Total Quality Management and Balanced Scorecard
- A Comparative Analysis

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ABSTRACT

Recent years have witnessed rising interest towards integrated performance measurement and control systems. Total Quality Management (TQM) and Balanced Scorecard (BSC) are management philosophies that have been widely discussed not only in academic world, but also in business world.

The aim of this paper is to compare the contents of TQM and BSC and to build a hierarchy of concepts between these managerial terms. The goals and objectives of TQM and BSC are supposed to be quite similar. Most of the research effort will be concentrated on having a vision of possibilities to use BSC as a tool for implementing TQM.

TQM is a philosophy to offer value-adding services to customers effectively and profitably. The basis for this Japanese born philosophy was created in the 1960’s. It integrates quality development in personnel motivation to promote customer satisfaction. Deming, Juran and other well-known quality authorities have published a number of articles and books concerning the implementation of these quality philosophies.

BSC, introduced by Norton and Kaplan in 1992, is a performance measurement method and also a strategic management tool having four different perspectives to the success of a company. Traditionally, financial business indicators have failed to explain the good or poor situation of a company. BSC, however, also includes non-financial performance measures and objectives driving towards better performance.

The main conclusion of the study is that both concepts can be seen as philosophies. TQM is a collection of tools surrounded by the philosophy of quality thinking. BSC is a strategic tool for strategic planning and implementation, and it is also surrounded by the philosophy of cause-and-effect relationships. It depends on the point of view, and the extent of implementation of these concepts, which one is used to implement the other one.
1 INTRODUCTION

1.1 Background
Recent years have witnessed rising interest towards integrated performance measurement and control systems. Total Quality Management (TQM) and Balanced Scorecard (BSC) are management philosophies that have been widely discussed not only in academic world, but also in business world.

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1.2 Objectives of the Study
Since both concepts, TQM and BSC include same elements, and they both are considered as a part of modern management, there is a need to analyze the differences and similarities of these concepts. Thus, the aim of this paper is to compare the contents of TQM and BSC and to build a hierarchy of concepts between these two commonly discussed managerial terms. The goals and objectives of the both tools are supposed to be quite similar, and this is one of the main interests of the paper. Most of the research effort will be concentrated on having a vision of possibilities to use BSC as a tool for implementing TQM.

1.3 Research Approach
The selected research approach for this study can be characterized mainly as conceptual analysis. TQM and BSC belong to the context of management. The purpose of the study is to discuss these concepts in the same context and to build up a conceptual hierarchy in order to connect these two different concepts. The discussions are based on literature review.

The structure of the paper follows a typical structure for a study based on conceptual analysis approach. In the next following two chapters, two main concepts – TQM and BSC – are analyzed separately. In the chapter following these two, both concepts are analyzed by considering them in the same context. In other words, a synthesis based on preceding chapters is made. In the last chapter of this study, conclusions are presented.
2 TOTAL QUALITY MANAGEMENT

2.1 From Quality Control to Quality Management
According to Garvin (1988) quality thinking began with the rise of inspection in the early 1920’s. The next phase was statistical process control in the US industry; Shewhart’s methods date back to 1930’s (Garvin 1988, p 6). World War II added the military standards to quality thinking. These aspects and the Japanese production management are the basis for total quality management (TQM), which we know nowadays.

The discussion and empirical studies of quality related topics date back to the late 1950’s (Deming 1982, Garvin 1988). The development tools implemented at this stage were mostly designed to assure the standard level of manufacturing. The level was seen from the customers’ point of view. The tools were aimed to eliminate the statistical inspection of industrial goods and to share the responsibility of quality to all employees (Feigenbaum 1961, Juran 1988).

Quality can be defined at least in five ways: Transcendent, product-based, user-based (“Quality is fitness for use.” (Juran 1988, p. 2.8)), manufacturing-based (“Quality means conformance to requirements.” (Crosby 1986)), and value-based (Garvin 1988). Garvin (1988, p. 40-50) has described product quality for manufactured goods by eight dimensions. These are performance, features, reliability, conformance, durability, serviceability, aesthetics and perceived quality. However, these kinds of classifications can be made not only in the case of manufacturing, but also for other types of business (See e.g. Vonderembse and White 1996).

TQM concept has been known as a concept since 1980’s. Feigenbaum (1961) first called the quality philosophy as total quality control (TQC). The American industry turned it into TQM (See e.g. Vonderembse and White 1996 or Garvin 1988). TQM is a collection of methods to build quality into products and processes. It is a holistic way of thinking and doing business. Successful actualization of TQM concept requires high understanding of customer satisfaction and deep commitment to philosophy on all levels of an organization (Deming 1982, Juran 1989).

2.2 Practices and Means
According to Silen (1998, p. 46), TQM has been widely understood as a collection of principles and means found via empirical experiments, even if it should be understood more like a philosophy. TQM includes six components: (See e.g. Vonderembse and White 1996)

1. Focus on the customer is the driving force for a company trying to gain competitive advantages (Deming 1982). Quality function deployment (QFD) was first systematized in Japan in 1972 at Mitsubishi’s Kobe shipyards (Garvin 1988, p. 198). It is method to turn customer requirements into product features in the design phase (Akao 1990).

\footnote{Deming has not used the term competitive advantage, which was first introduced by Michael E. Porter in his book Competitive Advantage in 1985. Deming’s idea is the same.}
2. *Everyone should be responsible for quality.* The personnel of a company put philosophy into action. (Deming 1982)


4. *Continuous improvement.* For example the Plan-Do-Study-Act Cycle\(^2\) (Deming 1982) emphasizes this.

5. *Employee training* underlines the importance of innovation and development (Deming 1982, Juran 1989). Juran (1989, p. 40) has also pointed out the typical misconceptions between quality improvement and capital investment.

6. *Fact-based management* is an important component of TQM. It asks for analysis and quality tools (Deming 1982, Juran 1988, Kume 1991). Deming (1982) and Juran (1989) argue that a lot of bad quality is produced by management or process failures, not only by workers.

The tools of TQM have been analyzed and developed by many authors. The issues can be divided in different categories according to the point of views. Deming (1982) has developed the fourteen points program for quality oriented company. These points include thoughts about training, leadership and workmanship, for example. Juran (1989) has created a trilogy of quality. That consists of quality planning, control and improvement. Among the many papers of Ishikawa, one of the most important contributions to the quality thinking has been the cause-and-effect – diagram, also known as the fishbone diagram (Vonderembse and White, 1996).

Crosby (1986) published his philosophy after fourteen years of industrial experience. Crosby’s core idea of quality is the cost of not satisfying the customers. Crosby introduced the idea of zero defects and “doing it right the first time”. These should be the goals of an industrial company because quality is free, while failing to do these increases costs. Taguchi underlines the design function to create quality. His philosophy is based on the concept of robust design, which guarantees high quality regardless of process variation. A special tool from Taguchi is the design of experiments (DOE). That consists of empirical test results and decision variables with chosen design parameters (Karjalainen 1992). Mathematical method is orthogonal matrixes formed by varying the values of the most important decision variables.

Quality can also be seen as costs (See e.g. Crosby 1986, Juran 1988). The basis for this approach is to think perceived quality. If the quality level for a certain feature of a product or a service meets the customer expectations tolerance limits, the quality cost is at its minimum. There are for example no lost customers or warranty costs. If the variances of features are high, customers will be dissatisfied. Taguchi has shown this in his quadratic loss function. (WWW 1999, Karjalainen 1992, p. 13 - 15)

\(^2\) Deming originally introduced a Plan-Do-Check-Act Cycle in 1982, but changed the word “Check” to “Study” later.
Quality costs are typically separated to failure, appraisal and prevention costs (Crosby 1986, Juran 1988). Failure costs include external (for example warranty repair, handling complaints, replacing products, losing customers) and internal (for example correcting errors, rework, increased throughput time) failure costs. Appraisal costs consist of measuring, inspecting and testing. Prevention refers to employee training, quality control procedures and design, for example.

TQM includes also the idea of using practical methods for improving and assuring the emphasized quality level. The well-known methods are seven new and seven old quality tools. The seven old tools include flow diagrams, control charts, check lists, histograms, Pareto analyses, cause-and-effect -diagrams and scatter diagrams (Deming 1982, Juran 1988, Kume 1991). These have strong statistical process control orientation. The seven new tools are more for conceptual and logical thinking. These include affinity diagrams, interrelation diagrams, structure trees, matrix, value analyses, process decision program charts and arrow diagrams (Critical Path Method (CPM) or Program Evaluation Review Technique (PERT)) (Juran 1988, Kume 1991). In addition to these, there are a lot of other operational and managerial tools that have been used to improve quality (Juran 1988).

2.3 Advantages Gained by Quality Management
The PIMS (Profit Impact of Market Strategies) research has shown that high quality level (asked from customers) leads to higher return on investment (measured). With high return on investment it is easier to increase market share. There is a clear evidence of correlation between profits, market shares and quality levels (Garvin, 1988).

Nowadays there are also quality awards (Malcolm Baldrige Award, European Quality Award) and certified quality standards (ISO9000) that may help an organization to gain competitive advantage (Vonderembse and White, 1996). These may be strategic and economical reasons for a company to implement TQM.

TQM has developed to what it is today along with other business management philosophies. It is a diversified way to see the whole business growing up from different aspects of quality. TQM gives certain goals, numerical and non-numerical, for a company (Deming 1982, Juran 1989). Reaching those goals is typically not easy; it requires support from management, long-term strategic decision-making and motivated personnel (Garvin 1988, Silen 1998).

3 BALANCED SCORECARD

3.1 From Measurement Method to a Strategic Management Tool
Kaplan and Norton first introduced the Balanced Scorecard (BSC) in 1992. According to their article in Harvard Business review BSC was supposed to track the key elements of a company’s strategy (Kaplan and Norton 1992). It was to help to establish the measures that drive the company’s overall performance. Essential idea in BSC is the concept of perspective. Company’s performance can be assessed from various directions. By taking into account several perspectives simultaneously one could reach fair view regarding company’s overall performance. Kaplan and Norton compare BSC to the dials in an airplane cockpit: It gives the managers complex information at a glance. In 1992 Kaplan and Norton introduced four basic
BSC perspectives: Customer, financial, internal business and innovation & learning.³

As such, the idea of combining different perspectives was not a radical one. Several authors had already earlier discussed the need to complete the traditional financial measures with non-financial ones. The importance of measuring the causes in addition to measuring the effects or results was recognized. Financial measures alone were seen inadequate to track the causes of present events – a combination between cause- and effect-oriented measures was seen necessary. (See e.g. Deming 1982, Uusi-Rauva 1986, Johnson and Kaplan 1987) The Balanced Scorecard provided a framework to actualize this combination.

The way the measures are linked to a company’s strategy according to Kaplan and Norton is clarified in Harvard Business Review article in 1993 (Kaplan and Norton 1993). The construction of a BSC starts with the statement of the company vision. It includes the definition of strategic business units (SBU’s), statement of the mission and the vision. The next question regarding each perspective is now: If my vision succeeds, how will I differ. The process continues by definition of the critical success factors (CSF’s). Finally, measures can be linked to identified CSF’s. The set of critical measures forms the company-specific BSC.

After the introduction of the concept, BSC has been developed towards a strategic tool. Kaplan and Norton wrote an article that was titled “Using the Balance Scorecard as a Strategic Management System” in 1996. According to them, BSC lets managers introduce new management processes that, separately and in combination, contribute to linking long-term strategic objectives with short-term actions. Processes are: (Kaplan and Norton 1996a)

1. Translating the vision – helps managers to build a consensus regarding the organization’s vision and strategy
2. Communicating and linking – lets managers communicate the strategy up and down the organization and link it to departmental and individual objectives
4. Feedback and learning – it gives companies the capacity for what can be called strategic learning. The scorecard enables companies modify their strategies to reflect real-time learning.

As one can see, BSC is considered to be more than just a measurement system. The Balanced Scorecard could be used not only to clarify and communicate strategy, but also to manage it (Kaplan and Norton 1996b).

³ The original perspective of innovation & learning has been replaced with perspective of innovation and growth, see Kaplan & Norton 1996a and 1996b.
3.2 Gaining Understanding by Linking Business Perspectives

Principle of the Balanced Scorecard is presented in Figure 1. Since BSC was first established in 1992, the basic structure with four perspectives is slightly developed. Kaplan and Norton have presented a new name – learning and growth – for the original learning and innovation perspective. Furthermore, some enterprises that have implemented BSC concept have taken whole new perspectives in addition to these four (see e.g. Olve et al. 1998). While the four original perspectives of BSC have been found to be robust across a variety of companies and industries, they should be considered as a template, not a straitjacket (Kaplan and Norton 1996b).

Figure 1 shows the essential characteristics of BSC concept. The perspectives are connected to each other to demonstrate causal relationships in company operations; in addition, the company vision and strategy strongly influence the collection of measures and targets regarding each perspective.

![Figure 1. The perspectives of Balanced Scorecard (Kaplan and Norton 1996a)](image)

Measurement system’s ability to systematically demonstrate various causal relationships may be a questionable issue; however, Kaplan and Norton set an example concerning the creation of causal measures. This is demonstrated in Figure 2. Return-on-capital-employed can be a scorecard measure in the financial perspective, the driver of which could be repeat and expanded sales from existing customers – as a result of a high degree of loyalty among customers. Analysing customer preferences may reveal that on-time delivery (OTD) of orders is highly valued by customers. Thus, both OTD and customer loyalty are selected into the customer perspective of BSC. Next question is what internal processes must the company excel at to achieve excellent on-time delivery. Improved OTD may require short cycle time of internal processes as well as the high quality of them. Both of the factors can be measures in internal perspective. Organization can improve internal processes for instance by training and improving employee skills. That
would be a quite possible objective for learning and growth perspective. (Kaplan and Norton 1996b, p. 31)

Without any doubt, the actual construction of measurement system with clear causal relationships requires deep understanding of company operations. Indeed, Kaplan and Norton state that the relationships among objectives and measures in the various perspectives are only hypotheses; however, they are explicit ones.

![Diagram](image)

**Figure 2.** The cause-and-effect measures in BSC context

Customer perspective measures are to answer the question: How do customers see us? BSC demands that managers translate their general mission statement – many times focused on customers – into specific measures that reflect the factors that really matter to customers. Often customers’ concerns tend to fall into four categories: time, quality, performance & service and cost. Clarifying the customer requirements may sometimes force the company to hire third parties to perform customer surveys. (Kaplan and Norton 1992)

Internal business perspective measures try to answer to the questions: What must we excel at? What have to be done internally to meet the customer requirements? The internal measures of BSC should stem from the business processes that have great impact on customer satisfaction – factors that affect for instance cycle time, quality or employee skills. Goal setting for these factors demands measures that are influenced by employee’s actions. For this reason, managers need to decompose overall cycle time, quality etc. measures to local levels. (Kaplan and Norton 1992)

If the customer-based and internal business measures on BSC identify the goals that are most important to company’s competitive success innovation and learning (or growth) perspective reminds that the goals keep changing. Company’s ability to innovate, improve and learn affects directly to company’s value. In other words, only through the ability to launch new products and create more value to customers can a company penetrate new markets and increase revenues. Measures in this perspective may concentrate on product or process innovations – or they can track improvements on company’s existing processes. (Kaplan and Norton 1992)

Financial perspective measures indicate how well the company’s strategy, implementation, and execution are contributing to bottom-line improvement.
Typically financial goals are related to profitability, growth, and shareholder value. Financial measures are important for at least two reasons. The linkage between improved operating performance and financial success can actually be quite tenuous and uncertain. A Company may fail to capitalize the actual operational achievements. Moreover, some findings show that a well-designed financial control system can actually enhance rather than inhibit an organization’s TQM program. (Kaplan and Norton 1992, p.78)

In managerial context, BSC is in particular a tool for setting the objectives and targets for an organization; in addition, it enables managers or employees to monitor and assess achieved results and causes behind them. Being a tool does not however mean that BSC is a fixed system. The balanced scorecard should be tailored taking into account the specific needs of an organization. It is a flexible system – a framework – that can be fitted to serve different organizations and industries with different objectives.

As a management tool, the value of BSC is in providing the cause-and-effect relationships. If it succeeds balancing the past, present and future, it actually enables proactive control instead of reactive one. From the management point of view, it would be more important to recognize the causes before the actual effects than to find the causes after the resulted effects.

4 TOTAL QUALITY MANAGEMENT AND BALANCED SCORECARD IN MANAGERIAL CONTEXT

Total Quality Management is a collection of tools. On the other hand, it is often said to be a philosophy concentrating on the customer focus. In addition to the customer focus, TQM is without any doubt concerned in the perspective of internal processes (see the four perspectives of BSC in Figure 1). However, TQM does not explicitly emphasize the financial perspective, neither the perspective of learning and growth. From this point of view, Balanced Scorecard seems to have a wider frame than TQM. On the other hand, it is not justified to argue that TQM does not consider the financial perspective or the perspective of learning and growth. Some components of TQM do contribute in this area. These are for example cost reduction by making everyone responsible for quality, not only technical inspectors, or learning process acceleration by analyzing cause-and-effect relations of a specific phenomenon.

BSC explicitly emphasizes the financial performance as the most important perspective of the overall performance of an organization. It is built on causal cause-and-effect chains, which always end at the financial cause following from the changes in critical success factors of the organization. Thus, when customer focus is the most critical perspective in TQM, BSC emphasizes that the financial perspective is the most important one, while customer perspective is one of the chains in the cause-and-effect chains affecting to the financial performance.

BSC is often seen as a measurement tool, while TQM is seen more like a philosophy. Is this common supposition justified? Let’s consider this by having a look to a definition of “philosophy”:
In other words, philosophy can be defined as a set of beliefs reached by particular system. As discussed before, TQM is a set of tools. Now it seems obvious that TQM can be seen as a set of beliefs reached by these tools. Thus, it is justified to define TQM also as a philosophy. But how about BSC? Is it only a measurement tool or could it also be seen as a philosophy?

BSC is based on causal cause-and-effect chains. By improving customer satisfaction, for example, a company should gain its income and financial performance. Thus, BSC is based on belief that affecting to critical success factors, it is possible to reach improvement in the financial performance of the company. This seems to fulfil the features of a philosophy. The conclusion is that it is justified to – in addition to TQM – call BSC a philosophy.

There is no doubt about the fact that both TQM and BSC aims to improve the performance of an organization. However, there is a fundamental difference in one aspect: When TQM offers a set of tools, implementing of which should lead to better customer satisfaction and overall performance of a company, BSC is more like an empty paper. Implementing BSC requires a deep understanding of critical success factors and processes of an organization. It does not give any “plug-and-play” solutions for the management of the company. BSC is much more dynamic in its nature than TQM.

TQM needs commitment of the whole organization, when implemented. Personnel at every stage of the organization should be able to understand the importance of the customer focus and start thinking their action from this perspective. As well known, this kind of changes can not come true, if the top management of the organization is not committed to them. Thus, TQM touches the whole organization. The implementation of BSC does not require this kind of total commitment. Its philosophy is to find the cause-and-effect chains. It does not tell, how to improve the performance of the critical success factors belonging to the causal chains. Thus, BSC seems to be more like the strategic tool or philosophy of management rather than the whole personnel. While TQM appears more homogeneous through the whole organization, BSC does not necessarily show at all organizational stages. This is not say, that BSC would not support decision-making or actions carried out at the lower levels of organization.

Let’s now consider the relationship of TQM and BSC from two different point of views:

1) TQM is seen mainly as a comprehensive philosophy, while BSC is seen only as a tool for performance measurement. In this alternative, BSC is regarded equal to the several tools traditionally included in TQM.
2) BSC is seen as a strategic management tool, but mainly as a philosophy leading to improved financial performance. In this alternative, TQM is regarded as a tool aiming to improve the performance especially in the customer and internal process perspectives of BSC.

Both point of views are considered in the following sections of the paper. Interpretation one is illustrated in Figure 3, whereas interpretation two is presented in Figure 4.

**Interpretation One: “BSC is a measurement tool to support TQM.”**

Let us consider a company, whose vision is to be “number one” regarding customer satisfaction. One of the strategies to fulfil the vision could be the adoption of TQM principles to company actions. Furthermore, choosing a strategy gives rise to a number of more precise objectives and goals related to the strategy. To clarify the company’s relative position regarding the objectives, they have to be measured. BSC can be seen as a general measurement tool connected to company’s strategic goals through critical success factors – whatever they are. *It is a tool among the several other tools included in TQM.* This point of view is illustrated in Figure 3.

This perspective emphasizes the general role of measurement in management process: If you want to manage, you have to measure. This is true despite of the selection of management principles or philosophies. Thus, this point of view can be considered as *practitioner’s view*. From this perspective, TQM gives or defines the direction whereas BSC (measurement) ensures that the direction remains and can be adjusted if needed. As such, BSC does not emphasize any specific strategic goals but communicates that various perspectives should be balanced.

![Figure 3. BSC as a tool among other ones in TQM context](image)

**Interpretation Two: “BSC is a strategic management tool.”**

This point of view includes the idea, that making business starts with a strategy process. Strategy process is conducted by management in order to define a vision, goals and objectives for a company and to select ways to reach these. After this it is
possible to find CSF’s and to construct measures for these. BSC collects the results of this strategy process into different perspectives and states clearly the cause-and-effect chains, as they are understood in a company. According to chosen strategies a company may for example decide to implement TQM or any other method to reach the goals and objectives tied with the CFS’s. In this case TQM is a method to gain advance for example in measures attached to customer perspective of BSC.

Figure 4 shows the idea of interpretation two. BSC is a strategic management tool by which a company defines its vision, goals and objectives. This means that the goals have to be distributed to every level of the organization. Other management tools may be necessary for different functions or activities in an organization to reach their goals. The situation and its development are monitored by chosen measures included in BSC. The thick arrow in Figure 4 indicates chosen tool to make goals that are set regarding a perspective, come true. The management of a company monitors improvements gained by using these methods. This is illustrated by the small arrows in Figure 4.

Figure 4. TQM as a tool for improving performance regarding a perspective

The essential point is that the strategies are under continuous change because of the changing environment and market situation. The CSF’s can remain the same much longer. It is the strategy process that turns the empty paper into real BSC. In this context TQM can be seen as a tool implemented depending on the contents of BSC.

5 CONCLUSIONS

The both concepts, TQM and BSC, emphasize customer focus, employee satisfaction and shareholder perspective. Also learning and development have their roles in these concepts. BSC can be crystallized by a visual scorecard illustrating the causal cause-affect –chains between critical success factors, leading finally to shareholder’s perspective. Respectively, TQM can be crystallized as a collection of quality tools surrounded by a philosophy of total quality.
One of the main interests of this study was to find out possibilities to use BSC as a tool in order to implement TQM. The answer to this question is not so simple. It seems obvious that BSC could without any doubt be one of the tools included in TQM. However, BSC is not only a measurement tool. It is a strategic tool for bringing the vision and the strategy of a business unit in practice. In fact, it is reasonable to use term philosophy when discussing BSC. This philosophy is built on causal relationships between the success factors of a business unit. It states that affecting to factors at the beginning of the chain it is possible to improve the other factors of the chain, and to finally achieve better financial performance.

The vision of a business unit presents an idea about the future. It should give an answer to the questions “What?” The philosophy of BSC helps the management of the business unit to build the necessary strategy for achieving the vision. Keeping the cause-and-effect –chains in mind, BSC gives an answer to a question “Why?” In this context, TQM offers tools for improving individual success factors. Thereby, it gives an answer to a question “How?”

The final conclusion of this study is that both concepts, TQM and BSC, can be seen as philosophies in order to improve overall performance of a business unit. TQM includes more concrete tools, while BSC is like a framework for strategic planning. It depends on the point of view, and the extent of implementation of these concepts, which one is used to implement the other one.

6 REFERENCES


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