
Improving decision-making practices through information filtering

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Biographical note: John Wang is a Full Professor at the MSU. Having received a scholarship award, he came to the USA and completed his PhD in OR from the Temple University. He has published more than 100 refereed papers and six books. He is the Editor-in-Chief of *Int. J. Information and Decision Sciences*, *Int. J. Applied Management Science*, *Int. J. Data Analysis Techniques and Strategies*. In addition, he is the Editor of *Encyclopedia of Data Warehousing and Mining (4 Volumes)-2e*, *Data Warehousing and Mining: Concepts, Methodologies, Tools and Applications (6 Volumes)*. His long-term research goal is on the synergy of operations research, data mining and cybernetics.

Spanning from government to businesses to individual employees, from a huge global venture to regional and local projects, information and decision-making have been encountered by every organisation and type of enterprise. It is a fact that governments and organisations have wasted millions of dollars every year due to using misleading information to arrive at incorrect decisions. These actions can lead to such negative outcomes as poor social programmes, corporate bankruptcies and the like. Therefore, it is of paramount importance for modern corporations to employ effective information management and decision-making processes at each critical stage of the organisation's functions. We can improve decision-making practices through information finding, finishing and filtering.

It has become a widely-recognised fact that information and decision-making has become the foundation of the world economy. In today's fast-paced business environment, even with an abundance of information, decision-making can be complex and slow. As floods of data emerge, effective information processing is sought as a *Panacea*. Since we have lots of data, yet are starved for knowledge, the use of innovative techniques is sought as a cure. With the ever-present spectre of uncertainty, the need for a sound decision is the objective. As a consequence of these various conflicts and dilemmas, the employment of efficient data management, leading to better decision-making, is the goal.

The mission of *Int. J. Information and Decision Sciences (IJIDS)* is to provide an international forum for practitioners and researchers both for-profit and non-profit organisations, along with information technology professionals, software developers and vendors, to exchange, share and present useful and innovative ideas and work. *IJIDS* emphasises the presentation and distribution of ground-breaking and original theories and concepts which can shape future directions of research. These, when applied, can enable

policy makers, government officials, business managers and different decision-makers to spread over various advanced techniques and new applications of information technology. *IJIDS* also supports discussions on how information systems can promote decision-making and also in turn, how the advances brought about by these decision-making practices can affect the growth in, and future application of, information technology. All models (normative, descriptive, cognitive and prescriptive) are encouraged.

There are seven articles in this issue. Shi and Xian relax the standard assumption that the agents are risk neutral and investigate the coordination of a supply chain in which a single manufacturer sells product to a single loss-averse retailer facing a newsvendor problem. They demonstrate that there exists a coordinating buyback/markdown-price contract between the manufacturer and the retailer. The other main contributions of the article are: (i) exploring the impacts of both demand uncertainty and loss aversion and designing optimal supply chain contracts under demand uncertainty; (ii) analysing the buyback/markdown-price contract that ignores loss aversion and indicating that coordinating contracts based on the assumption of risk neutrality result in a lower channel profit when the retailer is loss averse; (iii) exploring how a manufacturer can design a contract to improve the channel performance by analytical and numerical results.

Heikkinen, Matuszewski and Hämmäinen found Schoemaker's scenario planning a suitable method for decision-making in the context of emerging mobile services. The main challenges in using the method are related to avoiding subjective bias, identifying the most relevant trends, uncertainties and stakeholders, and building consistent and coherent scenarios. The method is a systematic way to assess possible future outcomes, but does not provide a detailed understanding of them. Scenario planning serves as a structure for brainstorming sessions, and as a basis for a more detailed analysis using quantitative methods. The authors applied Schoemaker's scenario planning to emerge mobile Peer-to-Peer Session Initiation Protocol (P2PSIP) communications services. According to their analysis, a potential P2PSIP stakeholder should seek settings where network and legal aspects are the most favourable: *ad hoc* and private environments without interconnectivity to the internet. A stakeholder considering global service provisioning should evaluate the semi-centralised public global scenario.

Pramodh, Ravi and Nagabhushanam develop Data Envelopment Analysis (DEA) – Fuzzy Multi Attribute Decision-Making (FMADM) Hybrid to measure the productivity levels of Indian banks and eventually rank them. Here, ranking is formulated as an FMADM problem, where the evaluation criteria (financial ratios) are treated as fuzzy sets and banks are considered as alternatives. Relative efficiency levels yielded by DEA, in single-input-single-output model are treated as membership values of all banks in six different fuzzy evaluation criteria, which are as follows: return on assets, return on equity, equity multiplier, profit margin, utilisation of assets and finally ratio of operating expenses to spread and other income. The third author, a banking domain expert, provided the weights of the criteria. An important observation is that DEA can be used as an alternative to fuzzy membership generation methods in the context of FMADM. Finally, the rankings are very much in line with the domain expert's expectation. The managerial implications of the study are that the size of the bank, reputation and quantity of business, number of Government of India deposits held did not contribute to the rankings produced by the hybrid. This is a significant outcome of the present study.

Car-sharing is a short-term car rental service allowing access to car whenever needed at conveniently located stations. Awasthi, Chauhan, Hurteau and Breuil present an AHP

based multi-step approach for identifying Car-sharing stations in medium size agglomerations. Each agglomeration consists of several communities. The authors begin by identifying various communities and potential locations inside communities for Car-sharing stations. These locations are weighted by experts using several criteria. The weighted locations are then subjected to a predefined threshold. All those stations whose overall weight exceeds the threshold limit are considered as final stations for implementing car-sharing. This approach was validated by application on various agglomerations of Poitou–Charentes region. This study is unique in the sense that it was conducted for the first time at a regional scale under the cadre of French project ECOSYMPA. Besides, literature on sitting studies for car-sharing is scarce. Their study is one of the premier studies that present a quantitative approach to determine vital locations for car-sharing in a medium-sized city.

Lee utilises the mean-variance approach to determine the optimal set of suppliers in the presence of supplier failure risks. The approach allows us to explicitly take into consideration the importance of cash-flow variability in the supplier selection planning process. It also allows us to incorporate traditional risk management tools such as insurance into the optimal suppliers' selection process. Specifically, Lee presents supply chain risk management models by taking into consideration the independent risks of individual supplier failures. The financial loss caused by disasters and the operating cost of working with multiple suppliers are subject to uncertainty. The author distinguishes two types of financial losses, total and partial, due to supplier's failure. Total loss occurs when all suppliers are down while partial loss results when some, but not all the suppliers are down. The author is able to compute the mean and variance of the total cost incurred. Utilising this result, the author formulated optimisation problems with different objective functions whose solution determines an optimal set of suppliers. Lee's methodology and modelling technique can balance the two desirable but conflicting objectives of cost minimisation and service levels achieved.

In the era of fierce competition, significant numbers of countries are investigating large amount of resources into information and communication technology as they seek to add value to their industry and economy. IT environment combines scale and quality in the key areas that promote competitiveness including education, infrastructure, encouragement of innovation and industry growth potential. In this article a managerial model is proposed by Fazlollahtabar to improve the role of IT in Iranian industry and economy based on multi-criteria decision-making. As methodological support of the model, an adaptive comparison between Analytical Hierarchical Procedure and Entropy method is proposed to identify the best policy for developing an IT project. After identifying the results by two models, one way analysis of variance is applied to discover the differences between the results. The article is accompanied with a case study in Iranian IT industry to illustrate the effectiveness of the proposed approaches.

Moustafa presents a model of multistage degraded system subject to minimal maintenance, random failures and partial repairs. Constant state dependent transition rates for the degradation failure processes are considered. The minimal maintenance and the partial repairs are assumed to follow general distributions with square of coefficient of variation less than or equal to one and state dependent which are the main contributions of the article, and can be modelled by hypo-exponential or Erlang distributions to use the Markovian property. The objective of the article is to calculate the steady state availability of the system, and the optimal mean time to minimal maintenance

maximising the availability in case of state independent Erlang and deterministic distributions.

The ability of an organisation to take effective decisions can have a major impact on business agility, flexibility, and sustainability. *IJIDS* presents a forum to help managers, planners, policy makers, researchers, educators and professionals to exchange their innovative ideas and thought-provoking opinions. It also creates a communication channel between practitioners and academics to discuss problems, challenges and opportunities in all aspects of information and decision-making.

IJIDS publishes original papers, reviews, surveys, debates, reports, position notes, practice comments, case studies, book reviews, commentaries and news. Special issues devoted to important topics in decision-making will occasionally be published.

Hopefully, *IJIDS*, *Int. J. Applied Management Science*, and *Int. J. Data Analysis Techniques and Strategies* will be able to share a manager's burdens, meet a practitioner's challenges, explore an executive's opportunities, and realise an entrepreneur's dreams.

Together, let's celebrate the birth of *IJIDS*, nurture its growth, contribute to its strength and protect its health.