs from each other both in national and multinational firms. The major difference is seen in the first steps which are project preparation and business blueprint. Multinational firm seems to have more chance than the national one in achieving organisational efficiency through successful ERP implementation. The research outcome is useful for professionals running implementation projects and those making decisions on ERP implementation. The results can also be used by practitioners managing ERP projects in order to avoid from implementation methodology illusion.
Keywords: enterprise resource planning, ERP project management, ERP implementation, cultural differences

A Meta-Analysis of how the Adoption of Innovative Web 2.0 Tools Like Digital Business Ecosystems can Lead to Improved SME Collaboration

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Abstract: This work studies the increasing role of Web 2.0 tools as enabler of SME collaboration. The author analyses how innovative Information and Communication Technologies (ICT) like Digital Business Ecosystems (DBE) could help small and medium enterprises (SMEs) to reduce the gap with large corporations. Nowadays Web 2.0 is permitting to perform some tasks unimaginable only few years ago. Individuals have evolved from a passive to an active role and currently are the main actors creating Internet content. However, compare to individuals, business still in the first stage of Internet revolution and are not taking profit of all the possibilities of Web 2.0. Most of them are using these tools only to improve existing procedures but not for creating new ways of doing business or interact with other SMEs. In this scenario, DBE has emerged as a new paradigm to solve some of these problems and to permit businesses behave in a similar way to what individual users are doing nowadays. In this work, after an analysis of the nature of co-operative behaviour and the importance of Web 2.0 facilitating its emergence by promoting self-organisation of their participants, the author evaluates this new paradigm in order to determine if it is a valid approach for SMEs. Finally, based on previous works of the author about the needs of SMEs, the study concludes with the definition of MADBE, an innovative multi-agent Digital Business Ecosystems inspired by natural ecosystems which aims to facilitate collaboration between SMEs.

Keywords: SME, collaboration, multi-agents, digital, ecosystems, business
Ideas About Profitability in Research and Development and the Selective Pressure From Management Accounting

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Abstract: The selective pressure on the development of products and production technologies is not exerted directly by customer demand, but by its interpretation in a company. The decisions on technical development usually take place a long time before a product reaches the market on the basis of calculations about profitability in management accounting. The profitability can depend on various factors, including production facilities, supply networks, intellectual property, distribution channels and competition. The calculations that lead to decisions on an investment tend to be very complex. Nevertheless, they do not represent fully realistic market conditions, but only a simplification for the sake of reliable estimates. In a conventional simple evolutionary model of innovation, technical development does not express expert knowledge. In addition, it adapts as much to the shortcomings of the financial calculations as to the prognostic information they are based on. If the selective pressure from management accounting is high, technical development is likely to focus on the exploitation of the missing cost factors in the calculations and neglect the reality of market demand. In practice, innovations in research and development are not propelled by arbitrary change. Expanding the conventional model, the expertise in research and development can be represented by introducing intentional improvement operators. These operators show a potential to avoid unwanted directions of adaptation, which gives reason to believe that common sense in research and development play an important role in avoiding detrimental effects of incomplete cost calculations.

Keywords: computational models of innovation, investment decisions on R&D, technology assessment and management accounting, simulation of evolutionary adaptation, profitability calculations and human expertise
Case Study on Information Evaluation by GIS for Aging Society
Urban Planning: GIS Application on Urban Planning-
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Abstract: Japan’s aging society and shrinking population are leading to serious problems, including a declining level of community vitality in most of Japan’s secondary cities. Structural changes in Japan’s population are expected to continue for the near future, making sustainable urban design and renovation more important than ever. Proper urban design must seek and evaluate the relevant social information. This research presents a typical case study using a new information evaluation method, the Geographic Information System (GIS), against the background of an aging and shrinking society. It is carried out in Yahatahigasi-ku, a ward in the city of Kitakyusyu, Japan. The ward’s land is characterized by steep slopes, which are inconvenient for aged people and reduce their outdoor mobility. Moreover, most of the ward’s houses are over 30 years old, the average lifespan for houses in Japan. The quality of the houses is inadequate to the demands of modern life, perhaps explaining the area’s inability to retain its youth. As a result, the shopping districts of Yahatahigasi-ku, prosperous in the 1950s and 1960s, are declining in proportion to the number of deserted houses. This research explores GIS design approaches as configured for an aging society. It discusses the important factors that flow into an urban design meant to address a declining population, such as the plot ratio, the mixing of commercial and residential spaces, and the placement of public facilities for the aged. The city planner must find the most suitable area for planning. Sustainable urban design requires that new elements be introduced into the traditional configuration; the constructional style of buildings in a mixed-use area will reflect the character of the district. This study considers the GIS urban planning method as a development of the GIS application. We see here the importance of geographic information to urban planning. This paper will exemplify the importance of sharing informational evaluations to the urban planning process. In this paper, a case study of Japan was investigated. It makes contribution on urban regeneration for aging society that also appropriate for cities outside Japan.

Keywords: urban design, GIS, aging society, compact city, migration
Distortion Free Algorithm to Handle Secondary Watermark Attack in Relational Databases

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Abstract: Publishing data over the internet has greatly facilitated the ways of data transfer and file sharing but opened new threats of piracy and copyright violations. The technique of relational database watermarking is used to protect digital assets by embedding imperceptible watermarks into the data before publishing. Relational database watermarking got inspiration from digital watermarking and efforts are being made to protect databases from such attacks by embedding watermarks. Database watermarking has been an active area of research for the past few years. This process causes distortion of data and may affect the quality of information and reporting. A novel approach is proposed to embed non-visible Unicode character spaces as watermark instead of changing the least significant bits of numeric data, which avoids distortion of the data. Similarly in the previous works, watermarks were embedded in numerical data only while our technique is applicable to character type data which is another novelty of the proposed technique. Researchers have identified different types of attacks against the databases. One of them is secondary watermark addition attack. The proposed technique provides a distortion free solution to protect the database from secondary watermark addition attacks. The owner's private key along with a timestamp issued by a trusted timestamp authority is embedded to protect the database from the threats of secondary watermark addition attack. Instead of involving the third party at a later stage, we propose its involvement at the stage of watermark construction. The third party will keep the record of timestamps, issued against owner's encrypted key, and database for which the timestamp has been issued. Experiments have shown that our algorithm is effective even after changing 90% of the contents of database by the attacker. The proposed technique not only takes care of the secondary watermark addition attack but also other types of attacks for example subset attacks and bit attacks.

Keywords: relational database watermarking, secondary watermark, trusted time stamping
Engineering Change Through the Domains of Enterprise Architecture
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Abstract: Change continues to be a challenge, as organizations strive hard to change with time and with new and evolutionary processes, activities and requirements. Many organizations are thus challenged by this change. Some of these organizations attempt to address the challenges of change through different strategic approaches, such as Enterprise Architecture (EA), which involves the development of an organizational capacity to respond to changing needs and conditions. The research investigated the practice of EA to understand how EA, through its domains engineer Change in the organizations in order to respond to rapid technological and business changes. Interpretive case study approach, using two organizations was adopted.

Keywords: change, enterprise architecture and domains architecture

Evaluating Interoperability Artifacts for the Exchange of Public Service Information: Outline of a Conceptual Framework
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Abstract: Drivers to improve the interoperability of information systems in public authorities are initiatives for simplifying the access to public authorities and their services for citizens and enterprises. The spectrum of such initiatives reaches from initiatives on the regional and national level up to global initiatives. All these initiatives have in common, that they are related in some way or the other to public services. I.e., they have to deal with the challenge of describing public services either as a base for exchange information about these public services within the public administration or between public authorities and citizens and enterprises or as a base for developing information systems to support the provision of public services. As a result of these initiatives numerous artifacts have been developed, including languages and methods for modeling public services, ontologies and taxonomies for public services, etc. Although, this multitude of artifacts has the positive effect, that there is a high chance, that every aspect of the complex concept “public service” is covered by at least one of these artifacts, it is difficult to keep track on all these artifacts and how are these artifacts are
related to each other, in particular what interoperability issue they address in detail, on which foundations and assumption these artifacts are based on, etc. In this paper a conceptual framework for evaluating such artifacts is proposed, which shall allow an evaluation of these artifacts with respect to the question given above. But this conceptual framework can be also useful for support of an artifact to solve a particular description problem regarding public services on the one hand, and on the other hand, it can be useful for the integration of these artifacts.

**Keywords:** eGovernment, evaluation, public service, interoperability, artifact

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**Free and Open Source Software for Public Sector Enterprise Applications in Sri Lanka**

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**Abstract:** This paper describes a study done on the use of Free and Open Source Software (FOSS) for enterprise applications of the public sector in Sri Lanka. The study investigates factors that affect the selection of software for public sector information systems with, an emphasis on how Free and Open Source Software (FOSS) is used and could be used in such projects. The objectives of the study are as follows. The study aims to identify factors that affect the adoption of Software in Sri Lankan government sector projects. In addition to this it identifies features that are considered as important in such large Information Systems, and how they relate to Open Source Software adoption in the context of the public sector in Sri Lanka. The findings are analyzed and suitable recommendations are presented for better selection of software in the public sector. The work is important as it identifies and highlights factors that affect the choice of software in the public sector. This is important for several categories of people. It is of importance to the strategic management and policy makers to know what drives the information system procurement decisions in order to make more relevant policies and guidelines that are congruent with the needs in government sector departments. It is useful when advocating new technologies and information systems. This is especially true when advocating the use of Free and Open Source software for the use in the public sector in a wholesome and sustainable manner. The research is also important to software vendors and solution providers to the public sector in identifying what factors need to be taken in to account when bidding for public sector IS projects. The research is of a qualitative nature. It consists of multiple case studies of selected government sector departments.
and projects in Sri Lanka. The study investigates information systems developed by internal staff, developed by external consultants, procured systems, system implementation via private public partnerships (PPP) and projects guided by the Information and Communication Technology Agency (ICTA) of Sri Lanka. Data was gathered through interviews of staff at different levels of selected government sector Information Systems projects. The data was comparatively analyzed on a case by case basis to identify common patterns and trends among the investigated organizations and projects. The identified factors affecting the choice of software include the cost, technical specifications, bidder’s expertise in selected technology and user’s expertise in selected technology amongst other factors described in the full paper. The study identifies patterns between the choice of software - FOSS or non FOSS, and these identified factors. Based on these, recommendations are given to adopt and benefit from the use of FOSS in public sector enterprise level software projects.

Keywords: enterprise software, government, free and open source software, software adoption

Evaluating the Success of Customer Relationship Management (CRM) Systems

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Abstract: Based on the Delone and McLean IS success model (1992), this qualitative study explores customer relationship management (CRM) system success factors. A case research approach was applied to examine CRM applications in three organizations. Through these case studies, five factors of CRM success were explored, namely: system quality, customer information quality, system use, user satisfaction, and system impacts. With regard to system quality, a main determinant of success was the system’s primary characteristics. CRM systems can be categorized as operational, analytical and collaborative, based on their characteristics. The study showed how system’s characteristics directly affect the purpose of system use. Operational CRM systems are mostly used for providing customer services. Analytical systems are primarily used for decision support. Collaborative systems are used both for work integration and providing service for internal and external customers. The study showed that if systems properly address users’ expectations and employees have the required skills to work with systems, employees are more willing to utilize the capabilities of systems to support CRM processes and, in turn, are more satisfied with the outcomes.
Customer information quality relates to system quality; integrated CRM systems that are based on standard platforms are more capable of generating high quality customer information in a timely manner. Individual and organizational impacts of CRM systems were explored. Individual productivity, improved decision making and planning, learning and awareness were shown to be important individual benefits that CRM systems provide for employees. At the organizational level, the study showed that CRM systems help organizations to acquire and share more knowledge about their customers, and improve business processes, products and services.

**Keywords:** customer relationship management, CRM, system evaluation, IS success, system effectiveness

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**Toward a Novel Methodology for IT Strategic Planning**

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**Abstract:** Defining IT target state and the specific roadmap to attain it, are main focuses of IT strategic planning which is considered increasingly as the basis for IT decision-making and governance. Unfortunately, it hasn’t evolved with the same speed as other fields in the IT sphere. Most of the techniques, approaches and methods related to IT Strategic Planning date back to the 80s or 90s and are most often oriented business rather than IT. Enterprise Architecture is a really promising discipline aimed at capturing the as-is architecture of an enterprise, defining the target and the roadmap to get from existing to desired state. In that way, it is tightly related to IT strategic planning and it can provide a framework to fill the gap and contribute in structuring and formalizing IT Strategic Planning field. Enterprise Architecture benefits from a standardization effort as well as from tool support. Deliverables and artifacts are generally well defined and structured in the existing frameworks. This paper present a new methodology for IT Strategic Planning based on Enterprise Architecture.

**Keywords:** IS strategic planning, enterprise architecture, methodology, metamodel, content framework
Applying Innovative Information System to Improve the Effects of Community Health Promotion

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Abstract: “Ottawa Charta” indicates that the importance of strengthen community actions is to achieve better health for residents. For achieving this goal, the health promotion works through community organizations is the most effective way. There are two models to promote community health in Taiwan. One is to set up a single community health department within a healthcare organization. The other one is to set up a community care center in the community by civic or government organizations. However, there is a common drawback of lacking a suitable and effective information system to evaluate the two models and serve as a basis to adjust future service content and efficiency. This study establishes an Internet information platform with Interactive Response System (IRS) to effectively evaluate the two models of community health promotion and to improve the services to upgrade the management of community health promotion efficiency. The results showed that the average satisfaction score of the Internet information platform is greater than 4 which mean that the innovative information system in this study is in accordance with the needs of community health department users and acquires a high satisfaction. The average satisfaction score of IRS is greater than 4 with the factor of “perceived usefulness” scores 5 which means residents of the community care center show a higher acceptance of using IRS in learning health education materials than that of traditional one. IRS can also improve diseases perception of community residents.

Keywords: information system to improve community health promotion, community health promotion effective, interactive response system (IRS)

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Abstract: Information has become an important aspect of daily operations in the mining industry. This is due to the mining industry’s increased dependence on information for strategic operations and competitive advantage. Therefore, the need for reliable and accurate information to achieve this, demands enhanced information security practices in these organisations. Sound information security practices require an effective information security program backed by information security policies and frameworks. The research aims to investigate the state-of-practice of information security in Zambian copper mines using the ISO/IEC 27002 standard as the foundation of information security, and to explore leadership perceptions regarding information security practices within these mines. Available literature on information security practices within the mining industry is used to identify barriers to effective implementation of information security practices and a conceptual framework is proposed to this effect. This framework is then verified by responses obtained by means of a survey administered to senior management and heads of Information Technology in Zambian copper mines, and an in-depth case study of information security practices in one of the said Zambian copper mines using an ISO/IEC 27002 audit tool. Identified barriers to effective information security implementation include, differing perceptions between senior management and middle management, incomplete information asset inventory, poor staff awareness, inadequate information security policies and procedures, inadequate risk management processes, and inadequate control system policies and procedures. A framework for enhanced implementation of information security in Zambian copper mines is further proposed. This framework is made up of proposed considerations and enhancements that can be used to address the barriers identified in the literature review, based on results from the leadership survey and the ISO/IEC 27002 audit instrument. This framework, based on ISO/IEC 27002 guidelines and controls, includes full management commitment to information security, adoption of an information security standard or framework, improved personnel awareness, complete and up-to-date asset inventory, defined information security governance framework, and enhanced policies and procedures for industrial control systems.

Keywords: information security, leadership perceptions, state-of-practice, copper mines, ISO/IEC 27002
Proposing an Optimized Change Management Process by Analyzing ITSM Frameworks

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Abstract: This paper proposes an optimized change management process for simplified organizational transition by evaluating and analyzing widely accepted ITSM frameworks such as ITIL, MOF v3, MOF v4 & FITS from different aspects including but not limited to the benefits and deficiencies of work flow, roles and responsibilities, key performance indicators & ARCI matrix. IT service management (ITSM) as a sub-discipline of IT management plays an important role in achieving the organizations goals and objectives. Many frameworks have focused on ITSM, and as a best practice Information Technology Infrastructure Library (ITIL) is the most widely accepted approach to ITSM and it is owned by United Kingdoms' Office of Government Commerce (OGC). ITIL v3 is presented in five main categories and each category contains its related processes. Based on ITIL, Microsoft Corporation developed a framework for IT service management named Microsoft Operational Framework (MOF). Although MOF 3.0 is mostly in accordance with ITIL framework, MOF 4.0 is presented by three main areas and a management section that covers the activities in each area. MOF 4.0 focus is on insuring the alignment of business and IT throughout the organizations activities. One of the most important aspects in ITSM frameworks is the manner in which changes are managed in an organization. This article includes evaluating and analyzing the change management process in the above mentioned frameworks from different aspects. As identifying the role of individuals and groups is the most critical aspect of any process, the first step is to assign roles and responsibilities. This is done by using an ARCI matrix which presents the individuals and groups responsible, accountable, consulted and informed. In order to identify the deficiencies of the ARCI matrix for each framework, the matrixes are analyzed and compared and a new ARCI matrix is introduced. The next step is to define the sequence in which the actions are taken, mentioned as a work flow. The work flow of each framework is analyzed and the importance and disadvantages of each action is discussed from a practical point of view. After defining the change process, each framework applies key performance indicators for assessing its performance. These indicators are listed and compared and the most effective and efficient indicators are determined. This evaluation and the lessons learned, resulted in an optimized change management process flow with a particular ARCI matrix and revised key performance indicators which
The use of RFID and Web 2.0 Technologies to Improve Inventory Management in South African Enterprises

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Abstract: Cost-effective inventory management includes balancing the cost of inventory with its profit. Most business owners fail to recognize the value of the cost of carrying inventory, which include not only the direct cost of storage, insurance and taxes but also the cost of money tied up in inventory. Running inventory using paper-based systems, Excel files and traditional enterprise software is a costly and resource-intensive approach that may not even address the appropriate issues for most businesses. It is with this in mind that this research proposes taking advantage of the Internet of Things (IoT) and Web 2.0 tools in the management of inventory. IoT promotes the communication of things/object through sensors. On the other hand Web 2.0 tools promote the communication of people through their phones or desktop computers. The collaboration of these two technologies could improve inventory management. A comprehensive literature survey is conducted on inventory management functionalities. IoT and Web 2.0 technologies are then mapped to the identified inventory management functionalities. As a result the research proposes inventory management architecture. The paper looks at the architecture of a system that fully integrates the technical advantages of Radio Frequency Identification (RFID) and IoT, in collaboration with web 2.0 tool, twitter, for loss prevention and as an enabler for locating misplaced stock, anti-counterfeiting of stock, etc. The system will focus on South African Enterprises as a developing country in Africa.

Keywords: Internet of things (IoT), Radio Frequency Identification (RFID), Web 2.0 tools, inventory management, South African Enterprises, Twitter
Modeling the Genetic Schemes of Human Memory Information in the Process of Production and Reparation of Knowledge

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Abstract: In this paper the theory of "genetic scheme of human information" is presented for the first time. This theory is in based on fifteen years of continuous study and research on related sciences including cognitive and meta-cognitive psychology, the system of processing information, information pathologies such as amnesia, information interference, mistakes in remembering information such as the time of tests and exams, neurology and learning, chemistry and long term memory compounds, electricity physics and electrons movements in data transferring. To make the theory more comprehensible, a conceptual model on the process of receiving knowledge, repairing knowledge and finding the relationship between different sciences to each other was created and presented. This included the use of factor analysis method and path analysis with multiple variable regressions. Its fitness degree was accepted with 86.12% by a group of 186 Faculty members of Iranian universities. The paper also offers a conceptual model for understanding the way information system of human mind performs in data saving and recalling. This model benefits from the results of previous studies and researches on the way memory performs in terms of neuroanatomy, neuropsychology, physiology, and the system of data processing in the field of metacognitive Psychology. This model was approved by a group of 97 lecturers in education and neuropsychology, who have been randomly selected. The related ratio is 85.538. The statistical method employed is factorial and path analysis. This model depicts the structure of the type of information and the way it is preserved and saved in the memory. In addition, the model makes it possible to transform the data into other forms which can be recalled and recognized in a simpler way.

Keywords: information genetic scheme, memory, knowledge generation and reparation, human mind information system (HMIS), conceptual model, data saving and recalling
Copyright Protection for GIS Vector Map Based on Wavelet Transform

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Abstract: The copyright of GIS vector map has become an increasingly complex topic. The main technologies which are used for copyright protection are the copyright marking techniques, and these techniques are delegated by watermarking. In this paper, a new watermarking algorithm for GIS vector map is presented. The magnitude of the DWT coefficients of vertices extracted from the map is altered to embed the watermark. The selection of the hiding coefficients will be depended on the threshold value; and a key used to select the exact locations which embed the watermark. The watermark bits are embedded in coefficients which should satisfy certain conditions. The Insertion of the watermark in these selected coefficients is done by changing the specific bits of the coefficients like spatial domain. The watermarks can be blindly detected without the original map and watermark information. The experimental results demonstrate the high robustness of the proposed algorithm to various attacks like noise additions etc, and by evaluating the quality of the watermarked map via the WPSNR with respect to the original map, we show that the watermarked map is very similar to the original map, which indicates that the proposed watermarking scheme can achieve a better tradeoff between the robustness and the transparency.

Keywords: 2D vector graphics; digital watermarking; wavelet transform; geographic information system (GIS)

Evaluation of IT Investment Methods and Proposing a Decision Making Model

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Abstract: Information technology investment decision making is one of the significant issues. Since the IT investment evaluation is not just based on direct and tangible factors and many other intangible and indirect qualitative criteria influence this evaluation. Generally, there are two different approaches in evaluation methods with their own advantages and
disadvantages: tangible methods such as Discounted Cash Flow, Net Present Value, Information Economics, etc. and intangible methods such as Value Analysis, Multi Objective Multi Criteria, Critical Success Factors, etc. But a more effective and precise road map is to guide decision makers to choose an appropriate multi criteria model that consider both tangible and intangible factors together. In this paper by literature review of these mentioned methods, various tangible and intangible factors were determined from different academic papers and practitioner resources and then were classified in two domains and a number of sub-domains. In order to obtain complete and applicable criteria, five reduction factors were defined, i.e. clarity, completeness, non-redundancy and operationality. Then this criteria list was delivered among a number of managers and information technology specialists. According to the given answers, a new criteria list was obtained with eliminating non-applicable criteria. As a consequence, to assess the importance of each criterion for creating the model, the rating scores, one to five were defined and added to the new lists. Then these new criteria lists were conducted among CIO, CEO, CFO and other related specialists in different Iranian companies to customize these criteria according to their business strategies and requirements. Score one represents not important and five represents very important. The results are assumed as the minimum level of criteria with maximum coverage in different information technology projects. In the next step, based on the results, we developed an analytic hierarchy decision making model. The results of this research indicate that this model is applicable and can be easily expanded by aggregating new sub criteria to be customized for different IT investment evaluations.

**Keywords:** IT investment, evaluation of IT project, intangible benefits, decision making model, economic factors, rational decision making

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**Critical Factors in the use of Mobile Learning by “Digital Natives” on Portuguese Teaching**

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**Abstract:** The purpose of this paper is to discuss the mLearning as a useable resource in formal education (in a classroom context), in order to improve the learning experience of young people. It is intended to enumerate the possible success factors that can contribute to the mLearning and to show that, when properly integrated into school curricula, they could be a valid learning experience for youth. Young people are referred to as the "digital natives" because of their constant use of digital resources in their day-to-day. Some
factors of significant importance are identified, namely the fact that young people see the mLearning as a valid learning tool, and that they accept its use in teaching, provided it is not to replicate contents taught in the classroom. This article highlights the important role that mobile learning can have on academic life, and the factors which underpin its success, such as the widespread use of mobile devices by young people. The "Digital Natives" use mobile technology with great frequency, particularly to keep in touch with family and social networks as they see the technology as an essential part of their lives. Mobile technology solutions may help transforming the way to create, teach and learn; in this sense, mobile phones may have an important role to play in tomorrow’s school.

**Keywords**: mobile learning, eLearning, moving learning capabilities; mobile devices; wireless network; digital natives; teaching

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**A Framework for Information Systems Innovation: A Case of Competitive Intelligence in Organisations**

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**Abstract**: Knowledge is used as a focal factor for competitive advantage, through effective and efficient performances by employees in many organisations. As a result, knowledgeable employees are expected to share their knowledge with others to increase innovation within the organisation. Unfortunately, this is not always the case. Generally, employees behave differently within an organisation. No organisation has total control of its employees’ behaviour and actions. The behaviour and action, which has impact on how knowledge is shared is influenced by many factors such as fear of losing jobs, power to negotiate personal interest. These factors influence the deployment of CI were found and interpreted and conclusion was made from those interpretations. The study aimed at establishing the impact of Competitive Intelligence (CI) on Information systems (IS) innovation products and services in organisation. A case study was conducted, using a financial organisation. Innovation-decision process was applied in the data analysis.

**Keywords**: competitive intelligence (CI), diffusion of innovation (DoI), Information systems (IS), innovation
RFID: A Review of its Relevance and Application in South African Retailing Systems
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Abstract: The advent of Radio Frequency Identification (RFID) has enabled identifying an object using a radio signal. RFID has become the talk of the day when world retail giants including Wal-Mart, Tesco, Target, and Albertsons announced their implementation of the technology to ensure efficient supply chain management, and, naturally, demanded that their suppliers meet RFID requirements. Today, these retailers boast some of the best supply chain systems and management in the industry worldwide. The increase in adoption and application of RFID, therefore, seems inevitable. It has been envisaged that the near future will see almost all new products sold to consumers having an RFID tag that can allow them to be remotely and uniquely identified and tracked. The potential impact of RFID on the South African retail industry is significant. This technology is mostly employed in supply chain management and customer relationship management. In supply chain management, RFID can benefit retailers in many ways apart from the mere identification of products and suppliers, such as monitoring the production process and the sequence of activities from the material production to delivery of the final products. Preliminary studies reveal that while South African retailers are aware of RFID and are interested in its adoption, few are actively engaged in pilot tests or planned implementations. Although, they are aware of its benefits, the relevance and its application in the South African retail sector is still limited. This paper reviews the relevance of RFID and the application in South African retail system.

Keywords: RFID, RFID relevance, RFID application, South Africa, retail system

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Abstract: Information and communication technologies (ICT) can support rural development activities through providing supportive information and
knowledge, and creating essential interconnectivities between rural areas and more developed regions. However, rural ICT for development (ICT4D) is still at best a ‘working hypothesis’, faced with barriers and challenges associated with implementation and use in the rural environment; which threaten the success, sustainability or relevance of ICT interventions in developing countries. The evaluation of rural ICT projects is indispensable as it determines the need, effectiveness, impact, sustainability and extent of the awareness of the contribution such projects or programmes can make in poverty alleviation and development. Even so, existing ICT for development evaluations are confronted with shortcomings and challenges which influence the reliability of evaluation conclusions. These shortcomings highlight the need to embark on a more comprehensive evaluation approach, sensitive to the rural environment. The paper adopts a theoretical multi-method approach to determine the multiple variables and components associated with rural ICT evaluation, and then to determine how these variables interrelate. The approach is founded on programme evaluation, ICT for development evaluation, and information systems evaluation. Programme evaluation informs this research study of the fundamental domains of evaluation and the structure that shapes an evaluation. An analysis of ICT for development evaluation frameworks and information systems frameworks compares and contrasts key characteristics that form the structure of a comprehensive evaluation that can be applied in ICT for development projects. The analysis and a review of programme evaluation enables the development of a Rural ICT Comprehensive Evaluation Framework (RICT-CEF) that encompasses the key components essential for a comprehensive evaluation of rural ICT projects. The theoretical framework aims to inform ICT intervention to improve and support rural development, through the application of fundamental and interconnected evaluation domains sensitive to the rural environment, throughout the project’s lifecycle.

**Keywords:** ICT for development, information systems evaluation, rural development, programme evaluation

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**User Adoption of the New Health Information System - Individual and Organizational Determinants**

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**Abstract:** The computer has become an integral part of healthcare delivery by providing tools for improvements in the quality of care. However, the failure rate for information systems implementation in healthcare
organizations will pose a great challenge in the area. In this paper, we aim to
discuss user adoption of the new health information system in healthcare organization. In this study, we review the literature in order to illustrate previous studies that present failures in implementing new IT-based systems in healthcare settings. Next, we discuss and apply theory to interpret the results. The results demonstrate some important aspects in the implementation of new health information system such as considering user involvement in the design and implementation phase of the system, taking into consideration and differentiating the different professional needs when developing the system, user training methods, and to consider work routine changes due to implementation of the new system. Our findings show that evaluations of health IT-based systems seem to have not been successfully implemented in a number of cases, and have failed to demonstrate improvements in patient care, operating costs savings, and improvements in productivity. This study shows that, in fact, we have not learned from the past. It can be concluded that the application of a participatory design approach in health IT-based systems may be fruitful for the organization. The involvement of the end users in the design and implementation process will allow for the collection of their ideas, thus benefiting the developing system.

**Keywords:** user adoption, health information system, user involvement, participatory design

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**Relationship Between Organizational Factors and RFID Adoption in Iranian Gas Company Central Warehouses**

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**Abstract:** This paper examined organizational factors that influence adoption of RFID (Radio Frequency Identification) technology in IRAN Gas company central warehouses. RFID has the distinct advantage of collecting data at some distance from the actual product, with no direct line of sight and without labor. Such a data automation system for real-time tracking, safety monitoring and overall warehouse operation leads to real-time visibility and tracking of assets and inventory that is necessary for a warehouse. In this paper we examine organizational factors (Structural: Size and resources and Centralization and Cultural: Innovativeness) associated with the adoption of RFID in gas company warehouses. Using a survey questionnaire we collected data from all 30 Gas company central warehouses employees (our unit of analyses) in IRAN. We found that organizational size do not show any
Keywords: organizational factors, warehouse, RFID

Business Intelligence as Decision Support in Business Processes: An Empirical Investigation

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Abstract: Our concern in this paper is the role of business intelligence systems and the perceived business value of implemented systems and their contribution to facilitate the fulfilment of organizational goals. The study builds upon a survey answered by 43 respondents from different large companies in Scandinavia. The survey used questions on how visions, objectives, strategies are supported by BI systems, on how business values are derived from such systems, and on how design and implementation issues affect the solutions. The overall conclusion of the study is that there are markedly different levels of problems in the areas, most problems being found in integration of BI information and decision processes, and that there is room for large improvements and further work within everything from implementation to requirements engineering for business intelligence decision support systems.

Keywords: business intelligence, decision support, business value, empirical study

Assessing Future Value of Investments in Security-Related IT Governance Control Objectives – Surveying IT Professionals

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Abstract: Optimizing investments in IT governance towards a better information security is an understudied topic in the academic literature. Further, collecting empirical evidence by surveying IT professionals on their relative opinion in this matter has not yet been explored to its full potential.
This paper has tried to somewhat overcome this gap by surveying IT professionals on the expected future value from investments in security-related IT governance controls objectives. The paper has further investigated if there are any control objectives that provide more value than others and are therefore more beneficial to invest in. The Net Present Value (NPV) technique has been used to assess the IT professionals relative opinion on the generated future value of investments in 19 control objectives. The empirical data was collected through a survey distributed to professionals from the IT security, governance and/or assurance domain and analyzed using standard statistical tools. The results indicate that the vast majority of investments in control objectives is expected to yield a positive NPV, and are beneficial to an organization. This result implies that investments in control objectives are expected to yield positive Net Present Value for the firm, which is an important finding since many of the benefits from an investment are indirectly related and may occur well into the future. The paper moreover contributes in strengthening the link between IT governance and information security.

**Keywords:** IT governance, control objectives, Information security, net present value

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**Evaluation Information Extraction for Health Text Categories Using C4.5 and Naïve Bayes**

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**Abstract:** Healthcare information technology, HIT or HICT supports health information seeking tasks. Data mining is an information extraction technique for identifying relevant information, structuring this information and subsequently providing the means to add textual information through mining the natural language. In the healthcare field, techniques summarise patient records, extract terms, ascertain new knowledge and provide diagnostics for various conditions. In this study we are interested in health information particularly with regard to the relationship between symptoms and cause in cardiovascular disease (CVD). Data filtered through a discovery pattern can be used for many tasks, including mining and evaluation to the accuracy of information extraction. In this paper an approach and framework of classification analysis has been proposed for evaluating health information from personal and medical data extracted from records and documents. The information extraction, as a feature of the selection from textual data, is significant in that it uses sliding window and TF-IDF techniques for a multiword check as well as for statistical matrix term weighting and rate of
recurrence. Diagnosis of a probable cardiovascular disease is done by looking at the symptoms and mined data by way of the ML algorithm. The outcome of the specific medical conditions is considered and determined the probability of cardiovascular disease in order to classify the documents and cardiovascular disease by the use of rule induction. This model generates a classifier from the patient medical data training set. Two machine learning techniques, C4.5 and Naïve Bayes, have been applied where the domain concept is ‘diseases’. Evaluation of the accuracy for the disease term and document classification process for our theoretical patient’s symptom and diagnosis were measured precisely using recall and F-measure for comparison as well as to demonstrate the process of learning. The results show that in predicting the categories of cardiovascular disease, the C4.5 classifier has 99.8% rate of prediction accuracy (percentage correct) and performed better performance than the Naive Bayes.

**Keywords:** information extraction, health text categories, C4.5, Naïve Bayes, evaluation

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**Optimizing Information Technology Value Governance Framework Based on Val IT**

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**Abstract:** Nowadays, information technology investment is crucial for organizations. Four IT investment principles are “risk”, “modeling”, “management” and “governance and compliance”. There are different frameworks such as ITIL, COBIT, Val IT and Risk IT which provide best practices to those IT investment principles. The Risk IT framework is about business risks related to the use of information technology. The connection to business is founded in the principles on which the framework is built, i.e. effective enterprise governance and management of IT risk. Val IT is a governance framework and complementary of COBIT from the business and financial perspective. Since Val IT framework only provides enterprise with the mechanism that it requires for monitoring and optimizing the IT business value, therefore there is no tool to calculate and evaluate information technology investment return. ITIL financial management process has three main aspects that provides guidance on how controlling spending and cost. In order to apply all direct and indirect cost evaluating in new information technology investment, a hierarchy decision making model is necessary. Since these frameworks activities are considered based on three principles of
investing, i.e. risk, management and governance, none of them has a process or approach to create a model based on the investment costs in order to make final decision. So a comprehensive framework that based on all four investment principles, can be as a good solution for evaluating new information technology investments. In this paper, a RMMG framework that considers IT investment evaluation decision making model and financial process among the value governance and compliance activities, and also evaluating IT investment risk will be proposed to aid those organizations that confront by IT value investment issues.

**Keywords:** IT value governance, Val IT, ITIL, Risk IT, decision making model, RMMG framework

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**Developing an Outpatient Electronic Medical Record System in Taiwan From a Physicians’ Perspective**

Hsiao-Ting Tseng, Pei-Ting Chang and Ray Chang  
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**Abstract:** Electronic medical record systems (EMRS) are regarded as an innovative administrative tool in healthcare to integrate patient information. Physicians can use an EMRS to receive integrated information to provide better outpatient service. Many hospitals worldwide, including in Taiwan, have either implemented or plan to implement EMRS to reduce or replace the traditional paper-based charts and patient records. The key reason for some failures in implementation of EMRS is that system design was not user-friendly, i.e. it did not take into account physicians’ real needs. This research employed a case study to explore the development of an Outpatient Electronic Medical Record System (OEMRS) that was developed on the basis of physicians’ expectations. A qualitative interview confirmed that physicians’ participation can significantly affect their satisfaction and acceptance toward OEMRS use.

**Keywords:** physician’s perspective, electronic medical record system, outpatient, satisfaction, acceptance
MTN Foundation's Digital Library Project in Nigerian Universities: An Evaluative Study

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Abstract: This survey study was conducted with the main objective of evaluating the use and service provision of MTN Foundation’s digital library project in Nigerian universities with regards to the objectives of establishing them. The initial plan to study two out of the three already commissioned libraries was forestalled by temporary closure of the second one hence the study concentrated on one, situated at University of Lagos, Nigeria. Questionnaire constituted the major instrument for data collection even though the librarian in charge of this library was interviewed and documentary records consulted to obtain such data as list of electronic resources/database available in the library. A total number of 1000 questionnaires were distributed to the library users. Out of this number, 852 were returned while 812 questionnaires were found usable. The data collected was subjected to descriptive statistical analysis using simple percentages and frequency counts. The result of the study revealed that this project is appreciated by users considering their level of acceptance of the fact that; the resources in this library has enriched their awareness on the existence of various kinds of e-resources (76.6%); the use of the resources has assisted them greatly in doing their assignments (68.8%); and resources from this library have made their research work very easy (54.4%). The study also identified some inhibitors to the optimal utilization of the library resources. These include; lack of awareness and training on the use of the library, low bandwidth, limited access to computer terminals, etc. The study recommends, among other things, that the bodies responsible for funding the library should ensure that the Internet bandwidth is upgraded to enhance its speed, users should be trained or given proper orientation on how to use the resources provided by this library and, the acquisition of more computer systems to augment the ones provided by MTN foundation.

Keywords: digital libraries, electronic resources, library resources use, universities, MTN foundation, Nigeria
Cloud Computing-Based IT Solutions for Organizations With Multiregional Branch Offices

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Abstract: One of the most significant phenomena of the new century is globalization. As business goes global, multiregional branch offices are needed and networked computing and information services must then be established for those branch offices. In this paper we investigate a cloud computing based approach to the rapid deployment of computing and information services for organizations with multiregional branch offices. We first take a look at the general process leading to the deployment of Computer and Information Technology (CIT) services for organizations, and then present some cloud computing-based solutions for organizations with multiregional branch offices, followed by discussions about their key features as well as issues and concerns surrounding the proposed IT solutions. An important contribution of this paper is a generalized view of the cloud computing-based approach, which may be used as guidance in implementing and deploying such IT solutions.

Keywords: cloud computing, globalization, information technology infrastructure

Case Study on Information Evaluation by GIS for Aging Society Urban Planning: Information Evaluation of Shrinking Cities

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Abstract: An understanding of the sites upon which they are working is crucial to city planners at every stage of the urban design process. Usually, the information (such as population, landform, building conditions, and economic data) is too complex to be processed and reported for analysis through the ordinary statistical approaches. The GIS (Geographic Information System) offers software that can collect related databases for different fields onto one map, allowing both the individual analysis diagram and the compound analysis to be easily achieved. Thus, GIS provides planners a more comprehensive understanding of the site upon which they are working. Our research is an actual urban design project in Japan, an example of the utilization of GIS in urban planning. It is a typical case, with an intricate landform and typical population composition. First, GIS analyzes the basic
data, covering landform, construction age, and population. These analyses occur in two stages: first, a comparative study of the population structure over the last 10 years in different landform areas, then the forecasting of its evolution. Using these analyses, the proposal plan tries to improve the residential environment and prevent decline by retaining the local population and attracting outsiders. The introduction of GIS allows digital data to be composited with draft data, resulting in clearer and more precise analyses. This method produced accurate dates for Yahatahigasi-ku, therefore assisting the evaluation of data reflecting the current situation and orienting the next step of the urban design. It has thus been demonstrated that GIS enhances the efficiency of site analysis. We consider this study of GIS in urban planning to be a development of GIS application. This paper presents a new information evaluation method for urban planning that provides more social information on the target area than previous methods and shares the results of information evaluations.

**Keywords:** urban design, GIS, population, landform, building state

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**The Impact of Software Test Constraints on Software Test Effectiveness**

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**Abstract:** Software testing is the one of the primary methods used in the validation and verification of output in the software development industry. It is seen as a key method for achieving software quality, reliability, fitness for purpose and customer satisfaction. Software testing is however an expensive process accounting for as much as 50% of the cost of developing software based systems. In recent years, software testing as a discipline has come under pressure due to time, cost and skills constraints. These constraints impact negatively upon software test effectiveness. Therefore it is critical to identify and implement test tools that reduce the negative impact of software test constraints on software test effectiveness. In this paper the researcher examines some of the most popular software testing tools such as test case prioritisation, test suite reduction and test selection criteria, to identify: Which individual test tools are most likely to yield optimal test effectiveness and, Which combination of test tools is most likely to yield optimal test effectiveness and mitigate the effect of test constraints An extensive review of the software testing literature was conducted and used to construct a survey instrument as the basis for examining the impact of test constraints on software test methodology. The survey was issued to expert software test
practitioners from various locations globally; the sample consisted of 43 test cases. The main findings were that no one approach to testing would yield satisfactory results but a combination of two or more test types from Automated testing, Smoke testing, Test case prioritisation and Regression test selection could yield effective software testing results and mitigate the effects of test constraints.

**Keywords:** software test tools, software test effectiveness, software test constraints, test selection methodology, test case selection criteria

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### Strategic Considerations for Effective Mapping of Educational Technology to Academic Outcomes

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**Abstract:** Advancements in IT and web-based technologies in the past two decades have the potential to revolutionize higher education, but realizing this potential seems to remain an elusive goal. Educators in diverse contexts are constantly exploring innovative technologies that claim to add value to traditional classroom knowledge delivery and impact the course delivery and design in colleges and universities. Even though the use of technology in higher education has substantially increased over the past few years, this use has been primarily limited to content management and delivery. There are, however, much broader strategic issues around alignment between the suite of learning technology tools promoted by universities and the academic plan, learning and teaching priorities, and expected graduate capabilities. To date many universities have not undertaken a full strategic assessment of the issues and implications of the introduction and sustaining of educational technologies and how these can best be utilized to fulfill academic policy and add value to student learning experiences and outcomes. We conducted a focus group of a number of innovative and early technology-adopter university teachers in which they discussed how educational technology tools (Ed-Tools) can be embedded into courses such that they develop students’ analytical, sense-making and synthesis skills whilst enhancing their decision-making and delivery capabilities. This study highlights the importance of effectively using educational technology to support academic staff with their teaching and learning. A distinguishing factor of this study is that it looks at the issue from a holistic point of view, and not merely from the teachers’, or the administration, or the students’ point of view. We have compiled a list of barriers and also a list of recommendations. Findings of this exploratory study are presented intentionally in the form of a discussion paper rather than
a traditional academic paper. It is hoped this presentation format opens up the issues for in-depth consideration by learning and teaching policy makers at universities and colleges.

**Keywords:** educational technology, ed-tech, ed-tools, teaching and learning, graduate capabilities
PhD Research Papers
Evaluating the Performance of ERP Systems in Saudi Arabian Higher Education: A Stakeholders’ Perspective

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Abstract: Enterprise resource planning (ERP) systems are complex and comprehensive software designed to integrate business processes and functions. Despite the difficulties and risk adopting ERP systems is expanding rapidly. Furthermore, universities make large investments in information systems (IS) expecting positive impacts (return on investment). Moreover, universities are facing serious challenges implementing a new technology. Meeting stakeholders’ expectation in higher education is one of those challenges; this refers to the universities as unique organizations. Since the effectiveness of post implementation of ERP systems has become an essential indicator of success; effective selection, development and improvement of information systems requires a systematic evaluation tool. Although there are a variety of IS success evaluation studies, there is no consensus on the appropriate manner of evaluation of IS success to help organisations return on investments in information systems. Previous studies focused on information systems and user performance, but they highlight the need for more focus on ERP systems and stakeholders’ performance. Despite the importance for IS evaluation, there is a lack of accepted frameworks on IS evaluation in general and ERPs in specific in higher education. This paper focuses on three information system models: Delone and McLean’s IS success, Task Technology Fit (TTF) by Goodhue and End User Computing Satisfaction (EUCS) by Doll and Torkzadeh. To avoid the weakness in these three models, this paper attempts to integrate the three models to produce a new construct which has a more comprehensive view of the most important factors pertinent to evaluation of stakeholders’ performance on ERP systems in higher education, combining the impact and the quality of the system. This framework will be applied at a later study the stakeholders’ performance in Saudi Arabian higher education.

Keywords: ERP systems; performance; stakeholders; evaluation; higher education, individuals, framework
The Benefits of ICT Adoption: An Empirical Study of Nigerian SMEs

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Abstract: The successful operation of companies in most industries is becoming increasingly dependent on their ability to adopt and utilize ICT systems (Chibelushi, 2008). The rapid development of ICT is suddenly changing the conventional way of doing business in organizations. In recent times, organizations of all types are adopting ICT in order to improve organizational efficiency, productivity, communication and to strengthen their competitiveness. In the present knowledge economy, there is a need for organizations, including SMEs, to develop some forms of competitive advantage with the use of ICT in order to be successful. SMEs play a vital role in the Nigerian economy and greatly contribute to the country’s industrial development. Despite the growing number of studies on the benefits of ICT adoption in SMEs, the benefits of ICT adoption in the Nigerian context is still under researched. Thus, this paper is drawn from on-going PhD research and aims at investigating the benefits that are derived from the adoption of ICT within Nigerian SMEs. The analyses of data collected for this study would provide valuable information to SME owner-managers, policy makers and academic researchers.

Keywords: ICT, SMEs, adoption, benefits, Nigeria

Establishing the Suitability of Dynamic Web Applications Development Platforms for Learning web Techniques in Tertiary Institutions

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Abstract: The availability of many platforms for developing dynamic Web applications suggests the existence of the problem of choosing the most suitable platform for learning the concepts of web applications development by undergraduate students in tertiary institutions. Students may not perform at their best capacity level if the platform chosen by the institution is not very suitable for learning the relevant concepts. As part of the framework to determine the most suitable platform for leaning web applications development in tertiary institutions, this study establishes a set of criteria for
evaluating the suitability for learning the concepts of Web techniques in Web application development such as Web page serving, HyperText Transmission Protocol (HTTP) basics, Server information, Form validation and processing, as well as maintenance of Session and Application states. These criteria were applied by evaluating four platforms namely Java Servlets, Java Server Pages, Active Server Pages and PHP using various research methods including descriptive inquiry, document analysis, observations and programming tests. While ASP was found to be more suitable on applying the criteria, the significance of the study lies in the establishment of a comprehensive but specific set of criteria that can be used as a scientific basis for selection.

**Keywords:** web applications development platforms, programming languages, web techniques, comparison frameworks

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**Human Resources Transformation Beyond Boundaries in Outsourcing Business Models - Expatriate Benchmarking**

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**Abstract:** Human Resource (HR) divisions of multi national companies (MNCs) are under tremendous pressure globally with the challenges and opportunities with the outsourcing business models to maintain competitive position in the marketplace. Attracting the mobile talent with multi dimensional skill set to address effective, efficient and controllable business needs is becoming complex, hence expatriate management and training has gained much attention. Successful Expatriate assignments drive revenue, value and growth to the organization. The expatriation process requires huge amount of effort for analysis, planning, selection, training before departure of the associate to host country. The authors would like to bring the practical approaches that need to be considered in global business outsourcing model considering 3 dimensions – Associate delight, Customer delight and Investor delight with expatriate benchmarking. The research study also brings the expatriate management strategies in 3 categories – Onsite (foreign location / host country), Offshore (home country) and Near-shore (country close to host country, but with lesser delivery cost). To substantiate the research, the data is collected from several Human resource leaders and managers at various levels – HR Executives, HR Analysts, HR Managers, Senior Managers from IT organizations in different geographies through interviews and web based surveys. Statistical analysis are conducted on the data collected and the data
analysis first revealed that 1) the organizations with good global management strategy had larger number of associates with better expatriate experience, steadier focus on leadership and resulted in better financials 2) The training is more focused on technology and job related skill set, but often ignored the level of depth in imparting the behavioral and cultural skills. The main contributions of the paper are expatriate training business drivers in the context of IT global outsourcing, proposing and benchmarking of Expatriate Canonical model framework, recommendations on delivery models with expatriate management with regard to IT outsourcing companies.

**Keywords**: benchmarking, expatriate management, expatriate training, ROI, onsite, offshore, near-shore

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**The Diffusion of Mobile Phones for Business and Information Management in Kenya**

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**Abstract**: Diffusion of innovation is the process by which an innovation is adopted and gains acceptance by members of a certain community, innovations that are perceived by individuals as having greater relative advantage, compatibility and less complexity may be adopted more rapidly than others (Rogers 2003:5:16). Information and communication technologies (ICTs) like the computer and the internet have been widely adopted by people in western countries, while in developing countries they have taken much longer to be adopted. Mobile phones ICT on the other hand have been widely adopted by both the western and developing countries in the last decade. In Kenya, for instance, the number of subscribers had reached 20 million by March 2010, and still growing (Communication commission of Kenya 2010). The rapid spread and use of mobile phone technology has in the last three years been extended to the use of innovative mobile money transfer services both of which have increased the speed of economic activities for Kenyans, including the low income people who were not served by financial institutions like banks and the post office network. Money transfer services were first introduced in Kenya in 2007 in the form of ‘M-pesa’, a financial transaction medium, which has had phenomenal growth since its introduction and has greatly impacted economic activities. The M-pesa mobile money transfer service has been described as a revolutionary way of making cell phone technology work to serve a basic need by providing a fast, safe, cheaper and easy way to transfer money (Vodacom 2010). This paper examines the rapid diffusion of mobile phones and related mobile
money transfer services in Kenya. It is based on an on-going research study on “The diffusion of ICTs in the informal sector in Kenya”. **Keywords**: diffusion of ICTs, mobile phones adoption, money transfer services, Kenya

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**Querying DTI Analysis Results Within Deep Perisylvian Area**

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**Abstract**: This paper is an advancement in the field of Data Driven Medicine. There has been a tremendous amount of work done in integrating technology into the medical field. Part of that work is in the storage and querying of medical images which is the focus of this paper. The high level motivation of this paper is to design a database driven system that empowers radiologists to validate their hypotheses against a set of medical images. More specifically, a system has been developed that answers queries pertaining to the average Fractional Anisotropy (FA) within a given brain structure. The proposed system enables querying of Diffusion Tensor Imaging (DTI) images to evaluate hypotheses that correlate changes in DTI analysis results (e.g., FA map) with brain epileptogenicity. The system makes the assumption that the following data are available: a) high-resolution and high-contrast image data such as T1-weighted MRI, b) models of brain structures of interest segmented in the high-resolution and high-contrast image space, c) DTI analysis maps such as FA map, d) registration Information that transfers the brain structures’ models from their native image space (T1) to target image space (FA map). A data model to store this information has been designed. The data model is implemented in a database that uses SQL Server 2008 technology. This database stores patients’ data, various image modalities, segmented models, and registration information. Part of importing the images into the database includes reading the dicom image tags and feeding the available tags into the database. After all the required pieces of data are in the database, the calculation of the average FA within a given model is done as follows. First, using the Visualization Tool Kit (VTK) libraries and the registration information the segmented model is transferred from its native space to the target image space (e.g., from T1-weighted MRI to FA map). Next, a bonding box is created around the model and each voxel within the bonding box is examined to see if it is inside the segmented model. At this point all the voxels of interest (inside the model) are identified and the average FA map would be calculated using the Image Tool Kit (ITK) libraries. The primary focus of this work was to calculate the average FA but the system can be extended to include many other features of interest such as
fiber density, curvature measures, etc. In conclusion, this system creates a link between quantitative measurements of several modalities of data e.g. DTI and qualitative patients’ situations in clinical practices, which is an important element in the field of Data Driven Medicine.

**Keywords:** medical image querying, medical image database, DTI/MRI querying, medical image data model, DICOM, medical imaging

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**Towards an Evaluation Method for Information Quality Management of Health Information Systems**

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**Abstract:** Information quality has been regarded by most researchers as one of the critical success factors of Health Information Systems (HIS) adoption. However, there is increasing evidence of poor quality information found in HIS. Poor information quality increases medical errors and adverse events. The occurrence of poor information quality reveals the need to evaluate information quality management (IQM) practices in healthcare organizations. It is crucial to assess the effectiveness of IQM to ensure the quality of information produced by HIS. A review of current evaluation methods for IQM in healthcare has been carried out to identify any existing gaps for further improvement. The literature review was conducted from the health informatics and information systems (IS) disciplines. It was found that the lack of information quality was due to a combination of human, organizational and technological factors. In the literature, guidelines and best practices are suggested in order to manage information quality in healthcare. However, there is inadequate literature that offers specific approaches and criteria for assessing quality information from the perspective of humans, organizations and technology. Therefore, this paper proposes a comprehensive and systematic evaluation method for HIS information quality management in improving the quality of information in HIS. The proposed method is developed based on PMBOK (Project Management Body of Knowledge) in order to provide a systematic evaluation process. With regards to evaluation criteria, this research focuses primarily on the criteria identified from a combination of quality management, IQM and IS/HIS evaluation findings from the literature. This paper contributes to the information quality body of knowledge within the information systems area. This evaluation method can be applied as a tool to evaluate the IQM practice in healthcare organizations and assist HIS users in improving the quality of information.
Developing a Change Management Model for Iranian Academic Libraries: A Delphi Study

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Abstract: Purpose- This paper aims to develop a change management model for Iranian academic libraries. Change is inevitable in organizations where it is now experienced as a daily phenomenon. Academic libraries perform in the rapidly growing environment of education and research and they need to be active in facing change in order to realize their mission. To facilitate the planning and implementation of change, several models have been designed in the past, but these are either too general or have been developed in specific contexts and cannot easily be adopted in other contexts. In order to overcome the challenges of change and to improve change management, Iranian academic libraries need their own change model. Design/methodology/approach-The model was designed based on a qualitative approach and a Delphi study. A panel of twenty-two experts in Management and Library Science and Information Science contributed to the design and validated the model in three rounds of Delphi. The input of the Delphi process was the “Information Services Framework for Managing Change” by Penfold and 54 predefined actions for change extracted from change models related to libraries. The experts were asked to allocate each action to one (or more) of the stages of the basic model. The panel members could also add their own preferred actions to the list. The consensus was measured by percentage agreement (60% or greater) for each item. Findings-Thirteen actions were added by the experts to the initial list. From the resulting 67 actions, only one of them was rejected by the panel, leaving 66 actions, which were consolidated to 58. These actions were then divided into five stages: reviewing the current status, analysing and defining library users, planning, implementing the change, and maintaining the change. After defining the problem, defining change management and describing the respective model, the methodology of the study and the findings were discussed and finally suggestions for future work were made.

Keywords: change; change management; change models; academic libraries; Iran
Adding Action to the Information Audit

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Abstract: The Information Audit (IA) has long been seen as an important tool within the Information Management field, with its origins stemming from financial audits. It is used extensively in libraries as an improvement tool and, although many have tried to define it, such as Guy St. Clair (1997), Orna (1999) and Henczel (2001a), there is still no general consensus on a definition, or the steps taken to achieve it. Whatever form it may take, it is agreed that to undertake such a task requires a structured approach. The following study will propose a hybrid approach in which Henczel’s seven-stage Information Audit model will be coupled with the Action Research (AR) methodology in order to assist a mid-sized architectural practice to manage their information throughout the architectural design process, and, in particular, as they attempt to design a new academic building for a prominent Australian university.

Keywords: information audit, information management, architectural design process, action research

Business Intelligence Best Practices for Success

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Abstract: Business Intelligence (BI) is in a high adoption and high growth area, as users quickly value the capabilities and increasingly demand more features to compete in today’s economic climate. However, from a return on investment (ROI) standpoint, BI is similar to ERP and CRM, in that it has a poor risk/reward profile, as it regularly runs into cost overruns, due to scope creep and limitless requests for support from end-users (Bernard 2009). Unlike operational systems which often have specific requirements and implementation completion timelines, BI environments are constantly evolving to meet business and information requirements (Moss 2007). Given the complexity of most system implementations, no single measure exists for Business Intelligence success. In order to effectively evaluate BI success, measures are developed to identify critical implementation factors based on the research objectives and investigation (Wixom 2001). As an organization progresses in BI maturity, the value of its activities expands. Successful organizations increasingly utilize analytical approaches to identify and enact...
modest improvements that increase profitability and return on business intelligence investments. This paper presents several key findings, lessons learned, success evaluation methods, and best practices as identified through prior literature review and a formal empirical study, which extends and enhances prior literature and understanding of BI.

**Keywords:** BI, business intelligence, critical success factors, implementation, success
Work in Progress
The Evolution of IT Governance in Multiple Industry Units and the Business Case for an Outside Partner

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Abstract: IT Governance has become the integral part of the strategic thinking process for the growing number of companies across different industries. Companies are increasingly evaluating what is core to their business and weighing the benefits of outsourcing critical non-core functions such as IT (Information Technology). IT Governance exists within the context of corporate governance and the principles are especially the same. IT governance is an accountability framework and management process that helps to define and communicate what must be done and provides the rigorous oversight to ensure that it is. The accountability framework is typically planned with well defined roles and responsibilities reflecting decision rights among the stakeholders in the IT Management process and is reinforced with effective reporting. This paper reports on an investigation which focused on the role of IT governance and the outsourcing partner as mechanism for the effective and efficient management of IT. Results are presented from a survey in which respondents consisted of IT executives with responsibilities for IT governance and Outsourcing from different parts of the globe, who represent multiple industries. The outcome of the survey indicates a strong correlation between the overall use of IT governance practices and overall governance performance.

Keywords: IT governance, outsourcing, corporate governance, business
The Relationship Between Quality Management and Knowledge Management in the Service Industries

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Abstract: Regarding the knowledge based economy master plan (2002), Malaysia is transforming itself towards a knowledge-based economy, which concentrates on knowledge, people and virtual networks. Researchers argue that achieving such an objective and gaining value from knowledge causes some problems including changes in customer demands, developing new skills, knowledge creation, and modifying the economical structure to a knowledge-based economy etc. (Plump and Zamfir, 2009; Suete, 2001; Nonaka and Teece, 2001). These challenges affect the way organizations collect, use and disseminate information. Knowledge management can lead to a sustainable competitive advantage. On the one hand, it is supposed that knowledge is an intangible and unique asset, which provides an organization with competitive advantage, while on the other, QM contributes significantly to the performance of organizations, mostly in the manufacturing sector. Considering the organizational life and structure, both QM and KM are professional communities that are positioned at different points in their maturity lifecycle, however, they have similar aims and positions in regard to management. It appears that both quality management and knowledge management are complementary, if not compatible, as the strategies of both are long term for the intention of gaining competitive advantage and overall improved performance. QM aims to help the value-creators of organizations in improving their performance as well as KM. They hold some similar basic assumptions, e.g. the importance of cultural changes and process improvement. There are valuable studies on the description of the interaction between QM and KM (see Jaime et al., 2006; Dvir, 2004). Regarding this point of view, this research is going to consider implementing KM in an organization with regard to QM practice and show how they interact and how they improve their effectiveness.

Keywords: knowledge, knowledge management, quality management
Construction and Validation of eSchool Success Model

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Abstract: DeLone and McLean (1992) IS Success Model has been widely adapted in evaluating success of many different information systems including e-commerce, e-learning and knowledge management systems. Adapting the D&M IS success model requires re-specification to suit specific systems. The re-specified models tend to introduce new dimensions and therefore new measuring instruments that call for empirical validation. In the current study evaluating NEPAD eSchool pilot programme in Kenya, a distinct new dimension was added to the D&M IS success model and the net-benefit dimension measure was re-defined to capture the objectives of NEPAD eSchool programme. The study specified seven dimensions to eSchool system: infrastructure quality, information content and communication quality, technical personnel service quality, training effectiveness, extent and exploitative use, user satisfaction and net-benefits. The eSchool success model was conceptualised theoretically and subsequently validated empirically using data collected from 776 students and teachers in six schools which have implemented NEPAD eSchool system. The data was split into two to facilitate implementation of both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The first half of the data set was used in performing principal component analysis on one new dimension (training effectiveness) and the re-specified dimension (net-benefit). The second half of the data set was used in confirmatory factor analysis to test the goodness-of-fit of the eSchool success model in evaluating eSchool success. This paper discusses the eSchool success model construction, its validation outcome and the contribution of the study to IS evaluation. This is part of a study in progress.

Keywords: eSchool, eSchool success model, validation of eSchool system, validation, IS evaluation
Poster
A Goal-Striving Framework for Technology Acceptance

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Abstract: For the past two decades technology adoption/acceptance research has been dominated by variations of the technology acceptance model (TAM) (Davis, 1986; Davis, Bagozzi, & Warshaw, 1989). Although these studies have provided many important insights into the adoption decision (Bagozzi, 2007; Fichman, 2004; Goodhue, 2007), there has been increasing agreement among prominent researchers (Bagozzi, 2007; Benbasat & Barki, 2007; Fichman, 2004) that continuing to pursue technology adoption/acceptance research using variations of the TAM is unlikely to yield meaningful advances. It has been argued that the TAM’s strengths and weaknesses both revolve around its simplicity and parsimony (Bagozzi, 2007). Its parsimony has allowed researchers to focus on two perceptions of potential adopters, perceived usefulness and perceived ease of use. The insights associated with these studies have dramatically increased our understanding of this complex association. However, many researchers have suggested that this line of inquiry has been ‘played out’. Another of the fundamental drawbacks of existing TAM-based research is much of the research in this area collects data at a single point of time (often using a single survey) and tries to infer the process of technology acceptance from data that only includes a ‘snapshot’ of time. Bagozzi (2007, p. 244) states that it “is unreasonable to expect that one model, and one so simple, would explain decisions and behavior fully across a wide range of technologies, adoption situations, and differences in decision making and decision makers.”

This state of affairs signals to many researchers in the field that we currently find ourselves at a crossroads. Research that introduces and/or validates new models, frameworks, or paradigms that seek to gain a deeper understanding of the adoption/acceptance process and extend the process to adoption outcomes (and thus the value to the individual/organization) is likely to be very well received by the research community. The proposed research will develop a general model of the process of technology acceptance that is adapted from Bagozzi’s (2007) Goal-Striving Model that has been historically applied to consumer behavior studies. Although Baggozi’s Model is at its core, the developed model will be based on other theory and frameworks including the TAM, the Theory of Planned Behavior (TPB), the Innovation Diffusion Model (IDT), Motivation Theory, Social Identity Theory, Expectation Confirmation Theory and others. A set of testable propositions will be presented in association with the proposed framework.

Keywords: Technology acceptance, diffusion, goal-setting, goal-striving
Presentation only
Transforming Information Management - The Role of Education

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Abstract: Information and knowledge are widely acknowledged as critical resources and are the source of competitive advantage and innovation in modern knowledge-based societies. Organizations across all sectors have recognized that information management is essential for goal achievement, compliance, security, strategic planning, and for knowledge management. As a result there has been a dramatic increase in technologies, theories and procedures to facilitate the management of information, but the progress to date has been mixed. There is a need for managers to have a broad understanding of information management issues, so they can evaluate information systems and processes, and successfully plan and implement IM strategies. But the essential information skills and knowledge required are scattered across several educational silos. Computer Science and Management Information Systems (MIS) departments, for example, often focus more on the systems, while Organizational Behaviour focuses on people and strategy, and Information Schools emphasize management of information through records management, taxonomies, and search tools. To ensure information management programs and strategies are successful, we first need to transform information management education.

With the launch in 2008 of Canada’s first Master of Information Management, Dalhousie’s School of Information Management attempts to meet this challenge. Embedded within the program is the recognition that information management encompasses the entire process of strategically creating, defining, finding, analyzing, protecting, classifying and distributing information within an organization to facilitate situational understanding and decision making. Given this, information management includes the acquisition, control and disposal of information products, the application of theories and techniques of information science to create, modify or improve information handling systems and the provision of services to internal and external clients. The core courses of our new Masters program cover all aspects of information from the examination of Information, People and Society, through to the Organization of Information, Information Systems and Technologies, User Experience, Information Policy, Program Evaluation and Knowledge Management. The Capstone course allows students to integrate learning from across the curriculum, while working on real examples from their work.

The program targets mid-career professionals who have at least five years' work experience in any information sector. Cohorts to date reflect a wide
diversity, geographically and across sectors. By means of a blended-learning model, courses are delivered primarily by distance, complemented with onsite intensives. Subject experts are hired to design and deliver the material, providing courses that emphasize learning across sectors. Students learn from each other as well as from the teachers, and are encouraged to bring their own work challenges to the classroom. While the program is still in its infancy, this presentation will focus on the successes and challenges to date, and reflect on how changing the educational model can change information management practices.

**Keywords** Information management, knowledge management, skills, education, evaluation

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**Business Intelligence as an Enabler for Evidence-Based Decision Making**

**Ms Terrie Tucker**

**Abstract**: Intelligence is considered a property of the mind and its abilities. Business Intelligence (BI) involves using computer technology to enhance this concept, to support decision making. Evidence-based decision making brings together data; evidence from the literature, research and best practices; professional expertise; and information about the organizations policies, practices, and culture. Business Intelligence is a key enabler to creating an environment of evidence-based decision making. Business Intelligence in healthcare today is at many different stages of maturity. While healthcare organizations are rich in data, they often lack the tools to transform the data into meaningful information. Once the data is transformed, the desired outcome is to have more knowledge about our patients, their needs, our communities, and the healthcare system. We need to create environments that foster a culture of evidence-based decision making. Business Intelligence can help to facilitate this process, but the human factors are often overlooked and we end up with BI systems with under-utilized functionality. We expect managers and clinicians to make sense of the enormous volumes of data we put in front of them, without considering how people learn, how they process information, how we design interfaces and dashboards. Health and health care decisions are complex, difficult, and have upstream and downstream impacts. We often overlook that different audiences need different information, levels of analytics and details. Context and background are critical for using information in an effective and meaningful way. At the same time, there is a growing expectation for accountability, performance management, and quality improvement in the healthcare sector. Healthcare organizations need tools, processes, and
information that will help them address these changes in their environment, allow for flexibility and growth, plus bring them to new levels of knowledge. Transformation cannot occur until we have these supports in place. This presentation will focus on leading practices to use business intelligence to enhance decision making in the healthcare setting. It will bring together the theory of best practice with the practical application in practice in the healthcare setting. Topics will include:

- Business Intelligence,
- Transforming data into new knowledge and
- Dashboards & Scorecards in a healthcare setting
- Human factors, design, & workflow considerations
- Using technologies to enable evidence-based decision making
- Strategies to support a culture of evidence-based decision making

**Keywords:** business intelligence, evidence-based decisions