

Improving International Business Negotiation Performance

Using Fuzzy Approach

-Case of Malaysian and Middle East Counterparts-

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Abstract. Negotiation is considered as one of the most important activities that managers do on a daily basis, and is estimated to consume about 50 percent of their working time. Even with such heavy demand on their time and effort, negotiations that failed to achieve mutual settlement are reported to be high. This paper presents a Multidimensional Model and a fuzzy rule-based decision support system that can assist managers to close international business negotiations with their counterparts successfully. “IF-THEN” fuzzy rules using linguistic variables that have impact on the outcome of the negotiation are generated. A genetic algorithm-based methodology is developed to obtain the optimal set of fuzzy rules. A fuzzy inference system is then created to assess the negotiation outcomes’ performance.

Keywords: International Business Negotiation; Negotiation Performance; Global Mind-set; Decision Support System; Evolutionary Fuzzy System; Genetic Algorithm.

1. Introduction

Many social and business interactions involve negotiation, in which participants may cooperate to achieve mutually beneficial outcomes to both parties, or compete to get the best deal for a party over the other. Within this context, negotiation can be defined as the process whereby two or more parties attempt to settle what each shall give and take, or perform and receive, in a transaction between them [1]. Studies on negotiation and business deals closure are focused on either decision-making styles, or the approaches and tactics used by negotiators. History has shown that the real world consists of multidimensional factors that have great influences, where cause and effect are imprecise, equilibrium is momentary, and patterns are repeated irregularly. Viewed from this perspective, a new approach with a different mind-set is required to look into developing multidimensional model and generating strategies that lead to a better understanding in interpreting business interaction and deal closure, whilst ensuring its value in different situations, with diverse parties. The effect of personality and organization characteristics in imprecise environment did not to receive the attentions it deserves thus far. No study has been conducted to account for various factors that affect business deals closure. As such, a research in modeling a negotiation structure that accounts for the various factors (for example , individual characteristics, organizational characteristics, and deal characteristics) that influence the success of the negotiating performance is critical. Moreover, understanding such problem in fuzzy environment will be a valuable contribution to enhance understanding of the significance of each of these factors in influencing the business deals closure and its effects on negotiation performance.

In this paper we present a multidimensional model and its accompanying methodology that can help decision makers to understand and identify the factors affecting the business deals closure in a non-static, fast changing world. It aims to bridge the gap between the research on negotiation and business deals closure [2]

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2. Model proposition and Explanation

(Figure 1)

2.1. The Model Dimensions

Creating global mind-set is one a prerequisite critical for building our model. The concept of mind-set was developed in the arena of cognitive psychology; and it relates to the general awareness of how people make judgment of their surrounding and select appropriate actions in interacting with the environment [3], [4], and [5]. Mind-set is defined as a predisposition to see the world in particular way that sets boundaries and provides explanations for why things are the way they are, while at the same time establishing guidance for ways in which we should behave [6],[7]. In this paper, global mind-sets (*individual and corporate*) are considered as inputs that affect the process (*behaviour*) and outcomes (*deal performance*) within the bilateral business negotiation field. Common sets of fuzzy rules are generated from experts and practitioners in the field of international business negotiation through a structured questionnaire capturing their experiences with the factors affecting negotiation performance (*output*) based on three dimensions: individual characteristics, organization characteristics and deal characteristics (*inputs*).

2.2. Dimensions Measurement

The questionnaire is designed to capture three categories of information or rules, namely global orientation, organizational global orientation, and lastly characteristics of the negotiated deals. A set of rules capturing the global orientation of the team members involved in negotiation based on a set of six antecedents; i.e. knowledge, conceptualization, flexibility, sensitivity, judgment, and reflection, measured on three levels of low, medium and high. A second set of rules captures the global orientation of the organization on the basis of five factors covering organization climate, organization structure, organization communication, decision making, and organizational leadership, measured on three linguistics values of low, medium and high. The third set rules represents the deal characteristics represented by six elements of degree of control, mechanism of control, amount of financing, magnitude of financial return, and the associated degree of risk. The questionnaire has been reviewed by three experts; an expert in management science, an expert in computer science and a practitioner involved in international business negotiation.

The set of rules generated through the questionnaire represents a subset of all the possible outcomes of pattern space, whose number can be represented exponentially as a function of number of factors and levels of measurement of each factor. In our case, the expected pattern space of the possible combination is $[3^6+3^5+3^5+3^3+3^2]3=3753$ rules. It is extremely difficult to generate the full set of possible outcomes in a traditional way due to time constraints, resources and usability. Therefore, a fuzzy inference system is created by identifying the combination of the factors that lead to the set of rules based on the input factors of individual characteristics, organizational characteristics and the worth of the deal. The genetic algorithm approach was used to generate the full set of possible rules as well as to identify the best solution of rules that mirror the reality as experienced by Malaysian. Three hundred and fifty questionnaires were distributed to managers and negotiators working in 65 Malaysian companies to obtain the basic rules. Forty-two members have responded, giving a respondent rate of 12%.

2.3. The Fuzzy System

In many real world applications, fuzzy systems - which use linguistics rules as a basic element to model the phenomena under the study are quite appropriate to describe the behaviour of complex problems that are difficult to model mathematically. Fuzzy researchers utilize fuzzy sets to represent non-statistical behaviour, uncertainty, and approximate reasoning to be applied on real life data [8], [9]. In most of the cases studied using this approach, the fuzzy rules with few input variables are developed by the experts and decision makers who are well versed with the problem. The advantage of generalizing rules is that they can cover several input situation, and therefore fewer rules are necessary to design the fuzzy rule base [10]. The possible number of fuzzy rules for a given problem rises exponentially when the number of input variables increases which makes the definition and generation of the complete rule set to assess the system performance very difficult. In several cases, the system performance is improved by the amendment of

membership functions and selecting the suitable fuzzification and defuzzification approach [11]. To model the performance measurement and evaluation system of negotiation and deal closure, the basic fuzzy rules were generated from experts and practitioners in the field of negotiation and deal-making by a structured questionnaire. Three hundred and fifty questionnaires were distributed to managers and negotiators working in 65 Malaysian companies to obtain the basic rules. Forty-two full responses were obtained giving a respondent rate of 12%. In addition, the genetic algorithm is developed to obtain the optimal set of fuzzy rules.

2.4. The Genetic Algorithm

a) Rules Representation

While designing a fuzzy expert system using Genetic Algorithm (GA), the first important step is the adaptation of the coding system in representing the problem under the study from the fuzzy rules into the chromosome. The fuzzy system would not be well defined if the fuzzy rule base and the membership functions related with each fuzzy set of variable are not fully specified.

In this research, three categories of variables were identified, where the first variable have six fuzzy set, and the second and third variable have five fuzzy set, were considered to evaluate the deal closure performance. The evaluation is based on five steps. The first step assesses individual characteristics, the second assesses organization characteristics, the third assesses deal characteristics, the fourth assesses deal closure and maintaining business relationships, and lastly the fifth evaluates the deal performance. The membership functions correspond to the fuzzy sets of input variables, measured as low, medium and high. In this study, each input/output in the fuzzy set is represented by four integers 1 for low, 2 for medium, 3 for high, and use of value 0 to represent the absence of the factor. For example, a rule from a case of individual characteristics that is evaluated by six factors in which the input is medium, low, high, high, low and medium, and the output is medium; then the rule can be encoded as 2 1 3 3 1 2 2. In our case, a matrix of forty-two rows (number of respondents) and seven columns (six inputs and one output) describes the structure of the model in its first step, a matrix of forty-two rows and six columns describes the model in its second and third step. A matrix of forty-two rows and five columns describe the model in its fourth step, and a matrix of forty-two rows and three columns describes the model in the fifth step.

b) The Membership Function

In many cases, performance is found to be improved by changing the membership functions and selecting suitable fuzzification and defuzzification methods. Defuzzification is the translation of fuzzy data to precise data. It includes approaches such as max-membership principle, centroid method, weighted average method, center of sums and so on [12]. This study adapts weighted average method as the defuzzification approach of the fuzzy output data, whereas for the input linguistic variable, the simple average method was adopted as the defuzzification approach. The output membership function is given by the algebraic expression below:

Output membership function is taken as the equation $(x_1 w_1 + x_2 w_2 \dots + x_n w_n) / (w_1 + w_2 \dots + w_n)$

$$\text{Output Membership Function} = \frac{\sum_{i=1}^n (x_i w_i)}{\sum_{i=1}^n w_i} \quad (1)$$

c) The Fitness Function

The fitness function evaluates the performance of the rule base as represented by integer strings. Since the objective in negotiation analysis is to evaluate the deal closure performance, the absolute difference error is taken to evaluate the fitness of the chromosomes

$$E = (1/N) \sum |O_i - e_i|; \quad (2)$$

Whereas N is the number of evolved fuzzy rules and e_i is the expected outputs obtained by assigning priorities to the input variable. The chromosomes with higher fitness value are carried to the next generation.

$$\text{Chromosome Fitness Value} = 1 / (1 + E) \quad (3)$$

d) The Crossover Operator

Crossover is the process by which two parent strings recombine to produce two new offspring strings. It is usually applied to selected pairs of parents with a probability equal to a given crossover rate. In this case, a random point is selected and the column behind this point is exchanged as whole.

e) Mutation

Mutation is the process of change that occurs in chromosomes. It is a random alert of few composition of a string to produce a new offspring, instead of recombining two strings. In this research the mutation used is increased or decreased by replacing the integer with another in the range of [1, 3] excluding the present value of the element. The integers of the string are independently mutated. The mutation of the element does not influence the probability of mutation of another element.

f) The Algorithm

In this research, the process works as below:

(Figure 2)

1. The obtained population through the questionnaire is regrouped, based on the outcome level high, medium and low.
2. Applying the simple average method in representing the membership values of the input linguistic variables
3. Applying weighted average method as the composition rule for the fuzzy output data, *equation (1)*
4. Calculate the fitness $f(x)$ of each chromosome x in the sub-population; *equation (3)*
5. Repeat the following steps until n offspring have been created
6. Select a pair of parent chromosomes from current populations, the probability of selection being an increasing function of fitness.
7. With crossover rate, cross over the pair at a randomly chosen point to form two offsprings.
8. Mutate the two offsprings at each locus with a known mutation rate, and replace the new chromosomes in the new population. If n is odd, one new population member can be discarded at random.
9. Replace the current population with the new population.
10. Go to the step 2.
11. Keep the process from step 1 to step 8 for n times until you get satisfied with the results and make the decision based on the generated solutions.

3. Results and Discussion

To analyze the collected data, this study adjusted and built on the genetic algorithms and genetic programming component provided as a Java framework by “JGAP” Java Genetic Algorithms Package⁴. The system was customized by identifying the combination of the factors that led to the set of rules based on the input factors of individual characteristics, organizational characteristics and deal’s worth. The genetic algorithm approach was used to generate the full set of possible rules as well as to identify the best solution rules that mirror reality as perceived by Malaysian negotiators’ experiences. The system was configured to work backward as well, by generating the optimum rules in the first stage and identifying the factors that greater significance in affecting the results of the negotiation performance in the second stage. In addition, the system was presented to users “decision makers” with a friendly use interface. It is presented in manner to allow the individual decision-maker to identify the factors affecting the negotiation outcomes based on his level of satisfaction. Also, it has been built to keep the system valid and useable in the case of changes of the membership functions of the relevant factors, based on the changes of the surveyed population, in addition to the changes of the factors involved in the study.

It is noted that the negotiation performance membership function value for the best rules scored 82.14% in its high level. This means the combination of factors (deal closure and maintaining business relationship) reflects the reality of the negotiation performance in its high level by 82.14%. In the same way, the results reveal that the membership function value of deal closure was high and scored 71%, this indicates that whenever the negotiation performance is considered high the deal closure should be in the high level too, and surely is not expected to be low as scored 0%, and not necessarily medium as scored 29% in the high level. The membership function value of maintaining business relationship is 86% in medium level; this indicates

⁴ <http://jgap.sourceforge.net/>

that whenever negotiation performance is considered high the maintaining business relationship should be in medium and not necessarily to be high nor expected to be low as both of them scored 36% and 0% accordingly.

The factors of deal closure and the maintaining business relationship have direct impacts on negotiation performance. Noticeably, negotiation performance is considered high whenever the deal closure is at high level. On the other hand, maintaining business relationship is considered medium, whereas the deal closure has the strongest impact on the negotiation performance in the high level and in driving the negotiation performance results.

This research found that business negotiation performance between Malaysian executives and their Middle East counterpart is well explained by the deal closure and the business relationship maintainability dimensions [13],[14], [15], [16], [17], and [18]. The executives and business negotiators sampled in this research were accurate in their agreement in the importance of the six dimensions of individual global mindset named knowledge, conceptualization, flexibility, sensitivity, judgment and reflection [6],[7]. Beside the five dimensions of organization global mindset named organizational climate, organizational structure, organizational communication, organizational decision making and organizational leadership [3],[4],[5], and [19], in addition to the five dimension of the deal worthiness named degree of control, mechanism of control, amount of financing, financial return, and degree of risk as demonstrated by the research's results.

The research demonstrates that the conceptualization dimension is a leading factor in shaping the individual global mindset as it scores high, where the knowledge element is considered the most important distinctive motivator in considering the individual global orientation. Furthermore, flexibility and judgment dimensions show their strong impact in the individual global orientation as well when are combined with conceptualization dimension. Thus, as the individual captures sufficient knowledge about his business field, targeted market, and managing competition, he/she will not be globally oriented unless trained on conceptualization ability, flexibility and judgment skills.

The leadership dimension is a leading factor in shaping the organization global mindset as it keeps scores high, where the organization climate and the organization communication are considered to be the most distinctive instigators in positioning the global orientation of the organization. Organizational decision making confirms its strong impact in reflecting organization global orientation in the high level when it is joined with organizational leadership. Hence, as the organization establishes a favorable global oriented organization climate, organizational structure and organizational communication, it is not abundant enough to consider the organization globally oriented unless a clear decision making process and globally oriented leadership style are also adopted.

The degree of control dimension is a leading factor in determining the deal's worth as it keeps scores high, where the combination of mechanism of control and financial return are the most important distinctive motivators in considering the worth-of the deal. Additionally, financial return and degree of risk strongly validate the deal worth is considered either low or not. Consequently, as the organization owns a reasonable degree of control on the deal, it is not enough to consider the deal worth only if it is validated by the satisfied financial return and by an accepted degree of risk.

In general, the research reveals that negotiation should not be viewed as limited to personal skill only. It should be recognized that the success of negotiations must take into consideration the strong impact of organizational dimension as well as the degree and mechanism of control aspect of the deal itself, in addition to the individual dimension. Furthermore, the conventional notion of negotiation as presented in the literature (e.g. [17], [20], [21], [22], [23], and [24]) views negotiation either as a decision-making or a problem solving process, should be revised from seen as two distinguished approaches toward a one approach with two stages, which is shaped by multidimensional factor of individual, organizational and the deal itself.

It is worth noting that the results and discussion of this research is in tune with past findings. In particular it supports the results of the benchmarking exercise in improving the corporate negotiation performance conducted by *Huthwaite Int. & IACCM*, [25], which is considered the first study of its kind. Further, it does not contradict the different findings of studies on cross-cultural negotiation (e.g. [13], [26], [27], and [28]).

3.1. Recommendations

The accepted results of the proposed multidimensional model developed within this study reveal a need for a course of actions to improve corporate business negotiation performance. The course of actions required is presented by set of recommendations as follows:

a) For Organizational (Leadership) Level

- 1) Transform negotiation process from individual competency into an organizational capability through:
 - i) Cross-organizational collaboration by enhancing internal communication and seeking organizational alignment toward organization's vision and objectives.
 - ii) Enhancing the organizational structure, and standardizing and formalization of decision making process to empower business negotiators within the organization vision boundaries.
 - iii) Enhance leadership support toward organizational global orientation.

b) For Managerial Level

- 1) Formalize and standardize corporate negotiation process through:
 - i. Organization policies and procedures providing clear definition of the negotiation process, negotiation phases, the required tasks within each phase, and the responsibilities of each individual within the negotiation process across the organization.
 - ii. Formalized authorization process to handle and escalate approvals.
 - iii. Negotiation evaluation and data recording by assessing each negotiation case at the end of negotiation process and defining the cause of success or failure.
 - iv. Formalize negotiation success measurement beyond the contract signature.
- 2) Motivation for long term results by:
 - i. Providing negotiation training to the team involved in negotiation process based on the targeted region characteristics and to emphasize on enhancing organizational, product and regional knowledge, and to challenge the analytical skills of the individual to understand the impact of globalization and international deals on the organization. In addition, to develop the ability to change the old habits in order to notice new way to deal with different situation in a global unstable environment.
 - ii. Include negotiation performance results on the employee appraisal cycle and organizational reward system.
 - iii. Enhancing lessons learned culture among employees by providing and sharing results on best practice and approaches of corporate negotiation best results.

c) For Policy Makers

Government bodies such as Malaysian External Trade Development Corporation (MATRADE), Construction Industry Development Board (CIDB), Professional Services Development Corporation (PSDC), and the Economic Planning Unit (EPU) should devise policies to enforce Malaysian organizations to set in place a formalized and standardized negotiation process, negotiation evaluation procedures, and negotiation training program by:

- iv. Developing a global oriented organization accreditation (GOOA) that ensures that the organization develops and applies standard negotiation process, negotiation evaluation procedures and a set of negotiation training.
- v. Introducing tax deductions to motivate organizations to develop and implement negotiation process, negotiation evaluation procedure, and a set of negotiation training, whereas the tax portion deduction eligibility be based on two components:
- vi. The development of negotiation process, negotiation evaluation procedures, negotiation training program; and the ratio of the trained employee on negotiation subjects within the organization.

3.2. CONCLUSION

This study investigated factors affecting international business negotiation performance and proposed a multidimensional model that shapes the negotiation outcomes. The research focused on the prior negotiation stage by identifying the required factors to improve corporate negotiation performance. Hence, future research that focuses on the effect of the proposed dimensions (individual, organizational and) deal behaviors on the negotiation process and the impact of each element in the factor dimensions on the shape of the negotiation course is welcome. Also, case studies that investigate the effect of implementation of

formulized and standardized corporate negotiation process, the motivation for long term results, and the accreditation procedures is remarkably needed. Finally, dynamic constructivism approaches embedded in multidimensional model that include, for example, factors of different cultures, with different individual characteristics, different organizational types, and different business deals levels to account their effect on negotiation process and in improving negotiation outcomes is encouraged.

International business executives will gradually participate in negotiation field depending on their capability to convey significant and satisfied business results. Research has always held an important role in the development of those results as well as in building, verifying and confirming the attained knowledge. Irrespective of the approaches, a dynamic multidimensional modeling is continuously an opportunity and need for additional research on negotiations process, negotiation strategies, and negotiation performance improvement.

(Figure 1)

Tameur Nachef Model Proposed for Ph.D. Research, USM Malaysia 2007

FACTORS	VARIABLE	MEASUREMENT	DEAL RESULTS						
Knowledge -Managing Competition-	Individual Characteristics Global Mindset	Deal Closure	DEAL PERFORMANCE						
Conceptualization -Managing Complexity-									
Flexibility -Managing Adaptability-									
Sensitivity -Managing Teams									
Judgment- Managing Uncertainty									
Reflection- Managing Learning									
Organizational Climate	Organization Characteristics	Maintaining Business Relationship							
Organizational Structure									
Communication in Organization									
Corp. Decision Making	Organization Global Mindset								
Corp. Leadership									
Degree of Control	Deal characteristics								
Mechanism of Control									
Amount of Financing				Deal worthiness					
Magnitude of Financial Return									
Degree of Risk									

The table to explain the model as presented by “Figure 1”

The factors is linked to variables by set of fuzzy rules; the variables are linked to a measurement by other set of fuzzy rules leading to a deal performance results

(Figure 2)

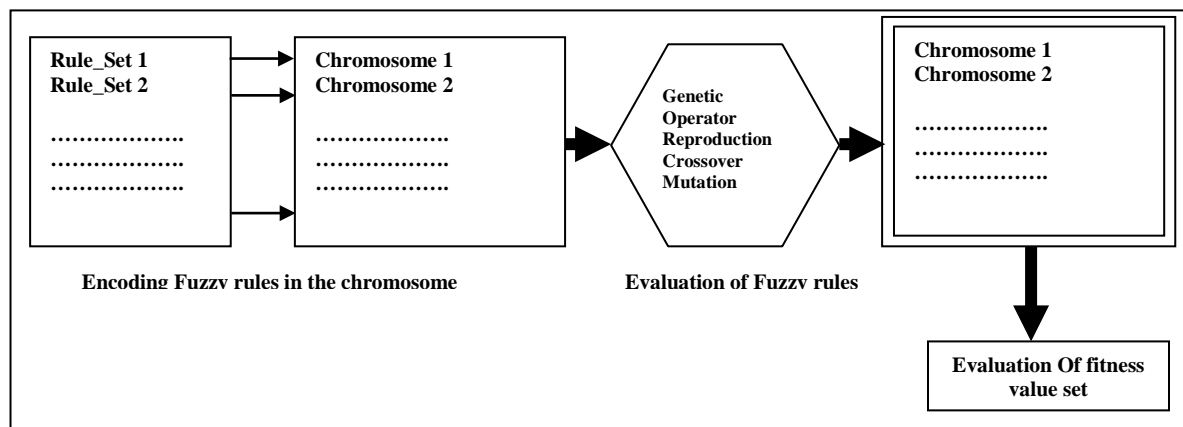


Diagram of Algorithm Process

Part of the Results: Fuzzy Rules of Negotiation Performance in the High Level

Deal Closure Generated Results											
Total Evaluation Time L.L.V (3) = 2250 ms; Population Size= 200											
LVV= Linguistic Variable Value; MV1= Membership Function Value within Population; MV2= Membership Function Value within Subgroup; OMV= Overall Membership Function											
Individual Global Mindset			Organization Global Mindset			Deal Worthiness			Deal Closure		
L.V.V	MV1	MV2	L.V.V	MV1	MV2	L.V.V	MV1	MV2	L.V.V	O.M.V	
3	19%	38%	2	55%	38%	3	12%	13%	3	0.7146	
3	19%	38%	3	21%	63%	2	45%	88%	3	0.7146	
2	60%	63%	2	55%	38%	2	45%	88%	3	0.7146	
1	21%	0%	3	21%	63%	2	45%	88%	3	0.7146	
2	60%	63%	2	55%	38%	1	43%	0%	3	0.7146	
3	19%	38%	3	21%	63%	3	12%	13%	3	0.7146	
2	60%	63%	3	21%	63%	3	12%	13%	3	0.7146	
2	60%	63%	1	24%	0%	2	45%	88%	3	0.7146	
3	19%	38%	1	24%	0%	2	45%	88%	3	0.7146	
2	60%	63%	2	55%	38%	3	12%	13%	3	0.7146	
3	19%	38%	2	55%	38%	2	45%	88%	3	0.7146	
2	60%	63%	3	21%	63%	1	43%	0%	3	0.7146	
1	21%	0%	2	55%	38%	2	45%	88%	3	0.7146	
1	21%	0%	3	21%	63%	1	43%	0%	3	0.7146	
1	21%	0%	3	21%	63%	3	12%	13%	3	0.7146	

Maintaining Business Relationship Generated Results											
Total Evaluation Time L.L.V (3) = 2265ms; Population Size= 200											
LVV= Linguistic Variable Value; MV1= Membership Function Value within Population; MV2= Membership Function Value within Subgroup; OMV= Overall Membership Function											
Individual Global Mindset			Organization Global Mindset			Deal Worthiness			Maintaining Business Relationship		
L.V.V	MV1	MV2	L.V.V	MV1	MV2	L.V.V	MV1	MV2	L.V.V	O.M.V	
2	60%	86%	3	21%	57%	3	12%	43%	3	0.7363	
3	19%	14%	2	55%	29%	1	43%	14%	3	0.7363	
2	60%	86%	3	21%	57%	2	45%	43%	3	0.7363	
2	60%	86%	3	21%	57%	1	43%	14%	3	0.7363	
1	21%	0%	3	21%	57%	2	45%	43%	3	0.7363	
2	60%	86%	1	24%	14%	3	12%	43%	3	0.7363	
2	60%	86%	2	55%	29%	3	12%	43%	3	0.7363	
3	19%	14%	2	55%	29%	3	12%	43%	3	0.7363	
3	19%	14%	3	21%	57%	3	12%	43%	3	0.7363	
2	60%	86%	2	55%	29%	1	43%	14%	3	0.7363	
1	21%	0%	3	21%	57%	1	43%	14%	3	0.7363	
2	60%	86%	1	24%	14%	2	45%	43%	3	0.7363	
1	21%	0%	2	55%	29%	2	45%	43%	3	0.7363	
3	19%	14%	1	24%	14%	3	12%	43%	3	0.7363	
1	21%	0%	2	55%	29%	3	12%	43%	3	0.7363	
3	19%	14%	3	21%	57%	1	43%	14%	3	0.7363	
1	21%	0%	2	55%	29%	1	43%	14%	3	0.7363	
2	60%	86%	1	24%	14%	1	43%	14%	3	0.7363	
3	19%	14%	3	21%	57%	2	45%	43%	3	0.7363	
3	19%	14%	1	24%	14%	2	45%	43%	3	0.7363	
2	60%	86%	2	55%	29%	2	45%	43%	3	0.7363	

Negotiaion Performance Generated Results								
Total Evaluation Time L.L.V (3) = 1609 ms; Population Size= 181								
LVV= Linguistic Variable Value; MV1= Membership Function Value within Population; MV2= Membership Function Value within Subgroup; OMV= Overall Membership Function								
Deal Closure			Maintaining Business Relationship			Negotiation Performance		
L.V.V	MV1	MV2	L.V.V	MV1	MV2	L.V.V	O.M.V	
3	19%	71%	2	57%	86%	3	0.8214	
3	19%	71%	3	17%	14%	3	0.8214	
3	19%	71%	2	57%	86%	3	0.8214	
2	52%	29%	2	57%	86%	3	0.8214	
3	19%	71%	2	57%	86%	3	0.8214	
3	19%	71%	1	26%	0%	3	0.8214	
1	29%	0%	3	17%	14%	3	0.8214	
3	19%	71%	2	57%	86%	3	0.8214	
3	19%	71%	1	26%	0%	3	0.8214	
3	19%	71%	3	17%	14%	3	0.8214	
1	29%	0%	2	57%	86%	3	0.8214	
2	52%	29%	1	26%	0%	3	0.8214	
2	52%	29%	3	17%	14%	3	0.8214	
1	29%	0%	3	17%	14%	3	0.8214	
1	29%	0%	1	26%	0%	3	0.8214	
2	52%	29%	2	57%	86%	3	0.8214	

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