

CZU: 658.56:006.83

THE SUCCESS METRICS AND THE SUCCESS FACTORS*Awny ZRIKAT**Universitatea de Stat din Moldova*

The article deals with the issue of implementation process of ISO-9000 standard and the factors that lead to its success. It's being examined the correlation between success and various factors; the level of correlation between the success of different Local Authorities of Israel and the activities carried out by them in the process of implementing the quality management system.

Keywords: *quality, ISO-9000, metrics of success, employee involvement, public organization, companies, quality manager.*

INDICII DE SUCCES ȘI FACTORII DE SUCCES

În articol este abordată problema privind procesul de implementare a standardului ISO-9000 și factorii care determină succesul acestuia. Analizei este supusă corelația dintre succesul implementării respectivului proces și diferiți factori determinanți ai acestuia. Este examinat nivelul de corelație între succesul diferitelor autorități locale din Israel și activitățile desfășurate de acestea în procesul implementării sistemului de management al calității.

Cuvinte-cheie: *calitate, ISO-9000, indicii de succes, antrenarea angajaților, organizație publică, companii, manager de calitate.*

Constructing a Metric of Success: As part of the interviews and questionnaires, many questions were asked and much data was accumulated about the implementation process of ISO-9000 standard and its success. In order to examine the correlation between success and various factors, an index of success was constructed and later, the level of correlation between the success of different Local Authorities and the activities performed by them was examined [1, p.5470].

In order to compare between various Local Authorities an index of success is to be established. It is based on an identical foundation of data, therefore the index of success will be set only for those Local Authorities in which an interview for the quality manager has been held at least for interviewees in the field. In total there are only 23 such Local Authorities. While in one Local Authority the interviews were done in more than one construction project, the index considered for this Authority is an average between the indexes of various projects.

The index of success has been done on just 20 Authorities out of the 23 qualified Local Authorities, or those having a nearly complete quality guide, in 3 Local Authorities no interviews could be held and data taken out from them due to their internal reasons.

Various Components of the Index of Success: The building blocks of the index of success are the answers to questions given in the interviews and the questionnaires. Occasionally, a particular question was repeated several times: once it was asked in the questionnaire and then again in an interview, once a quality manager was asked on it and another time the interviewees were project managers. In order to increase reliability level, all the answers to identical questions will appear. In total, answers to 70 questions were weighted in the index of success. The answers were weighed quite arbitrarily, but in a way that each answer will have more or less equal weight in the final index [2, p.47].

The index of success is, thus, a cumulative index of points, meaning that each answer to a question that indicates success adds points, and occasionally, answers that indicate lack of success subtract points. The final index of Authority is not a score from 1 to 10 but rather is an index relative to other Authorities. If some Authority has an index of 30 points, it does not mean anything unless the situation in other Authorities is examined as well. The number of complaints in delivery, number of months of delay of project completion, etc. For the purpose of correlation with various factors, this index surely fits. Description of the index of success for 20 different cases appears in the following figure.

Table 1

Concentration of Index of Success in Engineering Projects of Local Authorities

Number of Authority	Index of success of the Authority	Number of Authority	Index of success of the Authority	Number of Authority	Index of success of the Authority	Number of Authority	Index of success of the Authority
21	49,5%	26	54,3%	31	58,3%	36	66,5%
22	63,8%	27	70,0%	32	63,0%	37	69,3%
23	63,8%	28	39,5%	33	42,5%	38	70,5%
24	49,3%	29	48,0%	34	50,8%	39	57,8%
25	78,3%	30	70,5%	35	76,0%	40	32,0%

Source: Author's research.

The chart above shows the Local Authority in Israel with it's respective percentage of success. The chart below is corresponds to the scores of each Local Authority illustrates above as a graph.

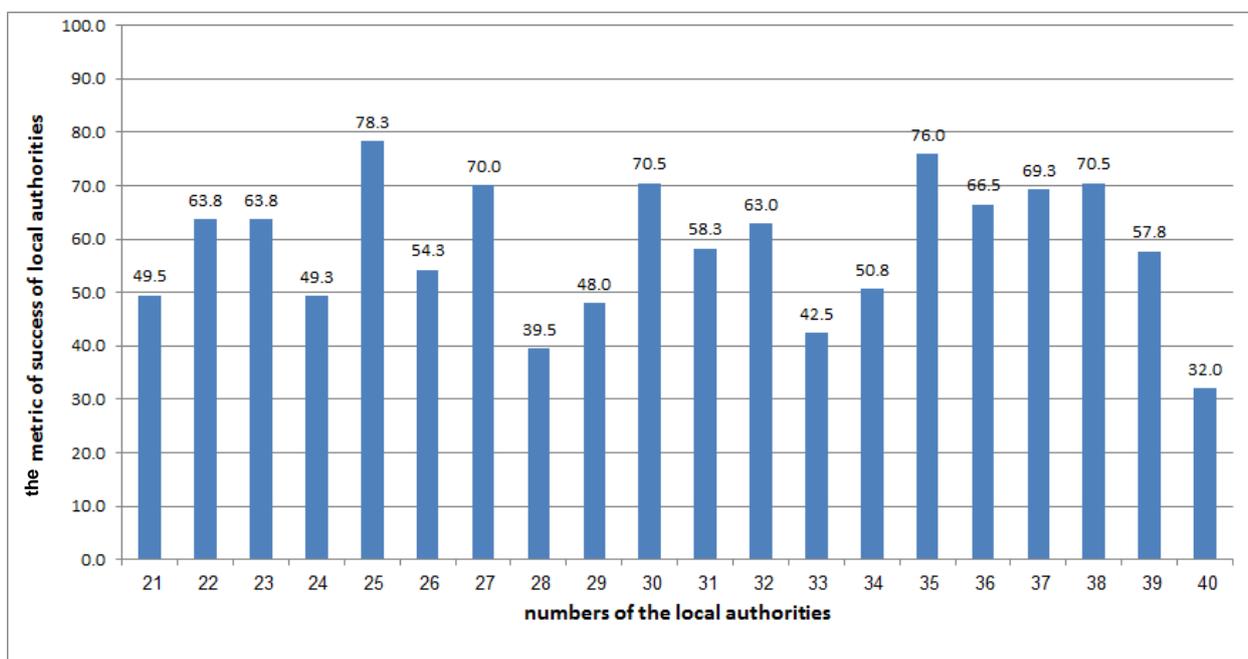


Fig.1. Relative Success of ISO-9000 Implementation within Different Locals Authorities

Source: Author's research.

Components of index of success in division by subjects are the following:

Length of Implementation: Theoretically, it would have been desired that the length of implementation of Israeli standard of ISO-9000 would be as short as possible, as then, the resources allocated for it would be reduced and the overall cost would have been low. Therefore, a negative score is given for length of implementation the longer it takes. Additionally, should the implementation delay for some reason, a negative score is then given [3, p.105].

Changes in Organizational Culture and Work Patterns: Positive organizational changes following the implementation of ISO-9000 standard definitely indicate its success. These changes can be: feedback system from clients, feedback system from employees, giving rewards to employees, a system of handling complaints of clients, and more. Additionally, changes that indicate use and operating the system testify to its success. These changes are: a current change of examination forms, professional instructions for employees, and more.

Objection and Difficulties at Work According to Standard: Organizational changes lead to objections, but managers of the implementation process have great impact and in their actions they enhance or weaken the level of objection; therefore, the lower is the level of objection, the higher is success. Another subject that was examined is the amount of difficulty at work according to procedures [1, p.S470]. A successful implementation process leads eventually to convenience at work and a minimal difficulty. Additionally, improvement in satisfaction of employees testifies to success of the process of implementation and some level of mitigation in the level of resistance.

Amount and Volume of Procedures: ISO-9000 standard might encumber upon work and might consume too much time. It is clear that if procedures and instructions of work will be more concise and effective, they will cause less difficulties. Therefore, theoretically speaking, it would be desired that there are minimal procedures that bring about maximal results. As results are examined in other components of the index, negative score can be given as volume of procedures rises.

Improvement in Performance of the Authority: An Authority that implements ISO-9000 standard is interested in seeing actual results from it. The interviewees in various Local Authorities were asked to respond whether according to their estimation there has been improvement in various indexes, following implementation of the standard. For example, is there a decrease in costs of projects? Has it met the timetable and budgets, which indicates a good evaluation of the Authority? Can improvement be felt in management of projects in Local Authority? [4, p.39].

Reduction of Number of Complaints: The central role of ISO-9000 standard as a quality standard is to reduce the number of complaints of clients. The lower is the number of complains and the more significant is the reduction in number of complaints, the greater is its success [3, p.27].

Improvement in Performance of Projects: Quality managers and interviewees were asked many questions the purpose of which is to examine the improvement in project management. The questions addressed the following subjects: meeting time tables and budgets, rate of progress of projects, time of delivering the programs, amount of corrections in procedures, order of work, etc.

Recommendations and Satisfaction: Quality managers and interviewees were asked to respond to questions that testify to their satisfaction with the standard, such as: is the implementation beneficial to the Authority, would they recommend implementing it, does it prove beneficial, and more. A high level of satisfaction testifies, as well, to success in implementation. See below in appendix number 4 the analysis of the metrics of success.

Assigning indexes to Assumed Metrics of Success

Way of Quantifying Metrics of Success: In order to examine the level of correlation between estimated factors of success and between success, the metrics of success are to be quantified as well, and to create an index of the extent of enhancement of each factor. The way in which a weight (score) is given to different factors of success is detailed in the following table.

Table 2

The Way of Quantifying Metrics of Success

Weight in percentage	Metrics
10%	Length of implementation
10%	Changes in organizational culture
10%	Resistance and difficulties in work according to standard
10%	Amount and volume of procedures
15%	Improvement in performance of the Authority
20%	Reduction of number of clients' complaints
10%	Improvement in project performance
15%	Recommendations and satisfaction
100%	Total

Source: Author's research.

In order to simplify the explanation regarding the metrics of success, here is an example: the extent of commitment and involvement of top management was different from one Authorities to another. Similarly to a technique that served for determining an index of success that was given to each Authority on the extent of commitment of management, according to the answers to questions asked in the interviews. After the score was set for each company on this subject, the rate of correlation between success in implementation and between involvement and commitment of management can be examined. If the rate of correlation is high, then the higher is involvement and commitment of management, the higher is the success of the Authority and if the rate of correlation is low, then involvement and commitment of management are not a factor that has much effect upon success in implementation of ISO-9000 standard.

Estimated Factors of Success: Following the literature review, interviews and questionnaires, a long list of factors appeared, that it was warranted to clarify whether they indeed affect the success of implementation of the quality system. This list, along with an explanation on the components served for the quantification thereof, is hereby presented:

1. Commitment and Involvement of Top Management: Commitment and involvement of top management in implementation of ISO-9000 standard as reviewed in the literature review, is probably one of the primary factors of its success. In order to quantify the extent of commitment and involvement of top management, the data and answers to following questions were used:

- ✓ Who has taught the subject first?
- ✓ What is the extent of involvement of Mayor of the Authority?
- ✓ What is the extent of involvement of top management in the Authority?
- ✓ Were there announcements of Mayor of the Authority or his deputy in the beginning of the process and at its end?
- ✓ Was there a ceremony with multiple participants at the time of getting the qualification?

2. Experience with a Quality System: It can be assumed that the longer a quality system exists, the more change it creates, and thus the greater is success. The quantifying of experience with the quality system served as data and answers to questions for the time elapsed since qualification of the standard, for the level of quality management according to ISO-9000 standard (in terms of use in procedures and tagging forms), for the experience accumulated in implementation of the standard in previous project, etc. [1, p.S469].

3. Motives: A whole system of motives drives the various Local Authorities towards implementation of ISO-9000 standard at their disposal. Part of them is motives for the sake of quality and part are external motives and others. In present chapter of the study, it will be clarified, amongst other things, as to whether this system of considerations has significant impact on success of implementation. In other words: does, someone who intends to improve quality get doing so? James J. O'Brien is quoted as saying: "Tendency towards dispute. A typical construction project attempts to do something never done before with a team that has never worked together. The members of each team commonly mistrust each other and possess preconceived notions regarding capability and integrity and little, if any, understanding of the motives and goals of their counterparts" [5, p.103].

4. Extent of Employee Involvement: In previous chapters, it was said that the extent of involvement of position holders in sites affected the satisfaction of those position holders, but the question remained open as to whether a high involvement of engineers and project managers in the preparation of procedures affects positively on additional indexes of rate of general success from implementation, as well. As expressed in Part 1, in section 1.2, all employees, whether they are upper management or entry level workers, all have an important role to play with high level quality. In Part 1, section 1.1, the significance of all parties involved as a whole leads to the result of the correlation between the quality and result. According to Carlos, J.F., the "quality" of participants emotional involvement or even their fears, all play a role. The involvement of employees served for this index is: employee involvement in steering team, extent of involvement of position holders in formulation of procedures, etc. As D.Carlos said, the author must listen to the employees. [6, p.53]. Listening to the employees also requires that there be a involvement of employees from each department who will partake in the discussion as well as brainstorming ways to improve the overall quality for everyone. This is also expressed in Section 1, at the research, of which Joseph M.Juran deems that a quality circle is stemmed from volunteer employees who seek out, within themselves, ways to better their working environment in their department.

5. Impact of Quality Manager: Quality manager is, as stated in section 2.2, a significant factor, and could be the most significant one, for the success of implementation of ISO-9000 standard. In this section, the extent of impact of quality managers status in the Authority hierarchy will be examined. Although it is costly to have a quality manager, as stated in Part 1, section 1.1, The author believes that the quality manager is vital for the growth and continuation of a successful business. It is necessary for the growth and continuation for success.

6. Effect of Time Table Planning: In section 2.2 "total length of implementation", it was found that there is a correlation between the existence of deadline and setting a timetable with road blocks for the continuation of implementation process. In this section, it will be examined whether the existence of these and of set weekly meetings affected the overall success of implementation [1, p.S470]. "The delivery mode of TA services is often specified in a superficial manner, without adequate consideration of alternatives.

7. Training and discussions multiplayer: is sometimes expected to occur automatically as a byproduct of other activities, and scarce high-level national staff may be assigned as "counterparts" to merely observe expatriate experts in their work. Also, the expected output or benefits of the services (as noted earlier, these are not always tangible or easily measurable) may not be sufficiently specified [7, p.3].

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Prezentat la 23.05.2018