

The Increasing Importance of Global Quality Management – Quality as a Competitive Factor

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Abstract

Quality must be produced economically. For only if the increased yield from a quality improvement is higher than the additional quality expenditure does the quality productivity of a company increase.

In this article, impact is understood as a competitive factor of quality and can be divided into two factors. These two factors are the customer benefits generated and on the other hand, the 0-error strategy in the products. This article aims to answer the following research question: "On which pillars are the generated customer benefits and, on the other hand, the flawlessness of the products based?"

Several empirical market studies were consulted as market and literature research as well 15 expert interviews.

The result was that if both the strategic pillar and the operational pillar and their sub-aspects are in place, then improved competitive factors are generated and created in the market environment and there are further competitive influencing factors in the market environment.

The interviewees have assessed these below to the used questionnaire:

- 88% confirmed, 10% partly confirmed and 2% not confirmed -

The explicit description and analysis of the individual elements and methods of quality control and quality cost accounting is not given in this article and will be elaborated in the author's dissertation.

The participants of expert interviews were selected by the study leader according to their professional background.

Using an extensive set of 15 expert interviews, we empirically demonstrated the existence of the strategic and operational pillars. In the combination, these have a direct influence on customer perceptions and are thus a competitive factor versus competitors.

These form the elements and methods of quality control and are the basis for evaluating quality with the aim of: Increasing quality with a constant reduction of costs with simultaneously increasing market acceptance.

Keywords: quality management, quality principles, quality strategies, competitive factor, quality 4.0

JEL codes: L15, L21

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1. INTRODUCTION

Quality must be produced economically. For only if the increased yield from a quality improvement is higher than the additional quality expenditure does the quality productivity of a company increase. The fact that high product quality can fundamentally increase corporate success has been proven in many studies [13], [20]. Certainly, the most prominent is the PIMS study conducted by Buzzel/Gale [9]: The authors were able to empirically prove that high quality leads to an increase in profits over premium prices in the short term, as customers are offered better value for money. In such a case, quality is an incentive to buy. In the long term, superior quality leads to an image gain for the company [4], which can lead to sustainable growth. Quality can also be a unique selling point for products and thus significantly increase the sales potential of an individual product [5]. It is obvious: quality is a strategic competitive factor [19], [21].

In addition to that, the application and implementation of "Industry 4.0" and "Quality 4.0" is becoming increasingly important. These are based on digital transformation to provide adequate responses to disruptive changes in relation to customers, organizations, and organizational boundaries and to ultimately create a competitive advantage [22].

In this paper, economic quality management is seen as an interplay of strategic quality and operational components. Therefore, the two pillars of product quality and the interaction of their individual components are examined in more detail.

TQM, Six-Sigma, Kaizen/KVP and Lean Management are not seen as separate management concepts in the context of business reengineering. Rather, all four concepts aim to increase productivity through a stringent focus on a customer and the involvement of employees [2].

The leading strategic element of modern quality management is Total Quality Management (TQM). This encompasses "the continuous improvement of the work of an organization for the cost-efficient production of high-quality goods "[23], whereby the wishes, needs and expectations of the customer are the guidelines and the focus of action [10]. When translating these into technical specifications, the customer's expectations, which are sometimes difficult to measure, should not only be fulfilled, but exceeded [15]. However, the customer should not only be understood as the industrial end customer or the consumer. Rather, every entity within a company is usually a customer and supplier of other entities. Only by consistently adhering to this customer-supplier principle can an awareness be created among employees that all activities have a customer. All activities contribute to the production of high-quality products.

There are many approaches in the literature that deal with quality-related costs [1]. Although controlling is usually responsible for collecting these costs, quality cost models are not stand-alone cost models, but should rather be integrated as an integral part of a company's quality programs [24]. Quality science criticizes the fact that there is currently no generally accepted and globally applicable standard for the calculation of quality costs and no globally applicable standard for the calculation of quality-related costs [16]. Nevertheless,

the following three main types of quality costs are distinguished in the currently established quality cost models [17] [12]:

- Failure prevention costs
- Inspection costs
- Internal and external consequential failure costs

All quality cost models are based on the basic assumption: "Quality-assured products are value-enhanced products"[14]. Expenditures for preventive quality measures are therefore investments [3].

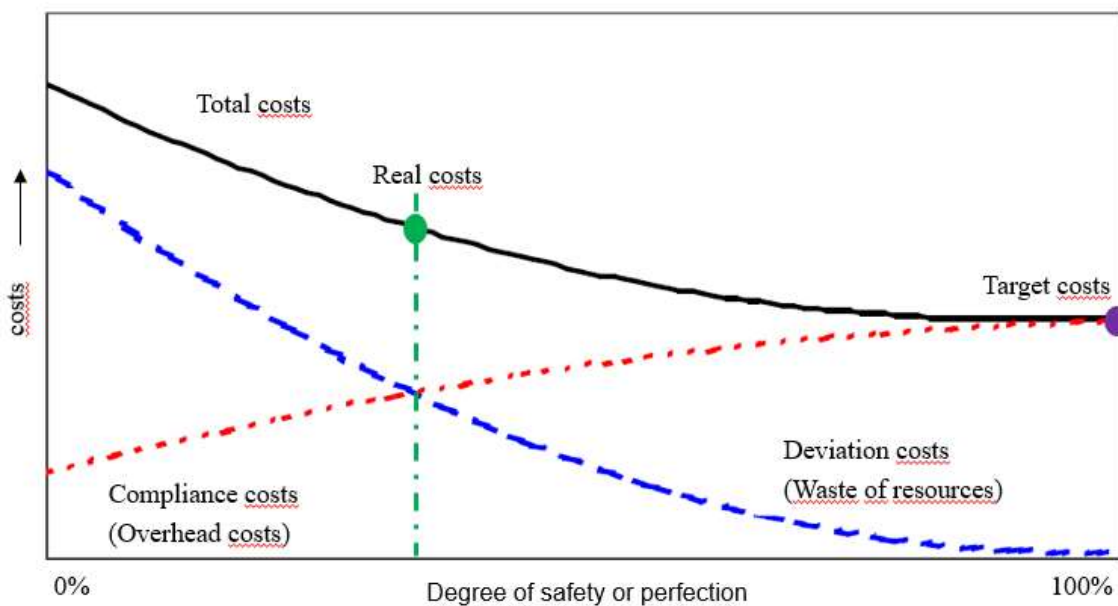


Figure 1: Quality Cost Accounting – Bisection of internal quality costs based on Wildemann [25]

2. METHODS

The number of interviews conducted is based on many years of personal contact with the respondents and is therefore credible and valid. Furthermore, due to the existing global structure and the sector mix, a corresponding informative value is given and can be generalized. In addition, the results of the interviews coincide with my personal professional experience.

To answer the following research question, several empirical market studies were consulted as market and literature research, and 15 expert interviews were conducted on this basis were evaluated quantitatively:

“On which pillars are the generated customer benefits and, on the other hand, the flawlessness of the products based?”

To answer this research question, we will examine the following hypotheses:

- H1: "If the strategic pillar as well as the operational pillar and its sub-aspects are in place, then improved competitive factors in the market environment are generated and created"
- H2: "Other factors from the market environment, such as F1², F2³, F3⁴, also influence the competition factor?"

To assume influencing factors and dependencies as confirmed, an approval of 80% from the coded interviews must be countable.

As well to answer the available hypotheses, 15 structured interviews were conducted and analyzed according to the established scientific method of quantitative expert interviews analysis [6], [8].

There were 12 questions in total about strategic quality control and operational QM tools and methods.

Definition of Expert:

The interviewee accompanies a management position and must have a correspondingly appropriate expertise.

Interviewee Selection:

These interviewees were selected from my global network of companies and include both customer and supplier quality managers from the second level of management.

Data Collection:

In total, 15 interviews were conducted between November and December 2020 by phone. The interviews are on average 25 min long per unit. The interviews were conducted in German and English. All the 15 interviewees were males with an age between 28 to 60 years old. All interviewees were interviewed at the time of the interview in a professional situation.

The data were evaluated quantitative by using points and different weighting factors, then classified and analyzed and validated in a utility analysis [6], [8], [18].

² Warranty period of products according to EU regulations (24 months)

³ Evaluation of products according to 5R method after life cycle to reduce, repair, reuse, refurbish, recycle

⁴ Easiness to use

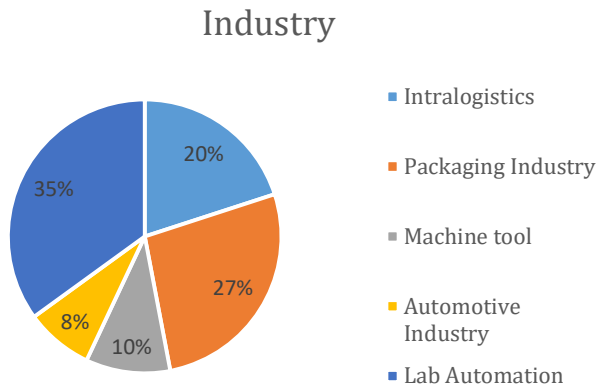


Figure 2: Graphical Overview - Industry of participants

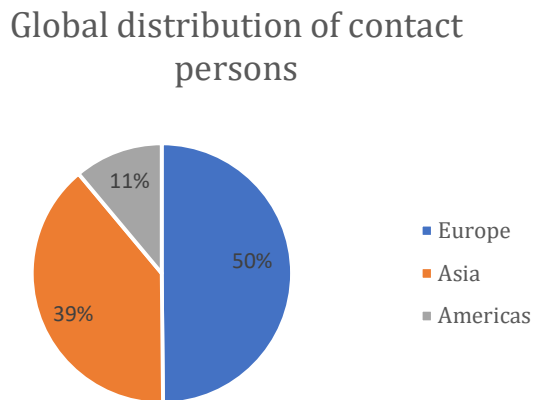


Figure 3: Graphical Overview - Global distribution of contact persons

3. RESULTS

The qualitative evaluation of the interviews yielded the following results:

The evaluation of the interview participants' responses in relation to the given possible responses

(A: confirmed/B: partly confirmed/C: not confirmed) to the present hypotheses showed the following result:

H1: "If the strategic pillar as well as the operational pillar and its sub-aspects are in place, then improved competitive factors in the market environment are generated and created"

Result of Interviews

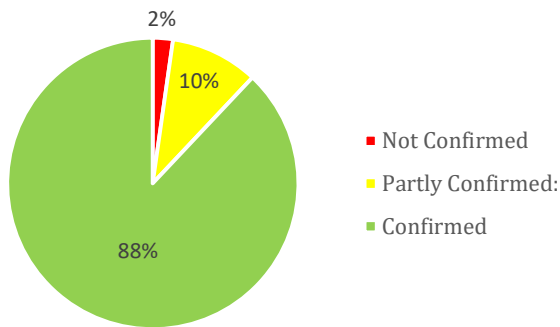


Figure 4: Result of Interviews

This is forming following structure:

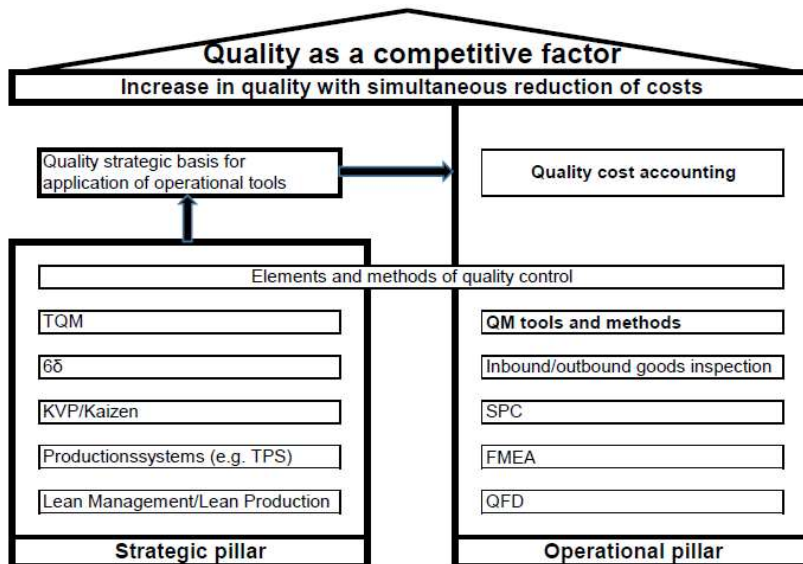


Figure 5: Strategic and operational quality management in the company

It can be stated that in addition to the confirmed areas of influence, further influencing factors could be found.

Hypothesis H1 has been confirmed, the zero hypothesis must be rejected.

Following the confirmation, the question arises whether there are other external influencing factors. This can be answered by the interview participants to the extended interview questions.

1. Environmental factors around the market
2. Experience and reputation of products
3. Service and warranty of products
4. Test reports and product comparisons
5. Take-back and recycle capability of products

All named terms could subsequently be assigned to the three already known influence factors.

For further information, see the following research table:

Named Term	Research Comment	Influence Factor
Environmental factors around the market	Political and economic influence (taxes, market prices, etc.), unemployment, economic recession and customer buying behavior are environmental factors that have a direct influence to market	Secure market access, marketable prices and corresponding customer needs. Acceptance of the need to own these products (Strategic- and operational pillar)
Experience and reputation of products	Own experience or from the direct environment influence the acceptance and awareness of the products and in turn thus the purchase decision	Good experience with products, they usually remain loyal to the product or brand. Indicators for this are the performance, functional life and the price/performance relationship (Strategic- and operational pillar)
Service and warranty of products	Extended service and warranty for products beyond the legal framework (24 months) influences the purchase decision and thus purchasing behavior	Few service and warranty claims, which is ensured by robust and safe product design and manufacturing (Strategic- and operational pillar)
Test reports and product comparisons	The buyer/consumer allows himself to be influenced in his purchase decision and trust by test reports and product comparisons	Good results in product test comparisons and high reliability with a good price/performance relationship (Strategic- and operational pillar)
Recycle capability of products	Take-back and recyclability of products are environmentally relevant factors that also influence the acceptance of products and purchasing behavior from an ecological point of view	Beyond the design of products over the life cycle, the recyclability of products must be conceived (Strategic- and operational pillar)

Table 1: Evaluation of named terms from additional Comments of Interview

It can be stated that in addition to the confirmed areas of influence, further influencing factors could be found.

Hypothesis H2 has been confirmed, the zero hypothesis must be rejected.

4. DISCUSSION

The result of the literature analysis, as well as the subsequent analysis of the expert interviews, have shown that the increasing importance of global quality management - quality as a competitive factor can certainly be presented in the surrounding of global market.

It can be stated, however, that until now less research was available on the origin, demarcation, and interaction of the influencing factors. De Meyer and Seghezzi identifies the influencing factors in their work but deliberately leaves open whether the named influencing factors form a self-contained unit or whether there may be other influencing factors, which have not yet been named [11], [23]. Our intention is to use this work to close this research gap.

To this end, we have carried out an exploratory study. We conducted 15 structured expert interviews and evaluated them quantitatively [6], [8], [18].

The investigation clearly showed that the known influencing factors exist in management practice and that no other influencing factors can be discerned.

The participants of the expert interviews were selected by the study leader according to their professional background, so that the sample of participants reflects the current situation in market.

This study is a partial study of the author's dissertation on Global Quality Management - The Importance and Impact of Competing Global Industrial Enterprises. Due to predetermined time constraints and limitations in relation to the scope of the study carried out, it is not possible to use a broad data base for analysis in this study.

For subsequent studies, it is desirable to broaden the analysis and to conduct interviews in the same form in many different countries with differentiated cultural backgrounds to be able to show differences of perspectives and empirically improve the study.

5. CONCLUSIONS

In this article, impact is understood as a competitive factor of quality and can be divided into two factors. These two factors are the customer benefits generated and on the other hand, the 0-error strategy in the products. This article aims to answer the following research question: **"On which pillars are the generated customer benefits and, on the other hand, the flawlessness of the products based?"** Several empirical market studies were consulted as market and literature research, 15 expert interviews.

During the literature research and the comparison with existing research, it is noticeable that there are already numerous publications on this research field, but these describe fragments with different questions and aspects.

As a result, it can be summarized, that there is a strategic and an operational pillar, which is composed of quality management methods on the one hand and quality tools on the other.

Using an extensive set of 15 expert interviews, we empirically demonstrated the existence of the strategic and operational pillars. In the combination, these have a direct influence on customer perceptions and are thus a competitive factor versus competitors.

The interviewees have assessed as below:

88% confirmed,
10% partly confirmed and
2% not confirmed

These form the elements and methods of quality control and are the basis for evaluating quality with the aim of: Increasing quality with a constant reduction of costs with simultaneously increasing market acceptance.

The questions, topics and findings have not yet been answered in all their complexity and are to be continued in further scientific work.

The explicit description and analysis of the individual elements and methods of quality control and quality cost accounting is not the subject of this article.

APPENDIX

The following documents and data used in this research can be downloaded from public data storage at Harvard Dataverse:

- Telephone interview questionnaire

To download go to <https://doi.org/10.7910/DVN/R6GOL1>

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