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MESSAGE FROM THE FOUNDER OF THE AHP AND ANP DISCIPLINES

Welcome to ISAHP2016 and welcome to London, England! Thanks to all of you for your extraordinary effort to attend this meeting! We know that the times are uncertain with the recent BREXIT vote for Britain to exit from the Eurozone, and the turmoil in the world financial situation, so we especially appreciate the effort it took for you to attend this conference. I want to express my thanks to the ISAHP2016 Conference Chairman Leandro Pecchia, and his co-chairs, Antonella Petrillo, Andrea Genovese and Marjan Hummel, and to Enrique Mu, Director of the Executive Committee of the International Symposium of the Analytic Hierarchy Process and to Maestro Meetings and its personnel, led by Milagros Pereyra-Rojas, assisted by Pilar Rodriguez Blanco and Maria Soledad Cabezas, that handled the organizational details of the meeting beautifully, and especially to Elena Rokou, Executive Research Director of Creative Decisions Foundation, who played a major role in every aspect of the conference.

Without all of you wonderful people who managed the organization, the many track chairs who worked so hard to put the program together, and, especially, the authors who expended blood, sweat and tears to write their papers, this conference would not have been possible.

Examples of what I want to mention are applications of AHP/ANP in Politics and to the workings of the neurons with real, complex, quaternionic and octonionic numbers. This kind of work is now behind us, so relax and enjoy the conference and London!

Thomas L. Saaty
Founder of the AHP and ANP disciplines
Distinguished University Professor
University of Pittsburgh, Pittsburgh, Pennsylvania, USA

MESSAGE FROM THE CEO CREATIVE DECISIONS FOUNDATION

We are pleased to welcome you to London, Great Britain, for the 2016 ISAHP conference. My husband, Thomas Saaty, the creator of the AHP/ANP, a theory of measurement that is often used in decision making with intengibles, turned 90 in July this year, so this ISAHP is a very special celebration. It is the 14th such International Symposium on the AHP. Our thanks to all of you, our longtime colleagues and friends from around the world, who are attending this conference. We look forward to seeing and talking with each and every one of you!

Rozann Saaty
CEO Creative Decisions Foundation
4922 Ellsworth Avenue
Pittsburgh, Pennsylvania, USA

MESSAGE FROM THE PROGRAM CHAIR

It is my extraordinary pleasure to welcome you all to the ISAHP2016 meeting and welcome you all in Europe and in London! As stated in Washington, it is 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, as it was in the original intention of Tom. At this regard, the ISAHP2016 keynote speakers will give us a comprehensive exemplar of how AHP/ANP can serve in real life to face complex decisions. In addition, 4 invited talks have been organized inviting emerging colleagues to present how they are using AHP/ANP today, giving us an impression of what AHP/ANP can be in the future years. The motto chosen for this edition was "Divide, compara. aggrega et impera", inspired by the ancient "Divide et Impera", to highlight the continuous attempt of human beings in developing methods to solve complex problems otherwise not solvable.

I am confident that keynote talks, invited talks, your incredibly rich submissions and the fantastic location will make this a wonderful conference. Seven scientific journals have offered the opportunity to organize seven special issues related to the ISAHP2016, highlighting how relevant our production is for the scientific community.

Please enjoy the scientific event, but take also as much time as you can to enjoy the friendship that has been one of the strong drivers of our community since I have fond memories of the ISAHP meetings.

Leandro Pecchia
ISAHP 2016 Chairman

MESSAGE FROM THE EXECUTIVE ORGANIZING COMMITTEE

It is my pleasure to welcome you to ISAHP2016. This time in the beautiful city of London, U.K. It seems like yesterday that we met in Washington, DC but it has been only two years. I have thought recently about why we long for our biennial ISAHP meeting and have concluded that the main reason is that our ISAHP events usually feel more like family reunions than academic gatherings. We are all looking forward to meet again with our friends and colleagues and catch up with their new exciting research and experiences. This London event is no different, and for this reason I invite you to enjoy ISAHP2016; to share your knowledge with our community of practice and to revel in our friendship and common interests in this beautiful city.

Enrique Mu, PhD
President
Executive Committee, ISAHP

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Martina Andellini, Bambino Gesù Children's Hospital; Giorgia Tedesco, Bambino Gesù Children's Hospital; Francesco Cosimo Faggiano, Bambino Gesù Children's

Hospital; Pietro Derrico, Bambino Gesù Children's Hospital; Matteo Ritrovato, Bambino Gesù Children's Hospital

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Valentina Ferretti, London School of Economics and Political Science; Giulio Mondini, SiTI

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Shannon Agredo, Carlow University; Catherine Vella, Carlow University; Enrique Mu, Carlow University, U.S.

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James Dolan, University of Rochester; Olena Cherkasky, University of Rochester; Peter Veazie, University of Rochester

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Constantin Schnupp, University of St. Gallen (CH)

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Universidad de Santiago de Chile; Cristian Mateluna, University of Santiago of Chile

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José Leonardo da Silveira Guimarães, Regional University of Cariri; Valerio Salomon, Sao Paulo State University, Brazil

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Yury ESTEPA-AVELLANEDA, Student; Juan Miguel David BECERRA TOBAR, Assistant Research; Diana Patricia PEDRAZA ALFONSO, Pediatrician and Neonatologist; Luis Carlos MENDEZ CORDOBA, Associate professor; Jan BACCA RODRIGUEZ, Associate Professor

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Giovani Gujansky, SENAI/ES; Mischel Carmen Neyra Belderrain, Instituto Tecnologico de Aeronautica

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Michelle Bergman, Carlow University; Brittany Miller, Carlow University; Vida Passero, Carlow University; Enrique Mu, Carlow University, U.S.

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Heba Adbulwasea Gogandy, King Abdul-Aziz University; Lamees Muhammad Alhashimi, King Abdulaziz University; Khadija Mughrbil, King Abdul-Aziz University; Asma M Bahurmoz, King Abdulaziz University, Saudi Arabia

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WEIGHTED AVERAGE VS TOPSIS: A COMPARISON OF AGGREGATION METHODOLOGIES FOR AHP

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WHAT IS THE APPROPRIATE SAMPLE SIZE TO RUN ANALYTIC HIERARCHY PROCESS IN A SURVEY-BASED RESEARCH?

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COMPARATIVE ANALYSIS OF AHP AND FUZZY AHP IN SUPPLIER SELECTION PROBLEM

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ABSTRACT

Appropriate supplier can lead the company to reach its competitive advantage. Many researchers have been conducting research in supplier selection problem using various multi-criteria decision making methods, including the Analytical Hierarchy Process (AHP) and its variation, such as Fuzzy AHP (FAHP). The research in this paper is trying to apply both AHP and FAHP in a glove manufacturer in order to see the role of the expert to the result of both methods. Four experts who are the staff in that company that have been working for 12-16 years are involved to see if FAHP is still needed. The FAHP method in this paper is based on the FAHP model developed by Chang (1996).

Keywords: supplier selection problem, priority, AHP, Fuzzy AHP

1. Introduction

To achieve the competitive advantage a good supplier that are able to deliver the raw material in the right quantity, at the right time and at the right quality is needed. The research in this paper was conducted in a glove manufacturer. Supplier selection problem is considered as multi criteria decision-making problem. One of the famous methods that has been used is AHP including its variation such as FAHP. However, the used of FAHP require more complex computation rather than the use of AHP.

2. Literature Review

Numerous researches have been conducted dealing with supplier selection process. Sometimes the company has to consider both quantitative and qualitative criteria. In that case, AHP method developed by Saaty (1980) is a powerful tool. There exist a criterion we found in our study that has not discussed yet in the previous work which is percentage of quality reduction. Kabir and Hasin (2011) conducted comparative analysis between AHP and FAHP, however the role of the expert to the result of AHP and FAHP which will be the focus of the research in this paper, was not discussed yet in the previous work.

3. Hypotheses/Objectives

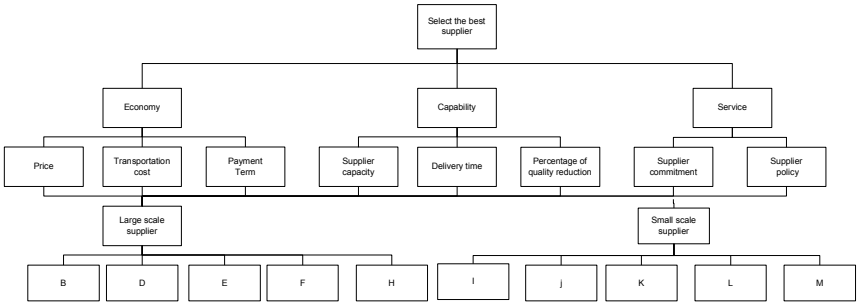
The research in this paper is trying to observe the role of the expert to the result of AHP and FAHP. The hypothesis is that if the expert is someone who has excellent knowledge and expertise related to the problem he/she is facing, then AHP alone is more than enough to be used as a tools for decision making.

4. Research Design/Methodology

The model we developed based on the pool of experts and secondary sources. Secondary sources was used to confirm the criteria that the company used for supplier selection with what other companies had been done. Four experts were involved in this study. They have been working for a this company for 12-16 years. Geometric mean is used to aggregate the opinion from those experts. To reduce the inconsistency when structuring the problem we are trying to build the structure in such a way that in each level at most 5 elements will be pair-wise compared.

5. Data/Model Analysis

The decision hierarchy of the supplier selection problem is formulated as follow:



Finally, the priority rank of supplier resulted from both methods are as follows:
AHP : D,B,H,I,J,K,M,L,F,E, FAHP : D,B,H,I,K,J,M,L,E,F

6. Limitations

The FAHP method used is this study is based on the extent analysis method provided by Chang (1996) which has been criticized by Wang (2008). Therefore in order to strengthen the result from this paper, further analysis will be conducted by applying other FAHP method such as Wang (2008) and fuzzy logarithmic least squares method (LLSM).

7. Conclusions

The contribution of the research in this paper are 1)based on the study we can conclude that if the expert is someone who has excellent knowledge about the problem i.e. some who has been working in the company for more than 12 years, then the result from AHP

and FAHP do not have any differences; 2) in the of supplier selection model we found once criteria that has been discussed yet in the literature review which is percentage of quality reduction.

8. Key References

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