

## Designing and validating Principals' Effectiveness Model in high schools

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### Abstract

The aim of this study was to design and validate school principals' effectiveness model at high schools in Lorestan Province, Iran. The experts and specialists were selected through theoretical saturation and the principals (n=199; 102 men and 97 women) were selected through cluster random sampling method. Data analyses were done in SPSS and LISREL and data validity was confirmed by experts. As for reliability, Cronbach's alpha was obtained equal to 0.96. Normality of the study population was measured using skewness test and data analyses were through structural equations and path analysis. The results showed that Chi square test (df=2.46) was less than 5, which supports goodness of fit of the model. Therefore, the elements of school principals were significant at 0.99 level and properly confirmed the effectiveness variable in the proposed conceptual model.

**Key Words:** Practical Skills, Management and Leadership Skill, IQ, Personality Abilities, Communication Skills.

### Introduction

Management and capabilities of a manager are of the top issues for any organization. Having strategic thoughts is a major concern in management as an incapable manager who cannot understand solutions and good approaches quickly may fail to find the right way to realize organizational goals (Mahmoudi et al., 2012). Through examining and studying competencies need for an efficient management, we can highlight the capabilities needed by managers of an organization. Recognizing these capabilities enables us to find individuals who can handle daily issues and deal with problems and

issues ahead (Pennington and Edward, 2000). Educational organizations in the new age known as the age of technology need wise, competent, and expert managers more than ever. Such managers can guarantee performance and effectiveness in the organization. It is notable that only organizations with knowledgeable, active, and skillful managers can expect higher performance and effectiveness and may reach their goals and development in all aspects. Success of an organization in realizing its goals depends on the way of implementing management and efficient leadership style by the manager. As the leader of

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organization, a manager can choose different styles in guiding human forces. Adopting suitable behavioral models by manager creates more motivation and energy in employees and boosts their satisfaction with the job and profession. Using the right style of leadership, managers can improve organizational atmosphere and efficiency and performance of the organization (Hashemi Tari, 2009). Failure of organization in achieving a good level of performance is mostly due to inefficient management and leadership in the organization (Taher (b), 2007). By effectiveness, we refer to the extent of effect of the measures undertaken to achieve predetermined goals. In other words, effectiveness has to do with paying attention to performance or output that is also of good quality. Effectiveness means to use the data (resources) of organization in an efficient and proper way for a reasonable cost and in a reasonable time period -i.e., minimized waste of time and money. Therefore, effectiveness means to do tasks in the right way (Bakhtiari, 2002). William Redin who introduced the concept of 3D management style added a new dimension "effectiveness" to other dimensions namely task-oriented and relationship-oriented aspects. By "effectiveness" he referred to situational factors in management style. He argued that in the case of education organization, depending on situation, different management styles can be effective or ineffective. Effectiveness of

learning style depends on its relevance to the situation factors (Alaghebandi, 2015). Management at school is part of management in educational systems. By executing educational affairs, school principals play a major role in achievement and social success of students. Therefore, individuals selected for this position must have the ability, knowledge, education, and skills. They must be also committed to their job, feel strong responsibility, and have the wisdom and capability to manage school and educational affairs. Therefore, effectiveness of school principals depends on their skills, knowledge, attitude, capabilities, and merits (Taslimi et al., 2013). Competence is a sort of systemic view to employees that covers all traits, characteristics, skills, and attitudes as to the effectiveness of tasks and liabilities and organizational objectives. Such specifications, traits, behaviors, and competencies have a key role in realization of objectives. Basically, the characteristics of individuals who can achieve effectiveness is what we call competencies. That is, competent individuals are those who can demonstrate a good behavioral pattern and in practice this is interpreted as effectiveness measure (Khanifer, 2013). Therefore, the concept of success and effectiveness in management in the sense of success at work should be the first objective of a manager. Performance of a manager should be measured based on the outputs of their work rather than the mere evaluation of the products -i.e.,

success at work- or the sum of tasks assigned to them or done by them in one day. Success is realized through implementation of management in the right way and it is demonstrated as outcome of the job done by them. A clear definition about effectiveness of management is the level of success of the manager in terms of performance and outcome of the tasks assigned to them (Alavi 2007, cited from Gholam Hosseinzadeh et al., 2015). The necessity of management lies with the need to have a guide and effective leader. Studies have highlighted the importance of effective managers to lead educational organization. That is, in addition to educational institutes, management in any organization is the most important element in the realization of organizational goals - i.e., organizational effectiveness. To have more effective organizations or groups, managers and leadership are the most important elements. Rap and Zoik argued that managers are the main pillars of decision making in the face of organizational challenges and problems. Therefore, they have a pivotal role in success or failure of an organization (Rangbar et al., 2014). According to experts in this field and statistical tests results, the eight measures of an effective leadership in terms of importance are creating attraction, team building, group empowerment, continuous improvement of performance, perspective, self-assessment, inspiration, and coaching (Saatchi & Azizpour, 2012). Therefore, it should be

admitted that the world is changing beyond our expectations and the change affect all aspects of the society. The changes also affect educational systems and leadership in these systems is one of the main factors in changes (Castelli, 2016). Taking into account the paucity of effectiveness model for high school principals whether in Iran or other countries, there is a room for a study to develop such model for high school principals in Lorestan Province-Iran. The higher the effectiveness of senior high school principals, the brighter the future of the country. The most important goal of education is to educate students and develop their potentials and talents. In general, a model to measure effectiveness of high school principals in Lorestan Province, is one of the greatest necessities. Our reviews and inquiries from the education organization of the province and education research center in the province and online searches have convinced us that this study is the first of its kind. In short, to highlight the importance, necessity, and value of the present study, two main points are notable: a- Necessity of validating and examining a school principal's effectiveness model to shed light on the problems and issues in education organization of the province. b- Validation and examination of the proposed model showed that school principals and teachers in senior high schools of Lorestan Province can improve their sense of attachment, responsiveness, and commitment. In general, one of the educational

gaps in Lorestan Education Organization is the absence of a model to measure effectiveness of school principals.

### *Literatures*

Pirzad et al. (2018) examined the elements of effective behavior in the directors of Farhangian University and introduced a model to improve management in the university. The ten elements of effective behavior of the directors were inspiration, creating evolution, strategic thinking, willingness to serve, academic support, cultural-educational thought, humanistic relationships, professional behavior, empowerment, and executive capability.

Ranjbar et al. (2014) reported that the most important indices of effective managers were knowledge and professional information, behavioral and thinking skills, attitude and insight, personal characteristics, eagerness to work, responsiveness, and observing religious and moral values.

Saatchi and Azizpour Shouie (2005) designed an effectiveness model for university managers and leaders. They listed eight items of effective management and leadership based on the viewpoints of management and leadership experts including creating attraction, developing team, group empowerment, continuous improvement of performance, having perspective, self-assessment, inspiration, and coaching.

Sheerenze (2015) examined educational effectiveness theories and inefficiency. They acknowledged that developing theories in this study depends on developing knowledge base and effectiveness at schools. Along with developing multi-level concept of educational effectiveness, they also highlighted integrity at system level, school level, and classroom level. They concluded that other models do not provide a good interpretation of rationality.

Kotter (1999) examined the behaviors of effective general managers and showed that their behaviors mostly follow a 3D model. The three dimensions are programming, networking, and enforcing the program to execute the program. In addition to describing the behavior of school principal, the model can be used as a prescribed pattern (for similar condition). As shown by studies, a major part of the time and energy of effective school principals is spent on networking and winning the support of employees to implement programs. It is notable that programming for long-term perspective (including daily scheduling and ambitious long-term plans) are the constant challenges.

To summarize, to achieve a higher effectiveness in education, we need managers with the required competencies, more capabilities, professional skills, and expertise. They also need to have stronger motivation to solve current problems and be more responsive. Fulfilling such tasks depends on having the required skill and

competencies. Lorestan Education Organization needs to examine effectiveness of school principal and prepare the condition for improving commitment, responsiveness, and effectiveness eventually. Therefore, the present study is aimed at answering the following questions.

### *Problem statement*

#### *Main question*

What is the principals' effectiveness model in high schools in Lorestan Province Education Organization?

#### *Secondary questions*

What are the elements of high school principals' effectiveness

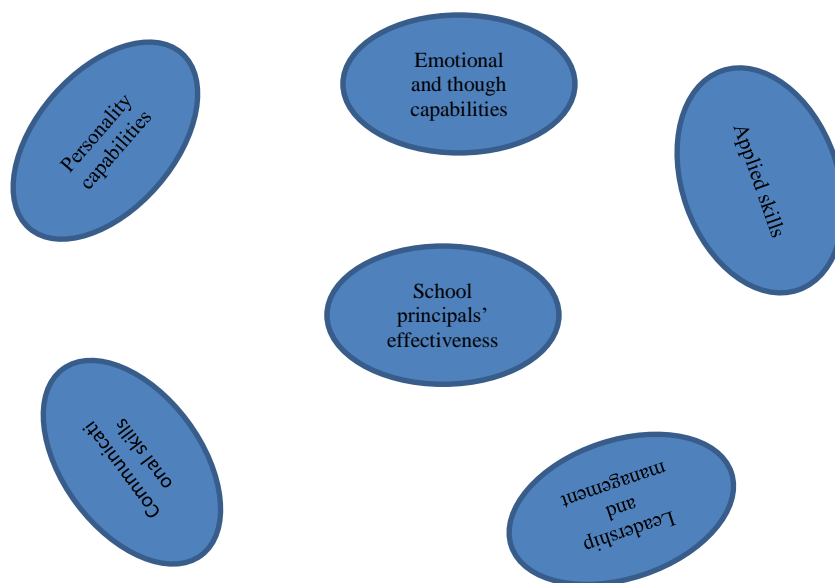
model in Lorestan Province Education Organization?

What is the high school principals' effectiveness model in Lorestan Province Education Organization?

Does the high school principals' effectiveness model in Lorestan Province Education Organization have goodness of fit?

#### *Conceptual model*

Given the findings from literature view, interviews, and questionnaires, five elements and 68 codes were found for the conceptual model (Table 1).



### *Methodology*

Given the objective, the study is an applied work and given the fact that it is an attempt to validate and test a model of effectiveness of senior high school principals in Lorestan Province based on theoretical references and experts' opinion through explorative and confirmatory method, the study is a descriptive confirmatory work. Therefore, a combined method – qualitative and quantitative methods- was used in the study.

### *Qualitative method*

Given the main objective of the study (validation and examination of high school principals' effectiveness in Lorestan Province), the study was started with literature review (Iranian and international articles) and in-depth interviews with experts (experienced teachers, principals, faculty board members, and education managers). This phase yielded the elements of the model. The interviews with 11 experts were done in private and continued until data saturation. Based on the primary interviews, the elements and indices were extracted and to check the validity, they were provided to experts of educational sciences and educational management. Based on the feedbacks, modifications were made and a questionnaire was designed for Delphi test. The test is a structured process to collect information in consecutive rounds that lead to a general consensus.

### *Quantitative method*

Based on the extracted elements, a researcher-designed questionnaire was designed based on Likert's five-point scale. After confirming face and content validity by experts, reliability of the tool was calculated using Cronbach's alpha. Eventually, a tool with 71 items was administered to the sample group and goodness of fit of the model was obtained. The tool covered the aspects of school principals' effectiveness including applied skills, management and leadership skills, intellectual and thinking capabilities, personality capabilities, and communicational skills.

### *Study population and sampling*

The study population, based on the methodology, consisted of qualitative and quantitative sections. The study population in the qualitative phase, which was about designing the model, consisted of academic experts in the field of managers' effectiveness. Data saturation was achieved with 11 interviews. The study population in the quantitative phase consisted of all high school principals in Lorestan Province including 411 individuals (211 men and 200 women). The sample size was obtained equal to 199 based on Cochran Formula, including 102 men and 97 women who were selected through cluster sampling.

### *Data gathering tool*

Through the qualitative phase, the elements and aspects were obtained through theoretical foundations and interviews text



using Delphi test. The results of descriptive analysis in the first phase of Delphi test along with Kendall tests were used to determine the level of agreement among experts about the codes (n=101). Kendall coefficient was equal to 0.268, which was at a low level but still significant (0.000). This indicates a high level of agreement between the respondents so that there was a significant agreement to the answers. Therefore, the second phase of Delphi method was implemented to confirm the indices. The result was a questionnaire designed based on Likert's four-point scale (1=weak; 2= moderate; 3=good; 4 = excellent). The questionnaire was provided to 11 experts to find the level of agreement among them about the indices and codes. Descriptive analysis of the data in the second phase of Delphi test and Kendall test supported a high agreement level between experts about the codes (n=89). Kendall test results in the second phase were at a moderate level (0.437) and given sig. level (0.000), there was a good agreement in the experts' opinion. The third phase of Delphi method was aimed at confirming the elements and indices. Descriptive analysis of the data along with Kendall test showed agreement among the experts on 68 codes so that the results indicated a strong agreement among the experts (p=0.000). Therefore, given the high level of agreement, Delphi process was completed at this level. With three stages of Delphi method, the elements and codes were used

for designing a data gathering tool (Table 1). In the quantitative phase, the researcher-designed tool with 71 items and five aspects of applied skills, management and leadership skills, emotional and thought capabilities, personality capabilities, and communicational skills was administered to the sample group. The questions were designed based on Likert's five-point scale (1= never, ..., 5 = always).

#### *Validity and reliability of data gathering tool*

Validity of the tool was supported by the experts in educational sciences and reliability of the tool was supported based on Cronbach's alpha (SPSS) for applied skills (0.868), management and leadership skills (0.902), emotional and thought capabilities (0.698), personality capabilities (0.823), communicational skills (0.860), and the whole tool (0.960).

#### *Findings*

##### *Qualitative data analysis*

Based on literature review, theories, models, and patterns were extracted from Iranian and international studies. After summarizing, a questionnaire was designed with open and closed forms (a combination of the both). The tool was provided to 11 experts in educational and management fields through interviewing. As to the open section of the questionnaire, data-based method was used and as to the closed section of the tool, confirmatory method was used. Based on the interviews and data categorization

(Table 1), five axial elements were extracted namely applied skills, management and leadership skills, emotional and thought skills, personality skills, and communicational skills.

**Table 1- Elements and codes approved by experts for designing a data gathering tool**

No	Codes	Elements	No	Codes	Elements
1	Evolution oriented and creativity dynamics	Applied skills	33	Inspiration	Management and leadership skills
2	Making work environment interesting		34	Influence	
3	Creating a friendly environment		35	Coaching	
4	Justice and fairness		36	Flexibility	
5	Creativity		37	Participation	
6	Motivating		38	Understanding	
7	Discipline		39	Decision making	
8	Executive power		40	Programming skill	
9	Determining goals		41	Complicacy management	
10	Pursuing goals		42	Team building	
11	Technology		43	Self-motivation	
12	Guidance		44	Time management	
13	Identifying work environment		45	Stress management	
14	In-service education		46	Conflict management	
15	Obtaining new skills		47	Knowledge and information	
16	Respect		48	Sharing information	
17	Performance improvement		49	HR management	
18	Continuous progress		50	Recognizing current and future needs	
			51	Job security	



19	Comprehensive thought	Emotional and thought capability	52	Performance assessment	
20	Strategic thinking		53	Performance feedback	
21	Challenging thinking		54	Personal communication skills	Communicational skills
22	Cultural-educational thinking		55	Coordinating	
23	Wit and intelligence				
24	Thinking skill	Personality skills	56	Trust and credibility	
25	Emotional skills		57	Creating sympathy	
26	Physical capability		58	Speech skills	
27	Organizational intelligence		59	Programming skill	
28	Attractiveness		60	Group communication skill	
29	Self-confidence		61	Mutual understanding	
30	Self-control		62	Ability to communicate with extra-organizational agents	
31	Responsiveness		63	Competitiveness	
32	Accepting criticism		64	Connection with research and scientific centers	
			65	Communication with clients	
			66	Acculturation	
			67	Professional ethics	
			68	Human oriented	

(Source: literature review and interviews)

### *Quantitative data analysis*

The main objective of the study was to validate a high school principals' effectiveness model in

Lorestan Province. A research-designed questionnaire (anonymous) with 71 items was designed to cover the aspects of principals' effectiveness (applied skills, management and leadership skills, emotional and though

capabilities, personality capabilities, and communicational skills). The data collected using the tool was used for data analysis. Given the fact that structural equations model (SEM) and path analysis were used to measure goodness of fit of the effectiveness

elements, skewness test was used to check normal distribution of data. In general, the skewness for principals' effectiveness ranged from -2 to 2 -i.e. normal distribution was supported.

**Table 2- Correlation matrix of the elements of principals' effectiveness**

Indices	Applied skills	Management and leadership skills	Emotional and thought capabilities	Personality capabilities	Communicational skills	Principals' effectiveness
Applied skills	1	0.585**	0.379**	0.413**	0.523**	0.764**
Management and leadership skills	0.585**	1	0.320**	0.355**	0.469**	0.726**
Emotional and thought capabilities	0.379**	0.320**	1	0.489**	0.384**	0.702**
Personality capabilities	0.413**	0.355**	0.489**	1	0.457**	0.732**
Communicational skills	0.523**	0.469**	0.384**	0.457**	1	0.781**
Principals' effectiveness	0.764**	0.726**	0.702**	0.732**	0.781**	1

\* Sig. 0.05 \*\* Sig. 0.01 NS: Not significant

As listed in Table 2, correlation coefficients of the principals' effectiveness elements are in 0.702 and 0.781 range. The results indicate that applied skills (0.764\*\*), management and leadership skills (0.72\*\*), emotional and thought capabilities (0.702\*\*), personality capabilities (0.732\*\*), and communicational skills (0.781) have a direct and significant relationship with the principals' effectiveness at 99% level. The highest correlation is observed between

communicational skills (0.781\*\*) and the principals' effectiveness and the lowest correlation is between emotional and thought capabilities (0.702\*\*) and the principals' effectiveness. The results indicate that there is a positive and significant relationship between the principals' effectiveness and the elements extracted based on their responses.

In the next step, we need to determine level of changes in the elements of principal's effectiveness explained by the

codes and questions in the tool. To this end, explained variance was

used, which is the most important index in SEM.

**Table 3- Factor load, estimated covariance, and t-value of the items covering applied skills**

Item	1	2	3	4	5	6	7	8	9
Factor load	0.33	0.32	0.50	0.30	0.36	0.31	0.36	0.32	0.58
R <sup>2</sup>	0.11	0.10	0.25	0.09	0.13	0.10	0.13	0.10	0.33
t-value	4.18	40.04	6.4	3.03	4.17	3.81	3.12	3.97	7.66

**Table 3- Continue**

Item	10	11	12	13	14	15	16	17	18
Factor load	0.31	0.34	0.36	0.50	0.45	0.31	0.31	0.40	0.44
R <sup>2</sup>	0.10	0.11	0.13	0.25	0.20	0.10	0.10	0.16	0.19
t-value	3.91	4.12	3.22	6.30	5.74	2.59	3.99	5.11	5.67

Explained variance = R<sup>2</sup>

As listed in Table 3, applied skills is covered by codes 3-20, 39, and 40. This means that 18 codes out of 20 codes in the primary model has the required factor load with t-value equal to 1.96. Therefore, these codes are good representative of applied skills. Among the 18 factors that cover this element, factor 9 is the best, as its

factor load and the explained variance coefficient are the highest. In other words, this item defines applied skills in the best way. In addition, factor 4 has the lowest factor load and explained variance coefficient compared to other factors.

**Table 4- Factor load, estimated covariance, and t-value of the items covering management and leadership skills**

Item	1	2	3	4	5	6	7	8	9
Factor load	0.35	0.30	0.34	0.37	0.39	0.34	0.53	0.42	0.63
R <sup>2</sup>	0.12	0.09	0.12	0.14	0.15	0.12	0.28	0.18	0.39
t-value	3.25	3.83	4.35	4.80	4.96	4.35	7.10	5.48	8.58

**Table 4- Continue**

Item	10	11	12	13	14	15	16	17	18
Factor load	0.54	0.52	.030	0.30	0.32	0.34	0.34	0.39	0.31
R <sup>2</sup>	0.29	0.27	0.09	0.09	0.10	0.12	0.12	0.15	0.10
t-value	7.17	4.91	3.78	3.82	4.03	2.97	4.34	3.66	3.90

Explained variance =  $R^2$

As listed in Table 4, leadership and management skills is covered by codes 1, 2, 20-38, 58, and 59. This means that 18 codes out of 22 codes in the primary model has the required factor load with t-value equal to 1.96. Therefore, these codes are good representative of leadership and management skills. Among the five factors that cover this element, factor 9 is the best, as

its factor load and the explained variance coefficient are the highest. In other words, this item defines leadership and management skills in the best way. In addition, factors 2, 12, and 13 have the lowest factor load and explained variance coefficient compared to other factors.

**Table 5- Factor load, estimated covariance, and t-value of the items covering emotional and thought capabilities**

Item	1	2	3	4	5
Factor load	0.41	0.58	0.50	0.57	0.61
$R^2$	0.16	0.33	0.25	0.32	0.36
t-value	3.25	4.14	3.58	4.13	5.61

Explained variance =  $R^2$

As listed in Table 5, emotional and thought capabilities is covered by codes 46, 47, and 49-51. This means that all codes in the primary model have the required factor load with t-value equal to 1.96. Therefore, these codes are good representative of emotional and thought capabilities. Among the five factors that cover this element,

factor 5 is the best, as its factor load and the explained variance coefficient are the highest. In other words, this item defines emotional and thought capabilities in the best way. In addition, factors 1, has the lowest factor load and explained variance coefficient compared to other factors.

**Table 6- Factor load, estimated covariance, and t-value of the items covering personality capabilities**

Item	1	2	3	4	5	6	7	8	9
Factor load	0.44	0.48	0.38	0.32	0.32	0.53	0.58	0.50	0.52
$R^2$	0.19	0.23	0.14	0.10	0.10	0.28	0.34	0.25	0.27
t-value	4.35	5.45	4.31	3.27	3.13	5.48	6.52	5.46	5.65

Explained variance =  $R^2$

As listed in Table 6, personality capabilities is covered by codes 41, 45, 48, 52-57. This means that all codes have the required factor load with t-value equal to 1.96.

Therefore, these codes are good representative of personality capabilities. Among the five factors that cover this element, factor 7 is the best, as its factor load and the

explained variance coefficient are the highest. In other words, this item defines personality capabilities in the best way. In addition, factors

4 and 5 have the lowest factor load and explained variance coefficient compared to other factors.

**Table 7- Factor load, estimated covariance, and t-value of the items covering communicational skills**

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Factor load	0.44	0.57	0.58	0.53	0.46	0.52	0.55	0.53	0.46	0.72	0.43	0.47	0.53	0.43
R <sup>2</sup>	0.20	0.32	0.33	0.28	0.22	0.27	0.30	0.28	0.22	0.52	0.19	0.24	0.28	0.19
t-value	6.13	7.80	7.97	7.11	6.13	7.18	7.45	7.20	6.17	10.39	5.70	7.19	7.18	5.89

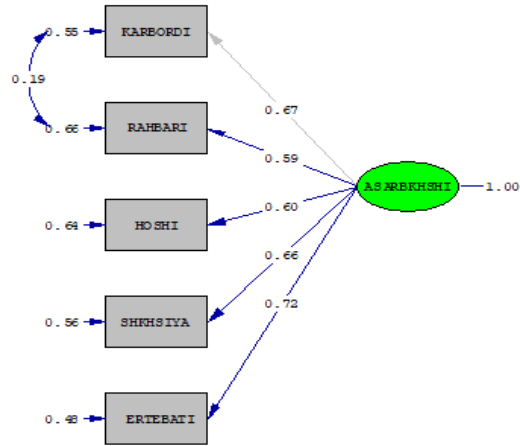
Explained variance = R<sup>2</sup>

As listed in Table 7, communicational skills is covered by codes 42-46, 60-71. This means that 14 codes out of 15 codes have the required factor load with t-value equal to 1.96. Therefore, these codes are good representative of communicational skills. Among the five factors that cover this element, factor 10 is the best, as its factor load and the explained variance coefficient are the highest. In other words, this item defines communicational skills in the best way. In addition, factors 11 and 14 have the lowest factor load and explained variance coefficient compared to other factors.

#### *Structural equation model (path analysis model)*

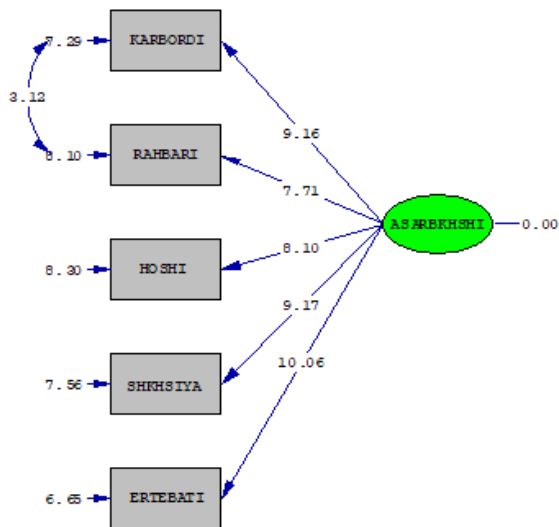
Structural equations modeling and path analysis were used to measure goodness of fit of the proposed model.

Given the introduction, to measure goodness of fit of the proposed model, path analysis was used in LISREL. As showed in figures 1&2, since RMSEA of the models is less than 0.1, there is no need to make a modification to obtain an exact estimate of path analysis for the questionnaire items.



Chi-Square=9.85, df=4, P-value=0.04311, RMSEA=0.086

Fig 1- SEM coefficients for principals' effectiveness



Chi-Square=9.85, df=4, P-value=0.04311, RMSEA=0.086

Fig 2- T-value to determine significance of the SME

Based on Fig.1&2 and LISREL output as to the elements of

principals' effectiveness, the fitness indices are listed Table 8.

**Table 8 – Principals' effectiveness goodness of fit indices**

Index	Estimate	Preferred value
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$\chi^2/df$	2.46	<0.05
RMSEA	0.086	<0.9
GFI	0.98	>0.9
AGFI	0.93	>0.9
CFI	.99	>0.9
NFI	0.98	>0.9
(MR	0.0019	Close to zero
SRMR	0.035	Close to zero

As listed in Table 8,  $\chi^2/df$  is equal to 2.46 and less than 5; that is, goodness of fit of the model is support. In addition, RMSEA is equal to 0.86 and less than 0.09; GFI is equal to 0.98; AGFI is equal to 0.93; CFI is equal to 0.99; NFI is equal to 0.98; MR is equal to 0.0019; and SRMR is equal to 0.035. All these indices are in preferred range; thus, goodness of fit of the model is supported and the elements of the questions are consistent with the principals' effectiveness. In other words, the elements of the variable "principals' effectiveness" cover the variable in the conceptual model. The reason for this is that the five elements used to measure the index are in 99% level of confidence, which makes them acceptable elements to measure principals' effectiveness. There is also no notable overlap.

Given that RMSEA is less than 0.9, the goodness of fit is supported by this index. This means that the proposed model is fit, significant, and valid. In addition, with t-value of each factor load of the elements of the tool higher than 1.96, the consistency of the elements to measure the concepts is supported. Therefore, what is intended is actually measured by the tool and the relationships between the constructs and latent variables is reliable.

As listed in Table 9, the changes in the principals' effectiveness are explained by the elements of applied skills, leadership and management skills, emotional and thought capabilities, personality capabilities, and communicational skills. Using the factor loads, explained variance coefficient and obtained t-value can determine the weight of each elements as an index of principals' effectiveness.

**Table 9- Factor loads, estimated covariance, and t-values of the elements of principals' effectiveness**

Elements	Applied skills	Management and leadership skills	Emotional and thought capabilities	Personality capabilities	Communicational skills
Factor load	0.67	0.59	0.60	0.66	0.72
R <sup>2</sup>	0.45	0.34	0.36	0.44	0.52
t-value	9.16	7.71	8.10	9.17	10.06

R<sup>2</sup> = Explained variance coefficient

As listed in table 9, the primary model of the principals' effectiveness has five elements with adequate factor load and t-value > 1.96. These elements are acceptable representatives of the principals' effectiveness. Among these elements, communicational skills are the best factors given its high explained variance coefficient compared to other elements. On the other hand, management and leadership skills has the lowest explained variance coefficient. Given the results in Fig.1&2 and tables 3&4, the four indices of communicational skills,

management and leadership skills, emotional and thought capabilities, personality capabilities, and communicational skills have a significant relationship with the principals' effectiveness as all t-values are higher than 1.96. Moreover, as showed by the fitness indices, the data in this study has a good fit with factor structure and theoretical ground of the study -i.e. validity of the tool is supported. Table 10 lists the path coefficients of structures' effects and significance of the estimated parameters.

**Table 10 – Path coefficients of the effects of structures and significance of the estimated parameters**

Independent structure	Dependent structure	Path coefficient	t-value	p-value	R <sup>2</sup>
Applied skills	Principals' effectiveness	0.67	9.16	0.000	<b>0.1</b>
Management and leadership skills		0.59	7.71	0.000	
Emotional and thought capabilities		0.60	8.10	0.000	
Personality capabilities		0.66	9.17	0.000	
Communicational skills		0.72	10.06	0.000	

As listed in Table 10, communicational skills index has the highest impact on the principals' effectiveness (72%) and management and leadership capabilities has the lowest impact

(59%). Thus, based on path analysis of the questions, the effect of the indices of the structure of principals' effectiveness is supported.

### *Discussion and conclusion*

Given the findings, the secondary question No.1 (what are the elements of high school principals' effectiveness in Lorestan Province?) was answered.

### *Applied skills*

As the findings showed (Table 1), applied skills cover codes like evolution-centered, creating dynamism, creating dynamism, making work environment more interesting, creating a friendly atmosphere, observing justice and fairness, creativity and innovation, motivating staff, organizing, discipline, executive capability, setting goals, pursuing goals, familiarity with technology, leadership, familiarity with work environment, taking in-service educational courses, obtaining new skills, respectful behavior, performance improvement, and continuous progress. As listed in Table 2, the value of Pearson correlation coefficient ( $r=0.764$ ) is significant at 0.01 level; which means that with a confidence level of 99%, there is a positive and significant relationship between applied skills and the principals' effectiveness. Therefore, an increase in applied skills leads to an increase in senior high school principals in Lorestan Province. Based on SEM and path analysis and results illustrated in Table 8 and Fig.1&2, all goodness of fit indices are in acceptable range and goodness of fit of the model is supported. This means that the items of the questionnaire are consistent with applied skills.

Therefore, the subjects need to create dynamism and change in their schools; motivate staff and students to do required and necessary activities; and create a friendly environment for all individuals in the environment to express their ideas without hesitation. Capability of school principals in extending justice at work environment motivate staff and students to walk toward creativity and innovation. Through programming and work discipline, they can improve their own and others' executive power to pursue organizational goals.

### *Management and leadership skills*

Given the results in Table 1, management and leadership skills cover codes like inspiration, coaching, influence, flexibility, participation, ability to differentiate, decision making, programming skill, complicity management, team development, self-motivation, time management, stress management, conflict management, knowledge and information, public information and sharing knowledge, HR management, recognizing current and future needs, work security, performance assessment, and performance feedback. As listed in Table 2, with  $r=0.726$ , which is significant at 0.01 level, with a confidence level higher than 99%, there is a positive and significant relationship between management and leadership skills and high school principals' effectiveness in Lorestan Province. This means that an increase in management and

leadership skills leads to a higher effectiveness in the participants. Based on SEM and path analysis (Table 8 and Fig.1&2), the indices of goodness of fit are in acceptable range -i.e. goodness of fit is supported. This means that the items of the questionnaire are consistent with management and leadership skills.

### *Emotional and thought capabilities*

Given the results in Table 1, emotional and thought capabilities cover codes like perceptual thinking, strategic thinking, challenging thinking, intelligence and wit, and cultural-educational thinking. As listed in Table 2, with  $r=0.702$ , which is significant at 0.01 level, with a confidence level higher than 99%, there is a positive and significant relationship between emotional and thought capabilities and senior high school principals' effectiveness in Lorestan Province. This means that an increase in emotional and thought capabilities leads to a higher in the participants. Based on SEM and path analysis (Table 8 and Fig.1&2), the indices of goodness of fit are in acceptable range -i.e. goodness of fit is supported. This means that the items of the questionnaire are consistent with emotional and thought capabilities.

### *Personality capabilities*

Given the results in Table 1, personality capabilities cover codes like thinking capabilities, emotional capabilities, physical capabilities, attractiveness, self-confidence,

self-control, responsiveness, accepting criticism, and organizational intelligence. As listed in Table 2, with  $r=0.732$ , which is significant at 0.01 level, with a confidence level higher than 99%, there is a positive and significant relationship between personality capabilities and high school principals' effectiveness in Lorestan Province. This means that an increase in personality capabilities leads to a higher in the participants. Based on SEM and path analysis (Table 8 and Fig.1&2), the indices of goodness of fit are in acceptable range -i.e. goodness of fit is supported. This means that the items of the questionnaire are consistent with personality capabilities. Schools principals who manage to improve their personality and interactive capabilities, can have a better performance in their work.

### *Communicational skills*

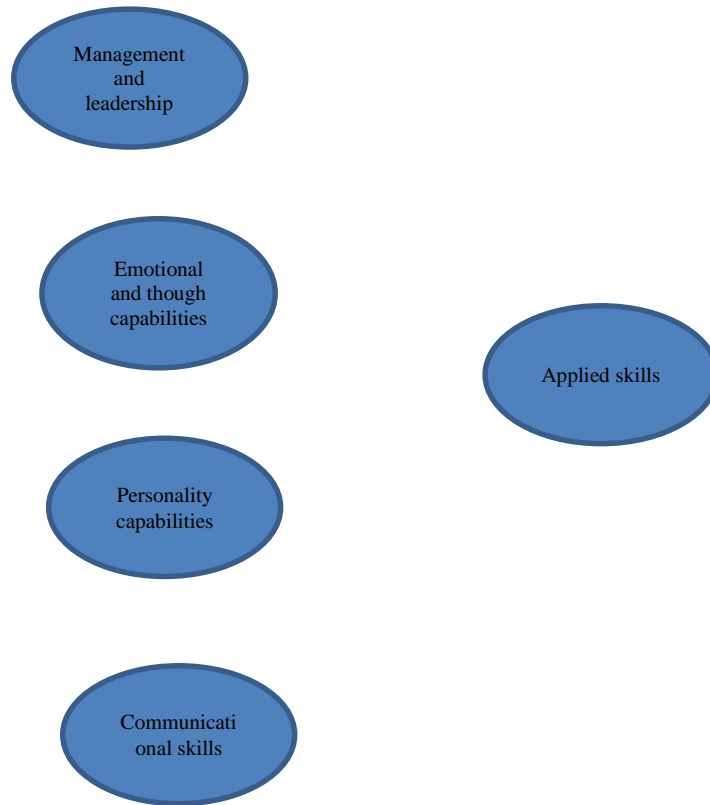
Given the results in Table 1, communicational skills cover codes like individual communication, creating coordination, winning trust and validity, creating sympathy, speak skills, programing skill, group communication capability, mutual understanding centered, ability to communicate with extra-organizational factors, competitiveness, communicating with research and scientific centers, communicating clients, acculturation, professional behavior, and humanistic beliefs. As listed in Table 2, with  $r=0.781$ , which is significant at 0.01 level, with a confidence level higher than

99%, there is a positive and significant relationship between communicational skills and senior high school principals' effectiveness in Lorestan Province. This means that an increase in communicational skills leads to a higher in the participants. Based on SEM and path analysis (Table 8 and Fig.1&2), the indices of goodness of fit are in acceptable range i.e. goodness of fit is supported. This means that the items of the

questionnaire are consistent with communicational skills.

### *Final research model*

The secondary questions 2 (what are the elements of an effectiveness model for high school principals in Lorestan Province?) and 3 (Do the elements of an effectiveness model for high school principals in Lorestan Province have goodness of fit?) are answered in the following sections.



**Fig 3- Final research model**

As shown in Figure 8, the principals' effectiveness has five elements namely applied skills, management and leadership skills, emotional and thought capabilities,

personality capabilities, and communicational skills. As listed in Table 2, these elements have positive and significant relationship

with each other given Pearson Correlation Coefficient Test.

### *Recommendations*

#### *Applied skills*

School principals need to create a lovable and attractive environment to achieve a higher success level. Creating an environment for sympathy and cooperation can be a factor in success and effectiveness of managers. Thus, they might give up their perspective in some cases and see things from the teachers and students' viewpoint and show a more cooperative attitude. They are recommended to create a friendly environment in which teachers and students feel more secure to express their needs.

As listed in Table 8, Chi square test with  $df=2.46$  was less than 5, which means that the goodness of the model is supported. The elements of effectiveness of school principals were significant at a confidence level of 99% and they measure the effectiveness properly.

#### *Management and leadership skills*

One of the elements in success and effectiveness of managers is to use teachers' experiences and information in a proper way. To make this happen, the school principals can prepare the ground for active participation of teachers in transferring professional information and participation in decision making and use their information and experiences. One of the ways to improve effectiveness at schools is to use joint decision-making methods. One reasonable way to use this

method is to ask teachers to share their ideas whether verbally or in written form. For instance, in the case of urgent need for making a decision, verbal voting will suffice and if the time allows, voting on paper is recommended.

#### *Emotional and thought capabilities*

Foreseeing the future is a key point in the management of any organization or institute. Therefore, school principals need to look after ways to predict and evaluate the future and help their colleagues by taking timely actions. Successful school principals never avoid facing problems and challenge and the key difference between effective and ineffective school principals is their way of facing challenges and problems. In this regard, they should welcome challenges as a way to demonstrate their skills. This not only motivates school principals but also conveys the idea to others (teachers and students) that they should also welcome challenges. This increases motivation to solve problems in schools.

#### *Personality capabilities*

Awareness and knowledge about one's personal specifications and characteristics prepares the group for a higher effectiveness in individual and managers in particular. School principals can design a method to learn about their weaknesses and strengths through say running a hidden poll among teachers. Responsiveness and accepting responsibility are among the specifications of effective and



successful school principals. To be responsive, they need to nurture such a sense in them permanently and improve responsiveness.

### *Communicational skills*

Creating a mutual and two-way relationship helps improving professional performance. Therefore, school principals should be good speakers and listeners in meetings and create a sense in teachers that their voice is clearly heard by the principal. School principals are supervised by educational ministry and they have a close relationship with educational organization. Therefore, they need to have communicational skills to have a good relationship with different departments of organization and through this achieve their educational goals.

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