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Studying Organizational Learning Status Using Rough Sets Theory (RST)(Case Study:Shahre- babak Banks employees)

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ABSTRACT

This study was conducted to assess the organizational learning of employees. The statistical population included Shahre- babak banks' employees of 200 subjects and sample size was considered 97 cases using Morgan table. Study tools included two demographic and organizational learning questionnaires, gomezh et al, (2005). Reliability of questionnaires was determined using Cronbach's alpha coefficient (0.86). Rough set theory was used in order to reduce the features, data and conclusion. Decision table was formed after determining the maximum and minimum ratings of respondents and decision variable, then Decision table was standardized and later the compatible and incompatible cases were identified and reduced table was established. Results indicated that: if respondents rate low to management commitment component of organizational learning, their organizational learning level will be low. If respondents rate middle to knowledge transfer and integration and system perspective components, their organizational learning level will be middle. If respondents rate high to open space and experiment components, heir organizational learning level will be high.

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INTRODUCTION

In today's competitive environment, organizations' need to assets such as knowledge, learning, effective communication, willingness to change is highly significant. In other words, organizations must continually expand, increase learning and develop communication in order to meet competitive conditions. Otherwise, they will suffer of entropy.

In economic instability, most of organizations struggle to preserve and maintain their competitive position. In this context, organizational learning is a strategic tool for long-term organizational success recording. Despite the current instable environment, organizations must maintain learning in order to maintain their competitive environment. Similarly, organizational learning evolves based on systematic knowledge. In other words, organizations can benefit from the organizational learning capabilities that are the base of personal learning [16].

Learning is the start of needs to evolve and get better and the more developed human knowledge and science, the need to evolve and learn will be more. Alvin Toffler says: "illiterate is not one that cannot read and write, in the third millennium, but one is who cannot learn or who forget the learned and re-learn the lessons" [18]. Therefore, study clearly effects on the human behavior in organization [8]. Organizational learning is a competitive advantage for organizations. Increasing changes in science, technology and environment and its complexity that effects on organizations any time, specifies paying attention to organizational learning and improving techniques and skills of employees more and explains necessity of using past experiences in the light of looking ahead [9].

Literature:
Learning:

John Lowe and Etienne Wenger believe that learning is essentially a social process which cannot be separated from its esoteric meaning. They developed term "community of practice" in 1991 based on work on

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learning theory in the late 1980s and early 1990s. Learning is closely related to individuals. Social learning occurs when people with common interests cooperate over a specified time to exchange ideas, find solutions and innovations based on ability and not the class. Two researchers argue that "community of practice" can be anywhere; in general we have the same type of cooperation in several societies, in business community, school and home or even in civic activities and spare time. Naturally, "community of practice" features are different. But they can be defined in three dimensions:

1. What is the subject (domain)?
2. What is the function (community)?
3. What capabilities are produced (action)?

Learning capacity of organizations:

John Redding has identified three aspects to be considered when creating the learning capacity of the organization:

• Learning Speed
• Learning Depth
• Range of learning

Learning speed refers to the speed of organization to complete each learning cycle (planning, implementation and reflection) and completing the logical repeats of cycle.

Learning depth refers to the learning rate that organization will gain at the end of each cycle and it is done through questioning on organizations' assumptions and improvement in the future learn ability.

Range of learning is the extent to which organization will transfer insights and new knowledge that have been obtained through reasonable iteration of learning cycle to other categories and other parts of the organization [15].

Organizational Learning:

The organizational learning start is due to the cumulative development of different management theories like Adam Smith, Taylor, learning curve and etc. The organizational learning concept dates to 1990 when Taylor raised transfer of learning to other employees issue in order to increase efficiency and improve organization. But Richard Cyert and James March were the first ones who connected two words of learning and organization in 1963 and introduced learning as an organizational phenomenon in literature [17].

Organizations are constantly faced with changes in twenty-first century. The key point for their effective competition in competitive markets is how to learn and produce new knowledge. Survival and growth of organizations in the current changing world requires the ability to respond timely and appropriately to consecutive changes in environment. The organizations can predict timely necessities and environmental changes and continue their survival in constantly changing environments that focus and emphasize on organizational learning. Learning requires that individuals apply the knowledge that they gain at organization in their behavior. Learning has three stages: cognition (learning new concepts), behavior (developing new skills and abilities) and practice (doing the work, actually). According to Garvin, organization needs five skills in order to use new ideas to improve organizational performance, and converting them into practical application including problem solving, experience gaining, learning from their experience and history, learning from others and transfer or implementation. Individual learning term apparently refers to individual learning in organization but organizational learning refers more to group learning or organizational level learning. Individual learning takes place through research, interview, cognition, experience, training, and development of effective mental models in mind, but organizational learning occurs when the group learns to interact, share knowledge and act collectively so that the combined capacity of the Group is increased and they obtain the ability to understand and take effective action [1].

Argyrisand Schon introduced for the first time radial learning concept in 1978, they argued that radial learning is a process through which organizations discover and correct their mistakes. In addition, the concept of organizational learning is very similar to the concept of radial learning [5].

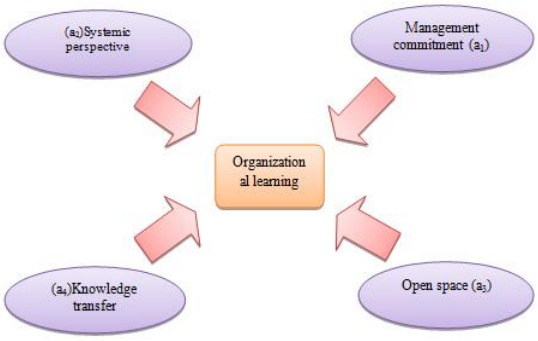
Radial learning is defined broadly as the development of new knowledge or insights that have potential effects on behaviors through values and beliefs. The radial learning is associated to the development of new knowledge in organization [7].

Research questions:

Main research question: Which level is organizational learning among employees of Shahr-e Babak banks at?

Sub-question 1: "Management commitmentfororganizational learning" ofShahr-e Babakbanksis at high level.
Sub-question 2: Which level is "system perspective" in Shahr-e Babakbanks at?
Sub-question 3: Which level is "Open Space andexperimentation" in Shahr-e Babakbanks at?
Subquestion4: Which level is "Knowledge transfer andintegration" in Shahr-e Babakbanks at?

Research conceptual model:



Methods:

The study type and method is descriptive- survey according to the research subject, questionsand hypotheses. In this study, two types of decision and conditional variables have been considered. In Rough, conditional variables are based onorganizational learning dimensions including management commitment, system perspective, open space and knowledge transfer anddecisionvariable ofShahr-e Babakbanks isorganizational learning. The statistical population of this study is 200 experts with Bachelor degree andsample size is 97 subjectsaccording tokrejcie andMorganTables. Data collection tool of this study is organizational learning questionnaire"Gomezhet.al." including 16questions that measure management commitment, system perspective, open space and experimentation and knowledge transfer and integration components. Cronbach's alphais used to determinevalidity of questionnaire that is 0.86. Its validity is confirmed by experts (face validity).

Data analysis:

Rough sets theory is used in this study in order to extract logical rules for understanding organizational learning status of Shahr-e Babak banks. Since 16 items measure organizational learning and value is based on five-item Likert spectrum, so the minimum rating of respondent is min= 16 and maximum received rating of respondent is max= 80.

On this basis:

If the respondent score is 16 to 37, organizational learning is at low level: $16 \leq X \leq 37$
If the respondent score is 38 to 59, organizational learning is at middle level: $38 \leq X \leq 59$
If the respondent score is 60 to 80, organizational learning is at high level: $60 \leq X \leq 80$

On the other hand, four dimensions of organizational learning have minimum and maximum scores according to the questions of component in the following table

Table 1: Organizational learning components' rating in Decision table.

Row	components in Decision table	Organizational Learning and Dimensions	Max. score	Min. score	Number of items
1	a_1	Management commitmentfororganizationallearning	25	5	5
2	a_2	System perspective	15	3	3
3	a_3	Open spaceandexperimentation	20	4	4
4	a_4	Knowledge transfer andintegration	20	4	4

According toTable 1,therange oforganizational learningdimensions can be mentioned 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}

On the other hand, the management commitment component has a rating of 5- 25, system perspective has a rating of 3- 15, open space and experimentation components have a rating of 4- 20 and knowledge transfer and integration components have a rating of 4- 20 for organizational learning.
In thenext step, numbers arereplaced with codes in thecolumnsa1, a2, a3, a4 (location features) andcolumnd (decision feature) and are standardized. Thus, codes1, 2, and 3 indicatelow, intermediate and highlevels of variable in Table 4, respectively.

Table 2: Standardization of organizational learning dimensions.

Standard code	Top and bottom boundary	Each dimension value	organizational learning dimensions	Component code
1	X≤11≤5	X≤25≤5	Management commitmentfororganizationallearning	a_1
2	X≤18≤12			
3	X≤25≤19			
1	X≤7≤3	X≤15≤3	System perspective	a_2
2	X≤11≤8			
3	X≤15≤12			
1	X≤9≤4	X≤20≤4	Open spaceandexperimentation	a_3
2	X≤15≤10			
3	X≤20≤16			
1	X≤9≤4	X≤20≤4	Knowledge transfer andintegration	a_4
2	X≤15≤10			
3	X≤20≤16			
1	X≤37≤16	X≤80≤16	organizational learning	d
2	X≤59≤38			
3	X≤80≤60			

At this stage, Decision table is standardized andrevised according toTable(2).

Table 3: Information/decision-making table.

	u	a_1 Management commitment	a_2 Systemic perspective	a_3 Open space	a_4 Knowledge transfer and integration	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	3
X14	u77	1	2	2	1	1	7
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	3
X20	u97	2	3	3	3	3	4

At later stages,compatibleand incompatibletables arecreated according toTable 3.

Where:

$(x|y)\ \epsilon IND(A) \equiv \forall a\epsilon A\ (a(x) = a(y))$

$J(x) = \{d(y)|y\epsilon U\&(x|y)\ \epsilon IND(A)$

Definition: $g: Sub(V) \rightarrow [0,1]$ function is sugeno sized functions if below terms are true:

1) $g(v_1) = 0\ \ g(v_2) = 1$

2) $V_1, V_2 \subseteq V\ \ V_1 \subseteq V_2 \Rightarrow g(v_1) \leq g(v_2)$

3) For anyinfiniteascending or descendingsequenceofV subsets,

$\lim_{i\to\infty} g(V_i) = g(\lim_{i\to\infty} V_i)$

It is obvious that if $< V_i >_{i=1}^{n}$ is an infiniteascending or descendingsequenceofV subsets, then term 3 will be as below:

For ascending sequence of $3') \cup_i^n g(V_i) = g(\cup_{i=1}^n V_i)$

For descendingsequence of $3'') \cap_{i=1}^n g(V_i) = g(\cap_{i=1}^n V_i)$

Definition2: Belieffunction(Bel):sugenosized functionthat istruein term(4) isabelief function.

4) Foreveryfinite sequence $< V_i >_{i=1}^{k}$ of V subsets, the following equation is satisfied:

$$Bel\left(\bigcup_{i=1}^{k} V_i\right) \geq \sum_{i=1}^{k} Bel(V_i) - \sum_{1\leq i\langle j\leq k} Bel(v_i \cap v_j) + \ldots + (-1)^{k+1} Bel(v_1 \cap \ldots \cap v_k)$$

Table 4: Information/ decision-making table

Row	u	A				d		N1	{ . }	N2
		a_1	a_2	a_3	a_4					
x1	U1	1	1	1	1	1	{ 1 }	8	-	-
x2	U2	2	2	2	2		{ 2 }	5	-	-
x3	U3	1	2	1	2		{ 1,2 }	3	{ 1 }	1
x4	U4	1	1	1	2	1	{ 1 }	5	-	-
x5	U5	1	1	2	2	1	{ 1 }	2	-	-
x6	U6	1	2	2	1		{ 1,3 }	7	-	-
x7	U7	1	1	2	1	1	{ 1 }	5	-	-
x8	U8	1	2	1	1	2	{ 2 }	5	-	-
x9	U9	2	1	1	1		{ 1,3 }	3	{ 3 }	4
x10	U10	2	1	1	2	1	{ 1 }	5	-	-
x11	U11	2	1	2	2	2	{ 2 }	4	-	-
x12	U12	2	2	1	2		{1,2}	3	{ 2 }	7
x13	U13	2	3	3	3	3	{ 3 }	4	-	-
x14	U14	3	2	3	2	3	{ 3 }	6	-	-
x15	U15	3	2	3	3	3	{ 3 }	4	-	-

Definition 3:

Final plausibility function(Pl):sugenosized functionthat istruein equation(4') isafinal plausibility function.

4')Foreveryfinite sequence $< V_i >_{i=1}^{k}$ of V subsets, the following equation is satisfied

$$Pl\left(\bigcup_{i=1}^{k} v_i\right) \leq \sum_{i=1}^{k} Pl(V_i) - \sum_{1\leq i\langle j\leq k} Pl(v_i \cup v_j) + \ldots + (-1)^{k+1} Pl(v_1 \cup \ldots \cup v_k)$$

As can be seen (see Table 3)

$$U = \{x_1, x_2, \ldots, x_{20}\}$$

$$V_{a_1} = \{1,2,3\} = V_{a_2} = V_{a_3} = V_{a_4} = V_d$$

Also based on Table3, we adjust agreement tables and conditional probabilities as follows:

Table 5: (A)$a_1$and dagreement table.

d / a_1	d			sum
	1	2	3	
1	31	11	0	42
2	11	19	11	41
3	0	0	14	14
sum	42	30	25	97

(B)$a_2$and dagreement table

d / a_2	1	2	3	sum
1	28	4	7	34
2	14	26	10	50
3	0	0	8	8
sum	42	30	25	97

(c)$a_3$and dagreement table.

d / a_3	1	2	3	sum
1	28	18	7	53
2	14	12	0	26
3	0	0	18	18
sum	42	30	25	97

(D)$a_4$and dagreement table.

d / a_4	1	2	3	sum
1	23	8	7	38
2	19	22	6	47
3	0	0	12	12
sum	42	30	25	97

Properties Probability distributions can be obtaine dsimply, and then, posterior conditional probabilities can be obtained for each decision variable of d provided, assuming independence of features from each other, that amountsof features are known.

Here for posteriorprobability ($d = d_i$) provided that $(a_1 = V_1) \cap (a_2 = V_2) \dots \cap (a_k = V_k)$ it will be totally as below:

$$p_r[(d=d_i)|(a_1=v_1)\wedge(a_2=v_2)\wedge\dots\wedge(a_k=v_k)] = \frac{p_r(d=d_i)\times p_r[(a_1=v_1)\wedge(a_2=v_2)\wedge\dots\wedge(a_k=v_k)|(d=d_i)]}{p_r[(a_1=v_1)\wedge(a_2=v_2)\wedge\dots\wedge(a_k=v_k)]}$$

$$= \frac{p_r(d=d_i)\times \prod_{j=1}^{k} p_r[(a_j=v_j)|(d=d_i)]}{\prod_{j=1}^{k} p_r(a_j=v_j)}$$

In the case of research problem, it is calculated and adjusted as below using tables (4), (5):

Table 6: probability setting table for features and conditional probabilities of these features given the decision characteristics.

sum	3	2	1	a1,a2,…,a6
1	$^{14}/_{97}$	$^{41}/_{97}$	$^{42}/_{97}$	$p_r(a_1)$
	$^{8}/_{97}$	$^{50}/_{97}$	$^{39}/_{97}$	$p_r(a_2)$
	$^{18}/_{97}$	$^{26}/_{97}$	$^{53}/_{97}$	$p_r(a_3)$
	$^{12}/_{97}$	$^{47}/_{97}$	$^{38}/_{97}$	$p_r(a_4)$
	0	$^{11}/_{97}$	$^{31}/_{97}$	$p_r(a_1\|d_1)$
	0	$^{19}/_{30}$	$^{11}/_{30}$	$p_r(a_2\|d_1)$
	$^{14}/_{25}$	$^{11}/_{25}$	0	$p_r(a_3\|d_1)$
	0	$^{14}/_{42}$	$^{28}/_{42}$	$p_r(a_4\|d_1)$
	0	$^{26}/_{30}$	$^{4}/_{30}$	$p_r(a_1\|d_2)$
	$^{8}/_{25}$	$^{10}/_{25}$	$^{7}/_{25}$	$p_r(a_2\|d_2)$
	0	$^{14}/_{42}$	$^{28}/_{42}$	$p_r(a_3\|d_2)$
	0	$^{12}/_{30}$	$^{18}/_{30}$	$p_r(a_4\|d_2)$
	$^{18}/_{25}$	0	$^{7}/_{25}$	$p_r(a_1\|d_3)$
	0	$^{19}/_{42}$	$^{23}/_{42}$	$p_r(a_2\|d_3)$
	0	$^{22}/_{30}$	$^{8}/_{30}$	$p_r(a_3\|d_3)$
	$^{12}/_{25}$	$^{6}/_{25}$	$^{7}/_{25}$	$p_r(a_4\|d_3)$
1	$^{25}/_{97}$	$^{30}/_{97}$	$^{42}/_{97}$	$p_r(d)$

Forexample, for decision making rules of(i)and (ii)

$(i)(a_1 = 2) \wedge (a_2 = 2) \wedge (a_3 = 1) \wedge (a_4 = 2) \Rightarrow d = 1$

$(ii)(a_1 = 2) \wedge (a_2 = 2) \wedge (a_3 = 1) \wedge (a_4 = 2) \Rightarrow d = 2$

Posteriorprobabilityvaluesarecalculatedas follows:

$$(i)p_r[(d=1)|(a_1=2)\wedge(a_2=2)\wedge(a_3=1)\wedge(a_4=2)] =$$

$$= \frac{p_r(d=1).p_r[(a_1=2)\wedge(a_2=2)\wedge(a_3=1)\wedge(a_4=2)|(d=1)]}{p_r[(a_1=2)\wedge(a_2=2)\wedge(a_3=1)\wedge(a_4=2)]}$$

$$= \frac{42}{97}\times\frac{11}{42}\times\frac{14}{42}\times\frac{28}{42}\times\frac{19}{42}/\frac{41}{97}\times\frac{50}{97}\times\frac{53}{97}\times\frac{47}{97}$$

$$= \frac{42\times 11\times 14\times 28\times 14\times 97^4}{97\times 42^4\times 41\times 50\times 53\times 47}$$

In the same way, Pinprobability value is obtained for thenext rule:

Table7: incompatible(similar) components in DecisionTable

u	a_1=management commitment	a_2=systemic perspective	a_3=open space	a_4=transfer and integration	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 8: compatiblecomponents in DecisionTable.

u	a_1=management commitment	a_2=systemic perspective	a_3=open space	a_4=transfer and integration	d=organizational learning
u**1**	1	1	1	1	1
U2	2	2	2	2	2
U3	1	1	1	1	1
U**4**	1	1	1	2	1
U**5**	1	1	2	2	1
U**6**	2	1	1	3	1
U**7**	2	1	1	2	1
U**8**	3	3	3	3	3
U**9**	2	2	2	2	2
U**10**	2	1	2	2	2
U**11**	3	3	3	2	3
U**12**	2	1	1	1	1
U**13**	1	1	2	1	1
U**14**	3	2	3	2	3
U**15**	2	2	1	2	2
U**16**	2	3	3	3	3

We consider rules that are consistent in Decision Tables. For this reason, we exclude the components of Table4 and then consider16respondents of Table5 which have been classifiedin the table belowin terms of organizational learning.

Table 9: Sorted compatible table.

u	a_1	a_2	a_3	a_4	d
U1	1	1	1	1	1
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	2	1	1	1	1
U8	1	1	2	1	1
U9	2	2	2	2	2
U10	2	2	2	2	2
U11	2	1	2	2	2
U12	2	2	1	2	2
U13	3	3	3	3	3
U14	3	3	3	2	3
U15	3	2	3	2	3
U16	2	3	3	3	3

Minimal sets of features:

Since the Decision variable (d) has three status (low, medium and high), therefore, minimum sets can be created based on Table (6) so that respondents who rated 1 score for decision variable are grouped in one set, respondents who rated 2 score for organizational learning are grouped in one set and respondents who rated 3 score for decision variable are grouped in one set, three created sets are called equivalence classes of decision.

$$X_1 = \{u \in U | d = 1\} = \{u1, u4, u14, u23, u25, u38, u75, u82\}$$

$$X_2 = \{u \in U | d = 2\} = \{u2, u60, u64, u90\}$$

$$X_3 = \{u \in U | d = 3\} = \{u58, u66, u86, u97\}$$

we obtain Lower and upper approximations based on three sets ofX_1, X_2, X_3. We should consider that A is defined as below set:

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

Table 10: approximation of three sets of X_1, X_2, X_3.

X_1 set	X_2 set	X_3set
$[u1]_A = [u4]_A = \{u1, u4\}$	$[u2]_A = [u60]_A = \{u2, u60\}$	$[u58]_A = \{u58\}$
$[u14]_A = \{u14\}$	$[u64]_A = [u64]_A$	$[u66]_A = \{u66\}$
$[u23]_A = \{u23\}$	$[u90]_A = \{u90\}$	$[u86]_A = \{u86\}$
$[u25]_A = \{u25\}$		$[u97]_A = \{u97\}$
$[u38]_A = \{u38\}$		
$[u75]_A = \{u75\}$		
$[u82]_A = \{u82\}$		

$$\underline{A}X_1 = \{u \in U | [u]_A \subseteq X_1\ \}$$
$$\underline{A}X_1 = \{u1, u14, u23, u25, u38, u75, u82\}$$
$$\underline{A}X_2 = \{u \in U | [u]_A \subseteq X_2\ \}$$
$$\underline{A}X_2 = \{u2, u64, u90\}$$
$$\underline{A}X_3 = \{u \in U | [u]_A \subseteq X_3\ \}$$
$$\underline{A}X_3 = \{u58, u66, u86, u97\}$$
$$\overline{A}X_1 = \{u \in U | [u]_A \cap X_1 \neq \phi\}$$
$$\overline{A}X_1 = \{u1, u4, u14, u23, u25, u38, u75, u82\}$$
$$\overline{A}X_2 = \{u \in U | [u]_A \cap X_2 \neq \phi\}$$
$$\overline{A}X_2 = \{u2, u60, u64, u90\}$$
$$\overline{A}X_3 = \{u \in U | [u]_A \cap X_3 \neq \phi\}$$
$$\overline{A}X_3 = \{u58, u66, u86, u97\}$$

The precision ofRoughsetcan bedeterminedbythe followingterm:

$$\alpha_A(X) = \frac{|\underline{A}X|}{|\overline{A}X|} \qquad \alpha_A(X_2) = \frac{|\underline{A}X_2|}{|\overline{A}X_2|} = \frac{3}{4}$$

$$\alpha_A(X_1) = \frac{|\underline{A}X_1|}{|\overline{A}X_1|} = \frac{7}{8} \qquad \alpha_A(X_3) = \frac{|\underline{A}X_3|}{|\overline{A}X_3|} = \frac{4}{4}$$

Table 11: reduction table.

u	u1	u4	u14	u23	u25	u38	u75	u82	u2	u60	u64	u90	u58	u66	u86	u97
u1		λ	a4	a3,a4	a3,a4	a1,a4	a1	a4	a1,a2, a3,a4	a1,a2, a3,a4	a1,a3, a4	a1,a2, a4	a1,a2, a3,a4	a1,a2,a3 ,a4	a1,a2, a3,a4	a1,a2, a3,a4
u4	λ		a4	a3,a4	a1,a4	a1,a4	a1	a3	a1,a2, a3,a4	a1,a2, a3,a4	a1,a3, a4	a1,a2, a4	a1,a2, a3,a4	a1,a2,a3 ,a4	a1,a2, a3,a4	a1,a2, a3,a4
u14	a4	a4		a3,a4	a1,a4	a1	a1,a4	a3,a4	a3,a4	a1,a2, a3	a1,a3	a1,a2	a1,a2, a3,a4	a1,a2,a3	a1,a2, a3	a1,a2, a3,a4
u23	a3,a4	a3,a4	a3		a1,a3,a4	a1,a3	a1,a3, a4	a4	a1,a2	a1,a2	a1	a1,a2, a3	a1,a2, a3,a4	a1,a2,a3	a1,a2, a3	a1,a2, a3,a4
u25	a1,a4	a1,a4	a2	a1,a4		a4	a4	a1,a3, a4	a2,a3, a4	a2,a3, a4	a2,a3, a4	a2,a4	a1,a2, a3	a1,a2,a3 ,a4	a1,a2, a3,a4	a2,a3
u38	a1,a4	a1,a4	a1	a1,a3	a4		a4	a1,a2, a3	a2,a3	a2,a3	a3	a2	a1,a2, a3,a4	a1,a2,a3	a1,a2, a3	a2,a3, a4
u75	a1	a1	a1,a4	a1,a3, a4	a4	a4		a1,a3	a2,a3, a4	a2,a3, a4	a3,a4	a2,a4	a1,a2, a3,a4	a1,a2,a3 ,a4	a1,a2, a3,a4	a2,a3, a4
u82	a3	a3	a3,a4	a4	a1,a3,a4	a1,a3,a4	a1,a3		a1,a2, a3	a1,a2, a4	a1,a4	a1,a2, a3,a4	a1,a2, a3,a4	a1,a2,a3 ,a4	a1,a2, a3,a4	a1,a2, a3,a4
u2	a1,a2, a3,a4	a1,a2, a3,a4	a1,a2,a3	a1,a2	a2,a3,a4	a2,a3	a2,a3, a4	a1,a2, a4		λ	a2	a3	a1,a2, a3,a4	a1,a2,a3	a1,a3	a2,a3, a4
u60	a1,a2, a3,a4	a1,a2, a3,a4	a1,a2,a3	a1,a2	a2,a3,a4	a2,a3	a2,a3, a4	a1,a2, a4	a1		a2	a3	a1,a2, a3,a4	a1,a2,a3	a1,a3	a2,a3, a4
u64	a1,a3, a4	a1,a3, a4	a2,a3,a4, a5	a1,a3	a3,a4	a3	a3,a4	a1,a4	a2	a2		a2,a3	a1,a2, a3,a4	a1,a2,a3	a1,a2, a3	a2,a3, a4
u90	a1,a2, a4	a1,a2, a4	a1,a2	a1,a2, a4	a2	a2	a2,a4	a1,a2, a3,a4	a1	a3	a2,a3		a1,a2, a3,a4	a1,a2,a3	a1,a3	a2,a3, a4
u58	a1,a2, a3,a4	a1,a2, a3,a4	a1,a2,a3, a4	a1,a2, a3,a4	a1,a2,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	a1,a2, a3,a4		a4	a2,a4	a1
u66	a1,a2, a3,a4	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	a1,2,a3	a1,a2, a3	a1,a2, a3	a1,a2, a3	a4		a2	a1,a4
u86	a1,a2, a3,a4	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,a3	a1,a2, a3	a1,a3	a2,a4	a2		a1,a2, a4
u97	a1,a2, a3,a4	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	a2,a3, a4	a1	a1,a4	a1,a2, a4	

4. According to if rules -then we can say that:

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

There will a description of d = 1 by lonely constraint a2 = 1 according to data reduction and reduction table that is called value reducer.

IF a_2=1 THEN Result=1

Therefore, if organizational learning components are in low level, therefore organizational learning will be at low level, too. 16 listed rules above can be summarized using similar reasoning as follow:

IF a_1=2, a_4=2 THEN Result=2

IF a_3=3 THEN Result=3

Conclusions:

1. According to $\underline{AX}_1$ set we can conclude that the respondents listed in this category are sure that the organizational learning is at low level in their organization and therefore organizational learning components are at low level in their organization. Also, according to $\underline{AX}_1$ set we can express that there are individuals among the respondents listed in this category who argue that organizational learning is probably at the low level in their organization and organizational learning components are likely at low and middle levels.

2**.** According to $\underline{AX}_2$ set we can conclude that the respondents listed in this category are sure that the organizational learning is at middle level in their organization and therefore organizational learning components are at middle level. Also, according to $\overline{AX}_2$ set we can express that there are individuals who argue that organizational learning is probably at the middle level in their organization and organizational learning components are likely at middle level.

3. According to $\underline{AX}_3$ set we can conclude that the respondents listed in this category are sure that the organizational learning system is at high level in their organization and therefore organizational learning components are at high level. On the other hand, according to $\overline{AX}_3$ set we can express that there are individuals among respondents listed in this set who argue that organizational learning is probably at the high level in their organization and organizational learning components are likely at high level.

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