A BUSINESS EXCELLENCE APPROACH FOR THE PORT INDUSTRY A BUSINESS EXCELLENCE APPROACH FOR THE PORT INDUSTRY

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Abstract

Considering the global transport realities, port operators are obligated to meet the user's requirements with qualitative facilities and services in order to retain a competitive advantage. The "quality" issue has become apparent within the seaport industry, while the influence of quality on customer perceptions and consumption behavior has become a major factor affecting the end user choice of terminals and ports. Although that quality management provides approaches to achieve such objectives, a limited number of ports have developed quality oriented approaches.

This paper explores issues related to quality and total quality management within the seaport industry. A qualitative analysis will be applied considering the perspectives of total quality management employment within the ports and the European Quality Award model will be explored as a framework for excellence for the seaport industry. The findings will provide practitioners and decision-makers with an indication of the applicability of the model of business excellence in port industry.

Keywords: *Port Industry, Quality Management Systems, Total Quality Management, Total Quality Ports, European Quality Award, Excellence.*

A BUSINESS EXCELLENCE APPROACH FOR THE PORT INDUSTRY

1. Introduction

Over the last decades, the increased competition, the advert of information technology related to the port production as well as the evolvement of the transport industry as a whole, has a significant effect on ports around the world *(Chlomoudis et al, 2003)*. As a result, new production capabilities and novel combined transportation practices have been introduced. Ports have to redefine their management strategies, their business processes and product –service characteristics. For the later, the traditional port services have altered including both industrial and service operations *(Suykens, 1986)*. The "quality" issue has become apparent within the seaport industry, while the influence of quality on customer perceptions and consumption behavior has become a major factor affecting the end user choice of terminals and ports. Quality may be seen as the single most important factor for long-term competitive success and customer satisfaction *(Marlow & Paixao, 2003)*. Total Quality Management (TQM) is the product of a complex mixture of strategic business components and management practices. Although quality has recently received significant attention, both qualitative and/or qualitative results relating quality management approaches to the port industry are only a few.

The main approaches related to quality have developed *(Oakland, 1989; Pun et al, 1999)* from inspection, statistical process control, and quality assurance, to Quality Management Systems (QMS) and Total Quality Management (TQM). The above-mentioned approaches were build upon the previous one through the introduction of new methods and/or practices. Nowadays emphasis is placed on prevention *(quality assurance & quality standards)* while continuous improvement quality approaches still remain a challenge for many business sectors. This paper identifies the prospects of employment of European Quality Award as a pathway for the modern port industry into a business excellence orientation.

2. Quality and Total Quality Ports (TQP)

The global competition process has been the main external driving force for the new challenging era of the port industry *(Chlomoudis & Pallis, 2004)*. This new scene boost ports to create and sustain competitive advantage by increasing their ability to respond to users needs through the quality improvement of port services. The improvement of quality services must be based on management practices aiming at this target. The variety and the complexity involved in port production nowadays have been a motive for the development of different management approaches *(Chlomoudis et al, 2005)*

The environmental awareness has been increased the last few years and the ports have become subject to new legislation aimed at environmental protection. The adoption of best practices such as the environmental quality management systems should benefit port authorities.

Quality in the seaports may be defined as the provision of products and/or services, which meet user needs *(explicit & implicit)* and exceed user expectations. Important seaport service –product dimensions involved in the quality issue are *(Lopez & Poole, 1998; Chlomoudis et al., 2005)*: ***a)*** *Technical aspects & Efficiency,* ***b)*** *Time consistency and reliability &* ***c)*** *Security & Safety.*

Although that quality is a requirement, a limited number of ports adopt quality management due to the following reasons[1]:
- The variety and the complexity involved in the port industry have been a barrier for the development of quality management approaches
- The absence of specific quality standards for the port industry is a disadvantage for the quality management implementation
- The quality management system of a single port producer cannot guarantee the quality of services in the maritime port logistic chain
- The holistic character of the Total Quality Management is a main barrier for its application to the port industry

A limited number of ports dwell on quality management mainly through quality assurance actions. The quality management systems (QMS), which are based on nonconformance detection and prevention are closer to the established practices and, therefore, easier to implement by ports, rather than the continuous improvement quality management strategies. The former approaches, however, have in some cases been strained to the limits of their performance, and still the results have been improper for the port industry. This is evident if one considers the limited number of applications based on ISO 9000:2000 /ISO 9001:2000, in this particular business sector. In fact, most of the published work available relate to quality assurance and the implementation of quality management systems such as ISO 9000:2000 /ISO 9001:2000 *(Lopez & Poole, 1998; Myung –Shin Ha, 2003)*, but only a few focused on the application of the wider concept of total quality *(Frankel, 1993; Marlow & Paixao, 2003; Chlomoudis et al., 2005)*.

In order to achieve quality port products and/or services a management approach is required interrelating all those stakeholders *(internally & externally)* which contribute *(pilots, terminal operators, transport companies, intermediaries and service providers, warehousing firms etc)* to port operations. TQM is a significant, new and powerful theoretical management framework that has been interpreted and defined differently around the world. The main issue of TQM, however, is a primarily orientation in securing the survival of the company by making full use of the company's resources *(Kruger, 2001)*. TQM management paradigm place emphasis on customer *(internal & external)* orientation, involving all port units, through the active involvement and empowerment of staff, and is based on a long term commitment to the continuous improvement management paradigm.

It is true, however, that different ports may impose different management requirements. TQM management paradigm expounds values and principles largely at

[1] A detailed analysis will be provided in the forthcoming doctoral study: Lambridis C. (2007). Prosperities for the implementation of quality management within the port industry .Doctoral (PhD) Thesis under submission. Piraeus: Department of Maritime Studies University of Piraeus.

odds with values and principles propagated by Taylor and Fayol that directed their attention to tasks, working systems and data. A variety of models have been suggested studying and categorizing the ports *(Notteboom & Winkelmans, 2001; Robinson, 2002)*: **A)** A model produced by UNCTAD describes how the European port industry has evolved since the 1960s and identifies the key factors and milestones into three (3) port generations *(UNCTAD, 1992)*. **B)** A framework based on three (3) "Worlds of Production" *(Chlomoudis et al, 2003)* has been developed along the lines of Storpair and Salais (1997), and is based on the distinction of the product and/or services provided positioned in distinct *"worlds of production"*. These models could be used as tools to interrelate port characteristics with quality management requirements.

Although the UNCTAD classification indicates a number of important issues, it has been criticized in the literature, among others, that is employing only a limited number of indicative criteria in order to produce the above-mentioned three port generations *(Beresford et al, 2004)*. On the other hand, the above mentioned approaches may be extended introducing a business strategy towards the *"next generation ports"* and a new *"port production world"*, involving the development of ventures with other sectors of the transportation industry and/or cooperation port networks *(Chlomoudis & Pallis, 2004)*. There is a consensus, however, that "future ports" may be seen as *"port–port & port–transport communities" (De Langen, 2003)* sharing a common vision and strategy in an effort to satisfy the different stakeholders and the society as a whole *(Beresford et al, 2004)*.

The TQM principles and methods might be more relevant, as an overall long-term strategy, for seaports involved in global transport competition environment where customer orientation is of importance *(next generation ports and/or the worlds of production as referred above)*. These ports will be referred here as *"Total Quality Ports."* For Total Quality Ports *(TQP)*, quality assurance and certification may be inadequate in meeting today's rapidly changing port environment, which is characterized by uncertainty, unpredictability, variability and high competition levels. In the characteristics of TQPs ought to reside the core underlying principles of TQM paradigm.

The TQM may provide answers to contemporary questions concerning the port industry. However the European Quality Award, as a quality management approach, must overcome all these barriers which impede the implementation of quality management within ports. A prosper environment for the application of quality management should be achieved through an integrated multi – systemic quality management model on a port community level. This model should be[2]:
-an internal developed and first party audit model which is an integrated management approach for the port community
- a multi-systemic model which includes quality sub-systems that fits to the specific needs of each port producer and sub-systems that applied to the port community as a whole.

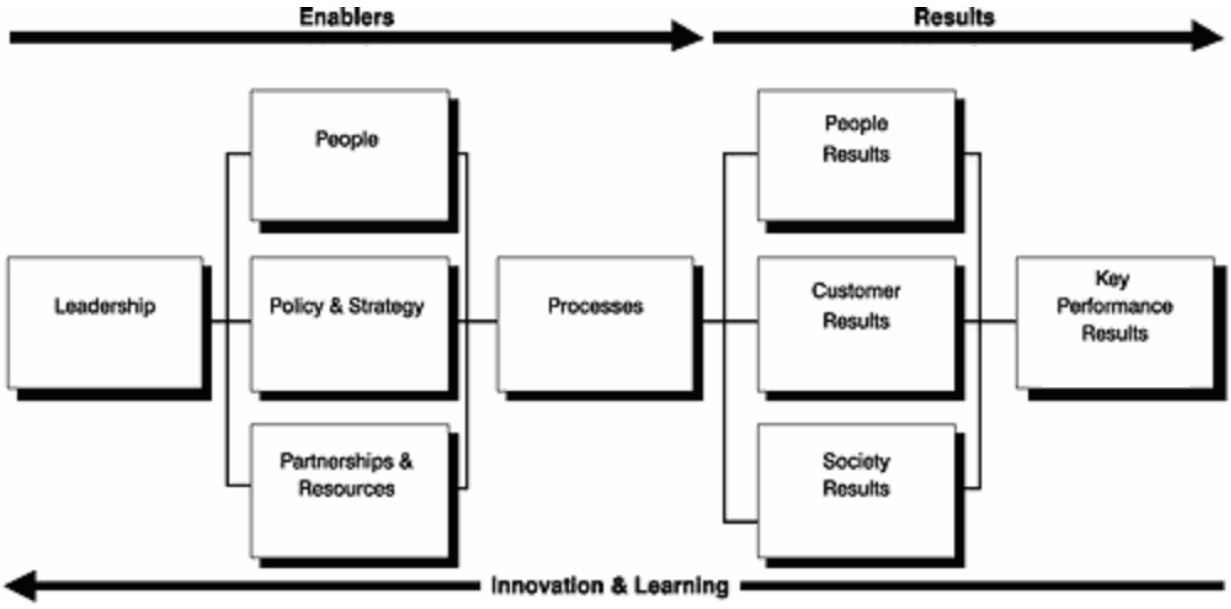
[2] A detailed analysis will be provided in the forthcoming doctoral study: Lambridis C. (2007). Prosperities for the implementation of quality management within the port industry .Doctoral (PhD) Thesis under submission. Piraeus: Department of Maritime Studies University of Piraeus.

- a model which creates interrelations between the members of the port community and integrates the common processes of the port producers
- a model with a steering committee comprising from the port producers on a voluntary basis.

The role of the steering committee is to coordinate the port producers, to set quality standards and targets, to integrate the common processes, to audit the operation of each producer and the community as a whole etc.

In a theoretical basis, benefits resulting from the application of TQM are well known. However, the reality is that many quality programs continue to fail to deliver the results required for competitive advantage *(Ahire et al, 1996)* and the "right" approach for the implementation of TQM actions is difficult to establish, while, many authors suggested different pathways *(Huq & Stolen, 1998; Gunasekaran et al, 1998; Yusof & Aspinwall, 2000; Lee & Quazi, 2001; Sila & Ebrahimpour, 2002)*. A well-known TQM implementation strategy is through the frameworks provided by International Quality Awards and the corresponding self-assessment methods *(Dale, 2002; Li & Yang, 2003)*. This practice is not unknown in the literature for a TQM implementation strategy *(McDonald et al, 2002; Samuelsson & Nilsson, 2002; Sila & Ebrahimpour, 2002; Li & Yang, 2003)*. The criteria of the quality awards may provide a consistent quality award-based instrument in providing on a "how-to" aspect of total quality management. The criteria of the quality awards may be also employed as a basis for assessment *(Caffyn, 1999; Samuelsson & Nilsson, 2002; McDonald et al, 2002*) and can be tailored in terms of the different requirements imposed by the specific industry *(Lee & Quazi, 2001; Pun, 2002; Warwood & Antony, 2003)*. The Quality Awards due to the catholic *(does not refer to a specific researcher point of view)*, holistic and precise nature have been used widely in both qualitative and quantitative research *(Adebanjo, 2001;Sila & Ebrahimpour, 2002)*. In this paper, the European Quality Award (EQA) is employed as a framework for studying TQPs, i.e. as a seaport business excellence approach.

Figure 1. The European Quality Award Framework *(EFQM, 2004)*



3. The European Quality Award

The European Foundation for Quality Management, *(EFQM)* was founded by fourteen (14) leading European organizations on 1988 with the support of the European Organization for Quality *(EOQ)* and the European Commission *(EC)*. The European Model for Business Excellence *(EFQM Excellence Model)* was developed along the lines of the American MBNQA and the Japanese Deming Prize, was introduced in 1991 and has been significantly reviewed on 1999. It may serve as a framework for organizational self-assessment *(EFQM, 2004)* and a basis for judging the European Quality Award (EQA) applicants. Although some discussion relating to the marginal usage of the term "quality" within the EFQM Excellence Model *(Kanji, 1998; Adebanjo, 2001; Dale, 2002),* EQA is based on a holistic consistent to the philosophy of TQM approach *(Adebanjo, 2001)*. The EQA is a non prescriptive framework which is based on nine (9) criteria categories *(Figure 1)* that are divided into 32 sub-criteria and a total score of 1.000 points. These criteria used to assess an organizations progress toward excellence. Each of the criteria categories can be seen as the dimensions of business excellence divided into two main groups, the "Enablers" and the "Results". "Enablers" criteria are concerned with how the organization undertakes key activities; "Results" criteria are concerned with what results are being achieved. Applicants for the EQA can be enterprises of all sizes ranging from the public or the private sector within a three-tiered European Recognition scheme.

4. Seaport management actions towards excellence: Dimensions of Total Quality Ports

In this section a qualitative analysis is conducted in order to exhibit the necessary set of actions, strategies and policies to be addressed by port management for achieving business excellence. A two-fold approach is adopted: **A)** Analysis of the EQA criteria context & **B)** Port management literature. The results of the study are presented in Table 1. The first column of the table exhibit the EQA criteria and the second column provide statements for achieving excellence in port industry. Specifically, qualitative analysis of the EQA criteria leads to a set of actions, policies and strategies that have to be considered in implementing the business excellence model in Total Quality Ports as the core quality management culture and practices.

The port management literature is mainly oriented towards the port functions, logistic chains and resource management rather than towards port processes and port–stakeholder –customer relationship. Indeed, as has been mentioned before, only a few authors address the total quality management issue within the port industry. However, we argue that the work done can serve as an invaluable source when specific management or operational port functions within overall total quality paradigm is addressed. In the next paragraphs, an interrelation between the port management literature and the total quality management requirements through the EQA criteria is undertaken.

Port leadership requires decentralization of the decision making process whilst participatory practices with good interior and exterior communication processes are a necessity *(Thomas, 1994)*. Strategic planning in ports is based on the common

interests of port community (Ircha, 2001) whilst the trend for united port communities must be taken into account to the strategy and policy formulation process (*Beresford et al, 2004; Chlomoudis, 2005*). Now, more than ever, there is a need to push port industry on commercial activities and pursue commercial objectives with an extended port corporate strategy *(Everett, 2003)*. Port strategic planning includes workforce commitment to the port mission statement and adoption of common goals and objectives throughout the organization *(AAPA, 1988)*. Environmental management *(Wooldridge, et al, 1998)* and immediate response to internal and external changes is a necessary feature of the modern port strategy. As Ircha *(2001*) suggested *"Effective scanning enables ports to anticipate, adjust and cope with changes as they occur rather than merely reacting to unforeseen crises"*.

The development of the human resource is among the main priorities of the modern ports. There are approaches assuming that the human resources and knowledge management are the key elements for successful development rather than technology and capital (*Paixao & Marlow, 2003*). Training on health and safety issues as well as the ergonomically improvement of the designed cargo equipment responds to the labour needs (*Beresford et al, 2004*).

Ports main "position" to supply chain offers opportunities to major ports for the development of added value logistics (*Notteboom & Winkelmans*, 2001), while horizontal and vertical integration and port networking operation *(Cullinane et al, 2004)* can evolve seaports to important nodes within a logistic system. (*Chlomoudis, 2005*). The existing joint initiatives between the private sector and the port authorities concerning the development of information systems *(Lambrou & Pallis, 2004A; Lambrou et al, 2004B)*, aims to serve mutual interests and provide the required information (*Notteboom & Winkelmans*, 2001).

The processes criteria are related with the development of a port – wide process based, rather than fuction based, management culture. Beyond the ports integration to the total transport chain, port networking with overseas ports, neighboring ports and inland ports is of great importance (*Notteboom & Winkelmans, 2001*). Port strategy aims to horizontal and vertical integration of ports along the logistic chain with emphasis on a decision support process for procurement and acquisition (*Marlow & Paixao, 2003*).

Marketing strategies, measurements of customer needs and satisfaction enable port authorities to design new services such as building dedicated to principle customer terminals (*Heaver et al, 2000; Mester, 1992*). Moreover, the aim to meet customer needs is very common among port managers and scholars involved with port industry management. This is the main reason boosting research related to port selection criteria *(Lirn et al, 2004; Piyush et al, 2003; Prabir & Buddhadeb, 2003; Myung - Shin, 2003; Nir et al, 2003; Mangan et al, 2002; Dong – Wook Song & Ki- Tae Yeo, 2004; Tongzon, 1995; Pallis, 2003)*. Marlow and Paixao (2003) suggested that ports in order to compete more efficiently ought to introduce agility, which *"...implies flexibility and the development of a structure that allows for rapid response to changes in customer demand..."*. The motivation and the satisfaction of the staff perception are measured and port staff ought to be considered as an important stakeholder. The market uncertainty, the time sensitive customers and the random or

seasonable demand of multimodal process required trained and educated human resources at the highest level (*Marlow & Paixao, 2003*).

Table 1. Actions towards Business Excellence in port industry based on EQA criteria analysis

EQA CRITERIA	SEAPORT MANAGEMENT ACTIONS TOWARDS BUSINESS EXCELLENCE: DIMENSIONS OF TOTAL QUALITY PORTS
1. Leadership ENABLER	Long-term commitment for TQM and resources deployment for quality organization. Port-wide leadership culture (everyone involved in port management, teamwork, process control, training etc.) Align port staff in achieving specific goals, empowerment and motivation of staff. Focus in change management & improvement techniques. Establish a vision and a mission for the port enterprise & instill values for excellence.
2. Policy & Strategy ENABLER	Define Port Stakeholders and their expectations from the port –port enterprises *(budget providers, regulation bodies, community, competition, customers, staff, suppliers, shareholders, partners, port communities, port networking, horizontal and vertical partnership development)* Information management *(port information from stakeholders for port strategic thinking)* Development of a strategic business plan *(employ techniques such as the balanced scorecard) based on vision and mission (communicate, review & update the plans)* Develop staff commitment to the port mission and goals. Develop Management and support processes *(quality and safety management, human resource management, stakeholder communication, information system, financial processes)*
3. People ENABLER	Explicitly define Port Staff *(full time, part time, support, temporary, volunteers)* Development of a Human resource management plan Appraisal processes development *(reward and recognize port staff)* Staff development & training & Staff empowerment *(development of self-directed teams committed to excellence)* Develop staff satisfaction feedback –management process.
4. Partnerships & resources ENABLER	Define a twofold strategy and culture for port resource management: **a)** within organization *(port owned and controlled resources)* & **b)** outside the organization *(partnerships, port interrelated organizations and suppliers the public sector, competitive businesses within transport industry)* Define port partnerships as all those *(organizations, enterprises etc)* interrelated with port activities creating added value for port customers *(port competitors can in some instances be partners)*. Define and manage port "internal" resources though a fourfold analysis: **a)** port finance **b)** buildings, technology and equipment **c)** technology **d)** information and knowledge. Private sector and port authorities partnerships for the development of information systems. Interactive Information exchange between port and port users through formal processes.
5. Processes ENABLER	Development of a port –wide process based, rather than function based, management culture. Build a port process model: *Determine and build key and support port-processes in order to satisfy stakeholder needs within the strategic plan content.* Interrelation of port processes to specific measurement factors *(inclusion of horizontal & vertical integration of ports as elements along the transport chain)*.
6. Customer results RESULTS	Customers are all those who are recipients of products and/or services from the port. Ports operate as customer focus organizations measuring external customer satisfaction. Customer satisfaction, customer loyalty and customer value are key indicators of port operation. Port customer segmentation lead to specific measures, i.e. dedicated terminals available to principle customers.
7. People results RESULTS	Port staff ought to be considered as an important port stakeholder. Staff perception of the port is measured through their satisfaction and their motivation. Development of internal specific staff performance measures. A specific strategy is developed in order to communicate port and people results to all port staff.
8. Society results RESULTS	Define Port cooperate citizenship strategy & influence port position in relation to "Society" in terms of any individual or group influenced by port activities other than the port staff, external customers and suppliers. Port cooperate citizenship refer to at least five port policies: **a)** safety of individuals' **b)** port longevity **c)** resources preservation **d)** harmony with local community **e)** contribution to public interest. To some degree the fivefold port cooperate citizenship strategy can be made measurable. Define port communication strategy for the society results.
9. Key performance	Definition of the key performance results in terms of port strategy, quality, plans and customer experience. Break down the key performance results to key outcomes (both financial and non financial) to key performance measures

results **RESULTS**	and key performance indicators (tons per ship hour at berth, tons per gang hour waiting time, service time, turn around-time, environmental standards, berth occupancy revenue per ton of cargo). Business results ought to clearly related with the ownership status. Build a leadership and/or management culture on measuring results oriented.

Ports pursue closer relations with local authorities through partnership initiation which aiming at mutual interests objectives within the context of the incorporating the local authorities' interests to port strategies (*Beresford et al, 2004*). The effective operation of Environmental Management Systems (EMS) and the continuum scanning of the internal and market conditions require inputs through a formal procedure.The increasing awareness of environmental issues enables port authorities to a close co-operation with local authorities for the implementation of EMS (*Chlomoudis, 2005*). Furthermore, "*corporate governance*" initiatives are highly prioritised aiming at building trust and creditability secure the intellectual capital of the port, develop corporate social responsibility towards the local authorities, regulator authorities etc (*Chlomoudis & Pallis, 2004*).

Overall, port management aims to achieve performance results through the improvement of financial indicators related with port infrastructure and equipment, labor productivity and port operation and investments. In seaports, there is a strong relationship between performance and traffic, which is widely acknowledged at a number of studies (e.g. *Prabir & Buddhadeb, 2003*). Studies deal with productivity and efficiency of seaports presented in the literature review by Ro- Kyung & Prabir De (2004). Traditionally, increasing productivity has been mostly associated transport logistics *(Bichou & Gray, 2004)* with the upgrading of the transport chain, and unitization of general cargo *(Saundry & Turnbull, 1999; Chlomoudis et al, 2003*).

5. CONCLUSIONS

In this paper, a qualitative analysis has been contacted for the perspectives of total quality management employment within the port industry. A literature review has been conducted and the Total Quality Ports have been defined. Furthermore, Table 1 provides a number of actions that need to be considered in relation to EQA business excellence framework. At the center of this work lay the fact that an a priori investigation of certain well-known approaches of total quality will smooth the path into the new forthcoming management era within the port industry. We argue that existing port management literature address issues related to Total Quality Management, whereas, the EQA may provide a starting point as a theoretical – conceptual basis for the study of Total Quality Ports.

The findings provide practitioners and decision-makers with an indication of the applicability of the European Quality Award in port industry. The implications of poor quality products and or services does not relate solely to the customer who sought for better port products and/or services but also on the competitive position of the ports within the new integrated and highly competitive transportation environment. From a researcher viewpoint, it is quite interesting to investigate the total quality management paradigm in relation to the different port classifications. *The question is not whether "quality" is suitable, but which "quality" may provide the best strategic approach for the ports at present and in the future.*

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