Message from the founder of the AHP and ANP disciplines

Welcome to ISAHP2014 and welcome to Washington, DC! I imagine your days here will be busy ones. No doubt most of you come with notes on presentations you plan to make and notations about many panels and workshops you want to attend. Some will have plans for edited books and articles you want to discuss, ideas for collaborative research projects to be developed, dates for follow up conferences on particular themes, and numerous other professional concerns to pursue. As with other ISAHP meetings, almost everyone will come with lists of friends and colleagues to see and plans for sharing coffee or a meal. Many no doubt also come with keen interest in exploring the restaurants, museums (all public museums are free), music, cityscapes, shops, and other attractions that Washington, DC, has to offer. ISAHP2014 will follow in the tradition of the other ISAHP conferences; it will be a collage of interactions, catching up, discovery, debate, and enjoyment.

Credit for the wealth of panels, workshops, and discussion groups; the scholarly books to be made available; and the lure of new ideas and insights must be shared widely, as ISAHP2014 is the work of many hands. Central among these, of course, are the ISAHP2014 Conference Chairman Enrique Mu, and the Program Co-Chairs, Birsen Karpak and Antonella Petrillo, and the many track chairs who have worked so hard to put a wonderful program together. Maestro Meetings and its personnel, led by Milagros Pereyra-Rojas, along Maria Soledad Cabezas, handled the organizational details of the meeting beautifully. Their skills and years of experience ensured that the planning and operation of the Symposium were as flawless as possible. The numerous scholars who have put time and
effort into planning panels and encouraging colleagues to present papers are the bedrock of a successful meeting and I especially express my appreciation to them. Throughout the past year the Grand Hyatt Hotel staff have been helpful and cordial in responding to ISAHP’s many logistical needs. ISAHP2014 could not happen without the dedication and hard work of all these individuals.

It is my hope that among the many panels and other activities you have planned for yourself for ISAHP2014, you will make sure to attend the interesting plenary session at the start of each morning and also find time to drop by the Master’s Students presentations on Monday. This Symposium promises to be rich with ideas and debates, and I hope it will leave all of you with new insights and refreshed enthusiasm and understanding of the Analytic Hierarchy Process and the Analytic Network Process for decision making and the many ways they have been applied in fields ranging from conflict resolution to supply-chain management. I look forward to seeing many of you in the meeting venues, the conference rooms, and the reception areas, and sharing with you your thoughts about ISAHP2014.

Thomas Saaty
Founder of the AHP and ANP disciplines
Message from the CEO Creative Decisions Foundation

We are pleased to welcome you to Washington, DC, for this very special ISAHP meeting. My husband, Thomas Saaty, the creator of the AHP/ANP, a theory of measurement that is often used in decision making, will turn 88 this summer. So this meeting, the 13th such International Symposium on the AHP, will be a very special celebration. Our thanks to all of you, our longtime colleagues and friends from around the world, who have helped spread his remarkable ideas so widely. It is our pleasure that the foundation we established, Creative Decisions Foundation, has been the primary supporter of this important meeting.

Rozann Saaty
CEO Creative Decisions Foundation
Message from the Program Organizing Committee

Welcome to our ISAHP 2014 meeting! The theme for this symposium is “Beyond Decision Making” which refers to our idea that it is the time for AHP/ANP to get out of the toolbox of multi-criteria decision-making experts and to become the tool of everyday decision-makers. After all, this was the original intention of AHP/ANP creator, Dr. Thomas L. Saaty. A methodology that would help the world to be more rational when making decisions.

For this reason, ISAHP 2014 aspires to be the turning point for AHP/ANP to be accepted as the natural way of making rational decisions in all disciplines. Granted, we do not expect hierarchical thinking to be the only tool used by world decision-makers but rather the main organizing tool due to its intuitive simplicity and natural integration with other decision-making methods.

We have worked very hard to make this symposium a reality and we have counted with the enthusiastic collaboration of the whole AHP/ANP community. Not only the members of the organizing community (program and track chairs whose work has been the hardest) but also from AHP/ANP scholars and practitioners worldwide. Consistent with the theme of the
symposium, we are pleased to report that approximately one third of our presenters are students. Furthermore, we have made a special effort to also involve master-level students, the next generation of AHP/ANP advocates, in this symposium.

Our efforts have been productive and we are confident that you will find new opportunities to participate, meet, and collaborate with other AHP/ANP colleagues among the approximately 200 expected ISAHP 2014 attendees. Enjoy the Symposium!

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Annals of Management Science

International Journal of the Analytic Hierarchy Process

International Journal of Management and Decision Making

Papers will be screened, selected and recommended for publication to specific journals based on ISAHP2014 reviewer committee evaluation. Authors will be notified of the decision prior to submitting papers to journals.
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Creative Decisions Foundation
The Creative Decisions Foundation was established by Thomas and Rozann Saaty to promote more rational decision-making by people. The Foundation sponsors education, research and software development in advanced methods of decision-making involving the AHP. Of particular interest are conflict resolution, group decision-making on societal issues by incorporating strength of preference rather than the yes-no traditional way of voting, purchasing and resource allocation decisions for private and governmental organizations, and decision-making over the internet.

creativedecisions.net

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The International Journal of the Analytic Hierarchy Process (IJAHP) is an electronic journal published by the Creative Decisions Foundation about multi-criteria decision making using the Analytic Hierarchy Process (AHP) and Analytic Network Process (ANP). The IJAHP is published three times a year in an open-access format.

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ISAHP2014

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**A Decision Support Tool to Support Innovative and Strategic Processes**
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ERP SOFTWARE SELECTION MODEL USING ANALYTIC NETWORK PROCESS

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ABSTRACT

During the implementation of Enterprise Resource Planning (ERP) in any company, one of the most important issues is the selection of ERP software that can satisfy the needs and objectives of the company. This issue is crucial since it may affect the duration of ERP implementation and the costs incurred for the ERP implementation. This research tries to construct a model of the selection of ERP software that are beneficial to the company in order to carry out the selection of the right ERP software vendors according to the needs and objectives of the company. The proposed ERP software selection model is constructed based on three different perspectives, that are business, technology, and organizational perspectives. Each perspective consists of various criteria needed to be considered in the selection of ERP software. The proposed model is built over four clusters, which are Business Perspective (Cost, Quality, Vendor Status, Customization), Technological Perspective (Functionality, Duration of Implementation, User Friendliness, Software Update), Organizational Perspective (Training, Employee Needs, Company Culture, Human Resistance), and Vendor Alternative (Vendor A, Vendor B, Vendor C). Since this problem of ERP software selection is involving many criteria and there exist dependency among criteria, the ERP software selection model is constructed based on the Analytic Network Process methodology. The Super Decision software used in this research for solving the model using an illustrative example from an automotive finance company in Indonesia.

Keywords: Analytic Network Process, Multi Criteria Decision Making, Enterprise Resource Planning, Software Selection.
1. Introduction

Enterprise Resource Planning (ERP) is an emerging business concept for integrating all departments and business processes of a company into a single computer system that can serve all company requirements. This concept is widely accepted by various type of industry nowadays due to highly competitive business atmosphere that force any company to improve their business processes and business goals through any means including the advance of their information technology. During the implementation of ERP in any company, one of the most important issues is the selection of ERP software that can satisfy the needs and objectives of the company. This issue is crucial since it may affect the duration of ERP implementation and the costs incurred for the ERP implementation.

2. Literature Review

Parthasarathy (2007) stated that there are three different perspectives should be considered during the ERP software selection, which are business, technological, and organizational perspectives. Some researchers already used some criteria based on business and technological perspectives such as Wei et al. (2005), Ayag and Ozdemir (2007), Kahraman et al. (2010), Lin et al. (2011). The literatures show that organizational perspective has not been included yet in the selection criteria.

3. Hypotheses/Objectives

This research tries to construct a model of the selection of ERP software that are beneficial to the company in order to carry out the selection of the right ERP software vendors according to the needs and objectives of the company. The proposed ERP software selection model is constructed based on business, technology, and organizational perspectives. Since this problem of ERP software selection is involving many criteria and there exist dependency among criteria, therefore, the ERP software selection model is constructed based on the Analytic Network Process methodology.

4. Research Design/Methodology

The proposed ANP model for selecting ERP software is developed based existing literature review on ERP software selection and considering some inputs from experts from an automotive finance company in Indonesia. The criteria exist in the literature for selecting ERP software are listed. Based on the discussion with the experts, some criteria are selected and grouped into three clusters, which are business perspective, technological perspective, and organizational perspective. The ANP network structure of this problem are then developed based on the inner and outer dependence among criteria. An example of ERP software selection based on the experts’ experience in their company is being used for illustrative purpose. The illustrative example is solved following ANP methodology assisted by Super Decision software.

5. Data/Model Analysis

The proposed ERP software selection model is built over four clusters, which are business perspective, technological perspective, organizational perspective, and vendor alternative. Business perspective cluster consists of four criteria, which are cost, quality, vendor status, and customization. Technological perspective cluster consists of four criteria, which are cost, quality, vendor status, and customization. Organizational perspective cluster consists of four criteria, which are cost, quality, vendor status, and customization.
criteria, which are functionality, duration of implementation, user friendliness, and software update. Organizational perspective cluster consists of four criteria, which are training, employee needs, company culture, and human resistance. Vendor alternative cluster consists of alternatives of vendor, namely vendor A, B, and C. The network structure of criteria within the proposed ERP software selection model is presented in Figure 1.

Following the ANP methodology, finally, at the synthesis step the raw, normalized, and ideals values of each vendor alternative are presented in Table 1.

Table 1
Synthesis results of ERP software selection model

<table>
<thead>
<tr>
<th>Vendor Alternative</th>
<th>Raw</th>
<th>Normalized</th>
<th>Ideals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vendor A</td>
<td>0.0166</td>
<td>0.5320</td>
<td>1</td>
</tr>
<tr>
<td>Vendor B</td>
<td>0.0062</td>
<td>0.1987</td>
<td>0.3734</td>
</tr>
<tr>
<td>Vendor C</td>
<td>0.084</td>
<td>0.2692</td>
<td>0.5060</td>
</tr>
</tbody>
</table>
6. Conclusions
This research is able to build an ERP software selection model based on ANP method. The ERP software selection model comprises of four clusters, which are business perspective, technological perspective, organizational perspective, and vendor alternative. From an illustrative example from an automotive finance company in Indonesia, it is found that the ideal value for vendor A, vendor B, and vendor C, are 1, 0.3734, and 0.5050, respectively. This synthesis result show that the vendor A is the best ERP software for this company.

This research should be extended to various type of industry, so that the ERP software selection model can be generalized.

7. Key References


