Group Decision Making, Technology and National Culture – A Qualitative Approach

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ABSTRACT

The paper outlines the results of a two nation cross-cultural study into group decision making within ordinary and computer supported groups. This study examines in a laboratory setting the changes between supported and unsupported groupwork in the values at work during groupwork sessions for groups of Australia and Malaysia. It thereby addresses an aspect of social behaviour. In the experimental setting, groups are faced with a decision-making situation and group members give reasons for their choice of an alternative and it is assumed their reasons are based upon their values.While the main goal of the study is to examine the interaction between culture and technology on decision-making groups, the aims of the study represented as a hierarchy would be:

1. *to detect any differences in reference value systems between the two different decision-making situations (supported vs. unsupported) for groups of each of the two national cultures. It is assumed that such comparison would examine the impact of technology on each national culture.*
2. *to compare between each set of national groups' differences in reasoning due to the presence of technology. This comparison would indicate the impact of culture on supported groupwork.*

The study found that there were differences between the groups from the two nations in the values they used in decision making and further differences between the groups when they moved from ordinary groupwork to computer supported groupwork. In addition these differences were not alike for the groups from the two nations. The paper concludes with some pointers drawn from the study to the design of future computer supported groupwork systems.

INTRODUCTION

GDSS are a blend of technical and social facilities and they are believed to influence the social behaviour of a group [1]. After more than a decade research in the area of GDSS and collaborative technology many studies have indicated changes in group performance with the use of GDSS. Especially evident changes are a change in the number of comments issued during groupwork sessions and the time to reach consensus on a final decision. However there is considerably less evidence of any impact of GDSS upon social behaviour.

The present study shows that the impact of GDSS technologies on group performance is not limited to the mechanical features (eg, number of comments and the time to reach consensus), but it also extends to the behavioural features of the groupwork.

This study focused on the cultural values at work during the groupwork process. Cultural values at work are considered by this study to be the set of cultural values, which are referred to by the decision makers in their comments. The research involved groups of participants from two national cultures which although both are located in Asia-Pacific region, one can be considered a representative of the 'Western' culture and the other one a representative of the 'East'.

NATIONAL CULTURE

There have been several attempts in the past to find cultural factors as a basis of comparison between different national cultures. A cultural factor or dimension was considered to be a set of cultural values which were grouped together due to their similarities through either a quantitative process [2] or a subjective judgement of the author [3]. Two of the most comprehensive attempts have been the four-factor model of Hofstede [2] and the seven-factor model of Schwartz [3] and Schwartz and Bilsky [4].

In an early part of a study by Rahmati [5] a new 9-Factor model based on a value survey for the two national cultures involved was developed and tested. The purpose of this part of the study was to find the relative value groups to be used in the qualitative analysis of the comments made by the groupwork participants of the two national cultures in the next two stages of the study.The findings of an overall factor analysis of the data collected by value survey divided the resulting values into nine different *value groups* (factors, or dimensions). Hofstede [2], Schwartz [3] and Schwartz and Bilsky [4] called the culture level value groups Cultural Dimensions or Cultural factors.

Some of the nine cultural factors (value groups), which resulted, are similar in name with those of Hofstede's but they are different in terms of the values they represent. These nine factors are: Religious Commitment; Workplace Preferences; Locus of Control; Fatalism; Traditionalism; Challenge and Adventure; Individualism; Value of Privacy; Uncertainty Avoidance Factor.

The second and third stages of the study were a series of laboratory quasi-experiments in two different environments (face to face and computer supported groupwork sessions) using one single task. The *value groups* found in the first part were used to classify the comments made by the participants in groupwork sessions of the second and third stages of the study.

COMPUTER SUPPORTED AND UNSUPPORTED GROUP DECISION MAKING

There are very few GDSS studies addressing cultural issues in using Group Decision Support Systems. In the studies that did, the variables of interest were: user satisfaction, consensus level, and group productivity based on the number of comments issued by participants. Watson, Ho and Raman [1] compared Group Decision Support Systems outcomes, post-meeting consensus, and equality of participation between sites in the United States and Singapore. Individual levels of satisfaction with Group Decision Support Systems and the role of culture in the implementation process were addressed by Griffith [6].

Mejias, Vogel and Shepherd [7] used a cross-cultural field experiment to examine the impact of GDSS upon group consensus and individual satisfaction levels for groups of two different national culture (U.S. and Mexican). Mejias, et al. [8] in two identical field studies examined the impact of national culture upon group productivity levels and perceptions of participation equity within supported and unsupported environments.

The present research is an attempt to first examine the relationship between group decision making and cultural values and then extend the study further to examine the impact of technology on group decision making across cultures. It aims at discovering the cultural values at work during the group decision making process. The assumption is that the decision-makers assess different alternatives to comply with a set of cultural values.

Questions

The present research is a descriptive type of decision making research. It aims at discovering the values at work during the decision making process. The assumption is that the decision-maker would assess different alternatives to comply with a set of values [9]. The main questions of the study were:

Diagram 1: The Design of the Present Study
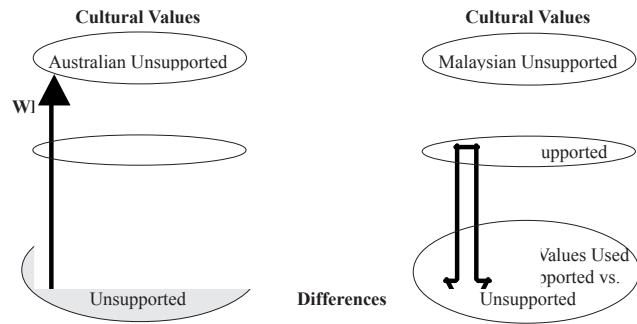
- Given similar decision making scenarios, in similar decision making environment (face-to-face), do groups of different cultures refer to similar value groups (cultural values) in their decision making process?
- Given similar decision making scenarios, in a particular decision making environment (ie, GDSS), do groups of one nationality, go through the same decision making process, and refer to the same reference cultural value systems, as they would in unsupported environment (the comparison within groups)?
- Would technology have a similar impact on the values referred to by decision making groups of the two participating national cultures?

Laboratory Quasi-Experiments - Design

The focus of this part of the study was on the cultural values referred to by participants from each of the two nationalities in their groupwork sessions. Groups of the two national cultures participating in this study only worked with one task. Half of these groups worked with this task in supported and the other half worked with this task in unsupported mode. In each session, the participants were asked to read through the task, make their decision and then give their initial decision with detailed reasons as to why they decided to select this particular alternative.

Analysis

The particular task for this study was written as an open-ended question concerning the value of higher education. The type of tasks used in previous GDSS studies did not seem relevant to the study of the impact of cultural values since they were mostly designed for a structured type of decision making.

The resulting data from the supported and unsupported groups was for the former a computer print out of all comments keyed into the computer and for the latter a transcribed text of the tape recordings of the discussions of unsupported group sessions. This data was subjected to content analysis.

The method of content analysis followed an approach suggested by Berg [10] and Morse and Field [11]. The researcher reads the entire document and identifies several of what they called *topics*. These topics then become the main categories or category labels. The categories should be very broad at first to allow a large number of comments to be grouped into each category. The comments in each category are further examined in order to derive sub-categories. These categories and sub categories are then represented as a tree diagram (Diagram2) and on the basis of this it is possible to write descriptive analysis about the categories and look for the relationships between the categories.

The importance accorded to each of the cultural factors varied between national groups, and different modes of groupwork situation.

It was to be anticipated that not all the values relevant to all factors would be referred to by groups of the two national cultures in each mode of decision-making situation. For the single task used in this study values relevant to 7 factors out of nine seemed to be important.: Uncertainty Avoidance, Fatalism, Challenge and Adventure, Traditionalism, Locus of Control, Religious Commitment, and Collectivism. These seven were used by the groups for this single task but the extent of reference for each factor is different for different national groups and for different modes of groupwork. Diagrams 3 and 4 show the comparison within each set of national groups. The comparisons are between the reference made to the seven cultural factors (Y axis) by groups of a national culture (Diagram 3-Australian & Diagram 4-Malaysian) moving from unsupported to supported mode of groupwork. Diagram 5 brings all four kinds of groupwork sessions: Australian unsupported, Australian Supported, Malaysian unsupported and Malaysian supported together. The purpose of this diagram is to facilitate the comparison between the extent of the difference in the values referred to by decision-making groups of the two different national cultures. It should be noted that X axis in all three Diagrams illustrates the relative frequency (percentage) with which the groups have referred to the values of a factor.

Discussion

It was established that, facing the same decision-making problem in similar decision-making environment (supported or unsupported), groups of the two different national cultures referred to different cultural values. It was also discovered that, in the cases where the two sets of national groups made similar decisions, their selection was often based on different reasons. A supported groupwork environment seemed to provide the groups from the two participating nationalities with an opportunity to make comments closer to the values they expressed in an initial value survey. Perhaps because of anonymity and they were thus less concerned about the social consequences of their statements.

Providing the two sets of national groups with the technology to support their groupwork changed their reasoning for the selection of any particular option. This happened when the participants referred to a different set of values or allocated different priorities to the same values the participants had selected in unsupported groupwork sessions. The results also suggested that the extent of the difference in values referred to by groups from the two national cultures in moving from unsupported to supported groupwork modes was larger for the Malaysian groups than it was for the Australian groups.

The Australian participants who had high individualism, low traditionalism, and high internal locus of control were a clear example of a 'loose' society. According to Triandis [12] in a loose society the values relating to the formalisation of group behaviour are undeveloped because deviant behaviour is easily tolerated.

The comments made by Malaysian groups showed significantly higher uncertainty avoidance, religious commitment, and collectivism, than the

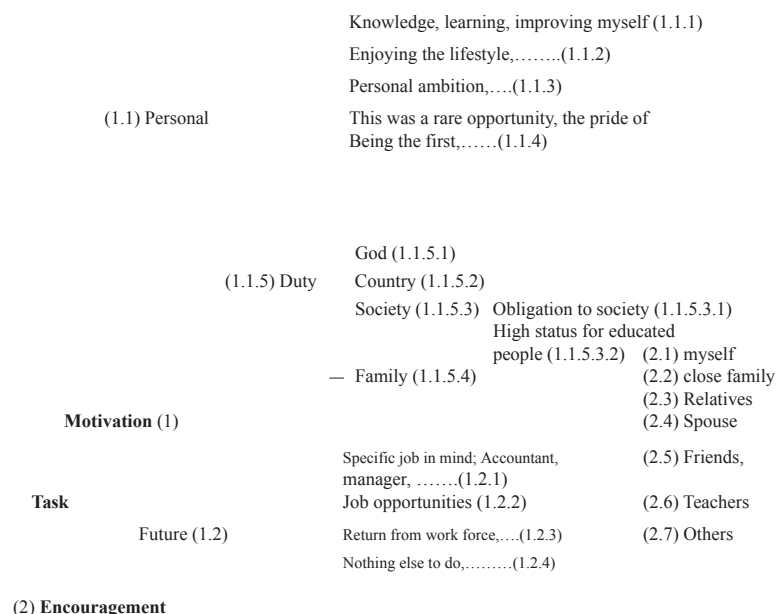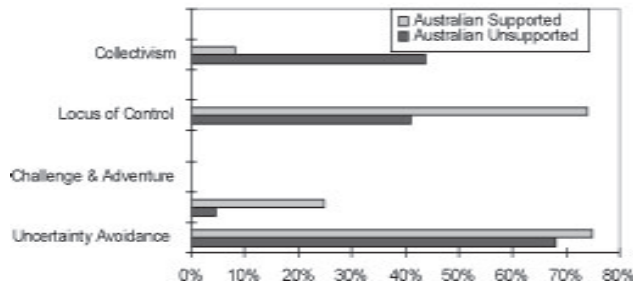*Diagram 2: The main themes and the codes for "higher education" task*

Diagram 3: The Impact of Technology on Groupwork for Australian Groups
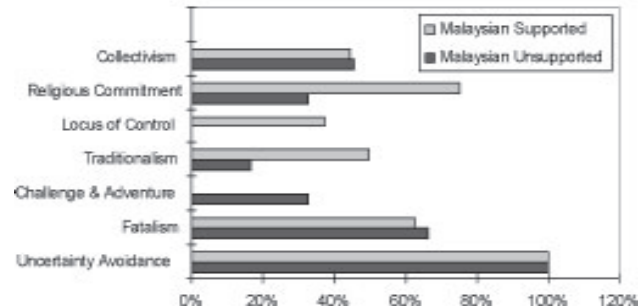

Diagram 4: The Impact of Technology on Groupwork for Malaysian Groups

Diagram 5: A 'Cultural Value' Comparison Between the Two National Cultures' Groupwork in Two Different Modes

Australian participants, as well as high traditionalism and external locus of control (Fatalism). Such a set of values would define Triandis's [12] 'tight' society.

The detailed cultural characteristics of groups from the two national cultures are examined below.

1. The high score for the Uncertainty Avoidance Index for the Malaysian students, found in this study, indicated a willingness to share the decision-making process in order to decrease the risks involved. The reason for this interpretation is that three of the five variables of the Uncertainty factor are related to sharing the responsibility in a decision-making situation. Australian students showed considerably lower uncertainty avoidance, which is close to the findings of their value survey (Diagram 3).

2. Triandis (1994) believed that groups in a collectivist society are the basic units of social perception. The high collectivism (or the low individualism) of the Malaysian participants would encourage the use of group decision-making in any decision-making situation. A very low collectivism is a confirmation of the presence of high individualism for Australian students who believe that they are responsible for their own life.

3. The high traditionalism factor for the Malaysian groups suggested the existence of a set of social regulations for influencing any type of social interaction, including group interactions. This set of regulations includes a respect for seniors and people of high status in the group. Such social regulations could be considered as a restriction in terms of what would be considered proper behaviour by group members in aspects of group decision-making, such as turn taking, and willingness to disagree with the suggested alternative of their seniors. In Australia as a loose society, individuals are accepted for their own personal merits and not because of their seniority or the class or their family. There may be little reason for individuals as group members in such a society to hide their disagreement in a decision making situation.

4. The strong rating accorded to an external locus of control (Fatalism) by the Malaysian participants suggests they may be more likely to engage in risk taking behaviour [13], because there is a belief that any consequences would be the responsibility of the superior external forces. This contrasts with the high internal locus of control shown by Australian groups. With high internal locus of control the decision-makers believe that they are responsible for the consequences of their decision. As a result to reduce the risk of a bad decision, the decision-making groups discuss all aspects of each alternative in detail before making their final decision. In such situation group members need their own *air time* to discuss their points of view.

The sum of the above features results in a situation for the Malaysian participants in which, although collectivism and religious commitment encourage the tendency towards group decision-making, the adherence to high traditionalism results in some limitations in group interactions. Malaysian participants are likely to be significantly limited by their social rules concerning group interactions. These limitations may include being obliged to agree with their seniors and refraining from expressing their opinion in group sessions.

To be competitive with other nations in the present global market, the third world nations may need to have more open channels to be creative. They may need to find ways to encourage people with a lower organisational status to voice their opinion without knowingly disagreeing with those in senior positions. *Keeping face* is of utmost importance in a tight society.
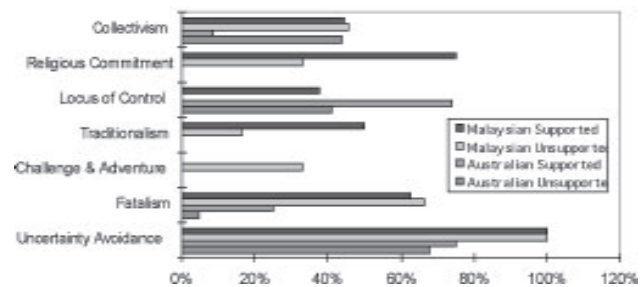
So there seems to be an identified need for the type of technological support for groupwork that not only facilitates the exchange of information (such as the simultaneous entry of comments in an electronic meeting system), but could also provide the participants with an opportunity to submit their comments anonymously. This way, participants could reject an idea suggested by a senior without any public damage to that senior's social status.

The Difference in the Impact of Technology on the Two National Cultures

While the findings of the comparison between the impact of technology on the groups from the two national cultures indicated that they referred to different values or referred to the same values with different priorities from their unsupported groupwork sessions, the relative difference for the Malaysian groups was higher than the Australian groups.

The overall result showed that the findings of the supported mode of groupwork for the Malaysian participants were very close to the findings of their value survey and seemed to be different from the findings of their unsupported groupwork. This could be interpreted to mean that the supported mode provided the opportunity for the participants to refer to their real reasons for selecting an option without fear of the social consequences.

The findings of this study showed that GDSS can changes the social behaviour of groups from different culture and this change seems to be more pronounced for a sample from *tight* societies than for a sample from *loose* societies.

A tight society with high uncertainty avoidance and low internal locus of control demands a highly structured group decision-making situation. This would in turn necessitate any group support technology to provide the decision-making groups with access to an archive of past similar decision making situations, the alternative selected and preferably a mid-term outcome of that decision. In a loose society the tendency seems to be 'to approach every decision making situation as a new challenge', in a tight society there seems to be a need for a standard or model to compare any decision making situation against such model. This difficulty is more relevant to an *unstructured* decision making situation, which is of course frequent in today's dynamic business world.

Implications for GDSS Research, Design and Implementation

A literature review seems to suggest that research in GDSS may need to be more focused on group behaviour, with more of an orientation towards social science perspective than an exclusive examination of the technological features of these support systems. As one of the few recent behaviourally based GDSS studies, this study has borrowed some of the concepts of social psychology (in particular, that of cultural studies) to examine the impact of technology on the group decision-making behaviour of sample groups from two different nationalities. Following the present trend in the social sciences, including the recent trends in Psychology and Sociology, and the fact that a structured study was not appropriate given the exploratory nature of the research, this study has used a qualitative approach. The findings of this study suggest that the use of group support technology have an impact on the decision-making process from the reference value system point of view. The findings of this study suggest that the use of technology provided the groups of decision-makers with the freedom to express a set of values which were closer to the values they referred to in their individual value survey (conducted in the first part of the study) and thus, presumably, closer to their actual values.

The implications of this research for the development of collaborative technologies are based on the indication that 'tight' societies would find some features, such as anonymity, more useful than would 'loose' societies. This could mean that the hope of finding a generic type of GDSS to serve the groupwork of different nationalities, who have different cultural value frames at work in the decision-making process, cannot be realised unless appropriate modifications to the features of these systems, in response to this particular need, are possible.

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