

IDENTIFICATION AND RANKING THE EFFECT OF PERFORMANCE EVALUATION ON WORLD-CLASS COMPONENTS

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Abstract

The importance of world class manufacturing is obvious to the modern manufacturers. According to the impression of Importance of achieving world-class in manufacturing companies and the role of the performance evaluation on achieving world-class, in this research, Identification and Ranking the Effect of Performance Evaluation on world-class components in Nahavand Cement Company was surveyed. Whole of the firm's personnel (136 persons) were selected as the population. These Materials and Methods' is applicable and descriptive-survey. the questionnaire distributed among personnel after the provision Based on Research hypotheses and 120 questionnaires delivered completely and then hypotheses analyzed with descriptive and illative Statistics and one sample t-test and freidman test using SPSS software. The results shown that all dimensions are in good condition and all hypotheses are confirmed.

Keywords: performance evaluation, world class organizations, Nahavand Cement Company

1- Introduction

Nowadays, entry into global markets is an important issue in developing countries that with appearance of international markets, Products presentations in these markets and expanding the business, lead to expansion in competition in international and global area and the new technology development cycle and continuum technological innovations resulted in new markets creation. Hence, human knowledge outcome and latest scientific promotions in various fields of production and operations management should be best utilized to achieve world-class production as manufacturers are able to offer products with sales and presentation capabilities in global markets in competition arena.

In this regard, organizations witch achieved world-class productions are different from other organizations and their properties are Cause of this distinction. Accordingly, reviewing the relevant scientific sources, fourteen basic features of these organizations is derived that the organizations should develop characteristics of these organizations in themselves in order to achieve world-class (Blanchard, 2004 – farsijani, 2005).

According to the characteristics of world-class organizations that have been expressed, it is necessary for the local and regional organizations tend to have advantage and preference toward their rivals in production and operation to nurture the characteristics of the organizations in world-class in themselves properly in order to present the organizations performance along with organization's specific vision and strategy in the best manner and dominate the Strengths and weaknesses of the organization according to specified goals and programs by performance measurement and evaluation and by removing weakness and paying more attention to

organization strengths Results in achieving the goals and The step is taken towards organization's globalization.

So, if performance evaluation performs with process approach and properly and continually, it would lead to improvement and executive systems responsibility and public confidence to organizations performance and efficiency and Effectiveness.

For an introduction to components and World class organizations index, it can be stated that World class organizations have components that seven of these are principal and have more effect on competitive capability to becoming a world-class organization which are of specific actions and Practicable in firms and organizations. These principal components consist of:

- a. Reduction in waiting time
- b. Reduction in operational expenses
- c. Transparent business performance
- d. Reduction in time of supply of the product to the market or time of Supply of a service to the customer (reduction of Achieve time to market)
- e. Simplification and effective up external resources supply process
- f. Global and multiple locations and operations management
- g. Meet customer expectations (Ross, 1991).

According to the above, this research seeks to Identification and Ranking the performance evaluation's variables affecting gaining the world-class in Nahavand Cement Company.

2- Literature review

Performance evaluation

Neely & Platts In the case of the performance evaluation concept in personnel dimension believe that: the performance evaluation is "the Quantification process of the operation Efficiency and Effectiveness".

Casio defined the performance evaluation as the systematic Description of the individual or group's performance weakness and strengths in association with performing the tasks.

In this regard, performance evaluation in resource and Features utilization method dimension is expressed in efficiency indexes framework. In simplest definition, if we consider efficiency as the output to input proportion, in fact, performance evaluation system assesses the effectiveness of management decisions with regard to the efficient use of resources and features.

Performance Evaluation Levels Types

Performance evaluation can be divided into 4 levels according to evaluation:

1-Strategic level: performance evaluation that explores and compares countries massive performances in national and international level according to various fields such as political, economic, social, cultural, and martial is called performance evaluation in strategic level.

2- Organization level: performance evaluation as united collection in organization level and comparing to the other organizations is called performance evaluation in organization level. In this evaluation organizational purposes accomplishment amounts have been considered regarding to limitations and resources.

3- Operation level: it evaluates each organization unit performance and compares to the other units purposes or performances.

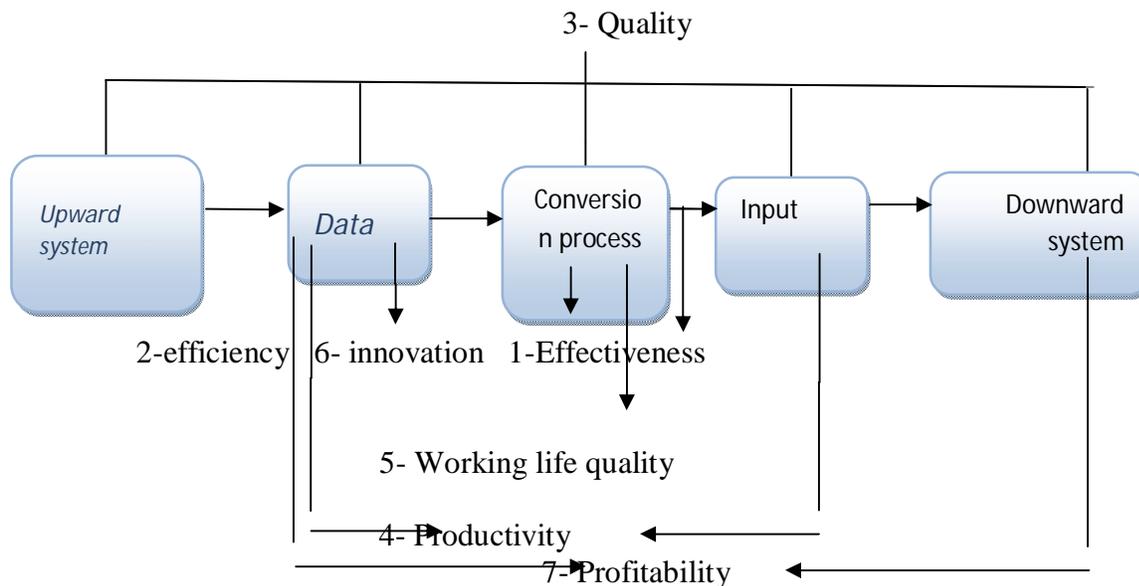
4- Individual level: it explores obtained behavior and results evaluation from individual activity with organization purposes which is a criterion for punishment or award.

Performance Evaluation Models

✓ **Sink and Tatel Model**

One of the approaches to performance evaluation system is “Sink and Tatel” model which was designed in 1989. As it has been shown in chart (2-2), in this model an organization performance originates from complicated relationships among 7 performance indicators as following:

- 1- Effectiveness including “correct tasks doing in proper time with proper quality”. In fact, effectiveness has been introduced in ratio of actual output on expected outputs.
- 2- Efficiency that its simple meaning is “correct doing of tasks” is defined by ratio of resources expected consumption on actual consumption.
- 3- Quality which has extensive concept has been explored and measured from 6 various aspects in order to making quality concept more tangible.
- 4- Productivity which is defined by traditional definition of output on input ratio.
- 5- Work life quality which improvement helps a lot to organization performance.
- 6- Renovation which is one of key components for performance improvement.
- 7- Profitability which is the organization ultimate goal.

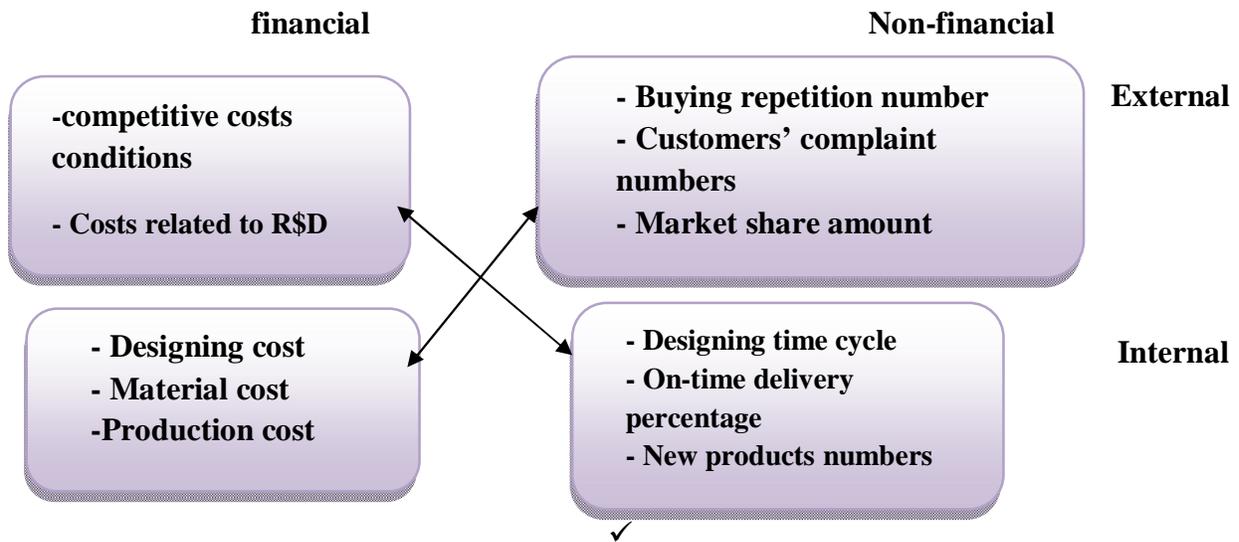


✓ **Chart 2-2 seven performance indicators**

Although, there have been many changes occurred in this industry after its offering, these 7 indicators have high importance in organization performance. Nonetheless, this model has some limitations, too. For example, “flexibility” is not mentioned as recent market necessities. In addition, another limitation is inattention to the organization customers (Tangen, 2004).

✓ **Performance Evaluation Matrix Model**

“Kigan” introduced performance matrix in 1989. This matrix is showing in chart (3-2). This model advantages are that it considers organizational performance various aspects including financial and non-financial aspects, and internal or external aspects coherently (Neely, Kennerly, 2000).



✓ **Chart 2-3- Performance Evaluation Matrix**

✓ **Determiners and Results Model**

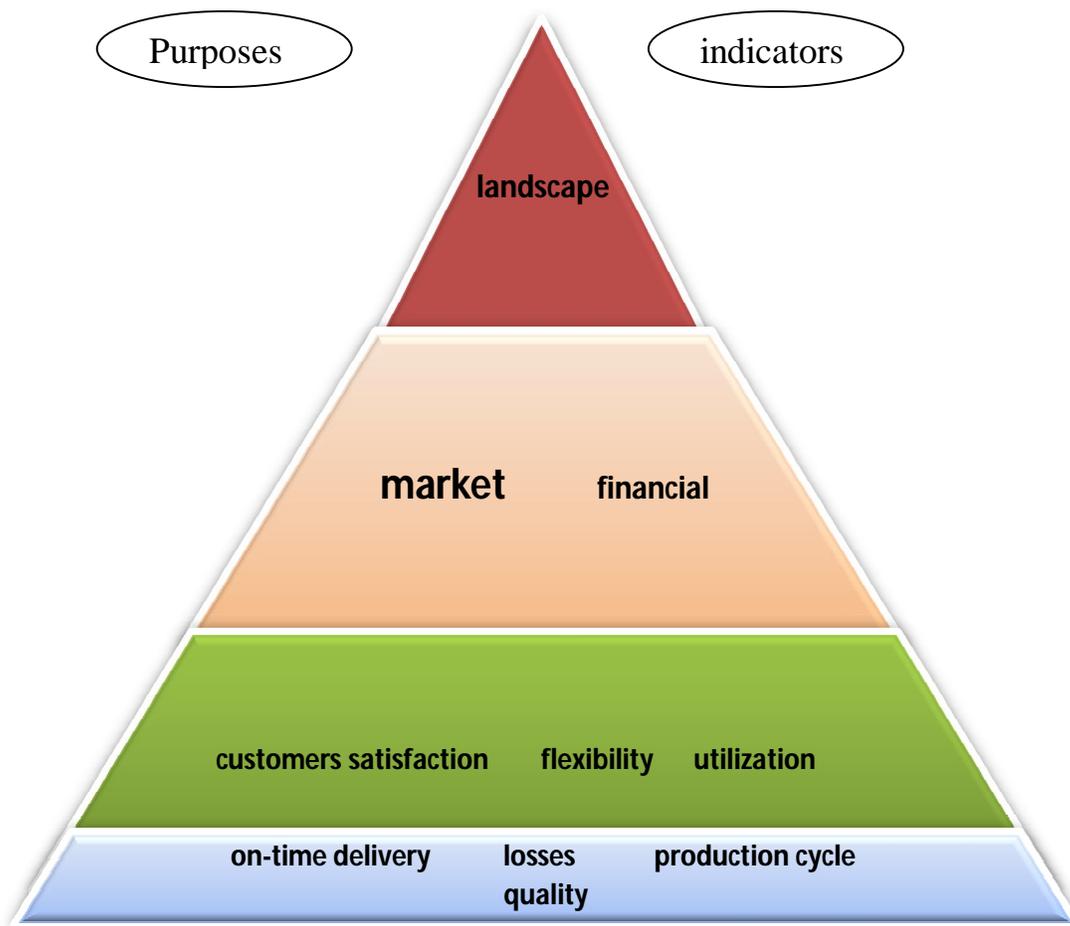
One of the models solves the problems of performance matrix problem is “determiners and results” framework which was designed and introduced by “Fitz Grad et al” in 1991. This frame is existed on this assumption that there are 2 basic performance indicators in each organization. These are indicators which are related to results and the ones which concentrate on results’ determiners. This separation reason of indicators is indicating this fact that obtained results are functions of business past performance and are obtained regarding to certain determiners.

In other words, results are as lagging indicators, while determiners are advancing and main indicators. Related indicators are gradually including financial performance, and indicators related to determiners are including quality, flexibility, resources and renovation utilization.

✓ **Performance Pyramid Model**

One of the performance evaluation system needs is existing clear relationship among performance indicators in various hierarchical levels of organization; as though, each unit tries to get to similar purposes. One of the models encompasses how to make this relationship is performance pyramid model.

This model of “Ling Cross” was designed in 1991, and performance pyramid purpose is making between organization strategy and its operations. As it is seen in chart (2-4), this performance evaluation system includes 4 levels of purposes indicating organization effectiveness (on left side of pyramid) and its internal efficiency (on right side of pyramid). Actually, this framework clarifies differences among indicators attending to organization external groups (such as customers’ satisfaction, quality, and in-time delivering) and business main indicators (such as productivity, time cycle and losses).



✓ **Chart 2-4- Performance Pyramid**

Making organizational performance pyramid by definition organization perspective starts in the first level that leads to business units later. On the second level, business units practice on setting short-term purposes setting such as profitability, cash flow, and long-term memories as market condition improvement and growth (financial and market). Business operation systems are connecting links among high-rank indicators and daily operation indicators (customers' satisfaction, flexibility, and productivity). Finally, 4 key indicators (quality, delivery, cycling and losses) in units and working centers have been used daily (Tangen, 2004).

The most important advantage of performance pyramid is its attempt to integrating organization purposes with operation indicators, but this approach doesn't offer any mechanism to identify performance key indicators, and also continuous improvement concept is not existed in this model.

✓ **Balanced Scorecard Model**

One of the most well-known model of performance evaluation system is "balanced scorecard" which was designed by "Chaplin and Norton" in 1992, then expanded and improved.

This model suggested that each organization should use series of balanced indexes to evaluate performance evaluation for superior managers to have general view of 4 organizational important aspects. These various aspects make answering to 4 main questions possible.

- 1- How are attitudes toward stockholders? (financial aspect)
- 2- In which fields we should act well? (inter-aspect of business)
- 3- How is customers view toward us? (customer aspect)
- 4- How can we continue value making and improving? (learning and innovation aspect)

Balanced scorecard's encompasses financial indicators which shows past activities results and completes them by considering non-financial indicators as future financial performance prerequisites and motive. "Kaplan and Norton" believed that by getting information from these 4 aspects the increase and information accumulation will be deleted by used indicators. In addition, managers are obliged to concentrate just on number of critical and vital indicators. In addition, using performance various aspects prevent from partial optimization (Kaplan and Norton, 1992). The most important disadvantage of this approach is its designing for offering total image of organization's superior managers' performances. Therefore, balanced scorecard framework has been made as controlling tool and don't attend to improvement (Nobelias, Krow, 1997).

Although, balanced scorecard is worthwhile offering important and sensitive areas to evaluate, it doesn't discuss on how to introduce proper indicators after identification; and finally, used them in management. In addition, this model doesn't pay attention to rivals aspect and doesn't consider benefits of all organization stakeholders (Nelly, Adams, 2002).

✓ **Business Process Model**

All frameworks explained since now are hierarchical oriented. There are other frameworks persuade managers to pay more attention to information and affairs in organization. For example, "Business Process" can be named which was suggested by "K.W, Borune" in 1996.

This framework is so proper and applicable, because it embosses input, process, output, and results indicators. Borune has used the example of "cake baking" to explain his model. In this example, input indicators include: flour amount, eggs quality, and so on, process indicators also concentrate on cases like oven temperature and baking duration. Input indicators include Cases like cake quality and vases results indicators such as its eater satisfaction. According to this model in an organization, inputs, process, outputs, and results to determine indicators and their performance evaluation include:

- ❖ **Inputs:** skillful and motivated employees, customers' needs, material, capital and so on
- ❖ **Process system:** products certification, products production, products delivery, and so on
- ❖ **Outputs:** products, services, financial results, and so on
- ❖ **Results:** fulfilling customers' needs, customers' satisfaction, and so on

Therefore, to evaluate organization performance evaluation, proper indicators regarding too explained areas above should be extracted.

Although, model is acceptable according to its concept and undoubtedly it is useful method to explain the difference among input, process, output, and results indicators, this model in placed in continuum in one side that expanded from intensive frameworks to process frameworks. In other words, hierarchy has been neglected completely in this model (Neely, Kennerley, 2000).

✓ **Stakeholders Analysis Model**

Performance evaluation system designing has been started by identifying organization strategies and purposes that is the reason why balanced scorecard of performance evaluation system starts with this question that: "what are stockholders demands?" actually, balanced scorecard is assumed implicitly that stockholders are the only ones who influence on organization purposes, and the other stakeholders don't play role in determining purposes. In other words, this model neglects other stakeholders' effect on organization. Non-attending to various stakeholders'

effectiveness differences in various environments is one of main reasons of not some huge firms being successful in using this model (Atkinson, Waterhouse & Wells 20, 1997).

Stakeholders analysis offered by “Lee” in 2001 .Stakeholders is divided into 2 groups: key and non-key stakeholders.

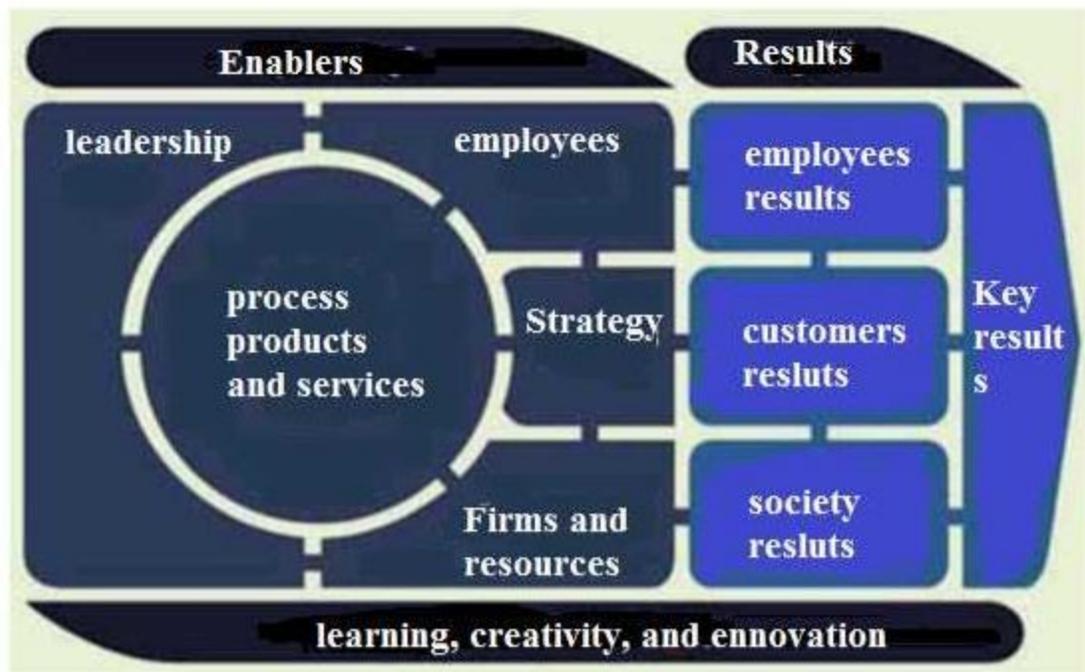
Key stakeholders have direct control on organization, and their wills are reflected in organization purposes (like stockholders), and non-key stakeholders use external mechanisms such as market and culture to protect their benefits, and don’t influence on purpose building (like customers).

Organization purposes are indicator of key stakeholders intentions and expectations, key stakeholders execute power on purpose building by organization governance structure, and non-key stakeholders are not so much powerful in purpose building instead they influence on organization strategies by external mechanisms, and indicate how to get purposes regarding to external environment. Therefore, performance evaluation system is started from strategies, and act as link between managers’ behaviors and stakeholders’ expectations.

✓ **European Foundation Quality Management Model**

Another known measuring framework which has been used extensively is European foundation quality management model (EFQM). As it is seen from chart (6-2), this framework includes 2 disparate factors divided to 2 general groups “Abilities” and “results”. Abilities include: leadership, employees, policies and strategies, resources, stakeholders, and processes. In addition, results include: results from people, results from customers, results from society, and results from performance key results. This framework supporting and instructing theory is that enablers like leverages which managers can use them to get to future results faster.

One of this model disadvantages is its functionalizing problem, because used concepts and expressions in this model is so general that they can be interpreted in various ways, and each organization will be able to make different evaluation indicators with this headlines (Neely, Kennerley, 2000).



✓ **Chart 2-6- European foundation quality management model (EFQM)**

✓ **Medori and Steeple Model**

This model is one of comprehensive and coherent frameworks which distinguishes and promotes performance evaluation systems. This approach includes 6 related stages which are shown in chart (2-7). Like the other frameworks this model start point is organization strategy definition and its success factors (step 1).

In the next step, organization strategic necessities are adapted with 6 comprehensive organization’s strategic necessities including quality, cost, flexibility, time, on-time delivery, and future growth. Then proper indicators selection with a checklist including 105 indicators starts with complete definitions (step 3).

After that existed performance evaluation system becomes verified in order to make present used indicators identified (step 4).

In the next step, it works on how to have real usage of indicators, and each indicator is explained with 8 other elements including title, purpose, equation, times, information resource, responsibility, and improvement (step 5). The last step works on performance evaluation system periodical revisions (step 6). (Medori, Steeple, 2000).

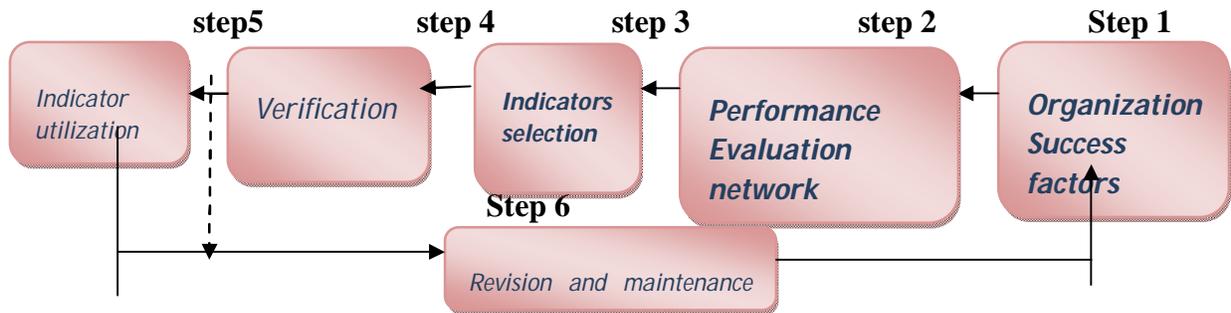


Chart 2-7- Verification Method and performance evaluation system promotion

In contrast to many other frameworks, this model is further more than simple guidelines and can be used practically by performance evaluation users. The most important advantage of this model is that it can be used both as a tool to design performance evaluation system and to promote existed system. In addition, there is unique explanation from how the concept of performance indicators have happened, but the main limitation in this model occurs in step 2 that evaluation network is constituted just with 6 competitive priorities, because as in is shown in the other models, performance indicators should attend to the other various issues, too.

The importance of performance evaluation

In this age, tremendous developments of management knowledge made the existence of performance evaluation system inevitable; in such a way that lack of evaluation system in organization’s various dimensions ranging from evaluation of utilization of resources and features, personnel, goals and strategies is considered as a sign of organization’s sickness.

The continuous improvement of the performance of the Organization creates a massive force of synergy that these forces can be a supporter the program of growth and development and creating opportunities for organizational excellence. Continuous improvement of the performance would not be possible without review and gathering Information from the rate of progress and achieving to the goals and without identifying the organization’s Challenges and

receiving feedback and notification of the rate of performing written policies and identifying the cases that need a serious improvement.

Experts and researchers believe that performance evaluation is the main issue in all organizational analyses and imagination of an organization without performance evaluation and measurement is difficult. Therefore, every effort is made to achieve success must has a framework and organizational performance improvement has to be a process named performance cycle.

Globalization

One of the significant changes occurred in the business environment of a 21st century is globalization of economic, industrial and service activities. Globalization phrase is called to a process that helps forming a unit and aggregated space. This process has expanded and various dimensions (Murthin, 1993).

Antony Mc grew explained the purpose of globalization as the process of structural transformation which occurs in economic, political and social activities that lead to forms of transnational and local power and international relations.

Therefore, in order to achieve this goal, global manufacturers tend to world-class manufacturing system. Unfortunately, in undeveloped and unfamiliar to global economy situation countries, most senior executive's consideration on national, not international markets, on good, not world-class products. Undoubtedly, Such attitudes result in their fiasco and exit from production field in this world view (Romhart, 1998).

Performance evaluation concept in world-class

It can be expressed that all organizations at least evaluate their performance with profitability index. But performance evaluation and measurement with world-class indexes and criteria specify the existing status and organization weakness and strengths. This led to the preparation of more effective programs and organization success and improvement.

So, a key part of the management in each organization is performance evaluation means a comprehensive, regular and systematic overview of organization activities and results which is utilized to improve the organization through an efficient monitoring. Performance evaluation a main part of the efficiency management and this will improve the quality and efficiency during efficiency improvement cycle¹. Performance evaluation In addition to improving efficiency makes sure it is correct strategies and motivates the employees (Drury, 1990).

3- Research Methodology

This research is an applicable research of goal and of nature, Materials and methods and data collection method is a survey type descriptive research. In survey method which is a descriptive research, data are collected among those who are possibly having information through various tools such as questionnaire, interview and other data collection tools.

In this research, with regard to the statistical operations meaningfulness, increase accuracy and the limitation of the statistical population, it was trying to that statistical population consist of whole of the population and the research's questionnaire was given to whole of the population (136 persons) to complete which 125 questionnaire was delivered and 5 of them are incomplete or useless and finally 120 questionnaire was analyzed after gathering.

Research hypotheses:

- Reduce customer waiting time is in a good status among the achieving to world-class factors
- Reduce costs is in a good status among the achieving to world-class factors

¹MEPI = Measurement +Evaluation, Planning, Improvement

- Providing customer expectations in a good status among the achieving to world-class factors
- Reduce product or service delivery time to market is in a good status among the achieving to world-class factors
- Creativity and innovationist in a good status among the achieving to world-class factors

4- Data analysis

In this section, in order to check the variables status single-sample t-test was utilized. Results are shown in table 1:

Table 1.t test analysis results

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper
Reduce customer waiting time	73.529	119	.000	4.03241	3.9238	4.1410
Reduce costs	82.119	119	.000	3.98833	3.8922	4.0845
Providing customer expectation	104.754	119	.000	4.19924	4.1199	4.2786
Reduce product delivery time to market	89.782	119	.000	4.01750	3.9289	4.1061
Creativity and innovation	72.738	119	.000	4.15333	4.0403	4.2664

According to table 1, since the Sig for all of the components is calculated less than 0.05, hence all dimensions are in a good status and hypothesis is confirmed.

Freedman test was utilized to investigate the importance and ranking the influenced organizations’ world-class key factors; results are shown in table 2.

According to table 2, the measure of influenced world-class key factors from organizational performance evaluation is: Providing customer expectation with the mean rank of (3.53), Creativity and innovation with the mean rank of (3.37), Reduce customer waiting time with the mean rank of (2.89), Reduce product delivery time to market with the mean rank of (2.68) and Reduce costs with the mean rank of (2.53)

Table 2.Freedman test analysis results

volume	120	
	36.847	
Degree of freedom	4	
significance	.000	
indexes	mean rank	ranking
Reduce customer waiting time	2.89	3

Reduce costs	2.53	5
Providing customer expectation	3.53	1
Reduce product delivery time to market	2.68	4
Creativity and innovation	3.37	2

5- Conclusion

According to the perceived importance of achieving to world-class in manufacturing companies, this research sought for identifying and ranking the performance evaluation factors affecting on achieving world-class in Nahavand cement Company. According to the statistical tests derived from SPSS software, hypothesis test results are as below:

Table 3. Analysis of hypotheses

Hypothesis result	mean	statistics	Sig	hypothesis
confirmed	4.03242	73.529	0.000	Reduce customer waiting time is in a good status among the achieving to world-class factors
confirmed	3.98833	82.119	0.000	Reduce costs is in a good status among the achieving to world-class factors
confirmed	4.19924	104.757	0.000	Providing customer expectation is in a good status among the achieving to world-class factors
confirmed	4.01750	89.782	0.000	Reduce product or service delivery time to market is in a good status among the achieving to world-class factors
confirmed	4.15333	72.738	0.000	Creativity and innovation is in a good status among the achieving to world-class factors

In this research freedman test results shown that the most important factors to achieve world-class are Providing customer expectation, Creativity and innovation, Reduce customer waiting time, Reduce product or service delivery time to market and Reduce costs respectively.

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