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Research Article

THE ORGANIZATIONAL LEARNING EVALUATION BY THE USE OF ROUGH SET THEORY (RAS)

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ABSTRACT
The recent research is to evaluate the staff organizational learning rate. The statistical society contains Ramhormoz city banks staff for about 200 individuals that the sample volume was considered by the use of Morgan table for 97 individuals. The research tool includes two questionnaires of demographics and organizational learning from (Gumer & coworkers, 2005). The questionnaire stability was determined by the Cronbach's alpha. In this research in order to reduce the specification and data and results from them, the Rough set theory collection theory applied that after the minimum and maximum respondents' scores and decision variable determination, the decision table was prepared and then the standardized decision making and in next step the adaptable and unadoptable issues were clarified and then the reduction table provided, the results showed that if respondents give low scores to management criterions for organizational learning, their organizational leaning level is low, if respondents give medium score to systemic view criterions and transference and knowledge solidification, then their organizational leaning level is medium. If the respondents give high score to the free space and experimentation criterions, their organizational learning level is high.

***Keywords**: Organizational Earning, Ramhormoz City Banks, Rough Set Theory*

INTRODUCTION
In competitive environment of organizations now a day to properties like knowledge, leaning, effective relation, desire to alteration and etc. has been face with great upheavals. In other word the organizations to be faced with competitive condition in front of their face should try to expand and increase their learning, communication and ….Because otherwise they will be stopped by entropy. In this economical instability most of organizations try to protect themselves and keep their competitive condition. In this direction, the organizational learning is considered as a strategic tool to achieve the organization long term success. Regardless of instable prevalent condition of present time, organizations should protect learning to keep their competitive condition, so the organizational learning will be completed based on the knowledge system. In other word, organizations could apply other organization learning capabilities which are suitable for individuals learning foundations (Estiven and coworkers, 1999). Learning is the beginning of completion and improvement and as more the science and knowledge developed, the need for learning will be increased. Alvin Taphler said: the illiterate is the one who cannot learn or forget his learning and learn from the beginning, not the one who cannot read and write (Tousi, 2006). Therefore learning obviously affects human behavior in the organization (Lutenz, 2005). Organizational learning is considered as the competitive benefit for organizations and the science, technology, environment increasing changes that effect the organizations life every time, the necessity to pay attention to organizational learning and enhancement of techniques and staffs skills will be more clarified and the need to use from past experience in organization will be determined by view to future (Markurat, 2006).

The Research Literature
John and Etienne believed that learning naturally is a social process that could not be separated from the internal concept, they invented the term of (social action) in 1991 based on the activity on the learning theory at the end of 1980 decade, learning has close relation with people, the social learning occurs when people with common interest during specific time for exchanging, finding new solutions based on capacities not the hierarchy condition will cooperate with each other, these two researchers do argument

that the (act society) could be available every time because we have such communications in such society. In working, school and home society even in public activities and in our free entertainment time naturally the action society features are different but we can define them from three points of views:

1-learning speed
2-learnnig depth
3-learning span

The learning speed points out to the organization speed rate in capabilities completion of learning like (programming, operation and reviewing) and the cycle logical repetition completion.

The learning depth referred to the learning rate that should be obtained by any organization at the end of each cycle and it is provided by the organizational hypothesizes and improvement of learning capability in future.

The learning span means that to what extent the organization might transfer the ideas and knowledge that are obtained from the learning cycle logical repetition to other section of organization (Sobhani and coworkers, 2011).

Organizational Learning

The organizational learning beginning is due to group development in different management theories like Adam Esmit, Tilvour, learning graph and other.

The organizational learning concept is referred to 1990 when Tilour presented the issue of learning transference to other staffs to increase practicality and organization improvement.

But Richard and Jamz were the first individuals that in 1963 connected the learning and organization together introduced the learning as the organizational phenomenon (Templton and coworkers, 2002).

Organizations in 21th century are facing with changes and to be able to compete in the market the key point is to how they should learn to produce new wisdom. The growth and existence of organization in recent world with full of changes requires the capability to react to the frequent environmental changes properly and on time.

Only organizations are capable to predict the necessities and changes on time and continue their existence in the environment that focus on the organizational learning and confirm it.

The learning requires that people apply the knowledge that their organization has obtained in their behavior.

Learning has three steps: realization (learning new concepts), behavior (skills development and new capabilities) and performance (doing the activities really) according to the Gurvin theory, the organization to use new thinking to improve the organization performance and changing it to scientific programs needs five skills which are: issue solving, gaining experience, taking the history experiences and learning from other transference or performing them.

The learning expression apparently points out to individuals learning in the organization but organizational learning points out to the group pr learning at organizational level. Individual learning obtained through studying, interview, experience, experiment and development if mental model in mind but learning occurs when the group learns how to have cooperation and share its knowledge and how to operate in group formation to the point that the group completed capacity increase and the understanding capability and its effective performance are obtained (Binet, 2008).

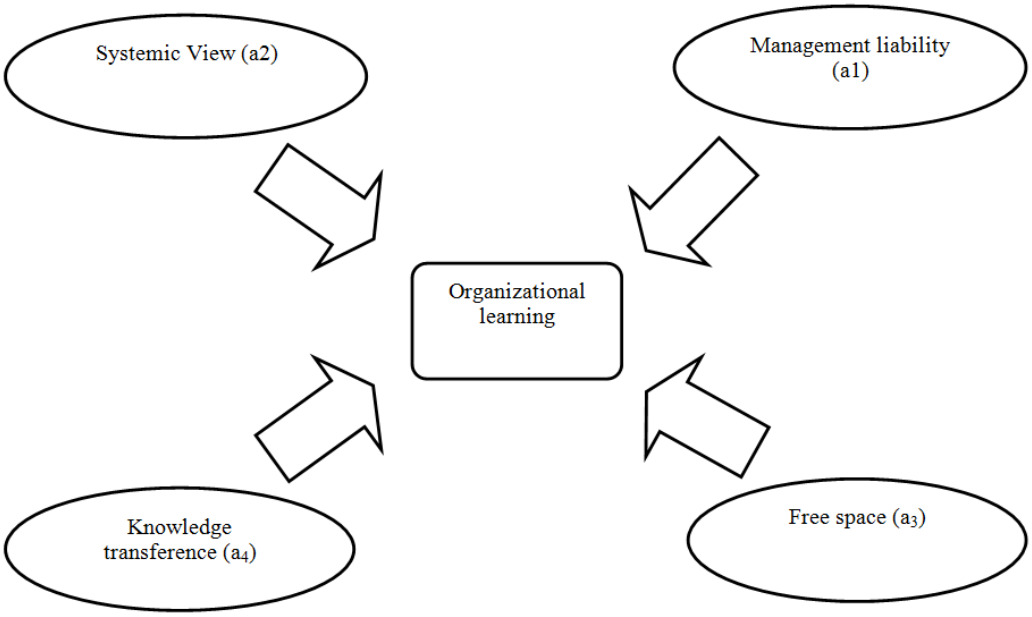
Argresin and Shoun (1978) for the first time presented the axial learning concept and discussed that the axial learning is the process through which organizations discover and correct mistakes. Also the organizational learning concept is really close the axial learning concept (Hongming *et al.*, 2007).

Axial learning is defined widely as the knowledge development or the new thinking that has potential effects on behaviors through values and believes; also the axial learning is related to the new knowledge development in organization (Lee *et al.*, 2010).

Research Questions

The research main question: how is the hidden model between the conditional features and organizational learning?

Subsidiary question 1: is possible to mention other model based on the co0nditional features and organizational learning?
The research conceptual model



MATERIALS AND METHODS

The Research Method

In this research according to the subject, questions and theories the type and method of research is descriptive and measuring. In this research two types of decision and conditional variables are used, in Rough set theory conditional variables based on the learning aspects including the dimensions of management liability, systemic view, free space, knowledge transference are considered and the organizational learning rate decision variables are the Babak city banks. The statistical society in this research are 200 people of experts with B.A educational degree that were chosen based on the Cherjesy table and Morgun table by the volume of 97 individuals.
The gathering tool in this research is the organizational learning questionnaire, GUMEJE and coworkers, 2005 including 16 questions that the management liability, systemic view, free space criterions and experimentation and transference and solidification are assessed. In order to determine the questionnaire validity the Cranach alpha was used that calculated as 0.86. The justifiability also confirmed by experts, the nominal justification.

Data Analysis

In this research to take logical regulation for realization of organizational learning condition was used for the BABAK city banks by the application of RAFF collection theories. Because the organizational learning are measured as 16 types and the valuation is based on the Likert 5 options spectrum, therefore the minimum score of a respondent is min=16 , the maximum score was 80
Therefore if the respondent score is 16 to 37, the organizational learning rate is at low level that means $16<x<37$
If the respondent score is between 38 to 59 then the organizational leaning is at minimum rate that means $38<x<59$
If the respondent score is between 60 to 80 then the organizational leaning rate is at high level that means $60<x<80$
From the other direction, the four aspects of learning according to the questions number for each criterion have the minimum and maximum scores as below table:

Table 1: The organizational learning criterions score in decision table

Maximum score	Minimum score	Number of items	Organizational leaning and is aspects	Criterions in decision table	Row
25	5	5	Management liability for organizational learning	a_1	1
15	3	3	Systemic view	a_2	2
20	4	4	Free and experimental space	a_3	3
20	4	4	Knowledge solidification and transference	a_4	4

According to table 1 we can note the limit of each aspects of organizational learning as below
V (a1) = {5, 6, 7… 24, 25}
V (a2) = {3, 4, 5… 14, 15}
V (a3) = {4, 5, 6… 19, 20}
V (a4) = {4, 5, 6… 19, 20}
In other word the management liability criterion for organizational leaning could have the scores 5 to 25, and systemic view criterion between 3 to 15 and the free experimental and free space 4 to 20 and the transference and solidification of knowledge could have the score 4 to 20.
In next step in columns a1, a2, a3, a4 (the condition specification) and in column D (decision specification) instead of mentioned number we will replace their codes and we standardize them. Therefore in table 4 the codes 1, 2, 3 orderly show the low, middle and high levels in intended variables.

Table 2: The organizational learning aspects standardization

Standard code	The low and high rates	Each aspect value	Organizational learning aspects	Criterions code
1	X≤11≤5			
2	X≤18≤12	X≤25≤5	Management liability for organizational learning	a_1
3	X≤25≤19			
1	X≤7≤3			
2	X≤11≤8	X≤15≤3	Systemic view	a_2
3	X≤15≤12			
1	X≤9≤4			
2	X≤15≤10	X≤20≤4	Experimental and free space	a_3
3	X≤20≤16			
1	X≤9≤4			
2	X≤15≤10	X≤20≤4	Knowledge solidification and transference	a_4
3	X≤20≤16			
1	X≤37≤16			
2	X≤59≤38	X≤80≤16	Organizational learning	d
3	X≤80≤60			

In this step we standardize and rewrite the decision table according to table 2.

Table 3: Informational /decision making table

	u	**a_1 management liability**	**a_2 systemic view**	**a_3 free space**	**a_4 transference and solidification**	**D Organizational learning**	**N frequency**
X1	U1	1	1	1	1	1	**4**
X2	U2	2	2	2	2	2	**5**
X3	u3	1	2	1	2	1	**4**
X4	u14	1	1	1	2	1	**5**
X5	u17	1	2	2	1	2	**3**
X6	u23	1	1	2	2	1	**2**
X7	u25	2	1	1	1	3	**7**
X8	u38	2	1	1	2	1	**5**
X9	u58	3	3	3	3	3	**4**
X10	u60	1	2	1	1	2	**5**
X11	u64	2	1	2	2	2	**4**
X12	u66	3	2	3	3	3	**4**
X13	u75	2	1	1	1	1	**7**
X14	u77	1	2	2	1	1	**8**
X15	u82	1	1	2	1	1	**5**
X16	u86	3	2	3	2	3	**6**
X17	u88	2	2	1	2	1	**3**
X18	u90	2	2	1	2	2	**4**
X19	u93	1	2	1	2	2	**8**
X20	u97	2	3	3	3	3	**4**

In next steps we will prepare the adaptable and inadaptable tables according to table 3

Table 4: The inadaptable criterions (similar) in decision making table

u	**a_1=management liability**	**a_2=systemic view**	**a_3=free space**	**a_4=transference and solidification**	**d=organizational learning**	**N**
U3	1	2	1	2	1	4
U93	1	2	1	2	2	3
U17	1	2	2	1	2	3
U77	1	2	2	1	1	7
U31	2	2	1	2	2	6
U88	2	2	1	2	1	3

Table 5: The adaptable criterions in decision making table

u	**a_1=management liability**	**a_2=systemic view**	**a_3=free space**	**a_4=transference and solidification**	**d=organizational learning**
U1	2	2	2	2	2
U2	1	1	1	1	1
U3	1	1	1	2	1
U4	1	1	2	2	1
U5	2	1	1	3	1
U6	2	1	1	2	1
U7	3	3	3	3	3
U8	2	1	2	2	2
U9	3	3	3	2	3
U10	2	1	1	1	1
U11	1	1	2	1	1
U12	3	2	3	2	3
U13	2	2	1	2	2
U14	2	3	3	3	3

In decision tables we regard some regulations that are adaptable. Therefore we put aside the table 4 criterions and in next step we consider 16 respondents for table 5 that are categorized in below table for organizational learning rate.

Table 6: The adaptable tables ordered form

u	a_1	a_2	a_3	a_4	d
X1	1	1	1	1	1
X2	1	1	1	2	1
X3	1	1	2	2	1
X4	2	1	1	3	1
X5	2	1	1	2	1
X6	2	1	1	1	1
X7	1	1	2	1	1
X8	2	2	2	2	2
X9	2	1	2	2	2
X10	2	2	1	2	2
X11	3	3	3	3	3
X12	3	3	3	2	3
X13	3	2	3	2	3
X14	2	3	3	3	3

The Minimum Collection of Specifications

Because the decision variable D has three condition of (low, middle and high) therefore based on table 6 we can make minimum collections in an order that respondents who have score 1 to decision variable put in a collection and respondents who has given score2 to organizational learning are put in other collection and those who have given score 2 to variable put in next collection, hence three made collections are called as decision making equivalence classes.

$$X\,1=\{X\ \in U\,|d\ (X\ )=1\}=\{X\,1,X\ 2,X\ 3,X\ 4,X\ 5,X\ 6,X\ 7\}$$

$$X\ 2=\{X\ \in U\,|d\,(X\ )=2\}=\{X\ 8,X\ 9,X\ 10\}$$

$$X\ 3=\{X\ \in U\,|d\,(X\ )=3\}=\{X\ 11,X\ 12,X\ 13,X\ 14\}$$

Based on three collections of X1, X2, X3 we have calculated the minimum and maximum approximate value for all three collection, it should be paid attention that A is defined as below:

$$A=\{a_1,a_2,a_3,a_4\ \}$$

Table 7: x1, x2, x3 three conceptual collections equivalence

X_1	X_2	X_3
$[X\ 1]_A=\{X\ 1\}$	$[X\ 8]_A=\{X\ 8\}$	$[X\ 11]_A=\{X\ 11\}$
$[X\ 2]_A=\{X\ 2\}$	$[X\ 9]_A=\{X\ 9\}$	$[X\ 12]_A=\{X\ 12\}$
$[X\ 3]_A=\{X\ 3\}$	$[X\ 10]_A=\{X\ 10\}$	$[X\ 13]_A=\{X\ 13\}$
$[X\ 4]_A=\{X\ 4\}$		$[X\ 14]_A=\{X\ 14\}$
$[X\ 5]_A=\{X\ 5\}$		
$[X\ 6]_A=\{X\ 6\}$		
$[X\ 7]_A=\{X\ 7\}$		

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$$\frac{U}{IA}=\frac{U}{A}=\{\{X\ 1\},\{X\ 2\},\{X\ 3\},\{X\ 4\},\{X\ 5\},\{X\ 6\},\{X\ 7\},\{X\ 8\},$$
$$\{X\ 9\},\{X\ 10\},X\ 11\},\{X\ 12\},\{X\ 13\},\{X\ 14\}\}$$

$$\underline{A}X=\{X\in U\left|\frac{X}{A}=[X\ ]_A\subseteq X\ \right.\}$$

$$\underline{A}X_1=\{X\ 1,X\ 2,X\ 3,X\ 4,X\ 5,X\ 6,X\ 7\}$$
$$\underline{A}X_2=\{X\ 8,X\ 9,X\ 10\}$$
$$\underline{A}X_3=\{X\ 11,XS12,X\ 13,X\ 14\}$$

We can define the RAFF collection accuracy rate based on the below precision coefficients respondents in this collection there are individuals who declare their organization learning possibility is at low level and the criterions or organizational learning are also at low level.

$$\alpha_A(X)=\frac{|\underline{A}X|}{|\overline{A}X|} \qquad \alpha_A(X_3)=\frac{|\underline{A}X_3|}{|\overline{A}X_3|}=\frac{4}{4} \qquad \alpha_A(X_1)=\frac{|\underline{A}X_1|}{|\overline{A}X_1|}=\frac{7}{7} \qquad \alpha_A(X_3)=\frac{|\underline{A}X_3|}{|\overline{A}X_3|}=\frac{4}{4}$$

Table 8: Inseparability matrix

u	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X 11	X 12	X 13	X 14
X 1														
X 2	λ													
X 3	λ	λ												
X 4	λ	λ	λ											
X 5	λ	λ	λ	λ										
X 6	λ	λ	λ	λ	λ									
X 7	λ	λ	λ	λ	λ	λ								
X 8	a1,a2, a3,a4	a1,a2, a3	a1,a2	a2,a3, a4	a2,a3	a2,a3, a4	a1,a2, a4							
X 9	a1,a2, a3,a4	a1,a3	a1	a1,a2	a2,a3, a4	a2,a3	a1,a4	λ						
X 10	a1,a2, a4	a1,a2	a1,a2, a3	a3,a4	a3	a3,a4	a1,a2, a3,a4	λ	λ					
X 11	a1,a3, a4	a1,a2, a3,a4	a1,a2, a3,a4	a1,a3	a1,a2, a3,a4	a1,a2, a3,a4	a1,a2, a3,a4	a1,a2, a3,a4	a1,a2, a3,a4	a1,a2, a3,a4				
X 12	a1,a2, a3,a4	a1,a2, a3	a1,a2, a3	a1,a2, a3	a1,a2, a3	a1,a2, a3,a4	a1,a2, a3,a4	a1,a2, a3	a1,a2, a3	a1,a2, a3	λ			
X 13	a1,a2, a3,a4	a1,a2, a3	a1,a2, a3	a1,a2, a3,a4	a1,a2, a3	a1,a2, a3,a4	a1,a2, a3,a4	a1,a3	a1,a2, a3	a1,a3	λ	λ		
X 14	a1,a2, a3,a4	a1,a2, a3,a4	a1,a2, a3,a4	a2,a3	a2,a3, a4	a2,a3, a4	a1,a2, a3,a4	a2,a3, a4	a2,a3, a4	a2,a3, a4	λ	λ	λ	

Conclusion

1- According to the AX1 collection we can conclude that the mentioned respondents in this collection are sure that organizational learning in their organization is at low level and the organizational learning criterions are also at low level. Also according to AX1 collection we can say that among mentioned

2- According to the AX2 collection we can conclude that the mentioned respondents in this collection are sure that organizational learning in their organization is at middle level and the organizational learning criterions are also at middle level. Also according to AX2 collection we can say that among mentioned respondents in this collection there are individuals who declare their organization learning possibility is at middle level and the criterions or organizational learning are also at middle level.
3- According to the AX3 collection we can conclude that the mentioned respondents in this collection are sure that organizational learning in their organization is at high level and the organizational learning criterions are also at high level. Also according to AX3 collection we can say that among mentioned respondents in this collection there are individuals who declare their organization learning possibility is at high level and the criterions or organizational learning are also at high level.
4-regulation, if –then or decision making implications

Table 9: Decision making regulation

IF a_1=1,a_2=1,a_3=1,a_4=1 THEN Result=1
IF a_1=1,a_2=1,a_3=1,a_4=1 THEN Result=1
IF a_1=1,a_2=1,a_3=1,a_4=2 THEN Result=1
IF a_1=1,a_2=1,a_3=2,a_4=2 THEN Result=1
IF a_1=2,a_2=1,a_3=1,a_4=3 THEN Result=1
IF a_1=2,a_2=1,a_3=1,a_4=2 THEN Result=1
IF a_1=2,a_2=1,a_3=1,a_4=1 THEN Result=1
IF a_1=1,a_2=1,a_3=2,a_4=1 THEN Result=1
IF a_1=2,a_2=2,a_3=2,a_4=2 THEN Result=2
IF a_1=2,a_2=2,a_3=2,a_4=2 THEN Result=2
IF a_1=2,a_2=1,a_3=2,a_4=2 THEN Result=2
IF a_1=2,a_2=2,a_3=1,a_4=2 THEN Result=2
IF a_1=3,a_2=3,a_3=3,a_4=3 THEN Result=3
IF a_1=3,a_2=3,a_3=3,a_4=2 THEN Result=3
IF a_1=3,a_2=2,a_3=3,a_4=2 THEN Result=3
IF a_1=2,a_2=3,a_3=3,a_4=3 THEN Result=3

5-according to data reduction and also the reduction table we can present a description from D=1 by application of a2=1 that is called value reducing element. IF a_2=1 THEN Result=1
Therefore if organizational learning criterions are at low level, then the organizational leanings are at low level in organization. By the use of similar deduction we can summarize 16 above regulation as below:
IF a_1=2, a_4=2 THEN Result=2
IF a_3=3 THEN Result=3

REFERENCES

Benet Alex and Benet David (2008). The partnership between organizational learning based on knowledge management 2.
Hongmingxie Chanyungliu and Chunhui Chen (2007). Relationships among market orientation, learning orientation, organizational innovation and organizational performance: An empirical study in the pearl River Delta region of China.
Loutanz Fred (1996). *Organizational Behavior*, translated by Sarmad Qholamalie, Iran Islamic banking organization, Tehran 436.
Makurat Mikel (2006). *Making Learner Organization*, translated by Mohamd Reza Zali, Tehran University, center of entrepreneurship 10.
Olivier Serrate (2009). *A Primer on Organizational Learning, Knowledge Solutions* **69**.
Soubhaninejad Yuz, Bashi Shateri and Ali Reza Karim (2011). *Organizational Citizenship Behavior*, theoretical basis and assessment tools (Bisotun publication).

Stonehouse Georg and Pemberton Jonathan (1999). Learning and –knowledge management in the intelligent organization. *Participation & Empowerment: An International Journal* **7**(5) 132.
Templeton Cary F, Lewisbrucer R and Sunder Charles A (2002). Development of an Organization Learning constructs. *Journal of Management Information Systems* **19**(2) 175.
Tousi (2006). Familiarity with learner organizations. *Tadbir Magazine*, Tehran **173** 73.