AN INNOVATION COACHING APPROACH TO EFFICIENTLY INTRODUCE QM-SYSTEMS IN SMEs

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This paper presents a cost and time efficient approach to implement a vital Quality Management System (QM) at small and medium-sized enterprises (SMEs) in developing countries (DC) to increase their competitiveness and to enable them to enter in international supply chains and virtual enterprise structures. It includes an overview of the actual situation in these countries w.r.t. quality, the presentation of an innovation coaching concept to introduce such methods on a learning by doing basis and a discussion on the results achieved.

1. INTRODUCTION

The trend of globalization of markets, the building of supply chains and virtual enterprise structures, forces the co-operation of individual small and medium-sized enterprises (SMEs) with local and global partners requiring the highest quality of their products and processes in order to maintain their competitive edge. This is valid both for SMEs in the EU and in DC countries such as Brazil and Argentine.

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Up to now companies, especially SMEs, have been mainly active on local markets, where it has been easier to sell their products, even if the operation and quality was not world-class.

In order to maintain and strengthen their position on the market, to keep their position as a competent supply chain partner and to compete with companies around the world, these SMEs have to improve their products and processes w.r.t. quality and productivity. This goal can be achieved through the installation of a vital Quality Management System (QM) [1]. Efficient methods and tools are required here to assist companies, especially SMEs, aiming at a cost and time efficient implementation of QM-Systems.

This paper presents a method for the introduction of an effective and vital QM-System into the SMEs in developing countries, based on a self-implementation approach to promote company competitiveness and to strengthen the innovation competence of the company staff and by this to increase the co-operation ability of SMEs.

The emphasis in this paper is put upon the actual situation of QM-Systems in Brazil and Argentine and how such systems can be introduced into the SMEs of these countries, based on a "learning by doing" approach and minimizing the need for external consultancy support.

2. QUALITY MANAGEMENT SYSTEMS IN DEVELOPING COUNTRIES

2.1 Actual situation

The developed methods and tools are supporting an increase of the ability of companies in DC countries to compete with other companies around the world and to enable the co-operation in the sense of virtual companies in a global market. A similar specific market situation was identified in Argentine and Brazil which is presented in the following in more detail for Brazil.

Brazil is one of the world's top ten economies which has experienced an extreme transformation within the last decade. According to Miguel et al [2], Brazil has begun to deregulate and liberalize its economy, tearing down trade barriers and attempting to get a grip on public finance and inflation. Additionally, in 1994, the Brazilian government launched the Brazilian Program for Quality and Productivity which contributed to radical changes in the enterprises faced with the complex situation regarding the global market. This program suggested mechanisms to improve the quality of products and management in order to achieve international levels. For instance, there are many certification bodies currently auditing Brazilian companies so that the number of qualified Brazilian companies has increased.

2.2 Towards a global market

According to Marinho et al [3], the establishment of the global market led to fundamental changes in Brazilian companies. They were confronted with a new reality, having to compete with products from the European Community, NAFTA, Japan, and mainly the "aggressive Asiatic Tigers". In order to be able to survive in

this new scenario, the Brazilian industry had to adopt a series of measures that were more open and competitive in order to enhance the local and international co-operation. Initially, companies preferentially put their emphasis on eliminating production inefficiencies, reducing costs and establishing more stable relationships with business partners. Thus, due to the changes imposed by the globalization of the economy, Brazilian companies have experienced a transition period, passing from an economy without substantial interference to an economy where the dynamic core is based on quality, productivity and competitiveness that follow international standards.

This transition period is marked by the loss of old beliefs, caused by the collapse of organisational models that had been supporting the management style which was well accepted during the last century. This was represented by the old paradigm characterized by predominantly huge vertical productive units, in general, presenting highly hierarchical and complex administrative structures. The Brazilian companies are now facing a transition to a new paradigm, where the competitive strategy is based on diversification, flexibility and co-operation. As a consequence, Brazilian companies are striving to achieve ISO 9000 certification and making substantial efforts to develop quality in order to have a competitive advantage [3]. Large companies or joint ventures normally have their own potential to be able to change the methods of working. A lot of them have already introduced modern technologies and management methods. However, most SMEs are still working in the traditional manner as they have done in the past. Furthermore SMEs have been reporting on the difficulties they have encountered associated with the implementation of QM-Systems. Therefore, an approach to support such companies is an absolute necessity.

3. TIME AND COST EFFICIENT INNOVATION COACHING APPROACH - BQM

The main problem especially for SMEs w.r.t. the introduction of QM-Systems is how to realize the implementation process. Therefore many approaches are involving external experts to a high degree, which could be categorized in two classical approaches leading to key problems to achieve the introduction of vital QM-Systems:

- Pure training of selected company representatives on QM systems in reference to ISO9000 by courses of different duration which shall enable these staff members to drive the introduction of a QM system in the company after completion of training. The success rate of this approach to achieve the envisaged result is limited due to the big discrepancy between knowing theoretically how something is to be done and bringing it successfully into practice. Quite often additional consultancy support is required.
- Hiring a consultant responsible for the introduction of the QM system in reference to ISO9000 in the company. The success of achieving the ISO9000 certificate will be guaranteed, but the consultancy costs are very high and, due to the limited involvement of company staff in the introduction process, the identification of all staff members with the introduced QM system is often inadequate.

Therefore, the Bremen's Quality Management Model (BQM) was developed by means of a regional initiative for SMEs in northern Germany. The model integrates

organisational, system technical and methodical elements into an overall concept for the time and cost efficient implementation of vital QM-Systems with groups of SMEs (i.e. main SME support is realized during group workshops). The essential goal of the BQM-Model is self-support which enables enterprises to independently design, introduce and maintain an effective company specific QM system in the future, based on a “learning by doing” approach (i.e. coaching approach), minimizing the need for external consultancy support.

Furthermore, such an “Innovation Coaching Concept” mainly aims at the introduction of a vital QM-system, not primarily aiming at the achievement of the formal ISO 9000 certification, but enabling a SME to improve its co-operation ability and innovation competence well accepted, understood and applied by all levels of the company staff. Therefore the process of the introduction of a vital QM-System is clearly structured into project phases (see Figure 1) with defined results, incorporating a training of the staff to enable them to execute the tasks of each phase. The realization by the SME staff and verification of results by the external experts will be used to decide whether to refine the results or to continue with the next phase. The phases of the BQM-Model are addressing the following:

- Definition of the QM-project.
- Fine analysis of processes within the SME.
- Conception and elaboration of the QM-system to be introduced.
- Implementation of the QM-system.
- Certification of the SME.

Figure 1 – Phase oriented innovation coaching approach

Accompanying to all phases of the BQM-Model the BQM-Experts are also supporting the SMEs individually according to the SME needs and progress achieved in each phase in order to introduce advanced organisational structures and technologies.

The phased BQM-Model, from the requirements and aims determination to the certification, contains a comprehensive set of assets and support activities for SMEs (see Figure 2) to initiate the introduction of a vital QM-System and moreover, to ensure the achievement of the envisaged results:

- About 20 one day training workshops by external experts including group exercises for the different phases, grouped in two workshop series.

- Training documentation.
- CATISO® tool covering questionnaires for the analysis phases, documentation templates etc. and supporting the long-term maintenance of the QM-system; the tool is PC based requiring an MS-Office installation.
- Ongoing verification of results and provision of specific improvement hints regarding the results elaborated by the SMEs through external experts.
- Internal audit support.
- Support for the selection of an accredited auditing organisation.

Figure 2 – Structure of the BQM-Model

The main support to SMEs is carried out during group workshops. Especially this aspect enables costs to be shared by 8-10 companies and the motivation for each member is higher due to group work and discussion initiating also experience exchange between SMEs and increasing co-operation awareness to establish synergies.

3.1 Co-operation and supporting network

Experience gained in the scope of the transfer of the BQM-Model indicated that the cost attractiveness of the BQM-Model for companies in Brazil and Argentine is essential. By this, it is not feasible to operate the BQM-Model from a location at Europe. Therefore 'local multiplier organisations' in Brazil and Argentine, overtaking the BQM-Model and practicing it in their region are a prerequisite. Besides the cost attractiveness, the advantages of local experts for SMEs are obvious, e.g.:

- Successful consultancies for SMEs are based on personal trust; this can be more easily realized at the local level.
- Language and cultural problems do not present a local barrier.
- Minimization of consultancy costs through the reduction of travelling costs.
- Local experts know the companies and local problems best.

To remain attractive for SMEs, the low cost concept of the BQM-Model does not allow extensive acquisition activities. Therefore, organisations aiming to overtake the BQM-Model should have well established contacts with the SME community in their region. It is identified that similar to EU mainly non-profit organisations (e.g. chamber of commerce type of organisations, technology transfer institution etc.) are key candidates to offer the BQM-Model at an attractive price to SMEs.

In order to be able to transfer the BQM-Model, a transfer approach has been developed taking into account the advantages of using locally oriented organisations and with the effective combination of network harmonization on a world wide level (see Figure 3). The transfer of the model is based on local networks organized around the nodes which includes SMEs participating at BQM-Projects and BQM-experts for the specific QM-topics to be trained.

Figure 3 – Model of network co-operation

To ensure the high quality standard of the BQM-Model a quality management approach was also developed for its application. Each organisation which builds up a BQM-Node will be regularly supervised on the basis of specified quality indicators and supported with updates of the method and its tools in accordance to the actual international standard. Moreover, the transfer of such models must include strong networking between the BQM-Nodes, to achieve a world-wide harmonization of activities, realizing the following:

- Experts of the different BQM-Nodes are applying world-wide a proven and successful scheme which can be cost efficiently improved, based on world-wide experience.
- Success stories at different nodes and in different DC countries are supporting the dissemination of introducing vital QM-Systems in SMEs world-wide.

4. EXPERIENCE IN THE INTRODUCTION OF QM-SYSTEMS

The adaptation and transfer of such a method to introduce QM-Systems was already done in Brazil. In order to concentrate on further adaptations and extensions of the BQM-Model, especially with respect to specific quality methods, the model was

first executed for one pilot company in close co-operation with a local network node.

4.1 Experience acquired applying the model

A typical example of a local SME was selected as the pilot-company, producing metal tanks, family owned and with a high demand for improvement to be able to be part of international supply chains and virtual enterprises. The company's objective and motivation in implementing a vital QM-system to achieve higher standards of competitiveness was the starting point.

Already in the scope of the analysis, specification and documentation of the processes in reference to the ISO 9000 structure, several required improvements were identified by the company itself, e.g.:

- Integration of design employees into the sales activities, to achieve a smaller number of product changes/ problems during the production.
- The purchasing, planning and production processes will start not until a clear definition of the customer requirements.
- Achievement of a higher awareness of the quality relevance of the daily work.

Moreover, the application of the BQM-Model has led the Company to a better understanding of their manufacturing processes regarding the application of both the MTO (make-to-order) and the MTS (make-to-stock) paradigms. Once started with the BQM-Project, high motivation and involvement of all employees was identified on the activities of standardization of processes, suggestions and "self-analysis" of all steps of their tasks which enabled the identification of possible improvements, supported by defined and maintained performance indicators to measure the improvement success.

The approach of the BQM-Model established a direct commitment of the employees to the changes thus turning the search for standardization into a continuous internal improvement process. One may say, that the products are being now developed in the "new" culture of quality. Additionally, the Company has turned to be more qualified to conquer new markets (the Company is now supplying Mercedes Benz, Renault, Peugeot, etc.) and the certification will take place in October 2000. These results achieved are forming the basis to implement a vital QM-system, which is the key objective of the BQM-Model.

The results acquired so far are showing that the implementation of the BQM-Model at the pilot-company has contributed to modifying the company profile and its concerns related to quality problems and also several quantifiable improvements could be achieved like e.g.:

- nearly 20% increased productivity,
- 10 % higher profit and
- acquisition of new customers (e.g. entering in a large international project in the automotive domain – international supply chain – as the only Brazilian partner).

Since the results at the pilot-company are very positive, the marketing actions regarding the transfer of the methodology to potential multiplier organisations (i.e. local network nodes) has been started and some other SMEs have already shown high interest in joining BQM-Projects for the introduction of a vital QM-System.

The positive experience gained by the application of the BQM-Model at the pilot company proved the successful applicability of the BQM-Model in EU and DC. Due

to the specific situation in Brazil the following points turned out and were considered for adaptations to the methods and tools:

- increased training of employees and
- integration of more examples in the tools as “training” material and benchmarks for the employees.

5. CONCLUSIONS

The paper presents a method to introduce a vital QM-System in companies and by this to improve the competitive position of companies, especially for SMEs in developing countries. The adapted method is promoting a self-implementation procedure, based on a ‘learning by doing’ (i.e. coaching) approach to introduce modern vital quality management systems in a cost and time efficient manner. Initial results in DC countries indicate its validity and the great benefits for industrial companies. The transfer of the method to local nodes (i.e. multiplier organisations) for coaching SMEs in DC by local experts is based on a proven international network approach. Already a significant interest of industrial companies as well as multiplier organisations in the coaching approach was identified.

6. ACKNOWLEDGEMENTS

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