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EVALUATING THE EFFECTS OF THE IMPLEMENTATION OF IRAN NATIONAL QUALITY AWARD NEW MODEL (INQA) IN IRANIAN ORGANIZATIONS

Abstract: The aim of this study is to examine the effectiveness of the Iran National Quality Award new model (INQA) in corporations that have implemented this model in Iran. This research aims to reveal the effects of implementation of Iran National Quality Award (INQA) New Model on seven dimensions of the Iranian companies which indeed are seven core factors of this model, i.e. Management & leadership, People, Processes, Resources, Customer & consumer results, Environment & community results, and Performance results. A mail survey was conducted on a simple random sample of 210 organizations that have achieved certification or appreciation during the implementation of INQA model in four rounds. 400 questionnaires were randomly distributed and 392 complete and correct questionnaires were returned. Descriptive and inferential statistics were employed to analyze the data. Results indicated that the highest positive impact of INQA New Model on the improvement of organizational performance of the surveyed organizations was on customers' area. Performance results, leadership and management, processes improvement, environment and society results, and finally better utilization of organizational resources were respectively other areas which are affected mostly. Also, this study found no significant relationship between the implementation of this model and the improvement of employees' conditions in the surveyed organizations.

Keywords: Iran National Quality Award Model (INQA), Business Excellence, Quality Management, Performance, Iran

1. Introduction

Today the managers of most businesses, both service and manufacturing organizations deal with quality unprecedentedly because paying as much attention as possible to customer is taken into consideration by organizations. Because as the study of Hellofs and Jacobson (1999) showed product quality impacts market share. Iwaarden and van der Wiele (2012) by literature note that in order to manage quality, organizations typically aim to do three things: build relationships with customers (and other

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stakeholders), reduce variation in key processes, and improve processes and products in a continuous step-by-step manner. In order to achieve these goals organizations around the world have employed different approaches and models presented by different researchers. Quality systems such as Statistics Process Control (SPC), Total Quality Management (TQM), and Business Processes Reengineering (BPR) and so on, are the only efforts done to improve the quality level in all organizational dimensions (Loomba and Johannessen, 1997).

Usually some models are presented & utilized to encourage organizations to apply quality practices too. Quality models & awards are introduced in national level due to the competitiveness & environmental conditions of each country. Of course there are many similarities between different national Quality models & awards in different countries. These similarities are seen the most in the area of criteria & scores allocation process (Eriksson, 2004). Despite these similarities, different researchers often study Quality models and awards in national level and make suggestions to improve them.

Fortunately in Iran during the past couple of years, industries of the country have found out the importance of quality as a key strategic weapon to compete in national and international markets (Valmohammadi, 2011). So, the main objective of this study is to identify the performance results achieved by the surveyed Iranian organizations that use INQA new model and particularly the impacts of the new dimensions of the model which has recently been designed and embedded in the model.

2. Literature review of quality management, TQM and organizational performance

Rose et al. (2004), define Quality management as a long-term organizational strategy to improve quality level of products and services presented by the organization for insuring the survival of organizations. Naylor (1999) suggests that Quality management should focus on all activities and at all professional levels in order to establish a continuous process towards improvement. The Quality Management field increasingly searches for new ways to improve organizational performance (Valmohammadi, 2011). Organizational performance is an indicator which measures how well an organization accomplishes its objectives. Based on the literature review, organizational performance is examined using two aspects: financial performance and market performance (Valmohammadi, 2012). In spite of the increase in research on TQM, many questions remain unanswered (Valmohammadi, 2011). Several writers have attempt to define the different dimensions that shape TQM including Ahire et al. (1996), Dale (1999), Flynn et al. (1994), Saraph et al. (1989), and Sila and Ebrahimpour (2005), Valmohammadi (2011).

Oakland (1993) argues that TQM is an approach for improving the competitiveness, effectiveness and flexibility of a whole organization. Dale (1999) defines TQM in accordance with ISO 8402 as a management approach of an organization centered on quality based on the participation of all its members. On the other hand Shiba et al. (1993) argue that TQM is an evolving system of practices, tools and training methods for managing companies to provide customer satisfaction. Dean and Brown (1994) suggest that total quality mainly composed of three elements; principles, practices and techniques. Hellsten and Klefsjö (2000) define TQM as "a continuously evolved management system consisting of values, methodologies and tools, the aim of which is to increase external and internal customer satisfaction with a reduced amount of resources". Also, Valmohammadi (2011) in his study regarding the impact of TQM practices on Iranian manufacturing SMEs consider tools

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and techniques and an important factor for TQM implementation.

2.1 Quality model

In fact organizations require some models to measure success level towards achieving their goals; therefore they can compare their current situation with the desired one. Realization of values and basic concepts expressed in TQM is the ultimate goal of quality models (Langeroodi *et al.*, 2008). Most of researchers (Curcovich *et al.*, 2000; Lee *et al.*, 2003; Yong and Wilkinson, 2001) consider quality models as the practical framework and tool towards applying TQM practices. They estate that understanding the components of TQM and translating its essential ideas into a simple language make quality models spread. Hakes (1996) believes these models are presented in order to measure the main criteria of TQM and they are modeled on the hypothesis that the excellent results (employees and customers satisfaction, community and performance results) could be achieved by powerful leadership, competent & committed employees, policies & processes in a coordinating structure (Langeroodi *et al.*, 2008).

2.2 Iran National Quality Award (INQA)

Many nations have established their own business excellence frameworks (BEFs) to help raise the performance of participating organisations within their country. BEFs provide a structured approach for organisations to assess their performance and benchmark this against an internationally recognised score. They are administered by national organisations (custodians) who are responsible for: framework design; on-going development and redesign; promotion of BE within that nation's business community; and provision of services to increase framework use (Saunders *et al.*, 2008). The idea of Iran National Quality Award New Model (INQA) was emerged in 2002. After

reviewing objective experiences of National Quality Awards in other countries, a committee composed of top national experts in quality management was formed in order to formulate Iran National Quality Award criteria. They started to study different models of important quality awards of the world specially MBNQA, EFQM & Deming Prize models. Then they presented their initial report about National Quality Award formation to High Council of Standardization by the head of The Institute of Standards & Industrial Research of Iran (ISIRI). National Quality Award formation was approved in the June of 2002. During several meetings, INQA model was determined based on European quality foundation model (Iran quality management society, 2011).

However, the organizational excellence model was presented in Iran when more than 70 national excellence models & 90 quality awards exist in the world (Yaghoobnezhad & Nazarianzadeh, 2009). Since 2001 some active institutions and associations in quality area made efforts to formulate a foundation in order to award active organizations in quality area, like other countries. Finally after long sessions and discussions and taking into consideration the cultural, social, political & economic indicators, EFQM organizational excellence model was selected as the basis of award formulation and thus two awards were born, which are as follows: 1- INQA that is awarded by Standard National Organization. 2- Iran National Productivity & Excellence Award (INPEA) that is awarded by Institute for Productivity and Human Resource Development to qualified organizations.

Generally, INQA is a national & scientific award which contains 3 levels of statue, appreciation, and certification that is awarded to applicant organizations in 10 product groups after precise assessments based on new model award (Iran quality management Association, 2011).

According to products and services variety

and due to the difference in nature of them and in order to encourage producers and service providers to compete and also focus on product and service quality in a certain product group, it was approved that INQA will be awarded to 10 determined classes by UN as Central Product Classification (CPC) in recognition of appreciation, commitment certificate, and silver and bronze prize separately. Golden statue will be awarded to only one organization which receives the highest score among all product groups

The illustration of the Model as a wheel has been designed so, to symbolize motion (Figure 1). This model has seven criteria of which, four are criteria of Enablers and the other three are Results. The first Enablers criterion is Leadership and Management which lies at the center of the Model. The other Enablers criteria are Processes, Resources, and People respectively

Figure 1. The illustration of INQA model

Based on the above mentioned literature review we posit the following hypotheses.

H1: Implementation of INQA new model has a positive impact on leadership and management.

H2: Implementation of INQA new model has a positive impact on organizational processes.

H3: Implementation of INQA new model has a positive impact on organizational resources.

H4: Implementation of INQA new model has a positive impact on employees' conditions.

Also, as the three Results criteria are: Customers (as the most important stakeholders of the organization), Social and Environmental, and finally Performance Results which comprise financial and non-financial results as well as People results as the most important part of the organization`s

capitals, so we tested the following hypotheses regarding these criteria too.

H5: Implementation of INQA new model has a positive impact on customer's satisfaction.

H6: Implementation of INQA new model has a positive impact on environment results.

H7: Implementation of INQA new model has a positive impact on organizational performance results.

The rotational force of the model begins with Learning and continues through Creativity and Innovation within Enablers towards achieving expected results. Such movement never halts if Leadership and Management play their appropriate roles (Iran quality management society, 2011).

3. Methodology

3.1 Sample and data gathering

A mail survey was conducted randomly among managers and experts of the 210 corporations that have achieved certification or appreciation during the implementation of INQA Model in four rounds. The list of firms was acquired from Iran quality management association database. Of the 400 questionnaires posted, a total of 392 questionnaires were returned and used in the final analysis, giving us a response rate of %98. Returned questionnaires with missing data were excluded. Approximately 60 percent of responses came from manufacturing sectors and the rest from the service sector.

The questionnaire included two sections: the first part is about demographic characteristics of respondents (see table 3). The questions of the second part which were based on a Likert scale ranging from 1 to 7 (1=strongly disagree and 7=strongly agree) is in association with the research's hypotheses and assesses every hypothesis from the respondents' point of view.

3.2 Validity & Reliability

Measurement scale reliability was assessed using the Cronbach's alpha. Nunnally (1978) states that a construct is reliable if the Cronbach's alpha of the construct exceed the minimum level 0.7. As seen in the table 1, the Cronbach's alpha for all the constructs is greater than 0.7 (ranging from 0.72 to 0.87). Therefore, the reliability of the constructs is acceptable (Nunnally, 1978). Descriptive statistics for the relevant variables are displayed in Table 1.

Confirmatory factor analysis using structural equations (Anderson and Gerbing, 1988) and applying the maximum likelihood method was used to evaluate convergent validity According to Thong (2001), convergent validity refers to the degrees to which two or more items measuring the same variable agree. The findings acquired are satisfactory showing a good fit between the measurement model and the data (χ^2/df=1.09; RMSEA=0.052; RMR=0.034; GFI=0.94; AGFI=0.92). The confirmatory factor analysis revealed that the standardized factor loadings are statistically significant (demonstrated by T-values above 1.96) and greater than 0.5. Thus, we concluded that our measurement scales had convergent validity.

Discriminant validity is defined as "the degree to which items differentiate between variables". For discriminant validity to exist, the AVE square root must be higher than the correlation between the constructs. Table 2 shows that this condition is met in all cases.

Table 1. Descriptive statistics and reliability

Constructs	Mean	SD	Cronbach's Alpha
Leadership and management	4.2076	.4612	0.76
Organizational processes	4.2355	.4260	0.86
Organizational resources	4.3614	.4242	0.72
Employees condition	4.0736	.5088	0.85
Customers satisfaction	4.3765	.6362	0.82
Environment results	4.5255	.7125	0.74
Organizational performance	4.4286	.6202	0.87

Table 2. Correlations and discriminant validity

Constructs	1	2	3	4	5	6	7
Leadership and management	**0.87**						
Organizational processes	0.73	**0.85**					
Organizational resources	0.27	0.18	**0.84**				
Employees conditions	0.32	0.43	0.75	**0.86**			
Customers satisfaction	0.60	0.63	0.37	0.54	**0.90**		
Environment results	0.47	0.52	0.13	0.52	0.75	**0.89**	
Organizational performance	0.85	0.81	0.48	0.34	0.64	0.53	**0.91**

Notes: **n =392;** square root of **AVE** is shown on the major diagonal (bold)

4. Results

4.1 Data Analysis

Responder's characteristics and their demographic information are presented in table 3:

Table 3. Respondents' characteristics (N=392)

	Item	Number	Percentage	Cumulative percentage
sex	male	244	0.62	0.62
	female	148	0.38	%100
	total	392	%100	
Education degree	Associate & Bachelor's degree	251	0.64	0.64
	Master's degree	104	0.26	0.90
	Doctorate and over	37	0.10	%100
	total	392	%100	
Age	Under 30 years	49	0.13	0.13
	30-45 years	142	0.36	0.49
	45-60 years	134	0.34	0.83
	Under 60 years	67	0.17	%100
	total	392	%100	
Work experience	2-5 years	78	0.20	0.20
	5-15 years	164	0.42	0.62
	15-25 years	103	0.26	0.88
	Over 25 years	47	0.12	%100
	title	392	%100	

Kolmogorove-Smirnov test was used to study whether the data distribution was normal or not. The aim of testing is to examine the stated claim of normal distribution of a quantitative variable data.

Table 4. Kolmogorove- Smirnov test results

	Model's point	Processes	Management and Leadership	People
Number	392	392	392	392
Mean	749.9260	4.2355	4.1938	4.0883
SD	126.58663	.42605	.64670	.80132
Test Statistic	.225	.030	.049	.082
Deviation Level	.160	.030	.022	.051
	Environment and Society Results	Customer and Consumer Results	Performance Results	Resources
Number	392	392	392	392
Mean	4.0883	4.3765	4.3765	4.1661
SD	.80132	.63621	.63621	.44441
Test Statistic	.082	.059	.059	.041
Deviation Level	.051	.059	.059	.020

Results show that data distribution is normal in all cases because significance level of all variables is greater than significance level of 0.05. Also the kolmogorove-Smirnov statistic is more than standard value of the table, therefore data is normally distributed. According to normally distributed of data in all cases, parametric test will be used.

4.2 Hypotheses test

In this research the analysis methods comprise of paired T-test to measure significance relationship and one-way ANOVA test to grading parameters and compare managers and expert's ideas. The table 5 shows the result of the paired t-test. The following are the results of the hypotheses tests.

In terms of leadership and management, there was a significant difference in the scores for model and no model (MD=0.210, SD=0.461) conditions; t (391) = 4.928, P=0.000, supporting H1. These results suggest that implementation of INQA new model was effective to improve leadership and management. For the H2 hypothesis, there was also a significant difference in the scores for model and no model (MD=0.175, SD=0.426) conditions; (t (391) =8.325, P=0.000, giving support to H2. These results suggest that implementation of INQA new model was effective to improve organizational processes. With regard to H3 hypothesis, there was a significant difference in the scores for model and no model (MD=0.361, SD=0.424) conditions; t (391) = 16.844, P=0.000, supporting H3. These results suggest that implementation of INQA new model was effective to improve organizational resources. However, for fourth hypothesis, there was not a significant difference in the scores for model and no model (MD=0.0443, SD=0.508) conditions; t (391) =1.770, P=0.078. These results suggest that implementation of INQA new model wasn't effective to improve employee's conditions.

Table 5. Paired T-test

	MD	Sig. (2-tailed)	df	t
Management and Leadership	0.2109	0.000	391	4.928
Organizational processes	0.1756	0.000	391	8.325
Organizational resources	0.3614	0.000	391	16.844
Employee's conditions	0.0443	0.78	391	1.770
Customer results	0.3764	0.000	391	11.715
Environment and society results	0.5255	0.000	391	14.601
Performance results	0.4285	0.000	391	13.681

Note: **n=392; MD: Mean Difference**

With regard to INQA model and customer satisfaction relationship, there was a significant difference in the scores for model and no model (MD=0.376, SD=0.636) conditions; t (391) = 11.715, P=0.000, supporting H5. These results suggest that implementation of INQA new model was effective to improve customers satisfaction. In terms of environment and society results, there was also a significant difference in the scores for model and no model (MD=0.525, SD=0.712) conditions; t (391) = 11.715, P=0.000, supporting H6. These results suggest that implementation of INQA new model was effective to improve environment and society results. Lastly, regarding H7 hypothesis, there was also a significant difference in the scores for model and no

model (MD=0.428, SD=0.620) conditions; t (391) = 13.681, P=0.000, giving support to H7. These results suggest that implementation of INQA new model was effective to improve organizational performance.

ANOVA and post hoc tests

One-way ANOVA as well as post hoc tests were used to determination of significance difference between the results of implementing INQA new model. These tests are used when we have found statistical significance between conditions but we don't know where the significant differences are. The results are given in table 10.

Table 6. One-way ANOVA and Tukey test

Criteria	Groups	Mean Difference	SD	Sig.
Management and leadership	2	-.033	.031	1.000
	3	.132[*]	.036	.005
	4	-.182[*]	.030	.000
	5	-.255[*]	.037	.000
	6	-.199[*]	.038	.000
	7	-.352[*]	.041	.000
Organizational processes	1	.033	.031	1.000
	3	.166[*]	.035	.000
	4	-.149[*]	.031	.000
	5	-.222[*]	.039	.000
	6	-.165[*]	.039	.001
	7	-.319[*]	.043	.000
Organizational resources	1	-.132[*]	.036	.005
	2	-.166[*]	.035	.000
	4	-.315[*]	.034	.000
	5	-.388[*]	.043	.000
	6	-.331[*]	.041	.000
	7	-.484[*]	.045	.000

Employee's conditions	1	.182*	.030	.000
	2	.149*	.031	.000
	3	.315*	.034	.000
	5	-.073	.037	1.000
	6	-.017	.039	1.000
	7	-.170*	.042	.000
Performance results	1	.255*	.037	.000
	2	.222*	.039	.000
	3	.388*	.043	.000
	4	.073	.037	1.000
	6	.056	.045	1.000
	7	-.097	.049	1.000
Environment and society results	1	.199*	.038	.000
	2	.165*	.039	.000
	3	.331*	.041	.000
	4	.017	.039	1.000
	5	-.056	.045	1.000
	7	-.153	.050	1.000
Customer results	1	.352*	.041	.000
	2	.319*	.043	.000
	3	.484*	.045	.000
	4	.170*	.042	.001
	5	.097	.049	1.000
	6	.153	.050	.051

Based on the results above, there was a statistically significant difference between groups as determined by one-way ANOVA. A Tukey post-hoc test revealed that there were no statistically significant differences between management and leadership and organizational processes groups ($p = 1.000$). There were also no statistically significant differences between employee's conditions and performance results ($p = 1.000$). There were no statistically significant differences between employee's conditions and environment and society results ($p = 1.000$). There were no statistically significant differences between environment and society results and performance results ($p = 1.000$). Finally, there were no statistically significant differences between environment and society results and customer results ($p = 1.000$).

5. Conclusion and direction for future research

Results show that INQA New Model has been successful in improving organization leadership and management and its main elements comprise of quality based culture, quality systems, stakeholders' needs, information derived from performance measurement and product quality and strategy transfer.

One of the main dimensions of INQA New Model is improving organizational processes and the model's assessors emphasize on organizational process improvement through different training and monitoring methods. In general one of the most important objectives of national quality models is organizational process improvement. Sometimes the importance of organizational processes is more than the product itself. So, the variability of organizational key processes should be decreased through use of techniques such as SPC and training of the surveyed organizations' employees with more advanced methods like Design of Experiment (DOE). Also research results show that INQA New Model implementation was completely effective on processes and all related elements including creativity &

innovation, product quality assurance, customer relationship and planning process.

Implementing INQA New Model could improve partners & suppliers' practices, finance resources, organization infrastructural resources and technology utilization. However, implementation of the model couldn't improve organizational learning. Although, organizational learning is defined and followed as one of model's parts, it couldn't meet this goal. Similar result was derived from H_4 that the model couldn't promote capabilities and skills level of employees. Organizational learning broadly depends on employees' capabilities and skills improvement and on the other hand employees' empowerment. Therefore, we can argue that INQA New Model has performed poorly in employees' capabilities and skills improvement. However, other factors have been improved by the implementation of INQA New Model.

According to model's goal setting, employees' conditions improvement was predicted but results show that the implementation of the model couldn't support this criterion in practice. On the other hand, research results indicate that INQA does not appropriately explain employees' conditions improvement or predicted items aren't reinforced well. The most important reason might stem from the weakness of executive teams of the surveyed organizations. So, this requires more attention of top management of the organizations regarding identification and removing of the roots. Also, lead assessors and assessors of this award could play an important role in order to find any improvement opportunities to further develop the related criteria of the model towards the improvement of employees' conditions.

Generally satisfying and meeting the customer's needs is one of the basic goals of organizations which also INQA pays attention to it. According to model's emphasis on customer related results, organizations and companies report the improvement of organizational performance on customers. It seems that organizational results regarding customers would improve through staff training in dealing with customers, organizational process improvement and leadership and management improvement. Since customers' satisfaction is one of the fundamentals of formulating national quality models, it has been confirmed by many of such models.

While according to research results, INQA application leads to environment & community results improvement, but this criterion is reported as one of the poorest model results. On the other hand, it seems that INQA has not operated successfully in environment & community results improvement. When the model is reviewed, environment & community results were received one of the lowest scores which has little effect on the model's final score. In addition, model's effort to promote this low level of environment & community results were not effective. Of course one of the other reasons of this subject was low sensitivity of the executives against other factors that leads to this part's weakness.

Organizational performance results criterion was one of the main goals followed up in the model which received a significant coefficient in the model. Research results show that INQA implementation could improve the level of performance results in the surveyed organizations and in fact the model could meet the predicted objective. The fact that the model could improve organizational resources utilization, managerial methods and affect the results of organizational performance as well is one of the reasons. In majority of quality models, performance results and also their effectiveness have been confirmed.

Prioritization of the results derived from INQA implementation through one-way ANOVA grading test with frequent measurements in 4 levels is as follows:

The highest impact of INQA implementation was the improvement of customers and consumers satisfaction in the first level. Then, performance results, leadership and management, and organizational processes have been affected the most due to INQA implementation. Next level contains environment and community results and also the better utilization of organizational recourses. Last level is about employees' conditions improvement which has not been affected by INQA implementation in a significant manner based on the results obtained. As the employees are the most valuable capital for organizations and play a pivotal role in the accomplishment of the organizations objectives, top management of the surveyed organizations should be aware that in a longer period of time they may encounter difficulties regarding the fulfillment of their strategic objectives due to not improvement of their employees' conditions. Vora (2013) notes the leader of organizations must understand needs and wants of their internal customers (employees) first. Once the internal customers are satisfied, they will improve processes, and delight the external customers.So, a survey as a direction for future research in order to determine why the respondents do not feel any improvement in their working conditions as a result of the implementation of this model is recommended.

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