ANALYSIS OF QUALITY MANAGEMENT SYSTEM
IN LOCAL AUTHORITIES IN ISRAEL

Awny ZREKAT

Moldova State University

Article addresses the issue in the field of quality management system within local authorities in Israel. It analyzes the present situation of Quality Guides in Engineering Departments in Local Authorities in Israel. Are identified stages of a project engineering management within local authorities.

Keywords: quality management system, quality guides, local authorities, certification, engineering project management.

ANALIZA SISTEMULUI DE MANAGEMENT AL CALITĂȚII
ÎN CADRUL AUTORITĂȚILOR PUBLICE LOCALE DIN ISRAEL

Este abordată problematica privind sistemul de management al calității în cadrul autorităților publice locale din Israel. Analizei sunt supuse ghidurile de calitate în departamentele de inginerie din cadrul autorităților locale din Israel. Sunt identificate etapele procesului de management al unui proiect de inginerie din cadrul autorităților publice locale.

Cuvinte-cheie: sistem de management al calității, ghid de calitate, autoritățile publice locale, certificare, management de proiect de inginerie.

1. Present Situation of Quality Guides in Engineering Departments in Local Authorities in Israel: At the beginning of the study, I reviewed in detail the subject of quality (Chapter 1 - literature review), and that included the development of quality management in the 20th century. I also compared between different approaches and different methods central to quality management nowadays, TQM and standard ISO-9000.

In the literature review, I also referred to the methods and techniques accompanying quality management, which constitute as supplements to the main approaches of quality management. These include JIT, Partnering and Value Engineering. The literature review presented here is the background and basis for the research work specified henceforth.

Israel has 257 local authorities, two of which are industrial local authorities. Each local authority has an Engineering Department (sometimes called the Engineering Division or Engineering Administration). The data was collected using a questionnaire that included 22 essential questions: numerical data on the authority, the department and the quality manual, including frequency of use and update. In addition, a conclusion committee was held, for feedback on the quality guide proposed by the researcher [1, web sit].

In sub-chapter 2.2, and based on the main findings of the interviews and questionnaires, and based on the feedback of the quality manual proposed by the researchers, the main conclusions of the study were formulated, the most central of which was identifying the main factors for success in implementing the ISO-9000 standard in local authorities. Moreover, a quality guide was formulated (in light of the cumulative experience of the researcher [2, p.S469]. As well as the feedback received from the committee, and the e-mail responses of the local authorities' engineers, in which they asked to change and improve the quality manual sent to them). A proposed model was formulated at the end of the study which is suitable to some extent to the ISO-9000 Israeli standard. This guide is meant to assist local authorities interested in entering the circle of quality and implementing ISO-9000 in the most efficient and beneficial manner.

The Current Situation in Local Authorities: The standard organizational structure of local authorities in the country is in a form of a pyramid, though each local authority adapts its organizational structure according to the positions manned in the authority. When the head of the authority is at the top of the pyramid, and under who are the various department directors, the local authority's engineer, who is the head of the engineering department, is in direct contact with the head of the authority, and under him are 3 levels: the sub-department of licensing, the sub-department of construction, the sub-department of planning. In our research, we study the sub-department of construction [3, p.27]. Below is a schematic diagram illustrating a standard organizational chart of local authorities in the country? [4, p.3-15].

Residents' Satisfaction with Local Authorities: The satisfaction of residents with local authorities' officials and departments, taken from the research of Dr. Itay Barry of the University of Haifa, is shown in the following diagrams [5; 3, p.28].
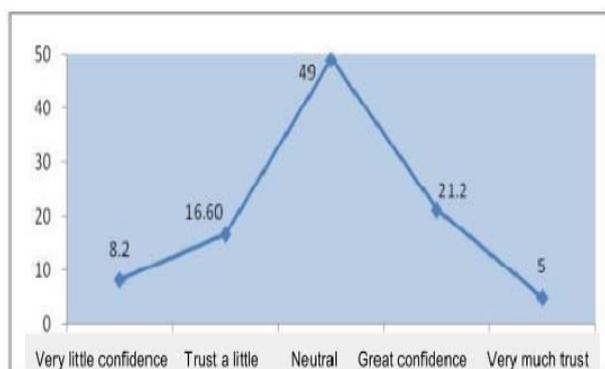

Fig.1. Level of satisfaction of the head Authority's office [5, p.12].
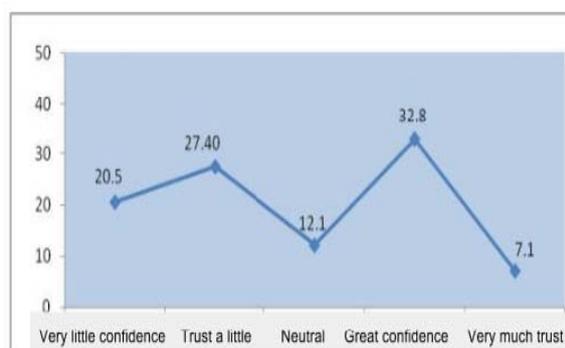

Fig.2. Level of satisfaction from the engineering department [5, p.21].

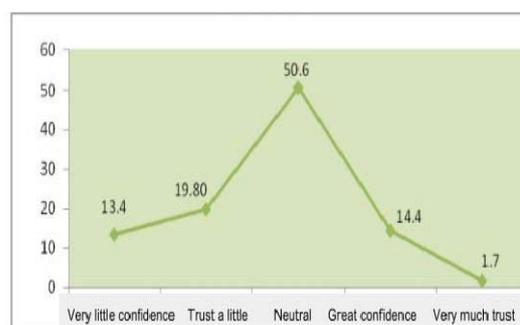**Fig.3.** Level of confidence in head of local authority [5, p.28]

Fig.4. Level of confidence in the local authority engineer [5, p.31]

Table 1

Level of confidence in the local authority [5, p.17-31]

No Confidence	Little Confidence	Normal	Medium Confidence	Great Confidence	Satisfaction
8.20%	16.60%	49.00%	21.20%	5.00%	Chairman's Office
13.90%	22.10%	29.00%	24.70%	10.30%	Head of the Local Authority
20.50%	27.40%	12.10%	32.80%	7.10%	Engineering Department
13.40%	19.80%	50.60%	14.40%	1.70%	Authority's Engineer

From Table 1 above study we can see that:

a. The great confidence in the head of the authority, among the public, is higher than that of the authority's engineer, 10.30% compared to 1.70%. It is possibly because the public elects a head of authority every 5 years while the authority's engineer does not change in the same frequency.

b. If we look at the distrust, we can notice that the two officials (the head of the authority compared to the authority's engineer) have the same percentage.

c. In regard to the Chairman's Office compared with the engineering department, we see that the public has greater confidence in the Authority Chairman Office than in the engineering department, which probably stems from the same reason mentioned in clause 1.

d. On the other hand, there is a big gap in the distrust in the engineering department compared to the authority's Chairman Office, 8.2% versus 20.5%.

Certification of Local Authorities and Organizations: Every year there are requests for accreditation for ISO-9000. Although ISO-9000 has been around for over 20 years, only 10 local authorities in Israel are ISO-9000 certified [6]. It is noteworthy that the efforts of organizations to join the list of authorities accredited for this standard are complicated and accompanied with financial and organizational difficulties, in addition to a lack of knowledge of the importance of the matter. The Standards Institution of Israel is the main accreditation body for organizations in Israel for ISO-9000. Other bodies have recently emerged which offer accreditation for ISO-9000. Many organizations are interested in joining the accreditation for various reasons, the primary among which is "reputation".

Data Collection on Local Authorities: There are 257 local authorities in Israel, 2 of which are industrial councils (no residents). The following table summarizes the data on local authorities in the country, taken from the website of the Ministry of Interior [http// www.moin.gov.il.].

Table 2

Local Authorities in the Country Broken Down by Sectors and Status

Total	Jewish Sector in Judea and Samaria	Non-Jewish Sector	Jewish Sector	
75	4	11	60	Municipalities
126	13	70	43	Local Councils
54	6	4	44	Regional Councils
2			2	Industrial Councils
257	23	85	149	Total

The main data collection was done through questionnaires and structured interviews, in addition to the committee held in Nazareth. The content of the interviews and questionnaires was based on the literature review conducted and in accordance with the purposes set forth in the study. In total, interviews were held with about 20 local authorities. Through face-to-face interviews [7, p.39]. The duration of each interview was about two hours. Interviews were conducted in various locations, mostly at the premises of local authorities.

At the end of the interviews with the interviewees, they were asked to recommend a suitable candidate for an interview among project managers. This was in order to verify the responses we received from the first interviewee, and thus we get a more realistic picture. Most of the interviews were conducted with authorities' engineers, who are basically the higher authority in all that related to managing engineering project. However, there were interviews with authorities' quality managers, project managers, supervisors and planners who provide design services to local authorities. Moreover, there were interviews with senior employees of engineering departments in local authorities.

Data was also collected using a questionnaire including 20 questions. The questionnaire was sent by email to 313 officials, using a Google Drive questionnaire. This number of sent emails is large and comprehensive. We did not receive feedback from all recipients, of course. 40 questionnaires were filled by senior officials in authorities. The questionnaires were based on the acquaintance of senior officials in local authority with quality procedures and the degree of their implementation.

Another way to collect data and feedback on the proposed procedures was through an extended conference of the senior forum in engineering departments in local authorities, attended by 15 local authority officials. During the conference, a wide and in-depth discussion was held of the procedures suggested by me (the author of this research has been a mid size-authority engineer for the past 22 years). The procedures which include forms were examined, revised and improved. As we seek to maximize the benefits of the conference, I had several phone conversations with the representatives coming to the conference. I coordinated several different points with them that might waste considerable time at the conference. Thus I brought all participants to uniformity in the database.

Receiving the responses to the questionnaires was carried out using Google Drive, and then transferred to an Excel spreadsheet for further analysis. The questionnaire was sent to the contact person using Google Drive, and after receiving the answers, everything was automatically processed in Google Drive and we got the results for each answer in percentages and numbers. The responses in my interviews with officials of the local authorities were also transferred to an Excel spreadsheet.

Engineering Project Management in Local Authorities: The engineering project management process in all local authorities is usually the same. Some of the authorities (small local authorities) are characterized with a process called "outsourcing", i.e. transferring the engineering project management process to an external body which manages (to some extent) the engineering projects instead of the local authority. According to Nolberto Munier "Project management is a very complex activity involving interacting and dealing with people with diverse skills, interests, and experience, different activities and lines of work, various trades and often working for the same project in different places at the same time" [8, p.5].

In "big" local authorities, the entire engineering project management process is done within the local authority. Here, the function is slightly different from medium-sized and small local authorities since the engineering department is divided into sub-departments: water, electricity, roads, buildings, safety and more. Each sub-department checks the engineering project in all its stages - hence the advantage of a big local authority over a small authority [5, p.207].

The Project's Six Stages of Life

The Initiation Stage: This is the stage in which the idea of the project emerges. This stage examines the problem, the need and the motives to initiate the engineering project. In the initiation stage, the main objectives are defined in macro-level, technological objectives, and required schedules that are set with the various stakeholders. This stage tends to be vague but at its end answers are received to questions such as: Who are the users? What is the need? What are the objectives? What is the execution process? What is the solution required? Who are the stakeholders? etc. Helpful information at this stage is historical information, basic assumptions, organizational policies and more. The products of this stage are the decision on the commencement of the project, a document of preliminary project contents (program), and the appointment of a project manager. A mistake in the definition of the project, at this stage, will lead to the likely failure of the project. According to Nolberto Munier "risk management should be considered well in advance of the project, when it still is in the initiation stage" [8, p.82].

The Planning Stage: The planning stage is the most significant stage in the project. Successful planning is likely to lead to success in achieving project targets, user satisfaction, meeting deadlines, quality compliance and more. This stage begins during the initiation stage and ends towards the end of the project. One must be sure to complete the required planning and not to rush (skip this stage will lead to failure in execution). According to Nolberto Munier "the planning stage of the 'costs to develop a project', which is an essential step to further prepare and maintain the project budget baseline or 'Budgeting" [8, p.173]. This stage includes the forming of many work plans. It is recommended to have plans for the following subjects:

✓ Planning work content, both high-level planning and detailed planning (low-level) of work packages in the project, dividing responsibility and how to update regarding changes.
✓ Planning schedules, tasks, order of tasks, time per task, dependents, constraints and a critical path.
✓ Cost Planning - preparing a budget plan and financial estimates.
✓ Product / service quality planning and how to ensure the desired quality is received.
✓ HR staffing plan - building a winning team that will lead the project to its successful conclusion.
✓ Communication planning - keep in mind that communication is the glue that binds all parties to colla-borative work [2, p.S467].

✓ Risk management - risk identification, risk assessment of total probability and effect, a decision as to what to treat and how.

✓ Procurement planning - to purchase or to produce? Who will be the contractor? Closing contracts and more.

✓ Integration planning - how the project will actually be managed and how the parts are connected to each other.

✓ Appropriate budget rising (usually from various government offices).

The Execution Stage: This is the most expensive stage of the project. It includes the operation of people and different resources according to the set work plans. At this stage, supervision is performed (planning versus actual performance) and, as a result, there may be a request for a change in content, schedules, costs and other factors. In this stage, much communication is distributed between the various parties, contracts and subcontractors are activated in order to achieve the different objectives. This stage begins around the beginning of planning and ends with the closing stage of the project. At this stage, the project's actual products are delivered [2, p.S467]. According to Nolberto Munier "In general the project manager is responsible for the whole lifecycle of the project, that is from inception to finish, including the warranty period. Normally reporting to him is a construction manager, who is responsible for the construction or execution stage" [8, p.85].

Monitoring and Controlling Stage: This stage provides feedback to the integration of all parts and testing that the contents have been completed and in the required quality, observation/supervision of the schedule, costs, resource management and personnel, reporting to stakeholders, observation/supervision of contractors and contracts and risk management. The goal is to sample performance at all times and, if there is a deviation, to perform repairs in time. According to Nolberto Munier "Just by planning how to deal with risk is not enough. Naturally, doing a real effort during the risk planning stage will increase the probability of project success, but since risks evolve during the project lifecycle, it is necessary to exert monitoring and control including forecasting risks when the project is underway. However, if these actions are not performed seriously, the project might still fail" [8, p.85].

Project Closing Stage: This is the last and final stage. It includes the completion of the project and the closure of the relevant legal contracts. The stage ends with a tour of project delivery, with the participation of the users. According to Nolberto Munier "Even when the project is finished, at least physically, its closing is important; everything must be neatly 'tied-up" [8, p.243].

Operation and Maintenance Stage: This stage begins from the day the project is transferred from the contractor to the local authority and to the users. At this stage, the engineering project is activated, defects are located and fixed. According to Nolberto Munier "Establish a company at destination for import, packing, distribution and hiring employees. Find out about regulations regarding minimum wages and salaries, as well as taxes withheld" [8, p.63].

Definitions and differences between construction inspector/supervisor and the project manager: The role of the construction supervisor is to check that the suitability of the construction to the plans, to confirm the quality of the work performance, the use materials in accordance to the construction plan, and to make sure the construction is according to standards and laws. Another role of the inspector is to ensure that the interest of the client is strictly preserved and that problems arising are resolved in a professional manner appropriate to his client. In summary, the main services of the construction supervisor are:

✓ Accurate examination of estimating material quantities, for price quotes.

✓ Supervising the selection of contractors and professionals.

✓ Close supervision of construction works and construction materials.

The project manager, the one with the professional knowledge as a construction person, is responsible for managing schedules, mediation and coordination between the different contractors, the developer and planning and construction authorities. He is the central axis through which arising problems and various data are transferred. His role is to make decisions that would bring the project to a close on time and according to budget plans.

Some of the roles of a construction project manager [9, p.3]:

✓ Construction project management from planning to completion.

✓ Being the link between the planners/designers and the various professionals and contractors.

✓ Assistance in the negotiations with contractors.
✓ Close monitoring of all the construction work.
✓ Setting priorities for the execution of the work.
✓ Coordination of schedules among the many bodies involved in construction: different professionals, contractors, construction material suppliers, etc.
✓ Examination of the construction site organization.
✓ Documentation and photographing of activities conducted on the site.

Referencies:

1. *Central Bureau of Statistics.* Israel. http://www.cbs.gov.il/reader. 2015.
2. CARLOS, J.F. *Charting Service Quality Gaps. Total Quality Management*, 2000, vol.11, no.4/5&6, p.S463-S472.
3. SHOR, K. *Quality Engineering.* Israel: TA, 1998
4. ROTEM, E. *E-Government in Israeli Local Authorities Comparative Analysis.* Haifa University. Israel, 2007.
5. BEERI, I. *National Assessment Project of Local Government (NAPLG).* University Of Haifa, 2009.
6. *The Standards Institution Of Israel: QCD is a Leading Certification Body.* http://www.sii.org.il/14-he/SII.aspx.
7. CARLOS, J.F. Contrasting Portuguese and International Service Quality Management in Algarve Hotel Industry. In: *The International Journal of Applied Management*, 2003, vol.4, no.1, p.37-54.
8. NEUMANN, Z., ZVIRAN, M. *Information Systems Practice.* T-A: College of Management. 2004.
9. ZREKAT, A. *Civil Engineering Construction Management Trend.* Canna Of Galilee, 2014.

Prezentat la 26.05.2016