

Presentation of Optimal Model of Educational Evaluation in Tehran High Schools

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ABSTRACT: The present study is intended to purpose an optimal model of educational evaluation in high schools at Tehran City and to identify its main components and parameters and it has been written to give response to the main question that "What is the most appropriate model (theoretical framework) of evaluation in high schools at Tehran City?" In this research, methodology of "Survey" type has been adopted toward realization of study objective and to give response to the main above- said other minor questions. The statistical population of this study includes teachers and principals with MA and PhD degrees, who are employed in Tehran Training and Education Organization. Method of sampling of this study is of simple randomized sampling while data collection has been conducted by using of questionnaire and other techniques that were adopted to determine reliability, validity and data analysis by means of Cronbach's Alpha Coefficient, T- single sample, Bartlett's Chi-Square Test of Sphericity, Kaiser- Meyer-Olkin (KMO) measure of sampling adequacy test, Scree chart and factor analysis with main elements method. By employing the techniques and methods of this study (factor analysis and appropriate statistical tests) it was characterized that the optimal model of educational evaluation is one that comprises of 13 elements (together with 63 parameters) as follows: 1- Equipment's and lab expenses, 2- Services (research, information and evaluation), 3- Principal, 4- Educational space and materials, 5- Teachers and scientific services, 6- Teachers and their welfare, 7- Teaching characteristics and technology application, 8- Official and staffing affairs, 9- Extracurricular activities, 10- Students and welfare services, 11- Consultation and professional development, 12- Educational facilities and 13- Total Quality Management (TQM). In this article, we deal with explanation of 3 foremost elements of the aforesaid components.

Keywords: Educational Evaluation, Cronbach's Alpha Coefficient, T- single sample, Bartlett's test of Sphericity and KMO Sampling Adequacy Test, Scree Chart and Factor Analysis

ORIGINAL ARTICLE

INTRODUCTION

Training and Education System has been and is the intellectual organizer, coordinator and main and essential regulator of life practical method and path for children, teens and adolescents and in fact managers, practitioners and producers and generally post community in any country and nation. For this reason, there is no dispute in this point that system of dialogue in any country at any time and in whatsoever form and content has played an establishing and organizer role and acted as holder of right of vote and determinant in its policy and acting agent for this procedure in several ways and focuses its main thought and mental conduct and the considered plan for the future of this organization and it has insisted seriously on enforcement and implementation of this conduct.

On the other hand, social discipline and moral tolerance, social and economic welfare as well as providing the facilities to meet individuals' spiritual and material requirements in a society necessitate to:

First, individuals in society should be trained morally and socially and at the second a greater number of people should manage to acquire insight, information and skill; thirdly, with respect to their capacity and ability, the elite and talented people should be trained in several fields of innovation, specialties and leadership and finally people strata should be benefitted from potential facilities of alertness and training of frank people through training and educational trend in practice in order to manage participating consciously and actively in organizing and management of their own community.

Rather than conveyance of cultural and social heritage, formal system of training and education deals with facilitating and supply the means for individual comprehensive growth and development and creation of unity and uniformity respectively in attraction of skilled manpower in different specialized fields and it provides the grounds for attraction and employment of personnel in economic, and sociopolitical organizations and institution.

Supreme goals of training and education system in Islamic Republic of Iran signifies development on important dimensions from students' behavior and conduct and training and educational planning and execution system is undertaken to try for training and rearing of a generation that believes in religious bases, and are active in execution of divine injunctions and rites, and enjoy moral virtues and pieties and make them to be benefitted from social development, political adaptation and mental and physical health. There is no doubt in this point that several factors are adaptable and effective in this regard out of which it can refer to textbooks content, management technique, teaching methods of teachers, extracurricular activities and way of occupation of training and educational space that are more essentially important so training and educational policy should be focused on taking perfect advantage of capacity from each of the aforesaid factors to realize training ideals of training and education system.

Although training and educational goals vary in terms of priority and importance degree and time and from one society to other one, totally six tasks or performances are identified for training system. The official training and education system should do some part of these tasks in order to acquire its identity. Several evaluation systems were designed in order to make sure from fulfillment of these tasks. In fact with respect to the given parameters, one of such systems and methods is a performance whereby one can control over several practices of management and plan in training centers.

In general, evaluation is carried out with respect to practical parameters that are led to benefitting from resources more than ever to realize the given objectives. In other words, as a subsystem of the general training and educational system, schools' evaluation system should first design thinking about any school or training centers and establish this idea in order to make sure of realization of special tasks, mission and goals for high schools. This is possible only when schools evaluation system and training centers can judge about utility of input factors (student, teacher, personnel, curriculum etc.) constantly and the given result is used by at decision-makers to improve training and educational affairs, services, publications and professional development as well as giving specialized services to society.

Basically, for doing evaluation, one may adopt several models such as realization of goals, internal criteria and facilitation in decision making and the like (Bazargan, 1995). In other words, in order to evaluate educational centers and schools in terms of some parameters such as input, process, product, (output), cognitive, efficiency, scholar, scientific, welfare,

financial and matrix indices are utilized (Hosseininasab, 1993). Nevertheless, it is intended in this study to interpret and analyze practical parameters as a comprehensive tool to evaluate high schools in this career.

In 1910, practical parameters were used as a comprehensive tool for educational evaluation in USA; however, formally since 1980s, this technique entered into training specialized area as the most major and prevalent method of educational evaluation. Currently with respect to practical parameters, evaluation is adopted as the most major method based on practical parameters in some countries including UK, Australia, France, German, Finland etc. (Khorshidi, 2003).

All training inputs, flows and outputs (products) are realized within subsidiary training, social, economic, political and cultural environment and this issue should be examined in relation to entire system for implementation of any evaluation from this trend. Educational system is a micro-system out of socio-economic, political and cultural macro- system. For this reason, evaluation of each of educational plans and curricula requires identifying entire educational system and its performance throughout social trend and it should track the reasons for deficiencies by accurately analysis and purpose appropriate suggestions to amend them and provide establishment of an efficient educational system. Result which has been derived from educational planning, execution, supervision and evaluation is several information that is acquired and based on which one may amend and improve planning trend. Accordingly, evaluation is an activity which its nature comprises of all educational and economic, social and cultural aspects and its subject matter is adjustment of performances with plans (Lotfabadi, 1991).

Perhaps, one may consider the first formal effort that has been made about evaluation since 1845 in which the performance of schools in Boston (Massachusetts, USA) was evaluated. The given measure is important because of this fact that students' scores have been used as data for evaluation. This is a technique that has still kept perfectly its importance and for this reason measurement of students' achievement scores is considered as an integrated part of educational evaluation nit evaluation itself (Mahjoor, 1995). Josef Meydris studied an investigation into performance of well- writing on about 3000 students in USA within 1877-1898 and this study is called as the first formal and systematic educational evaluation activity that was administered in this regard.

Achievement or aptitude of curricula were characterized by Hall's measurements on test score and based on mental insights. In this method which is called measurement- oriented technique, it was

considered to discover aptitude of curricula for student's educational performance. Furthermore, evaluation was only limited to measurement of variables that were observable and measurable (Kiamanesh, 1995).

In his research essay, Daniel Stufflebeam, (Stufflebeam, 1971) refers to this point that initially Context- Input- Process- Product (CIPP) Model was developed in order to provide appropriate information about a regular and systematic method for decision making where this represented the activity before evaluation practice. In particular, CIPP evaluation model is adequately able to contribute to mentors in description and illustration of their decisions and activities. CIPP evaluation model is purposed as a powerful tool to prepare plan and for execution of decisions after description and reporting about decisions and activities where the next steps in CIPP evaluation model are considered as some items including an image from responsiveness and responsibility, potential analysis from CIPP model in order to provide useful and necessary information.

In his research, Dennis Hinkle (Hinkle, 1973) assessed the evaluation techniques from several and different ESEA plans and indicated that such methods are not apt and adequate for evaluation of educational plans and curricula during a year. Thus, complexity and different levels and several decisions making in YRE plans and programs required adoption of new evaluation techniques.

Judi Gilberg and Scholwinski (Gilberg&Scholwinski, 1983) implied this point in an essay so that this article was intended to present description and reports for systematic evaluation of Schools of Psychology where it might demonstrate the benefits from information about principals, teachers and psychologists as well as the effectiveness of the related reports to students' evaluation methods that were used in a certain county or region.

In his survey, Tom Nicholson (Nicholson, 1989) refers to an approach for evaluation of Reading Skill training where he called it as CIPP (Context- Input-Process- Product) Evaluation Model and this approach included several techniques to identify requirements of each of students (context), students and classmates' access to them (input), execution of evaluation in training trend (process) and then implementation of final assessment (product).

Todd Wronski (Wronski, 1992) implied this point in his article that mentors were encouraged toward subject of responsibility burden as well as execution of evaluation that was done in a realistic and rational situation. Similarly, he introduces those evaluation models and patterns that are useful and reliable including: 1) CIPP Evaluation Model (1971) (Context-Input- Process- Product); 2) Stake's Evaluation Schema

Model (Responsive Evaluation) ; 3) and the model (Achievement Motivation Theory) that has been developed by McClelland(1975) that it seems in this model, school's total content is a background for technique and art; and 4) Kushner (1987) considers open dialogue and negation with audiences and participants in this model and he calls it as Quality Evaluation Model.

Carol Reganick (Reganick, 1993) in his survey refers to this point that cooperation and assistance had started in apprenticeship plan and curriculum by participation of 20 students, who suffered from behavioral hard problems. In this process, two evaluation patterns were adopted including Tyler's Goal- Oriented Plan and Stufflebeam's Model CIPP (Context- Input- Process- Product) where four students managed successfully to employ that plan and curriculum and fulfilled it.

In a study, Daniel Stufflebeam (Stufflebeam, 1995) implied this point that CIPP evaluation model provide ground for primary and final evaluation and at the same time evaluation is a key for definition of principals' role as well as illustration of 11 general tasks for administration. Evaluation process is done based on CIPP evaluation pattern framework (Context-Input- Process- Product) including 1) Evaluation of background section; 2) Searching and research on methods and techniques to amend and improve solutions and strategies; 3) |Control, supervision and measurement resultant from execution of plan; 4) Collection and measurement of documents, evidences and criteria resulting from consequences and outcomes out of this information that was gathered via multiple sources of management, Board of Directors, teachers, personnel, parents and members of principals.

Looking at educational systems of this country briefly may create some questions in mind of any researchers where some of them are as follows: To what extent are state educational system responsive to individual and community requirements, including populist, individualist, and quality- oriented and integrated systems? To what extent are such systems matched with economic, political and cultural development in this country? To what degree is educational system level appropriate for classroom adequately? To what level did educational systems fulfill their objectives? Giving answer to these and other similar questions requires application of educational evaluation mechanism. Employing these mechanisms may provide the needed conditions for transparency of performance and responsiveness in educational systems.

Evaluation mechanism as a tool, regardless of its application, for conducting of educational activities is only deemed like shooting a bullet in darkness.

Educational evaluation contributes to identify educational requirements and based on these needs it can target educational systems and curricula and makes it possible to formulate the appropriate curriculum and to make the needed efforts for realization of organization goals and guiding the leadership affairs (Bazargan, 2004:1).

Findings that obtained by Eric (2005) suggest that If we intend to have an effective and efficient evaluation system, in fact it requires existing an integrated and optimal pattern of evaluation. Namely, a productivity- based educational system needs appropriate evaluation. Casting a short glance at educational systems in advanced countries may signify this point that in fact having appropriate pattern for educational evaluation is the foremost factor for enhancement of educational quality.

Training and Education Organization is a strategic institution that should do several tasks including: I) Educational, II) Training, III) Professional development, IV) Servicing, and V) Publication etc. Now, this question is raised that: Has the current educational system in Training and Educational Organization realized its goals particularly at average level and met individual and social requirements of its learners positively or not? It necessitates creating an educational evaluation system to give answer to all these questions. Accordingly, researcher intends to interpret optimal pattern of educational evaluation for high school career in educational system at Tehran City by conducting a deliberative survey on evaluation patterns such as evaluation model of goals-realization, management- oriented evaluation pattern, open- goal evaluation model, evaluation pattern based on experts' comments, validation model, defense-based pattern, in- practice pattern, naturalistic and participatory model, CIPP pattern, interior evaluation model, exterior evaluation model, Wolf-Pophamcurriculum evaluation pattern in Research Center in California (2001) etc.

The main objective in this study is to present an optimal pattern of educational evaluation for high schools in Tehran City Training and Educational Organization. And one can refer to some of minor goals including identifying the most appropriate pattern for educational evaluation for high schools in Tehran City, determination of elements of educational evaluation for high schools in Tehran City as well as the parameters of these elements in educational evaluation pattern for high schools in Tehran City. Since the current research is of survey type so the following questions have used instead of application of hypotheses:

1- What is the most appropriate pattern (within theoretical framework) for educational evaluation of high schools in Tehran City?

2- What are the constituent elements of this model (theoretical framework)?

3- From what parameters does each of these elements comprise of?

MATERIALS AND METHODS

The current study is of applied researches type based on goal of study. Applied researches are intended to develop the applied sciences in a certain field. In other words, applied researches are led toward applied use. The results of such researches are employed in training and education for example in design of curricula and for contribution to taking decisions about education system. Similarly, this study is of descriptive (non- trial) researches in terms of data collection. Descriptive study consists of a group of methods which are aimed at describing the studied conditions and phenomena. Descriptive study may be only conducted to identify status quo further or to contribute to decision making process. Moreover, descriptive studies are divided into several classes in which the present research is included in surveying studies. Survey studies are of those researches, which are adopted to examine distribution of characteristics (traits) of a statistical population (Sarmad et al, 1998).

In this study, statistical population comprises of all principals, teachers (with MA degree in Educational Sciences field) from high school sector in Training and Education Organization (TEO) together with training and educational specialists (with PhD degree) in Tehran City. To select the reference sample group as well as in order to increase measurement accuracy, samples have been chosen by means of simple randomized sampling method and they come from TEO Organization Regions Nos. 2, 6, 8, 9, 12, 14 and 15 in Tehran City while sample group was selected with respect to assumption in statistical pattern of study and formula to determine sample space. As a result, in this study, sample size includes 520 participants where sampling plan was initially implemented separately in TEO Regions and then they were given as a whole form in tables.

Reliability indicates degree of measurement accuracy and in order to estimate reliability coefficient, a 64- question inventory was adopted as measurement tool in this study so Cronbach's Alpha Coefficient was usually used to calculate this parameter and its value was 0.97.

Table 1. Reliability of inventory segments

Elements	Alpha α
Research, information and evaluation services factor	0.8786
Total management quality factor	0.7273
Educational facilities factor	0.4524
Total Alpha	0.97

Validity of a measurement tool is the foremost factor in evaluation of the given tool. Some evidences were collected to examine the impact of the needed inferences that might include content validity, predictive validity, construct validity etc. (Khorshidi, 2003:178) and factor analysis has been used as a tool to determine validity of study measurement tools some factors loading was calculated as 0.3.

As it also already implied, data have been gathered from this study by administration of a 64-question inventory. After taking confirmation letter from the relevant officials for the sample group which was selected randomly, the aforesaid questionnaire was administered. In order to acquire better outcome and to create motivation in participants, at first study goals were described briefly and then questionnaires were executed and data were collected from participants' answers.

In this study, descriptive statistics was utilized including frequency, percentage, cumulative percentage, mean, standard deviation etc. and also for finding the answers to research questions with respect to the reasons that characterize implicitly the relationship among the studied variables and also inferential statistics, T- single test and factor analysis were used in the forms of main elements in SPSS statistical software. This program provides the answers for questions in the present survey.

To examine data description, initially 13 main elements of this study were classified based on mean values at observation levels and then by the aid of SPSS software, tables of frequency and frequency traits and the given chart were examined and separately listed in the following pages.

Tables of frequency include 3 columns of frequency, percentage and cumulative frequency. Tables of statistical characteristics (traits) comprise of 9 titles: Quantity of observations, range of observations, minimum, maximum, mean, standard deviation, variance, skewness and kurtosis of observations based on the given factors and their purposed levels.

Histogram chart has been estimated for factors based on their levels. Although, all histogram charts have abnormal skewness and kurtosis but due to great number of observations (n=520), one can approximately assume them as normal and symmetric because of Central Limit Theory. 13 elements, which have been studied in data description, are the same components that were verified in data analysis part for their existence necessity in terms of significance.

RESULTS

As it characterized in Table 2, in this factor level 5 and level 1 have correspondingly the maximum and minimum frequencies and percentage.

Table 2. Research, information and evaluation services factor

Level	Frequency	Percentage	Cumulative Frequency
1.00	7	1.3	1.3
2.00	57	11.0	12.3
3.00	158	30.4	42.7
4.00	226	43.5	86.2
5.00	72	13.8	100.0
total	520	100.0	

As can be seen in Table 3, for 520 observations, the related average standard deviation and variation are 3.66, 0.87 and 0.77 respectively. The related skewness are -0.44 and -0.32 respectively. Diagram of factor principal Levels of the given factor have been drawn based on their frequencies in the following histogram charts.

Diagram 1 indicates that in this factor, levels were dissymmetrical distributed but according to Central Limit Theory and with respect to this point that number of the studied observations is 520 in this survey and this is greater than 30 thus hypothesis for normality of observation is approximately accepted.

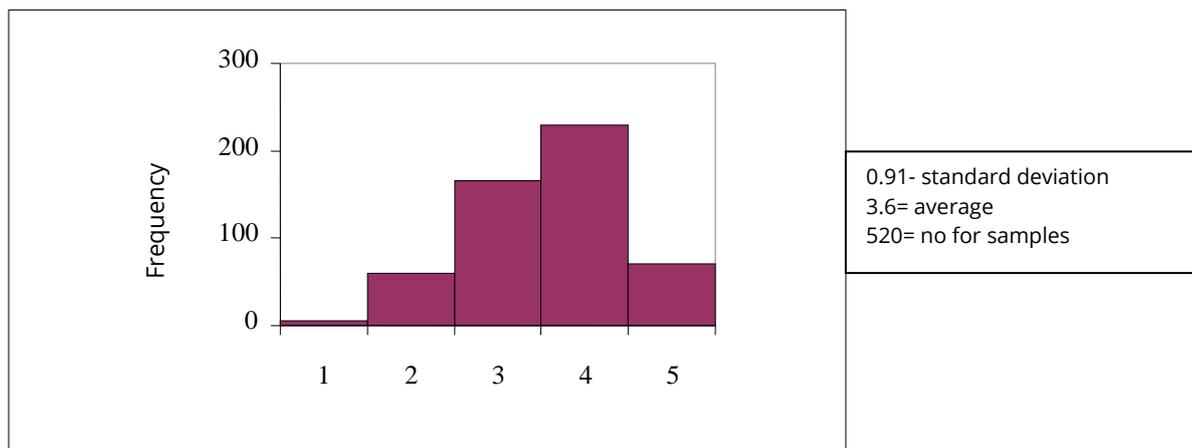
As it observed in the following table, in this factor, level 5 and level 1 have respectively the maximum and minimum frequencies.

As it seen in Table 4, for number of 520 observations, value of means is as 4.64, standard deviation as 0.99 and variance of observations as 0.99. Rates of skewness and kurtosis are respectively -0.74 and -0.66. In the following histogram chart, the levels of the given factor have been drawn based on their frequencies.

As can be seen in mentioned table, frequency and percentage of level four and level one is maximum and minimum respectively.

Table 3. Statistical Traits belong to Research, information and evaluation services factor

Quantity of Observations	Range of Observations	Minimum	Maximum	Mean	Standard Deviation	Variance	Skewness	Kurtosis
520	4	1.21	5.21	3.66	0.87	0.77	-0.44	-0.32



Digram1. Research, information and evaluation services factor

Table 4. Total management quality factor

Cumulative Frequency	Percentage	Frequency	Level
1.9	1.9	10	1.00
10.6	8.7	45	2.00
21.2	10.6	55	3.00
55.6	34.4	179	4.00
94.2	38.7	201	5.00
100.0	5.8	30	6.00
	100.0	520	Total

Table 5. Statistical Traits belong total management quality factor

Quantity of Observations	Range of Observations	Minimum	Maximum	Mean	Standard Deviation	Variance	Skewness	Kurtosis
420	4.60	1.20	5.80	4.17	1.03	1.08	-0.97	-0.43

Table 6. Total management quality factor

Cumulative Frequency	Percentage	Frequency	Level
4.2	4.2	22	1.00
14.0	9.8	51	2.00
25.0	11.0	57	3.00
59.2	34.2	178	4.00
87.7	28.5	148	5.00
100.0	12.3	64	6.00
	100.0	520	Total

As you see in the following table, Values of mean, standard deviation and variance of observations are 3.89, 1.17 and 1.37 respectively.

Rates of skewness and kurtosis are correspondingly -0.49 and -0.41 for these observations.

Table 7. Statistical Traits belong to Educational facilities factor

Quantity of Observations	Range of Observations	Minimum	Maximum	Mean	Standard Deviation	Variance	Skewness	Kurtosis
520	5	1	6	4.32	1.25	1.57	-0.77	-0.36

To describe data and generalization the given results to total statistical population, initially sampling

adequacy of this study has been tested for (n=520) observations based on the following table:

Table 8. Review the sampling adequacy for observations (n=520), KMO & Bartlett's Test

Kmo adequacy of sampling	0.822
K score (bartell's test)	31001.440
Degrees of freedom	2016
Significance level	0.000

With respect to number of significance level (p=0.000) which is lesser than coefficient value ($\alpha = 0.05$) so 520 observations are adequate for sampling analysis and they cover the given significance level.

The following table has been derived as results from statistical test, called t- single- sample and factor analysis for verification of the studied components.

Table 9. Results of one sample t tests (n = 520)

Factors	Test value=3					
	T value	Degree of freedom	Level of significance	Auerage difference	95% confidence interval for average difference	
					Lower bounds	Upper bounds
- information, research, evaluation services	17.141	519	0.000	0.6611	0.5854	0.7369
- manager	37.622	519	0.000	1.6482	1.5622	1.7343
- educational environment and material	32.738	519	0.001	1.4875	1.3982	1.5768
- teachers and academic services	17.363	519	0.000	0.8917	0.7908	0.9926
- total management quality	25.770	519	0.000	1.1742	1.0847	1.0058

DISCUSSION

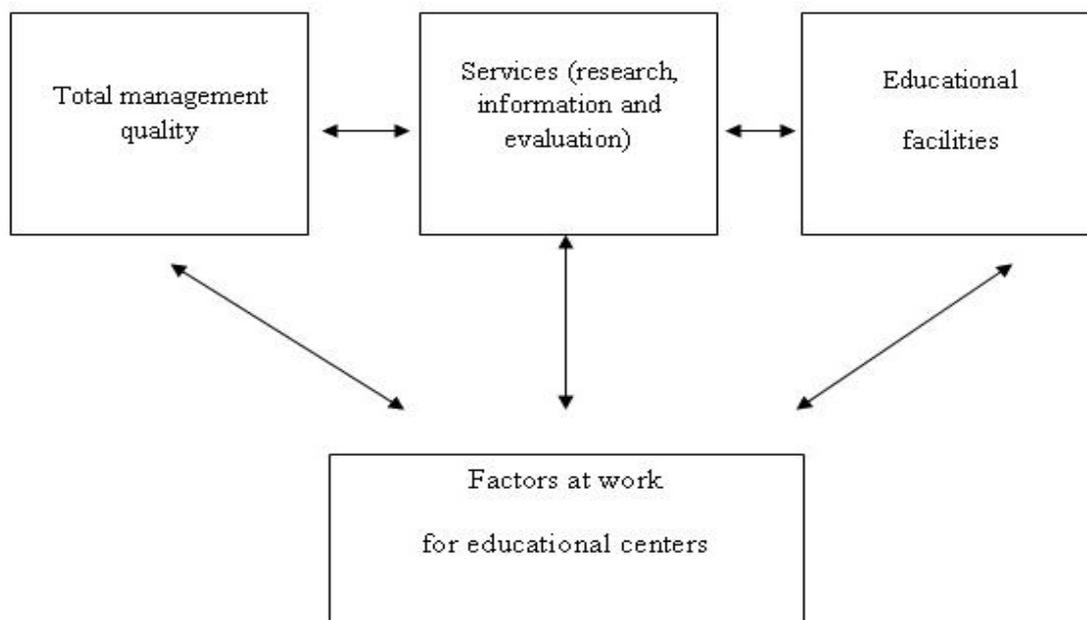
Given that significance level and rate error is lesser than $\alpha = 0.05$, so all five elements have been verified for this purpose in terms of statistical

After analysis of findings, the first finding points out that the most appropriate pattern theoretically - for academic evaluation in high school in Tehran includes 3 factors.

population. After verification of elements, statistical analysis test has been utilized including phases of correlation matrix among parameters, factor determination and rotated Varimax.

- 1- Services (research, information and evaluation);
- 2- Educational facilities;
- 3- Total management quality

They have been illustrated schematically below.



The above figure (theoretically) – is the educational evaluation system of factors for high schools in Tehran. These findings concur with malekshahireads findings (2000).

Secondly, this research points out that each of these factors comprises the following indexes:

First factor: services (research, information, evaluation)

1-Number of dropouts

2-Accessibility of scientific resources for learners

3-The number of question – answer sessions to explain the obscurities in different areas (religion, politics, science, culture)

4-How much teachers provide consultation to students.

5-The number of up- to- date scientific journals and books available at libraries

6-The number of books available to teachers and students at libraries.

7-The number of teachers guides.

8-The connection between schools, alumni and university students.

9-Number of academic progression tests given

10- How well managers consider the ideas in suggestion box.

11- Evaluation quality of school staff

12- The quality of question banks, the quality of given tests and alleviating stress among learners.

13- The number of scientific, literary, and mock university entrance exam given.

14- The number of evaluation carried out for teachers by their colleagues.

Second factor: educational facilities

1- The balance between number of students and teachers.

2- Educational space per student.

Third factor: total management quality

1- How school master attends bureaucratic discipline

2- The quality of classes and environment (light, heat, noise ...)

3- The number of extracurricular classes.

4- Students accessibility to university entrance exam preparatory classes.

5- How much the national quality standards are observed at schools.

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