EFFECT OF STAKEHOLDERS' BIASED JUDGMENTS ON THE RESULT OF THE GROUP DECISION MAKING

ABSTRACT

The main focus of this study was to highlight the influence of biased judgments (BJs) on the results of decision-making (DM). Priorities for the development of local value chains were structured using an analytic network process. Also, the possibility of using the Delphi technique (DT) as a solution to moderately biased judgments was examined. In each value chain, the preference of its stakeholders compared with the preference of the rest of the panel. The results clearly showed that stakeholders in each value chain have some kind of biased judgments concerning their value chain. The results also clarified that the BJs were influential in changing the DM results, and the DT was also influential in modifying biased judgments. The findings of this study showed that the selection of DM panel members is a vital stage of group DM, and also proved that there are available approaches like the DT to mitigate BJs.

Keywords: analytic network process, biased judgments, Delphi, group decision-making, value chains.

1. Introduction

The question raised about the group DM with qualitative criteria is: how can we be confident in the intellectual judgments of experts? Moreover, whether their emotions affect their perception. In many cases, if the decision-makers realize that the decision will affect themselves, they may change their judgments unconsciously or consciously. This shows the importance of selecting impartial judges for DM. The paper addresses how to evaluate the impact of judges on the final decision, and whether the stakeholders who are directly affected by the decision results could be proper judges. Are the judgments always based on knowledge? and is this done without consideration of their self-interests?

2. Literature Review

However, the selection of decision-makers is crucial due to their knowledge and their relationship with the decision consequences (Zhang, 2015). It means that the people who have more knowledge must have more influential power on the final decision (Herowati et al., 2014). The DT has been used to reach the consensus of experts with different specialties (Walker, 2016). However, in this research, this approach is applied to reduce BJs due to conflicts of interest of stakeholders.

3. Hypotheses/Objectives

This study set out to answer the following question:

- Will biased judgments originate from the personal interests of individuals based on distorting the outcome of the group DM?
- Can the DT help mitigate biased judgments? If this is the case, how?

4. Research Design/Methodology

Initially, with the help of library studies, sub-criteria were determined. These sub-criteria were placed under the criteria of the Market, Raw material, Human resources, Information and knowledge, and Environmental advantages. The questionnaires were answered through the arrangement of face-to-face sessions. In the questionnaire prepared to determine the sub-criteria (the first questionnaire), the members of the DM panel were also asked about the dependent criteria. The second questionnaire was prepared based on pairwise comparison matrices and answered face to face. Problems of inconsistency adjusted by referring again to experts, and in certain cases, defective questionnaires removed. In this study, the ANP used for prioritizing alternatives. Analysis of judgments was done using SuperDecisions software. A Kruskal-Wallis test in SPSS was used to determine whether or not there is a statistically significant difference between the with and without the DT modes.

5. Data/Model Analysis

Three steps were done to represent a network model: identifying criteria, grouping them into clusters, and determining the interdependency. After developing the model (Fig.1), prioritization of criteria was done according to the super matrices' analysis.

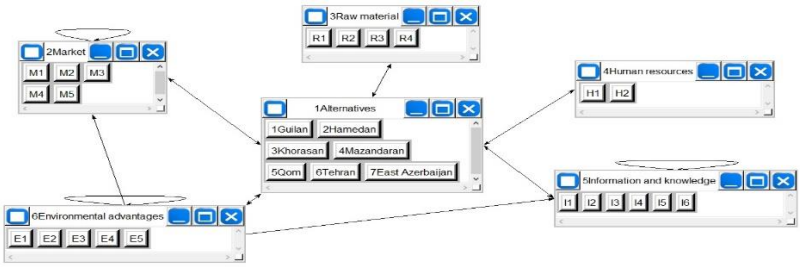

Fig.1. The model developed in this research

6. Limitations

There are two significant limitations in this study that could be addressed in future research. First, the research focused on BJs, and the results could not determine whether decision-makers made BJs, consciously or unconsciously. Second, in this study, there was not enough time for the effect of adjusting BJs by methods other than the DT.

7. Conclusions

This research contributes to the understanding of the BJs and their effect on the deviation of the output of the group DM using the ANP method. This research provides empirical evidence for BJs in more detail. Empirical evidence suggests that applying the DT can mitigate BJs. The findings and issues raised by the current study indicate that the first and most important priority is to find solutions to mitigate BJs.

8. Key References

Herowati, E., Ciptomulyono, U., & Parung, J. (2014). Expertise based experts' importance weights in adverse judgment. *ARPN J Eng Appl Sci*, 9(9), 1428–1435.

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9. Appendices

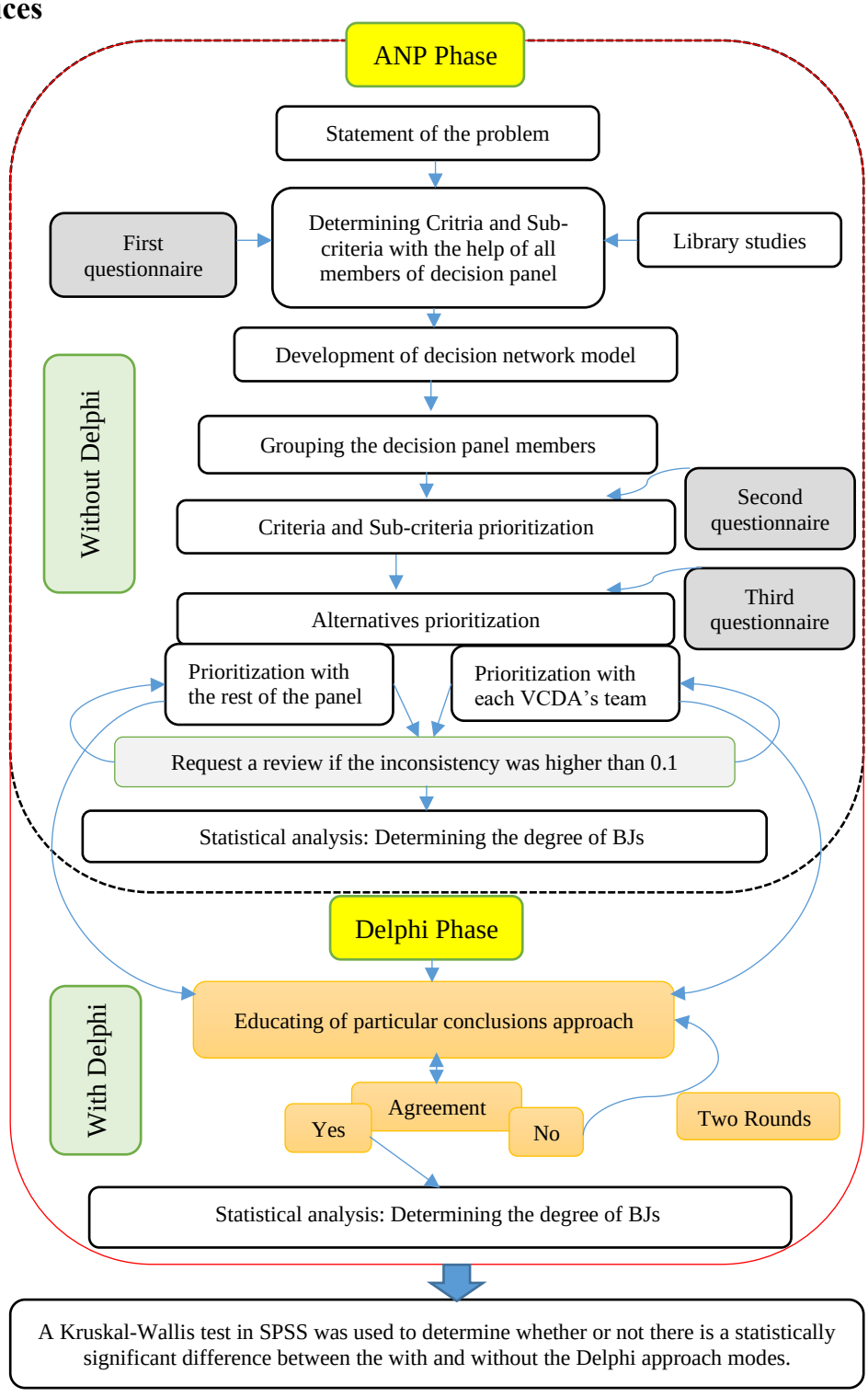

Fig. 2. Research process flowchart

In this study, the ANP used for prioritizing alternatives. Analysis of judgments done using SuperDecisions software. ANP was selected because of the interactions and dependencies in the DM model. A DM model was developed to determine the priorities of wood value chains; this decision was once made using members of DM panel without their VCDA's, and once again made using just their VCDA's judgments. Finally, the difference of model output due to the geometric mean in these two groups was investigated. The study stages followed, as shown in Fig. 2.

9.1 Weights of criteria and sub-criteria

The criteria's weighting showed that the Market and Raw materials with weights of 0.348, and 0.273 were the highest weight. After them, Human resources, Information and knowledge, and Environmental advantages, with weights of 0.141, 0.124, and 0.104, respectively, were followed. Regarding the sub-criteria, Market in Province (M4), Market share (M2), and Distribution channels (M1) are in the first to third ranks with weights of 0.123, 0.107, and 0.092, respectively (Table 1).

Table 1

Weights of criteria and sub-criteria

Goal	Criteria	Global weight	Code	Sub-criteria	Global weight
	Market	0.348	*M1*	Distribution channels	0.0925
			M2	Market share	0.1079
			M3	Marketing system	0.0771
			M4	Market in Province	0.1233
			M5	Market in neighbor countries	0.0463
	Raw material	0.273	*R1*	Variety of wood raw material	0.0485
			R2	Variety of non-wood raw materials	0.0363
			R3	Wood raw material prices	0.0848
			R4	Non-wood raw material prices	0.0485
	Human resources	0.149	*H1*	Experienced human resources	0.0264
			H2	Specialist human resources	0.0463
	Information and knowledge	0.124	*I1*	Innovation	0.0275
			I2	Knowledge exchange	0.0220
			I3	Research & Development	0.0259
			I4	Efficiency	0.0242
			I5	Flexibility	0.0171
			I6	Technology development	0.0281
	Environmental advantages	0.104	*E1*	Comparative advantage	0.0282
			E2	Export facilities	0.0194
			E3	Financial resources	0.0259
			E4	Government support	0.0241
			E5	Existence of large factories	0.0199