

## **Extracting and Validating Change Components at Universities with a Mixed – Methods Approach**

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### **Abstract**

**Objective:** The main aim of this study was to extract and validate the change components at Universities.

**Method:** The research method was sequential exploratory mixed methods design with instrument development type. In the qualitative phase, qualitative case study was used and the targeted phenomenon (change) was deeply investigated based on studying the documents and resources by document mining method. Data gathering was done until the data was theoretically saturated. In order to evaluate the qualitative data, theme analysis as well as Nvivo software were used. The results revealed the existence of five organizing themes with regard to change at the university. Finally, the theme network of knowing change components at universities was designed and it was validated through reliability and credibility using the data triangulation. In the quantitative phase, the research method was descriptive -survey. The participants included all managers of Shiraz University (138 people). Using Morgan table, 103 were chosen by simple random sampling method, among whom 98 people completely answered the questionnaires. The research instrument included the change evaluation scale at universities which was designed based on the theme network of knowing the change components at universities in qualitative part and distributed and gathered after calculating its validity and reliability.

**Results:** The findings of qualitative phase revealed that the component of the change at the investigated university were environmental, structural, human resources, symbolic, and political. Also, according to the findings of quantitative phase, a significant difference was seen between the mean of the mentioned component and according to Shiraz University's managers, environmental and structural factors are primarily considered.

**Conclusion:** Application of change at universities is a managerial proceeding, to do which, orientations, policies and actions should be considered according to the complex and variable situation of interactive environment at the university and the internal requirements.

**Keywords:** Knowing the change components, Change evaluation, University

## Introduction

The attention to the change at universities and higher education institutes as a challenging issue is in fact common. The reason is that universities and higher education institutes face new technologies, research areas and other improvements in the society, forcing them to change continuously (Buller, 2015). Therefore, to fulfill their development goals, achieve the competitive benefits and improve their services quality, they have to change and manage it appropriately (Else, 2004).

Change refers to transferring the current situation to the optimum one (Aarabi, 2010), which can happen at different organizational levels, such as epistemic, attitude, behavioral or personal, group, organizational or a combination of them (Heresi & Blanchard, 2010). According to Elain (2000), scientific independence of academic personnel, interior issues and problems (curriculum issues), leadership style used at the university and the decision types are among the effective components reinforcing the necessity of change at universities. According to a group research report, some managerial proceedings such as employees' engagement in change plans (Holt, 2003) and people empowerment (Spreitzer, Gretchen, & Doneson, 2005) affect the success of organizational change plans. Caldwell et al. (2009) believe that there is a relationship between leadership behaviors and the quality or the method of applying changes in an organization. As Self et al. (2008) argue, there is a relationship between leaders' support, leader-follower's interactions and perceived organizational support by people and organizational change. Despite the necessity of applying change to universities, based on the reports, they intentionally and unanimously refuse change or may not be aware what the dominant change component at universities is, while the success of change depends on recognition of different change components and also careful planning by dominant aspect or change components suitable with their importance at the university.

Thus, according to the arguments described above, it can be stated that in the revolutionized current situation, to keep up with the continuous changes, universities need to benefit from a suitable, logical and systematic framework to develop and evaluate change there; using these, universities can assess their change process more successfully. Despite this, lack of comprehensive and local change patterns, especially university change patterns, has led to the fact that the university members and the beneficiaries face resistance toward advancement or acceptance of change and the chance of success for universities decreases. Therefore, in this study, it was attempted to apply a mixed-methods approach at universities, so that a comprehensive approach concerning the change at universities is achieved and also the notion of change at Shiraz University is assessed using change evaluation scale (designed based on qualitative findings); by doing this, university change managers and curriculum planners can be assisted to recognize the dominant change component at their university and also design and implement change consciously.

## Literature review

Organizational change has been defined in many ways. This variety is due to experts' approach and attitude to this phenomenon. As an example, Nickols (2010) regards change as the transference of something from one place to another place or from problem-rising situation to problem-solving situation. Abbas and Asghar (2010) see change as a kind of revolution, revolutionizing or changing something to something better or more different by adding values in other things. Creasy (2007) argued that change acts as an opportunity, challenge or event that can pave the way towards dynamism and stability. All in all, it can be said that change is a consecutive continuous action and an open and unpredictable process which aligns the organizational forces to apply environmental changes and success.

Concerning organizational change, many researches have been done dealing with aspects, elements and components affecting change, some of which will be discussed later here. As some research shows, people's attitude towards change influences their behavior quality in supporting or

not supporting change (Bouckenooghe, 2010; Choi & Ruona, 2011). Nilakant and Ramnarayan (2006) believe that organizational commitment is one of the most effective components in organizational change. Some also found that organizational justice has a direct and positive effect on the employees' tendency to change in the organization (Yadegar & Seif, 2014).

In this regard, Smith (2005) stated that committed employees have a high level of energy and determination to accompany change and are dedicated in this process. Moreover, Ha (2014) pointed out the importance of people's role, organizational culture, innovation, strategy, and organizational structure in the change implementation quality. D'Ortenzio (2012) claimed that if appropriate criteria are not considered or the reasons for change are not fully explained and change is not managed efficiently, the organization will end up with an unsuitable consequence. Kezar (2013) argued that social, economic, and political factors, exterior beneficiaries and organizational cultures are considered as the factors contributing to change which universities and higher education institutes should consider. However, he states that these factors are highly dynamic and developed and interwoven layers of change can influence their quality.

According to Kenny's research report (2006), to gain competitive benefits over other competitors, organizations need effective changes and efficient change management. Organizational culture and structure are mentioned as important elements in this regard. Nasiri and Shaygani (2016) also stated in their research that organizations can expand their supervision over the environment by increasing innovation, developing interior culture, changing structures and the preparation to change. Al-Haddad (2014) stated that employees should have a golden opportunity to engage in organizational change. Furst and Cable (2006) argued that there is a relationship between managers' support, leader-followers interaction, perceived organizational support by people with organizational change. In their research, Seyyedi, Shahidi and Shole (2014) found that there is a relationship between change management and organizational culture.

According to Smith (2002), supporting change, considering employees' needs, and benefitting from strong sources to allocate the change process are among the effective factors in change quality. The results of the studies conducted in Iran show that in organizations in which change occur continuously, prediction of psychological reactions of people towards change in management process has a key role (Mortazavi, 2007). According to Khachian et al. (2012), people's intentional engagement in organizational change leads to higher self-confidence among organization members and is also a sign of respect and decreases their resistance to change. Zahedi's and Mortazavi's research findings (2010) also showed that members' engagement in change is considered a key variable in increasing the change possibility. Therefore, in organizations where engagement and freedom of action are emphasized, the conditions are more available for more effective changes. Ardalan, Ghanbari and Zandi (2015) found that there is a positive significant relationship between transformational leadership and employees' engagement with preparation to change.

## **Method**

Concerning the objective, the current research is developmental and the method was exploratory sequential with instrument development type done in three steps, that is qualitative, instrument development and quantitative, respectively (Creswell, 2014). This study is developmental, in that its findings can provide a functional framework to develop change in organizations. It is sequential as qualitative data were gathered first, followed by quantitative data. It is exploratory sequential with instrument development type, because the research objective was to investigate a new phenomenon and also it was chosen as the instrument development model as it was not designed \ a comprehensive tool to evaluate the change development at universities. Therefore, qualitative data were primarily

gathered and analyzed and finally, quantitative data were gathered and analyzed based on the qualitative phase. The way to conduct the study is mentioned in figure 1.

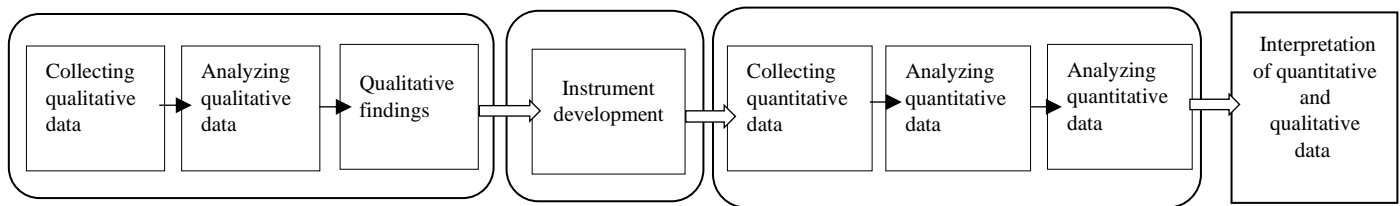


Fig 1. The process of sequential exploratory mixed methods study (Creswell, 2014).

### • Qualitative phase

As acquiring a deep understanding of change in organizations was meant in this study, the research method in this phase was qualitative case study. Qualitative case study is a kind of research strategy in which the researcher studies deeply a phenomenon and tries to understand it using different sources such as documents, interview etc. (Danaeifard, Alvani, & Azar, 2013; Hooman, 2010). The tool used to collect the qualitative data was all kinds of sources, including references, journals, and relevant theories to change field in the organizations by document mining method.

To assess the accuracy of the findings of this phase, their reliability and authenticity should be examined. Credibility is one of the important factors in the reliability of these findings. Credibility means that people should recognize the logicity and appropriacy of the findings in social aspects studied (at the university). In this study, by data triangulation, the coordination between theoretical and research records in the relevant field with the studied category in the qualitative phase was investigated. It is to be noted that to investigate the credibility of qualitative findings, dependability was used. Dependability shows the accuracy, stability and coordination of the findings (Hooman, 2010: 62, 65). Moreover, using thematic analysis in this study, after obtaining basic, organizing and comprehensive themes related to change, it was attempted to discover a framework related to change development at the university.

It is to be mentioned that theme analysis is a method to recognize, analyze and report the current patterns in the qualitative data. So, theme network acts like a website showing the organizer and the display method. Theme network organizes the basic themes (codes and key points of the text), organizer themes (themes achieved from combining and summary of the basic themes) and comprehensive themes (perfect themes containing the dominant principles in text) using a specific trend; so, these themes are depicted using the web schemes and the highlighted themes of each of these three levels are shown as well as their relationships.

Accordingly, as the aim of this phase of the study was to find a framework to develop the change at the university, contains an interwoven, multilateral and multilayered entity, using the Attride – Stirling's thematic analysis network (2001), it was attempted to design a new tool to assess the current change situation at the university. Also, knowing the change components in research domain in the quantitative phase, their reliability and validity were also calculated.

### • Quantitative phase

As in this phase of the study, the current change situation was dealt with, the research method in this study was a descriptive survey. The participants included all managers of Shiraz University (138 people). Using Morgan table, 103 were chosen by a simple random sampling method, among whom 98 people completely answered the questionnaires. ANOVA with repeated measure and Bonferroni post hoc test were used to analyze the information and the Freedman test was applied to compare the average ranking of change components. The research instrument was the change assessment questionnaire at universities and higher education institutes. The five-level Likert scale was used in the questionnaire, ranging from very much to very little. The validity and reliability of the scale were

calculated using the item analysis method (correlation coefficient among the items and the total score) and Alpha Cronbach. According to table 1, the questionnaire had a high level of validity and reliability.

Table 1. Validity and reliability of the universities change questionnaire

	Structural level	Human resource level	Political level	Symbolic level	Environmental level
Correlation coefficient	0.53- 0.81	0.75-0.88	0.78—0.87	0.78-0.86	0.69-0.86
Significance level	0.0001	0.0001	0.0001	0.0001	0.0001
Alpha Cronbach	0.85	0.87	0.91	0.86	0.80

Moreover, in order to investigate the relationship between each aspect of the organizational change at the university with the total score, mixed-method approach was used. The result of the analysis shows that each organizational change component of the university has a high explanatory power to change the university (Figure 2).

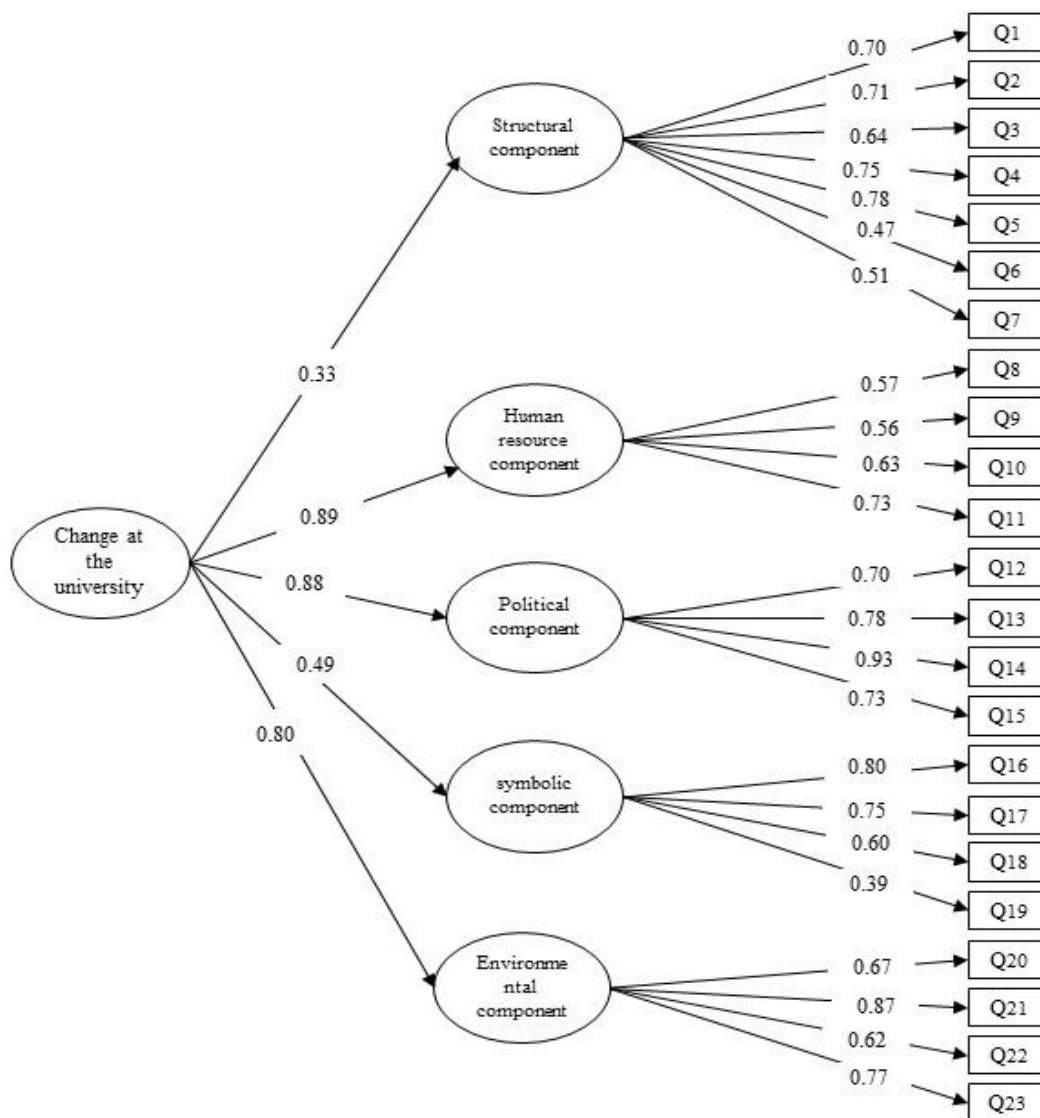


Fig 2. First order and second order confirmatory factor analysis at Universities

## The findings of the qualitative phase

### • What are the change components at universities?

To draw the theme network of change at universities, Attraide-Stirling's theme network framework (2001) was used, the results of which are mentioned in each component. According to Attraide-Stirling (2001), the detailed text of references and upstream document changed to software language; after frequently reading, the texts should turn into short and significant pieces in basic codes and then, all similar significant codes should be classified under one basic theme. This level should be frequently studied and investigated so that the error rate decreases and the achieved codes are classified just under a few significant themes.

After this stage, which is also called the summarization of the detailed texts, discovery of theme network seems plausible. In this level, by mixing the similar basic themes under the organizing themes and then putting the organizers under the main or comprehensive theme, network and network discovery will be possible to make. In this level, the theme network should be frequently studied and if possible, it should be modified and reconstructed before network discovery. Finally, after confirming the discovered themes, the themes should be described and analyzed and the relationship between the achieved themes should be dealt with. In the following, basic and organizing themes of change at universities (Table 2) is depicted as well as the change themes network at universities in Table 3.

Table 2. Basic and organizing themes achieved with regard to change at universities based on literature review

Organizing themes	Basic themes	The collected data
Structural component	Change mechanisms and plans	- Planning quality - Decision-making pattern - Change mechanisms and plans
	Control and supervision process	- Support (psychological dimension of the change) - Supervisors' support - Control and supervision process
	Changing trends and processes	- Routine processes of doing things - Changing trends and processes
	- Leadership style	- Management style - Leadership (leader's ability in diagnosis – strategic orientation – leader's ability in adaptability – leader's ability in communication with the environment – leader's ability in managing an interactive environment – leader's personal features (having a systematic attitude; creative and entrepreneurial mind, modest and self-conscious, motivated and having a positive attitude towards change, highly determined to change)
	Organization's vision and aims	- Organization's aims - Setting the vision
	Type of organizational structure	- Organizational structure (flexible and supportive structures)
	Quality of strategy in the organization	- Strategy
	Type of technology in the organization	- Technology (equipment, information technology, job analysis, structure of job

		processes, technical expertise, technical processes)
Organization's mission	-	Organization's mission
Quality of administrative processes	-	Administrative processes and policies Quality of administrative systems

Some of the mentioned references are as follow: Boknov and Deuce (2009); Jones et al. (2005); Barn et al. (2004); Tayzni (1999); Hirold et al. (2008); Block (2000); Leonard (2000); Lendi and Kante (2004); Kelvin Hard (1994); Gun (2008); Poray et al. (1999); Borke and Warner (1994); Ahanchi (2013); Torkzade et al. (2014); Anderson and Karden (1999); Robins and Karden (1999); Robins and Judge (2009); Eline (2000); Holt et al. (2007); Holt (2003); Lahm et al. (2002); Smith (2003); Spritzer et al. (2005); Hirold et al. (2008) etc.

Table 2. Basic and organizing themes achieved with regard to change at universities based on literature review

Organizing themes	Basic themes	The collected data
Human resource component	Organization's tendency to change	- Organization's tendency to change - Chief manager's attitude to change
	Readiness of Chief managers to change	- Tolerance of lack of trust - Readiness of higher managers to change - Organization's readiness to change
	Members' role	- People's role in processes
	Members' trust	- Members' trust to each other (psychological change component) - Members' support from each other
	Personality features	- People's feeling towards the organization - People's feeling towards others - Self-esteem - Motivation of change in people - Tolerance of lack of support - Members' attitude to change - Members' needs - Personal values - Members expectations
	Members readiness to change	- Members readiness for change (cognitive, emotional, intentional)
	Change-related skill	- Quality of members' knowledge
	Change-related knowledge	- Quality of members' skill
	Members' intelligence	- Members' intelligence
	Political component	political behaviors
Intrapersonal solidarity		Members' solidarity
Intergroup and interpersonal conflicts		Coalitions
		Obvious conflicts
Interaction patterns		- Interaction patterns with supervisors and counterparts - Interaction patterns - Political relationships
Symbolic component	Creating a participatory atmosphere	- Participation to do the tasks perfectly - Creating a supportive and participatory condition
	Organizational culture	- Organizational culture (values, beliefs, common feelings, main hypothesis)
	Value structure of the organization	- Value structure of the organization
	Organizational atmosphere	- Organizational atmosphere

Environmental component	Physical environment	<ul style="list-style-type: none"> <li>- The quality of configuration of organizational aspect</li> <li>- The condition of interior design of the organization</li> <li>- Type of architecture</li> </ul>
	Interior environment	<ul style="list-style-type: none"> <li>- Work atmosphere</li> </ul>
	Interactive environment	<ul style="list-style-type: none"> <li>- Influence of elements of political and economic environment; national culture; local culture</li> <li>- Environmental stability</li> <li>- Job security</li> <li>- Personality of key representatives</li> </ul>

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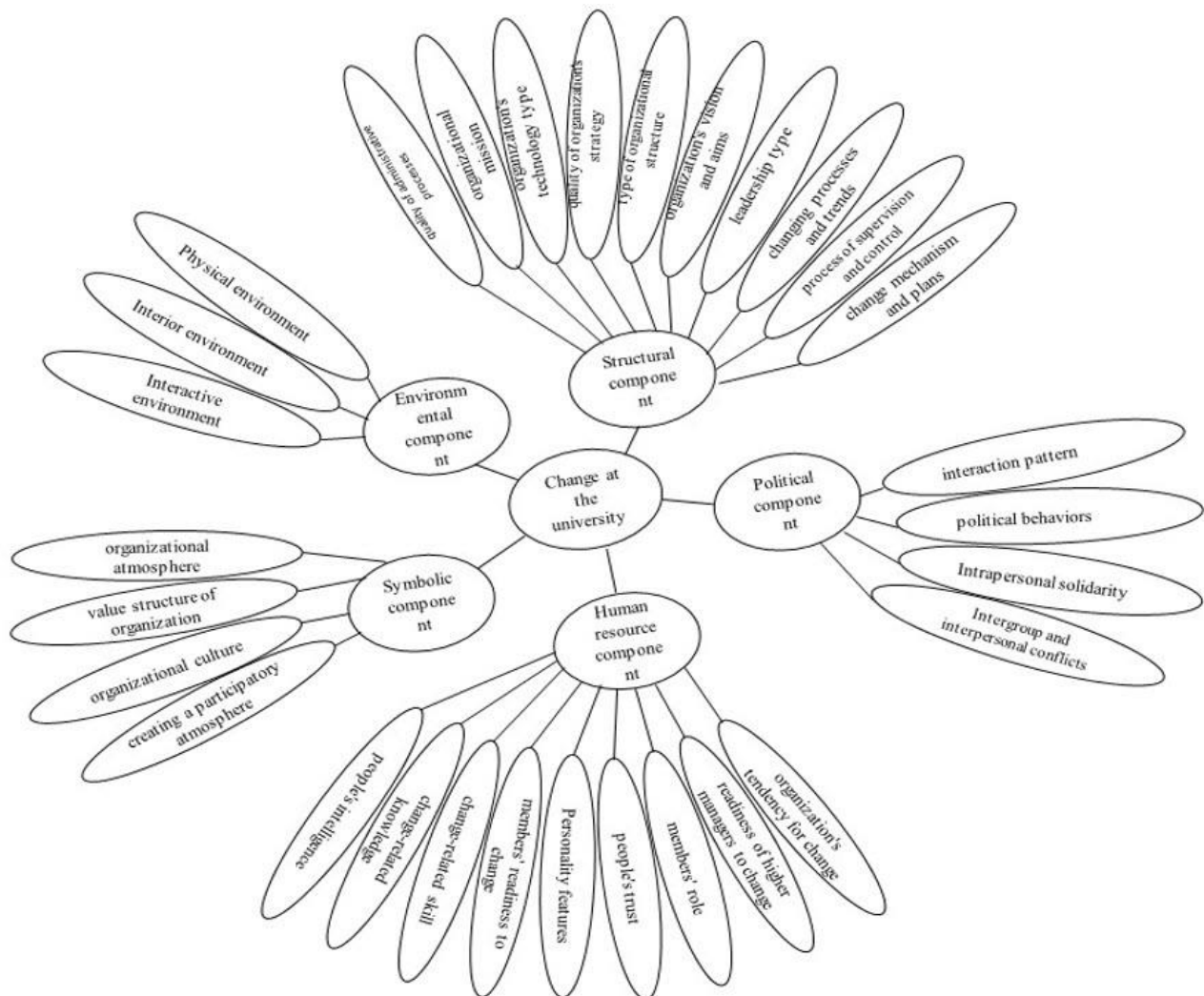


Figure 3. Themes network (Change at the University)



Table 3. The ANOVA with repeated measure of change component at the university

Change components	Mean	Standard deviation	F	Degree of freedom	Significance level
Structural component	2.92	0.76	4.54	(97 and 3.35)	0.0003
Human resource component	2.86	0.86			
Political component	2.70	0.95			
Symbolic component	2.62	0.79			
Environmental component	2.59	0.84			

Due to the significance of the difference between the means of change components at the university, Bonferroni post hoc test was used to compare the change components at the university in pair and the result show that while there was a significant difference between the mean of environmental component and political and symbolic component, no significant difference was observed between other component. Therefore, to compare the ranking of the means, Freedman test was applied. According to Table 4, environmental component had the highest ranking (3.42) and symbolic had the lowest ranking (2.54) and according to the obtained chi (28.33), there was a significant difference between the ranking of change components at 0.0001.

Table 4. Prioritization of change components at the university according to Freedman test

Change components	Mean	Chi square	Degree of freedom	Significance level
Structural component	3.42	28.33	4	0.0001
Human resource component	3.40			
Political component	3.01			
Symbolic component	2.63			
Environmental component	2.54			

## Discussion and Conclusion

The attention to change at universities and higher education institutes as a challenging issue is not at all strange. The reason is that universities and higher education institutes face new technologies, everyday competition among learners, change of population patterns of university entrants, and research areas and other improvements in a society, forcing them to change continuously (Mohtaram & Razi, 2019). This has made all the members conclude that change is inevitable; however, they unanimously found out that change application in current situation requires the use of instruments and frameworks which lead them in the change process. Thus, in this study, it was attempted to obtain change by editing and validation of change assessment scale at universities and higher education institutes.

The results of this study show that structural component is one of the most explanatory change components at universities and higher education institutes. Organizational structure depicts the path that organizational activities are divided, organized and controlled. Therefore, during the change process, it is determined how the employees should interact and play a role in change process (Hoy & Miskel, 2013; Ghasemi, 2003; Lines & Selart, 2013). So, attention to it and especially determining its type is important due to determination of the change process occurrence.

Human resource component was another change component at universities and higher education institutes. Taking this component into consideration in the change process means that a significant phase of successful changes at universities depends on the quality human resources quality and their

behavior and attitude towards change. In this regard, some researchers claimed that employees' creativity and innovation, their adaptability and compatibility, their ability in creating a relationship with others and their effectiveness, members' professional development and their tendency to improve are some factors affecting the quality of change performance which should be taken into consideration (Holt et al. 2007; Lehman, Greener & Simpson, 2002; Ghasemi, 2003).

Apart from what was mentioned, political and symbolic components are some other explanatory change components at universities and higher education institutes, which can influence the change process. This means that while the amount and quality of coalitions and environmental conflicts and people correlation is important in performing the change quality during the change process at universities, the type of culture and organizational memory can provide the context to implement change more effectively; so, it is worth a special attention. In this regard, some researchers claimed that if there is no coordination between team norms with new plans, by choosing elite people and redesign the current teams, change managers and authorities should form teams which are in line with their goals and help them in the change process. Moreover, by changing the values, symbols and patterns and improving the organizational memory, the required conditions for change should be provided (Cameron & Green, 2009).

The final change component at the university is environmental change. Environmental factors and the necessity of adaptability and compatibility is one of the main challenges of change managers and authorities which affect the change quality in an organization and its management (Nordin, 2014). By dividing the environmental elements into two sections, that is exterior and interior motives, they claimed that in many cases, organizational changes are considered as the direct output of the out-of-the-organization change, including political, technological, cultural, populational, economic and expectational factors. In return, they maintain that in most cases, changes occur as a result of the pressure of an organization's internal factors such as the organizational atmosphere quality and the dominant culture of the organization (Ghasemi, 2003; Najafbeigi, 2009).

In addition to the mentioned findings, after designing and validating change instruments at universities, the change components at Shiraz University was dealt with. The findings revealed that the dominant change component at the studied university was environmental, structural, human resources, symbolic and political components respectively and there was a significant difference between the mean of these components.

This finding means that according to Shiraz University's managers, environmental and structural factors are primarily considered. In explaining the current finding, it can be said that continuous and mutual interaction of university and the environment and the direct and indirect effect of environment on the university are among the importance reasons of environmental factor. Thus, as university is considered as an open social system and is in contact with the environment, identification of changes and environmental requirements and the adaptability and compatibility of processes and internal activities with environmental expectations are some ways to secure success. In this regard, Richards, O'Shea and Connolly (2004) believe that success of systems in changeable environmental situations and reconceptualization of technical, cultural, structural and social processes of the organization is in line with environmental changes. Therefore, lack of ability to respond properly to environmental changes can gradually threaten the existence of an organization in a competitive environment (Mohtaram, 2016). According to this, achieving such a result does not seem impossible.

Also, according to the findings, structural component is the second factor to which change managers and authorities can pay attention in the change process. The necessity of cooperation between university activities and guidelines and evolutions inside and outside the university is one probable factor of importance of this component. In other words, according to the respondents of this study, evolutions inside the university is successful when the environment is considered and also

interior requirements and conditions inside and outside the university, including the organizational structure and its type, plans and managerial proceedings, provide the context for change. In this regard, D'Ortenzio (2012) claimed that type of structure and official designs are among the factors that help organizations change in line with their environmental and internal changes. So, it can be said that unless the structure of an organization and the relationship between the components and elements change, the implementation will fail; therefore, they have to be taken into consideration.

Also, the other finding of the study showed that to change at the university, managers should pay attention to human resource component. According to some researchers, employees play a key role in facilitation, functionality and management of effective changes in the organization which directly influences change process. Therefore, in the change application process, the key role of every member must be considered; it is also important to bear in mind that the least amount of resistance from people can act as a failure factor in trying to change successfully (Clarke & Braun, 2013). Therefore, the university must endeavor to increase the level of knowledge and skills of people and provide a coordination in their abilities and competencies with the change aims and vision. In this way, people's resistance to change can be minimized (Al-Haddad, 2014; Mohtaram, 2016; Cameron & Green, 2009).

Political and symbolic components are also to be considered. The mentioned components, however, are not as high priority as the previous ones. In other words, in the change process at the university, although it might be said that the amount and quality of coalitions and environmental conflicts and people correlation might be important in performing the change quality during the change process at universities or the type of culture and organizational memory might provide the background to implement change more effectively, according to the sample managers, these components might not be taken into account like environmental, structural and human resource components. However, the effect of teams and informal networks in the quality of implementing or not implementing the decisions about organizational changes are among the reasons for the attention to these components. In this regard, some researchers argued that if there is no coordination between team norms with new plans, by choosing elite people and redesign the current teams, change managers and authorities should form teams which are in line with their goals and help them in the change process (Cameron & Green, 2009). Moreover, by changing the values, symbols and patterns and improving the organizational memory, the required conditions for change should be provided. In this regard, Mohtaram (2016) stated that development of change atmosphere with strategic approach at the university is one of the effective factors contributing to the quality of change at universities.

Overall, taken what was mentioned into account, according to the investigated managers, application of change at universities is a managerial proceeding, to do which, orientations, policies and actions should be considered according to the complex and variable situation of interactive environment at the university and the internal requirements. By doing this, the behavior of components and the entire organization should be driven based on the basic desirability of the organization in the short-time future. However, due to the complexity of the university, this managerial proceeding should be done with a systematic and comprehensive approach in all organizational levels – in personal, team, organizational and environmental levels – and guide universities to the desirable point.

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