Investigating the Impact of Organizational Learning Capability on Organizational Intelligence in Knowledge Based Organizations

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***Abstract*- The aim of this research is to explain the scientific foundations and offer practical solutions for University of Tabriz intelligence based on organizational learning capability. The research is applied in terms of purpose and descriptive in terms of data collection and analysis. The data was collected by using a standard questionnaire. The statistical population consists of scientific members of University of Tabriz in four knowledge groups; where 235 individuals were selected as statistical sample by using Cochran formula in confidence level of 95% and finally 210 questionnaires were selected for final analysis by simple random and cluster sampling method. The results of structural equations modeling showed that organizational learning capability by recognition coefficient of 32% is the predictor of organizational intelligence. Also, the results of Pearson correlation showed that while there is a positive and significant relationship among learning capability variable dimensions with organizational intelligence, the construct of "open space and experimentalism" with correlation coefficient of 0.49 has the highest effect on improvement of organizational intelligence.**

Keywords: Organizational learning capability, organizational intelligence, knowledge based organization.

I. INTRODUCTION

In this era of knowledge; organizations have begun to join the knowledge trend and the words including arm force work, worker, industrial economic and traditional organizations are being replaced with new concepts including "knowledge work", "knowledge", "knowledge economy" and "knowledge organizations". Drucker stated on the new organization by application of these words where the power of mind governs on affairs instead of arm force. According to this theory, in the future those organizations will be expected to develop that have more share of knowledge not more share of natural resources [9]. In knowledge economy, the intellectual property particularly human capital is considered as the most important organizational asset and the organizations potential success is rooted in their intellectual capabilities Knowledge always depends on humans as knowledge producer, so for establishing knowledge based organizations and use of knowledge, it is necessary to pay more attention to production and usage of resources, humans and their mental capabilities. Drucker believes that a man equipped with knowledge is considered as a determinant key of organizational efficiency [2].

In knowledge based organizations, knowledge is an important capital of the organization and their success depends on ability to create, react, employ and transfer knowledge [18]. Hence, knowledge based organizations shall manage their knowledge resources and intellectual capabilities in an efficient way in order to use opportunities in the current dynamic environment. Studies have shown that most researchers have investigated the effect of organizational intelligence on other organizational variables and they have less considered the effective factors on shaping an intelligent organization particularly knowledge based intelligent organizations [1,7]. The shortcomings of the former resources and importance of this subject in the knowledge based organization necessitated to bridge the gap in theoretical foundations.

Universities as knowledge based organizations play an important role in expansion of knowledge with rapid and intricate shifts in technology and science and encounter with government policies and ever increasing competitive environment. Therefore, the aim of this research is explain the theoretical foundation and offer applied solution for establishing University of Tabriz as an intelligent organization

based on organizational learning capability. The following questions have been proposed:

- Do organizational learning capabilities play a role in explaining organizational intelligence changes?
- How is the state of organizational learning capabilities structured in explaining of organizational intelligence?

II. RESEARCH BACKGROUND

A. Knowledge based organization

Knowledge based organizations are organizations that have knowledge capital as their main asset. Universities, software firms and space industries are examples of the knowledge based organizations. A real knowledge based organization is learning organization; since significant part of created value by these organizations is result of optimal learning of the individuals' recognition of problems and then collaboration with customers in order to improve the conditions [4,5].

B. Organizational

Organizational intelligence means knowledge and skills of synergistic combination of tangible and intangible assets available for decision making within the organization in order to achieve organizational goals [10]. Organizational intelligence is not sum of individual's intelligence, but it is the outcome of the individual's intelligence in the organization [3,8,6]. According to Albrecht an intelligent organization is composed of seven dimensions as [1]:

- **Strategic Vision**: The ability of an organization to create, develop and articulate the goals and vision of the organization. The default is that the leaders while expressing of concept of success, represent it. -**Shared fate**: with a sense of common goal, individuals understand success and they are able to act in synergy to achieve the vision of the organization.
- **Appetite for change**: change is sign of challenges and new experiences and exciting for the individuals and acts the chance to start a new business. The appetite for change must be coordinated with a strategic perspective.
- **Heart**: a sense of pride in the organization and follow up job with passion, optimism and belief as characteristics that affect organizational intelligence. Much love to work in the said organizations, the employees are eager to work more than expectations [11,15].
- **Alignment and congruence**: In the intelligent organizations, the structure and codes and regulations are aligned with development of team learning and participation of the staff and finally, creation of value and substantiating of organizations mission.
- **Knowledge deployment**: it represents the culture and atmosphere of the organization to use resources and information. If an organization fails to use the correct knowledge in proper place it will not achieve competitive advantage.
- **Performance pressure:** in an intelligent organization, each individual is accountable for their performance. When people from the organizations are expected for doing their part to meet the mission and thus owning up to the mission of the organization forms responsibility taking [1].

According to Albrecht, these indices are considered as benchmarks that if an organization achieves them it can be identified as an intelligent organization. Albrecht intelligent model according to concentration of the knowledge based organizations and the role and place of knowledge and standards of intelligent measures and the expert viewpoints were considered as model for measuring of organizational intelligent in University of Tabriz [1, 13,23].

D. Organizational learning capability

Organizational learning has been defined as management and organizational factors and features that facilitate organizational learning and learning possibility [8, 24].In following, four abilities of organizational learning of Gomez et al., have been explained [20]: (a) the management must provide a solid foundation to facilitate organizational learning. (b) It is necessary to have a collective intelligence for systematizing of the organization and shared vision among employees in the organization. (c) Organization needs to develop organizational knowledge for transfer and integration of knowledge acquired by the individuals (d) simple compatibility with changes in the environment in order to offer competitive advantage is not sufficient but it is necessary to go beyond confirmatory learning and achieve creative learning that requires open mindedness and experientialism behavior [9]. Four organizational learning capabilities based on Gomez et al. have been briefly explained below:

1. **Management commitment**: creating organizational learning capacity is primarily based on management's strong commitment to learning. Management commitment

facilitates the development and supports management commitment to the process of innovation, leadership and motivation of employees.

2. **System perspective:** system perspective requires a common identity for all members of the organization. In other words, learning capability that is based on collective intelligence aids the organization to be considered as a system and each member should collaborate for fulfillment of these goals.
3. **Openness and experimentation**: Productive learning requires openness and experimentation for new ideas and outside the organization, open space and experimentation make personal knowledge helps it to be constantly updated, expanded and improved. Such, search for new and flexible solutions for current and future issues based on the use of different methods and procedures are supported.
4. **Knowledge transfer and integration:** Process of transferring and local integrating knowledge through oral communication and nonverbal (formal and informal communication and information systems) related communications occur simultaneously and aids to reproduce capability and make available that as useful information [6].

Previous studies have attempted to explore the effective factors of organizational intelligence. In foreign studies' field, Lee et al., in this study the impact of the perceived organizational learning ability on user acceptance of information technology among operating room nurse staff in Taiwan, showed that the perceived organizational learning ability indirectly affects user behavioral intention through the mediation of performance expectancy, effort expectancy, and social influence [13]. This research recognized the relationship between organizational learning ability and utilizing the ERP system, Nowankpa and Romani found that the organizational learning ability had positive impact on the users' satisfaction as the commitment of the management influenced this positive impact on users' satisfaction and application of ERP. And also, the users' satisfaction further influenced the implementation of the ERP system.

Through, the internal studying field, Tabarsa and Nazarpouri, in exploring the impact of intellectual capitals on organizational sagacity, showed structural capitals with 0.46 impact factor included greater impact on structural sagacity and humanistic capital with 0.51 coefficient determination including the most important effective index [22, 24].

E. Development of conceptual framework

Matsuda divides organizational intelligence as a process into five components: organizational memory, organizational knowledge, organizational learning, organizational communication and organizational inference [10,17]. Allameh and Moghadami also argue that in organizational learning, learning processes are manipulated in order to improve knowledge and understanding of individual and organizational learning requirements and set of characteristics in the learning processes and provide implementation of the learning processes [2].In the internal study conducted in Iran, the role of learning ability, as the intelligent event especially in the knowledge-based organizations, has not been attended by the researchers. In this study by focusing on a systematic approach, based on Matsuda organizational intelligence process, organizational learning capability is considered as an intelligent process as a research gap and the following hypotheses are proposed:

The main hypothesis

H1: Organizational learning capability has a positive impact on organizational intelligence.

Secondary hypotheses

H2: Management commitment has a positive impact on organizational intelligence.

H3: Systems perspective has a positive impact on organizational intelligence.

H4: Openness and experimentation have a positive impact on organizational intelligence.

H5: Knowledge transfer and integration have a positive impact on organizational intelligence [12,18].

F. Research conceptual framework

Figure 1. Research conceptual model

III. RESEARCH METHODOLOGY

This research is applied in terms of purpose and it is descriptive and correlative in terms of data collection. The research method is a survey with the major advantages of the ability to generalize the results. The

population consisted of faculty members of the University of Tabriz in four knowledge areas: humanities science, engineering, agriculture and veterinary science that using Cochran formula, at 95% confidence level, a sample size with 235 individuals was determined by stratified random sampling method and finally 210 questionnaires were analyzed relative to each class. Detailed information on the population and the sample is presented in Table I. Data was collected for this study by using Albrecht organizational intelligence questionnaire consists of 49 items and Gomez et al. organizational learning capability questionnaire consists of 16 questions with Likert five grades scale [1]. To determine the validity of the data collection tools, in addition verification from the experts, indices factor analysis, validity of the questionnaire was confirmed. The results of Cronbach's alpha coefficient for the organizational intelligence questionnaire 0.80 and for organizational learning questionnaire 0.93 were obtained respectively. For analysis of the data, confirmatory factor analysis and structural equation modeling were performed by using AMOS software [14,21].

TABLE I
DETAILED STATISTICAL POPULATION AND SIZE INFORMATION

Knowledge scopes	Faculty member number	Sample size	Male	Female
Humanities	175	69	51	12
Technical and Engineering	137	52	42	6
Agriculture	139	53	41	4
Basic sciences	153	61	40	14
Total	604	235	174	36
			210	

IV. FINDINGS

A. Confirmatory factor analysis models

After collection of data to determine acceptability of the parameters measured (observed variables) to measure the implicit variables, at first, all explicit variables related to implicit variables are separately tested. Distinction exists between the two groups of explicit and implicit variables in structural equation modeling. Hidden variable is the variable that comes from the obvious variables. Due to the conceptual model, this study has obvious 11 variables that measure organizational learning and organizational intelligence [16,25]. Variables of strategic vision, shared fate, appetite for change, heart, alignment and congruence knowledge deployment, performance pressure, management commitment, system perspective, openness and experimentation and knowledge transfer and integration were considered as explicit variables (measurement patterns). Outputs of factor X and Y are shown in Tables III and IV. Outputs of Table III are shown in the form of two sets of equations including measurement equations of factor model X and measurement equations of the factor model Y that show the correlation between the observed variables (indicators) and its related factors; implicit components. As shown in Table II the variable of heart has factor value less than 0.29 was removed from the equation due to having value less than 0.3.

TABLE II
RESULTS OF FACTOR ANALYSIS

Implicit variable	Explicit variable	Alpha coefficient	Standard values	Coefficient of determination
Organizational intelligence	Strategic vision	0.8	0.76	57%
	Shared fate		0.32	10%
	Appetite for change		0.35	12%
	Heart		0.29	8%
	Alignment and congruence		0.53	28%
	Knowledge deployment		0.58	33%
	Performance pressure		0.49	24%
Organizational learning capability	Management commitment	0/93	0.8	64%
	Systems perspective		0.83	68%
	Openness and experimentation		0.91	82%
	Knowledge transfer		0.83	68%

B. Evaluation of confirmatory factor models fitting

For confirmatory factor models fitting the fitting criteria of structural equation modeling were used. Fitting measures indicate whether the model represented by data confirms the research measuring model or not? The overall fitting indices to measure models are shown in Table III. It should be noted that the value of chi-square (CMIN) is smaller, the model is compiled by the researcher is satisfactory; if the P-value is larger than 0.05 depicts that the CMIN is acceptable for the model. Since the P-value measured for all models (observed variables) is larger than 0.05, so it can be concluded that the value of chi-square (CMIN) is appropriate for measuring models.

TABLE III
RESULTS OF CONFIRMATORY FACTOR MODELS FITTING

Fitting indices	Acronyms	Accepted value	Calculated value		Result
			Factor model X	Factor model Y	
X2	X2/df	1< X2/df< 3	1.6	1.1	Confirmed
P value	P-value	P > 0.05	0.2	0.32	Confirmed
Goodness fitting index	GFI	٪90 < GFI	0.99	0.98	Confirmed
Confirmatory fitting index	CFI	٪90 < CFI	0.99	0.99	Confirmed

RMSEA	RMSEA	%8 > RMSEA	0.05	0.02	Confirmed

Another valid indices used for the fitting of the model is GFI. GFI is closer to 1 depicts better fitness of the data model. RMSEA is another index of fitness model that is 0.08 or less in the acceptable models, fitness of the models with values higher than 0.1 is considered weak. As shown in Table III the value of this index is less than 0.08 for measuring model that shows a good fit of the data models. It can be concluded that measuring models have good fitting and they could measure implicit variables well.

C. Hypotheses test

Structural equation modeling was used to test the research hypotheses. The results of path analysis between the constructs in the structural model are modified by removing the variable of heart is shown in Figure 2.

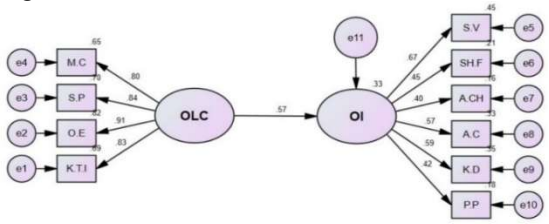

Figure 2.Output conceptual model

D. Assessment of the model overall fitting

Based on theoretical and empirical background each model encounters with the question of to what extent the complied model is in compliance with reality? Indeed, the question is to what extent data supports the theoretical model that has been developed? This key question is subject of fitness. Table IV shows the characteristics of the conceptual model.

TABLE IV
MODEL FITTING

RMSEA	IFI	CFI	GFI	CMIN/DF	P	CIMN	DF
0.07	0.94	0.94	0.93	2.22	0.000	75.65	34

One of the reliable indices used for model fitness is X2/DF that is calculated by simple division of the K square on the model degree of freedom and mostly values between1 to 3 are acceptable. CFI is also based on the correlation between the variables in the model so that the correlation coefficients between them lead to high levels of the comparative fitting index. Values close to 1 for this index are acceptable. According to above information it is concluded that the results indicate a good fitness of the conceptual model with the data. For significance test of the hypotheses, two critical values of CR and P were used. Based on the significance level of the critical values that must be greater than 1.96, the values are less than this value therefore it is not considered important, as well as smaller values of 0.05 for P values indicate significant differences in the calculated value of the regression weights zero in level of 0.95. Considering the results of the model analysis, the hypotheses have been analyzed and the results are presented in Table V.

TABLE V
HYPOTHESES AND REGRESSION COEFFICIENT AND DETAIL INDICES VALUES

Hypothesis	Regression coefficient	Coefficient of determination	Critical value	P	Result
H1: organizational learning capability Organizational intelligence	0.57	0.32	6.15	0.000	Confirmed

This first hypothesis (H1) depicting the impact of organizational learning capabilities on organizational intelligence with standard coefficient of 0.57 and a significant level of 0.000 and critical value of 6.15 (higher than 1.96) is confirmed. Also, P value of this hypothesis is zero and less than 0.01 indicates confirmation of this hypothesis, so by confidence of 99%; so it can be said that organizational learning capabilities have effect on organizational intelligence [19]. To test secondary hypotheses, Pearson's correlation coefficient was used. The results of the Pearson correlation coefficient between independent variables Management Commitment (MC), system perspective (SP), Openness and experimentation (OE), knowledge transfer and integration of (KTI) and the dependent variable of organizational intelligence (OI) are shown in the Table VI.

TABLE VI
RESEARCH VARIABLES CORRELATION COEFFICIENTS AND SECONDARY HYPOTHESES RESULTS

Secondary hypotheses	Coefficient	Sig	Results
H2: M.C ➔ OI	0.45	0.000	Confirmed
H3: S.P ➔ OI	0.48	0.000	Confirmed
H4: OE ➔ OI	0.49	0.000	Confirmed
H5: K.T.I ➔ OI	0.42	0.000	Confirmed

All variables related to organizational learning capability have a 99% significant correlation with organizational intelligence. Increase the level of organizational learning capability, the organization will be more intelligent [22].

V. CONCLUSION AND DISCUSSION

The results of the X factor analysis model shows that the effective index on the variable of organizational learning capability is openness and experimentation with the determination rate of 82%. This implies the acceptance of new ideas from employees within the organization and need to revise and update the

knowledge and institutional environment for effective management of knowledge in the organizations. According to the Y factor model it is determined that all organizational intelligence variables except variable heart had role in measuring of organizational intelligence. Low value of variable heart depicts insignificant role of heart in explaining the variance of organizational intelligence variable. The results can be sought in reduction of the members' life quality, lack of intimate atmosphere and progress opportunities and managers vision toward work and commitment behavior of the manger in University of Tabriz.

The results further show that the most important variable affecting the organizational intelligence variable is index of "Strategic vision" with coefficient of determination of 57%. This testifies the importance of familiarity of the human resources with strategic programs and their participation in decisions related to their functional areas.The analysis of the structural model results indicates that organizational learning capability by a standards coefficient of 0.57 and significant coefficient of 6.15 has a significant positive impact on organizational intelligence. Figure 2 depicts the structural model modified by deleting the variable heart due to low value. In answer to the first research question, the results are based on 32% of the variation explained by organizational intelligence, organizational learning capability, that confirms the hypothesis, it means that the ability of organizational learning can improve organizational intelligence.

The results of this study are based on the potential impact of organizational learning on organizational intelligence at the University of Tabriz and they are consistent with the results of previous studies. Relying on the results obtained it can be argued that planning to improve organizational learning capabilities strengthens organizational intelligence.

To answer the second research question regarding the status of organizational learning capability variable in explaining organizational intelligence, all secondary research hypotheses were confirmed, the commitment of the management variable with a correlation coefficient 0.45, system perspective with a correlation coefficient 0.48, openness and experimentation with a correlation coefficient 0.49, knowledge transfer and integration with a correlation coefficient 0.42 have a significant correlation with organizational intelligence variable.

The research findings show that the Tabriz University can improve its intelligence, that (a) motivate the managers commitment to organizational learning with awareness and recognition of the role and importance of learning in organizational intelligence, (b) members of the organization have a shared fate and a shared vision together and joint actions and relationships based on the exchange of information and improve shared mental models, (c) by making room for new ideas and perspectives help to improve the knowledge of members, (d) improve distribution and dissemination of knowledge through formal and informal communication and interaction between the members and the renewal and production of new knowledge.

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