A Process Model for Improvement Through EFQM

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Abstract: Promotion of excellence model in developing countries and its effectiveness on improvement plan is a challenging issue. The objective of this paper is to analyze EFQM model integrity and its appropriateness for improvement plans. Research concludes that having the assumption that the EFQM Excellence Model is appropriately structured to perform the identification of area for improvement, the model does not offer any specific guidelines on improvement plan and Result orientation. The research indicates that the model does not prove to show the validation of enablers Effect to result factors. In addition, it does not have a structured approach about how to exploit strengths, classify and prioritize areas of improvement. This research is distinct from previous work, through a two-year experiment including monitoring and assessment of selected companies. The framework suggested, presents a well-structured cause and effect program for improvement and its related scenarios for excellence road map. Through process model suggested for excellence roadmap, the consistency of the EFQM criteria is also criticized and a revised assessment guideline is suggested for effective internal assessment of organizations.

Key words: Benchmarking · EFQM model · Self-assessment · Organizational analysis · Improvement plan

INTRODUCTION

Increased competition has motivated many senior managers in manufacturing organizations to evaluate their competitive strategies and management practices with the aim of improving organizational performance. With a diminished workforce and the need to sustain performance, organizations are striving to define, implement and sustain Excellence Roadmap practice.

It is argued that new management assessment tools integrates strategy, management practice and organizational outcomes to create a quality organization that continuously improves and sustains better performance. During last decade Quality management Award has been used as countrywide and globally criteria for comparison of improvement. Sandbrook [1] reports that Quality Management award present in Europe is one of the three major Awards, in a form of The European Foundation for Quality Management (EFQM) Excellence Model, which has its origins in TQM.

Ruitz *et al.* [2] showed that the model provides a framework for managing quality and continuous improvement in an organization. It is composed of five 'enablers' (leadership, people, policy and strategy,

partnership and resources, processes) and four 'results' (people, customer, society and key performance). The model has also the added advantage of providing a set of measures for 'hard' and 'soft' quality.

Iranian industry leaders following this global trend have introduced EFQM practice to their supply chain to improve its supply base competitiveness during last four years. The question raised is whether EFQM model is an integrated framework for sustainable development of Iranian industry. Is the criteria developed for European industry fit the world practice and specifically Iranian business environment? The following section will review the challenges for the researchers and introduce the research problem in more detail.

RESEARCH PROBLEM AND STUDY PURPOSE

Much has been written on the TQM philosophy and methods by quality practitioners or "gurus", Deming, Crosby, Juran and Feigenbaum. Mitra [3]. Surprisingly, little rigorous research has been done to establish the link between TQM practice and organizational performance. One of these researches made by Ahire *et al.* [4] proposes a framework to examine the effects of integrated QM

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strategies on a firm's product quality. The common rationale for many TQM initiatives is that they will pay off ``five or six years down the line'' and the CEOs can only hope that shareholders are willing to wait that long. Bowles & Hammond [5] believe that "until a firm connection between TQM and the bottom-line is made, measured and regularly reported to senior management" CEOs are not going to take TQM seriously. Many studies have been conducted the attempt to test the link between TQM practice and organizational performance. However, according to Powell, these studies generally lack statistical and methodological robustness [2].

Similar set of researches on EFQM as a successor of TQM practice has shown that the model has inconsistency to performance and there is no relation between the scores obtained by the applicants to The European Quality Award within each criterion and the criterion weight [6]. This indicates that companies have not aligned themselves according to the weights and this might be because they disagree on the weights determined by EFQM or because they are not led according to the principles of excellence.

The criterion of The EFQM Excellence Model and its related weights and possible interactions have always been an important part of the model since its introduction in 1992. Porter [7] claims that this is also true for most of the other award models. Lascelles [8] and Conti [9] reviewed the intention for applying this model. According to their research, this stems from the fact that the award models are intended to be instruments for comparing an organization with other organizations or to rate an organization against a commonly adopted scoreboard. Ruiz-Carrillo *et al.* [10] and Rusjan [11] review the application of EFQM in organizations intending to implement strategic management techniques and to tackle the challenge of developing a mission statement.

In this respect, the causality of The EFQM Excellence Model has been examined previously by many researchers (Eskildsen *et al.* [12], Calvo-Mora *et al.* [13] and Moller [14], however very little research has been done on the weight structure and structural modeling. This is not surprising because for organizations that are trying to stay in business in today's increasingly competitive world, excellent results are not created by focusing on the result criteria, but instead by improving performance within the enabler criteria Conti [9].

The need for a intelligent strategy for organizations through a creativity has been reviewed by Nasabee *et al.* [15]. The author states, "One of the main modern managerial challenges is how to create new generation of intelligent organization through selecting successful strategies, creativity and Focus on employer's view and active partnership in adjusting, performing and evaluating organizational aims". Selection of this approach as a basis of improvement and understanding of EFQM model builds on the premise; organizations recognize and acknowledge the relationship between the enabler and the result criteria in excellence model. This has already been confirmed by previous research done by Eskildsen [12] and it therefore seems logical that companies would rate the enabler criteria higher than the result criteria.

This understanding comes from a hypothesis of existence of casual relationship between related enablers and result factors in such models that are not developed in literature. Moreover, the gap between a research on real practice results and question based techniques, which is mostly rely on mind set models, is the main distinction between our research with previous researches cited in literature. In this context, the research seeks to evaluate interrelationship of the nine criteria of the EFQM Excellence Model and the pattern for improvement, which is not addressed in literature. The research also aims to determine the impact of the Enabler criteria on the Results predicted in the EFQM Model. Therefore, the "Results" score constructs a separate status in our study as the dependent variables influenced by the improvement practices followed by organizations.

Thus, the following concept model is formulated: On EFQM Excellence Model, The processes for improvement of companies are based on casual process models with different patterns, which directly and positively influence organizational performance and the Results criteria.

In following section, we will develop the basic concept of process model for improvement and refine it according to our two-year experiment and monitoring for more than 40 companies.

Casual Model for EFQM Frame Work: Excellence Award as stated in EFQM model has the built in intention of improvement in performance of companies, therefore an understanding framework will help companies to define the roadmap of excellence in relation to their understanding of area for improvement and focus points. As per Evans [16] report, fortunately, the focus has shifted so that companies no longer focus solely on financial results.
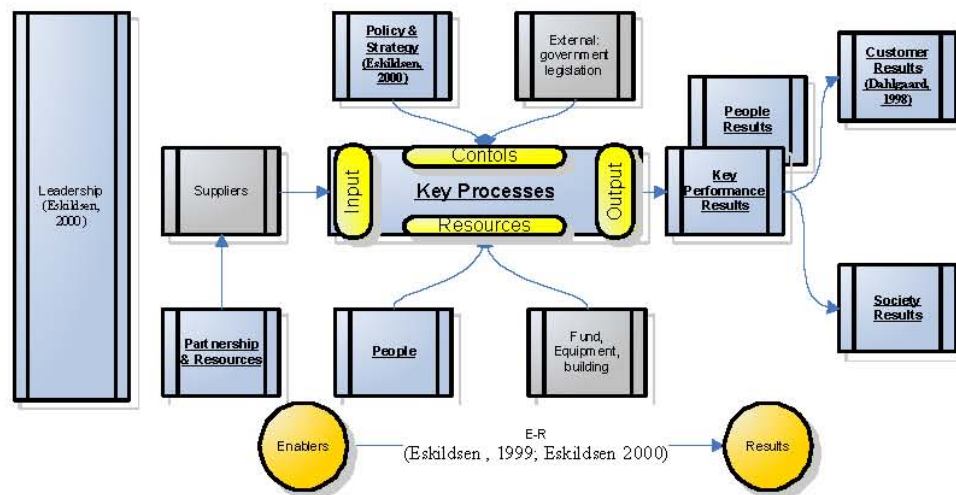
Fig. 1: Process model of EFQM framework

The ability to satisfy customers as well as employees has gained increasing attention as the competition for both market share and people has stiffened and especially the ability to measure employee and customer satisfaction has received increasing attention [6]. It can therefore be expected that "Key Performance Results" and "Customer Results" are perceived as more important than "Society Results" and "People Results".

"Leadership" and "Policy & Strategy" are also perceived as being almost synonymous and since these two criteria have an almost similar effect on the remaining, three-enabler criteria Eskildsen [12]. In recent researches, Bou *et al*. [17] claims that it is very difficult to rank the enabler criteria according to their importance and interaction. The research in healthcare also indicates the same understanding. Moeller [14] concludes EFQM having foundation in industry , is not specific enough to cover all areas relevant to health care.

An investigation to identify the elements and to design a structure for the Improved EFQM Model is introduced by Nabitz *et al*. [18]. With reference to our understanding, the basic model and its conceptual relationship presented in Figure (1) is a common understanding of EFQM due to experiments cited in literature up to now.

The boxes in the model indicates the criteria defined in the EFQM and the arrows show the known interaction between the measured criteria's according to available research results. The basic hypothesis of having relationship between total enablers score to results is also shown in model.

RESEARCH QUESTION

Introduction of Excellence model to Iranian companies started at 2000 and the first countrywide assessment of EFQM, as a selected framework of Iranian authorities, has been conducted in 2002. The most profound impact of Quality Management and excellence practice on organizational performance has been in the Iranian Steel making and Automotive Industry. These industries have applied the EFQM model concept to lead improvements in quality and productivity to demonstrate that the revitalization of old manufacturing management is possible. Following these pioneer industries, many firms planned for application of this model to improve their competency in global markets.

The claim that is recently raised by top management of many companies is the doubt on the applicability of EFQM for all firms, as the results are not satisfied. Although recent surveys on EFQM practice is not focused on its generality of application but it is assumed that such a framework is suited to different cultures (i.e. countries) as well as different sectors of business, we will address this issue through following hypothesis.

Hypothesis H1: The first assumption to be tested is whether the Enablers criterion affects the Result Criterion in The EFQM Excellence Model.

Hypothesis H2: The assumption that Iranian companies are focused within the enabler block means that enabler criterion is perceived as more important for improvement.

Hypothesis H3: does Iranian companies are more focused on specific result factors rather than an integrated simultaneous improvement in results.

Hypothesis H4: Is there a consistent relationship between the Result criterions with its specific enabler factors?.

The analysis of the above-mentioned hypothesis is the basics of the understanding for EFQM application but still the question for consistency of improvement plan with assessment results requires a new theorem for improvement that is formulated in following section as a scenario for improvement. The proposition for customized improvement framework introduced is a strategic excellence roadmap for companies based on EFQM assessment findings. This premise leads to our main research question, aimed at studying the process model for improvement in the EFQM Model. This research question is aimed at finding out how enablers should be developed to maximise their influence over results. In other words, we attempt to analyse what is the appropriate focus points within the enabler domain that leads to a maximum improvement in a given result profile.

METHODOLOGY AND ANALYSIS PROCESS

The data used to measure the model relationship are obtained from a study on EFQM assessment practice in forty Iranian companies in two year period.

The companies taken in our analysis are from different business sectors from manufacturing to service but almost in automotive supply chain. The companies in this study has been supervised and motivated for automotive industry award on EFQM assessment model. The assessment team selected for assessment process has been selected and organized in fifteen teams, each team consist of four people with different expertise while being EFQM certified practitioner. To calibrate the scores given to companies in field study, teams have reviewed a case study, its scoring formats and its related criteria before every site visit. Additionally all teams have analyzed a case study and all assessment has been compared with the base report.

The Anova & regression analyses are used to test the research hypotheses, where measures of result factors are treated as independent variables and enabling factors as dependent variables.

BASIC ANALYSIS AND FINDINGS

In order to analyze the above hypothesis, the outcome of the assessment and changes on the score is taken as indicators of model relationship and the assessor effect on the companies is taken as random effect. This is true because the assessment team has been selected randomly and on two consecutive year different teams has assessed different companies.

To analyze as per hypothesis and significant factors, it should be shown that there is an indicators of improvement toward excellence. The initial reviews of assessment reports showed the improvement of EFQM criterion over two years on following aspects:

- Difference of Total score of two years are statistically significant.
- There is no statistically significant decrease in score for all individual criterion.

The outcome of the analysis is in line with the expectation of improvement for selected companies through internal and external assessment. This is an indication of consistency of EFQM measures with respect to its anticipated improvement on its score. In relation to the concept of TQM & excellence models, it is assumed that there is a positive direct relationship between enablers and results.

Our analysis proves that such relation does exist where the weights are identical in EFQM model. Therefore, the hypothesis H1 is valid. Sensitivity analysis of weights on enabling & result items indicates that if the items are being normalized, the hypothesis of H1 is still valid.

The challenging question is the real facts & relationship of measured actions taken to advance to higher levels of excellence for selected companies that

Table 1: Enablers and Result trend (p<.0001)

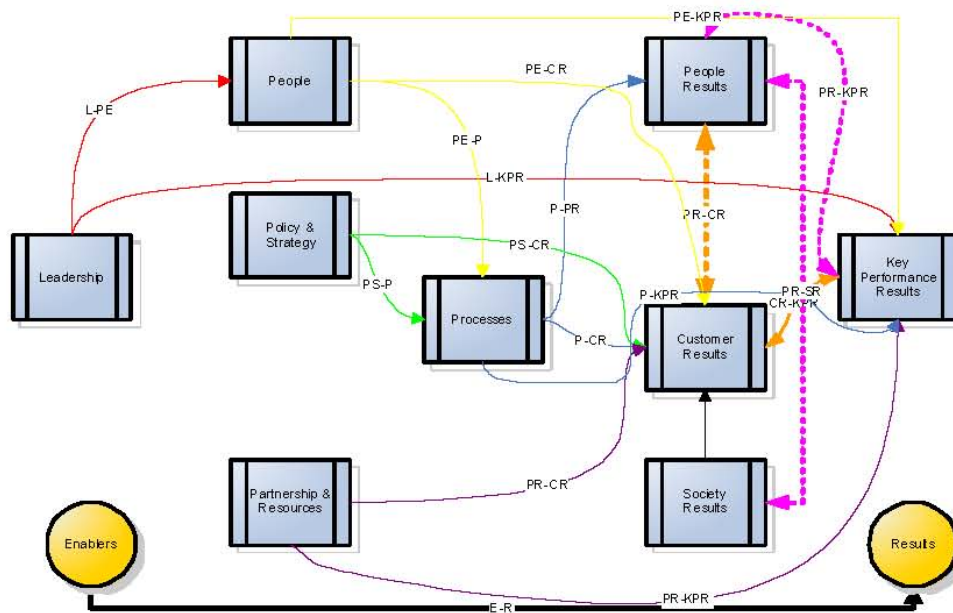| Enabling factors	Leadership	Strategy	Hr	Partner	Process
2005	18.82	15.88	18.23	17.35	23.52
2006	20.76	16.12	21.19	22.54	33.51
Result Factors	Customer	Employee	Social	Performa	
2005	11.17	10.88	6.47	18.82	
2006	33.20	16.22	6.75	34.37	

Fig. 2: EFQM model and significant relationships

may help others to follow the compatible programs. Table 1 shows the mean difference of factors in our study.

A statistical analysis of changes on different aspects of companies assessed shows inconsistency in rate of change that rejects H2 and H3 hypothesis. This is an indication of other relationship between factors not shown in EFQM model which will be analyzed in next section.

In order to analyze the model integrity and factor relationship, all related relationship to result factors has been identified (Figure 2). The model defines a functional mapping of all enablers to its possible results. As depicted in model, there are a set of Result Enabling Factors (REF), which is a mixed effect of the enabling factors.

Such representation of result enabling factor comes from this hypothesis that a one to one effect of enablers with its result categories is not verified by facts. Therefore, Hypothesis H4 is not supported through a simple relationship of factors. In fact, a combined enabling factor is supposed to affect results. Such an understanding of the interrelationship is the foundation for further improvement program we will present later.

REVISED MODEL

To develop the revised model, analysis of assessment records has been done from four different perspectives:

- Enablers & Result Relations.
- Interrelationship between enablers.
- Interrelationship between Results.
- Mixed Model Relationship & Result Enabling factors (REF)

To address the first category and in relation to the concept of TQM & excellence models, it is assumed that there is a positive direct relationship between enablers and results. Our analysis proves that such relation does exist where the weights are kept identical to EFQM model. This is consistent with the findings of Eskildson. Having known that in previous researches the weights are not criticized we have done a sensitivity analysis of weights on enabling & result items. our findings indicates that if the items are being normalized, the same relationship still is significant which declares the fundamental relationship of enablers to result criterion is a valid concept regardless of weight factor. In fact, rate of improvement for enablers and results shows that change rate for enablers are not significantly changed while there is a significant change in result indicators. Such an analysis indicates the fundamental concept of cause and effect cannot justify a concrete planned growth rate toward excellence through a straightforward improvement program.

Interrelationship of Factors: To address a thorough analysis of the hypothesis statement H4, It is assumed that, the five enabling factors defined in EFQM model

Table 2: Interaction of enablers in EFQM model

Enablers (Cause)		Enablers (Effect)
Leadership	→	People
People	→	Process
Policy	→	Process

Table 3: Result Enabling Factor of EFQM model

Result Enabling Factors (cause)	Results (effect)
Leadership has significant effect on KPR	Key performance Indicators
Processes has significant effect on KPR	
HR has significant effect on KPR	
Partnership & Resources has significant effect on KPR	
Policy and Strategy has significant effect on Customer results	Customer results
Processes has significant effect on customer result	
HR has significant effect on Customer results	
Partnership & Resources has significant effect on Customer results	
Processes has significant effect on People result	People Results

have been integrated to cover most important areas of an organization toward its excellence roadmap. Even though current weight for each factor resembles its importance as enabler, we have reviewed their interaction to validate the weight factor for organizations. The significant relationship between enabling factors is summarized in Table 2.

This result is consistent with observation reported by Shea [19], which showed that the relationship indicates a set of improvement factors consistent with classic management theory on leadership effect on people, as well as strategic management & Human resource management effect on processes reported by Bedingham and Thomas [20].

Further to enablers' interaction, results in EFQM model are supposed to indicate different perspective of an organization and therefore it is expected to be more interconnected. Our analysis shows that almost all result indicators are mutually interrelated except society results, which does not have interconnection with key performance results. The model of significant interactions is shown in Figure (2).

The above finding indicates that partitioning of results in EFQM model cannot define a role model for focus area of the interconnected result aspects. The only independent factor that can individually being planned is the society results which is affected by people results as it is affected by it and does affect on customer result respectively.

Model Relationship and Management Implication: Model consistency of EFQM has been reviewed through analysis of direct relationship of Enablers to results that we call them as Result enabling factors (REF). The interaction of enabling factors, which is not clear in EFQM model, has been defined through ANOVA analysis of result data. The outcome of our analysis indicates of following cause and effect relationship Table (3).

To summarize the findings, we have presented all relevant cause and effect relationship in EFQM model as in figure (2). As shown in model, all factors in model are not correlated which is in fact consistent with our understanding from a common business process.

The model represents new concepts on a "road to excellence" scenario where the EFQM and other awards are not clear on these aspects. Understanding the root cause of performance improvement & all other results according to our model suggests a process flow of improvement and its related steps.

Scenario building for improvement through understanding of viscous model of change will create certain roadmaps for different organization. Even though change mechanism for organizational planning may follow different path, a thorough review of the relationship map propose three major scenarios, which are most effective as follows:

Leadership and Employee Oriented Scenario: Leading people to change the process to reach result improvements on people, customer and Key Performance Results with a focus on commitment of people on customer results.

Strategic Management Scenario: Implement an effective Policy & strategy to change the process for improvement plans on results with a focus on customer results.

Partnership Scenario: Establishment of a partnership & resource management to improve the end results on customer and key performance indicators.

We have analyzed the gradient of changes for each factor in EFQM model through consecutive cause & effect relationship analysis to verify the proposed scenarios. The statistical regression analysis is used to establish the interconnections as in Table (4).

The scenarios suggested in our process model indicate the gradient of improvement for companies. The distinction between our analysis and previous works is the static nature of previous researches versus gradient
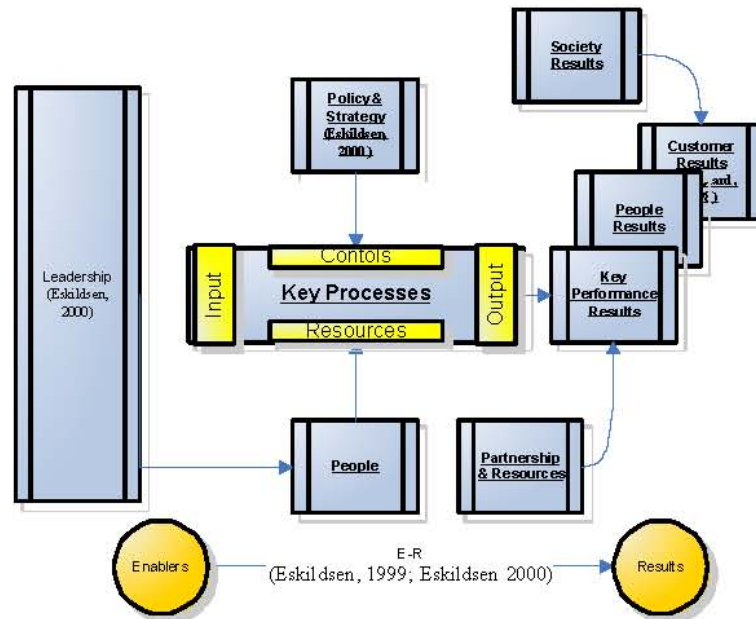
Fig. 3: Revised Process Model of EFQM

Table 4: *Scenario for improvement and proces model for EFQM*

Scenario for improvement	Improvement Direction	Improvement Growth rate
Leadership and employee oriented scenario	$HRD = \alpha\,(Leadership) + \beta$	$HRD = 883(Leadership) + 329$
	$Process = \gamma\,(HRD) + \delta$	$Process = 0.86\,(HRD) + 9.0$
	$CPK = \omega\,(Process) + \varphi(Partnership) + \theta$	$CPK = 0.54\,(Process) + 0.45\,(Partnership) + 19.7$
Strategic management scenario	$Prosess = \pi\,(HRD) + \varphi\,(Straregy) + \theta$	$Prosess = .76\,(HRD) + 0.3\,(Straregy) + 9.5$
	$CPK = \omega\,(Process) + \varphi\,(Partnership) + \theta$	$CPK = 0.54\,(Process) + 0.4\,(Partnership) + 19.7$
Partnership scenario	$CPK = \omega\,(Process) + \varphi\,(Partnership) + \theta$	$CPK = 0.54\,(Process) + 0.4\,(Partnership) + 19.7$

and dynamic analysis of the results. The Interaction of model parameters in EFQM model and its significant relations leads to a new revised framework and process model for excellence shown in Figure (3).

Our revised model indicates that the core of improvement is the process management where the People as a mechanism of change and Policy & strategy as a control mechanism will lead organizations toward excellence. (See $Process = \pi\,(HRD) + p(Strategy) + \theta$). In addition, the partnership & resource management will support business for its key performance results, which shows a parallel process toward excellence. (See $CPK = \omega(Process) + \varphi(Partnership) + \theta$). In fact, our study proposes that the engines for improvement are two main processes, internal key processes and partners as an outdoor process. The engine for change will be fired through people or Human resource development (See $Porcess = \gamma(HRD) + \delta$) which is triggered through leadership in organizations. (See $HRD = \alpha(Leadership) + \beta$).

CONCLUSION

Many authors have provided useful guidelines for EFQM assessment for developing performance measurement systems and organizational excellence planning. More over to that, Different decision makers demand different information from measures and indicators to serve their own goals and improvement plans where the current literature cannot support. The gap between real practice and research done on a question based techniques which is mostly rely on mind set models, is the main distinction between our research with previous researches cited in literature.

In this paper, we have argued that traditional approach of applying EFQM excellence model, as an assessment model is not a well-defined and consistent criterion to define the gradient of change, which fail to meet the needs of improvement plans for enterprises. There are four main problems with EFQM assessment techniques, which render

them invalid to use its assessment report in quality planning roadmap. These are lack of model relationship on "interaction of enabler's effect to results criterion", "enabler's interaction", "results interconnectivity" and "focus points".

Also, The main short come of EFQM model is a role model for scenario building for change which is due to lack of process model in EFQM literature. To address this problem, we have analyzed improvement scenario of selected companies and showed that to design the excellence plan, there is a need for process view of EFQM system with a suggested critical road map for change. This process view can provide enterprises with the information they require to make business decisions toward excellence.

The significant interactions of EFQM elements are also reviewed and a proposed interactions model defined. Further to our proposed model three main scenarios for improvement has been identified with different focus and process area as following:

- Leadership and employee oriented scenario
- Strategic management scenario
- Partnership Scenario

The new process view of EFQM based improvement plan is also presented .Such a formulation of EFQM provide fast feedback to decision makers that have the intention to foster improvement rather than simply monitor performance.

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