

BENCHMARKING AS PERFORMANCE REFERENCE IN A PERFORMANCE MANAGEMENT MODEL

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1. INTRODUCTION

Nobody has the fortune to know exactly what future will bring. Countless attempts are made to foresee the future, but the number of different opinions is enormous. Some common characteristics could be drawn by looking at the most popular predictions. The 1992 U.S. Manufacturing Futures Survey (Kim and Miller, 1993) revealed the following anticipation's among the managers regarding changes in business environment:

- Increasingly globalizing market competition, and cooperation (37%)¹
- More focus on customer's expectations for quality and time (24%)
- Changing nature of work force: their tasks, attitude, expectations, and capabilities (19%)
- Increasing concerns and regulation for environmental issues (13%)
- Declining or non-growing domestic market (12%)
- Rapid change in technology and shortened product life cycle (10%)
- Increased level of competition (9%)

A clear trend from this survey is that competition will increase due to more globalization and more demanding customers. As customers are exposed to better products and services their expectations for better quality, service and value will increase. Higher expectations have to be met by improved performance to obtain customer satisfaction.

Performance management is a response to this development to manage improvement of matters of importance for competitiveness as defined from an external point of view. Competitive benchmarking is an applicable technique to identify and decide performance gaps.

¹ Percentage of respondents that mentioned the issue

2. PERFORMANCE PRIORITIES FOR BENCHMARKING

We will provide a methodology to define performance from an external point of view as shown in Figure 1. By defining performance based on the stakeholder model and the vision and strategy, we achieve a direct link to competitiveness and business achievements. However, it is important to know the existing priorities and indicators to develop a common understanding of priorities. Priorities are a part of the organizational culture, and implementation based on a top-down approach without involvement, are likely to fail. A combination between the top-down and bottom-up approach is then preferable.

Unless a performance planning process is forced by a serious crisis, it is hardly possible to develop completely new priorities with a supporting measurement system immediately. Our methodology is general and could be applied in total reengineering of management, but we strongly emphasize use of pilot cases to make a participative process possible. Achieving a common understanding of priorities is the most critical task for future efficiency.

Our model integrates existing and future requirements. Efficiency and effectiveness are covering existing requirements whereas future requirements are covered by adaptability. Looking at performance requirements from an external point of view is then the only feasible approach to balance all three dimensions of performance.

2.1 Stakeholders performance requirements

Long term survival of a company depends on satisfying stakeholders needs. Competitiveness depends on attractiveness towards the different stakeholders where customers have an exceptional position. Stakeholders may have interest in special aspects of performance and conflicting interests especially regarding distribution of improvements exist.

Stakeholder satisfaction is determined by the difference between expectations and perceived performance. Perceived performance is related to the interfaces between the company and its stakeholders. Definition of performance requirements from a stakeholder's perspective could follow the succeeding sequence:

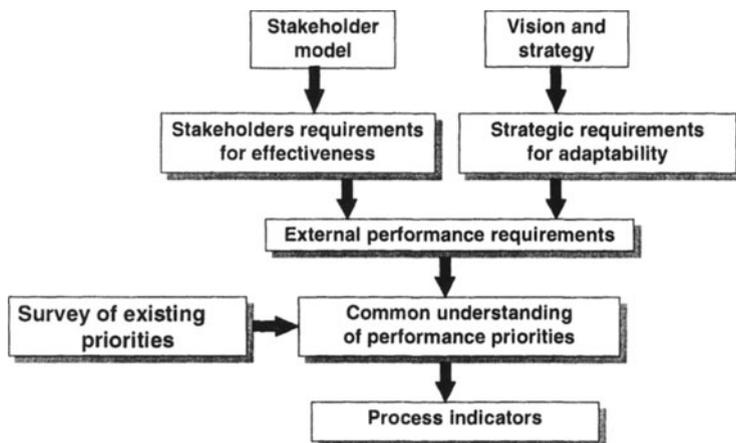


Figure 1 Model for definition of performance

1. Define stakeholders model with relative importances
2. Identify interfaces between company and stakeholder with relative importance
3. Identify performance requirements for interfaces
4. Define the relative importance of each performance requirement

Define the stakeholder model with relative importance

The list of stakeholders includes groups like customers, suppliers, authorities, owners, financial institutions, employees, management, environment and alliance partners. Within each group there may exist several subsets with different characteristics. Application of the stakeholder model means accepting the fact that a company and its stakeholders have mutual interest and dependency concerning specific business processes.

Most stakeholders are easily identified due to direct business relations whereas more indirect stakeholders could easily be forgotten. Brainstorming or Nominal Group Technique are useful tools to provide a representative set of the most important stakeholders. In some cases it could be wise to involve groups in different departments to ensure that all important stakeholders are identified.

The different stakeholders have different impact on competitiveness. Assessment of importance is necessary to achieve a balanced understanding of the priorities for the business and maximize cost/benefit of investments in performance improvement. Figure 2 shows that it is waste to provide high performance of characteristics of low importance. The most efficient strategy is naturally to improve performance of characteristics of high importance to competitiveness. Rating the different stakeholders is a step in the process of identifying the most important characteristics.

Assessment of importance is a difficult task in complex companies. However, to desist from giving importance, is to give equal priority to everything. Objectiveness is impossible, but a well-prepared process of subjective evaluation is sufficient for our purpose. It should be emphasised that this evaluation of importance is individual for each company and a necessary step to understand performance. Transformation of performance improvements into business achievements depends on the ability to identify the best prospects.

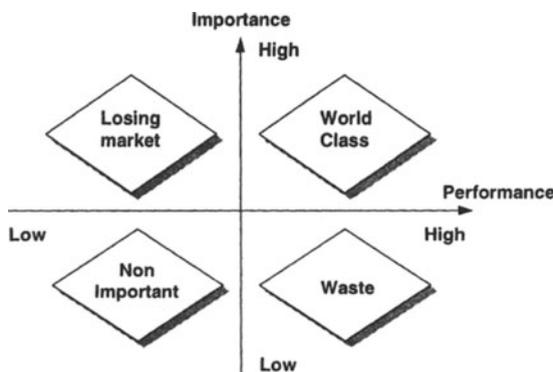


Figure 2 Relation between importance and performance

Identify interfaces between stakeholders and company

A stakeholder may have several interfaces to a company. These interfaces could have different characteristics and be of different importance. Identification of interfaces from the most important stakeholders' points of view will serve as a checklist for development of performance requirements. Three different kinds of interfaces may exist:

- Stakeholder and company are partners
- Stakeholder have direct interest in the output or the process
- Stakeholder have indirect interest in the output or the process

Creative techniques should be applied to develop an extensive list of interfaces. Afterwards, the set is reduced by rating the interfaces by relative importance.

Identify performance requirements

Performance has to be defined from the stakeholders point of view since their perception of performance determines the competitiveness of the company. Some stakeholders may have well-known requirements for performance as for instance finance institutions demanding a given interest rate. Others may have dynamic expectations of performance level.

Negotiations between company and stakeholders often regulate the financial aspects of the relationship, whereas more operational performance requirements often are left out. Access to continued education and training are examples of factors for employees satisfaction often neglected in negotiations with unions. A stakeholder will typically have some outspoken and some implied requirements to performance. Figure 3 shows a model of the different categories of match between the stakeholders and the company's perception of performance.

Traditional surveys are often not intended to collect this kind of information, but could easily be adjusted to suit our purpose. However, most knowledge is already available within the company. A common problem is that this information is distributed and related to individuals within the organization. A systematic approach is required to benefit from the knowledge of each individual.

The list of most important interfaces works as a checklist for development of stakeholders' performance requirements. Those involved in each interface have to systematize their knowledge. Additional information could be collected with surveys or less formal inquiries. Other sources for information both internally and externally may be tried.

		Company	
		Included in performance	Not Included in performance
Stakeholder	Outspoken	Obvious	Ignored
	Implied	Identified	Not identified
	Not intended	Waste or surprise	Unknown

Figure 3 Match between stakeholders' intention and performance

Define importance of each requirement

By assessing importance of each requirement, a rating of performance priorities from the stakeholders' point of view is obtained. This importance rating is the key input to the performance planning model. Information about these priorities is already available within the organisation, but additional information have to be collected. Surveys and different informal inquires could provide the necessary supplement.

The Kano-model (Akao, 1990) in Figure 4 relates satisfaction to the degree to which performance requirements are achieved. This could be helpful in the assessment process. The straight line represents the expressed performance requirements from the stakeholder. In general, only the expressed requirements would be explicitly mentioned if the stakeholder is asked for input. However, there exist a set of basic requirements that are so obvious that they are not explicit mentioned. The degree of perceived achievement decides the satisfaction level. Identification and fulfilment of expectations is necessary to achieve satisfaction. Offering unspoken features could enhance satisfaction. However, it depends of achievement of basic expectations. Extra service at the dealer will not equalize a scratch in the paint of a car.

Satisfaction of expectations are required before thinking of providing extra benefit. This is a guiding star for the importance evaluation process. Even if all of the basic requirements are met perfectly, we would not achieve real satisfaction. We would only eliminate dissatisfaction.

Performance planning is a continuous process and not a sequence of events. A new step in the process could provide new knowledge about previous steps, that should be included. New knowledge from other sources should also be included. The systematic approach makes it easy to update previous steps in the model. Importances set for requirements is not fixed and is a matter of tactic. Tactics have to be frequently updated. The performance planning model will help making better choices and to see the consequences of changes.

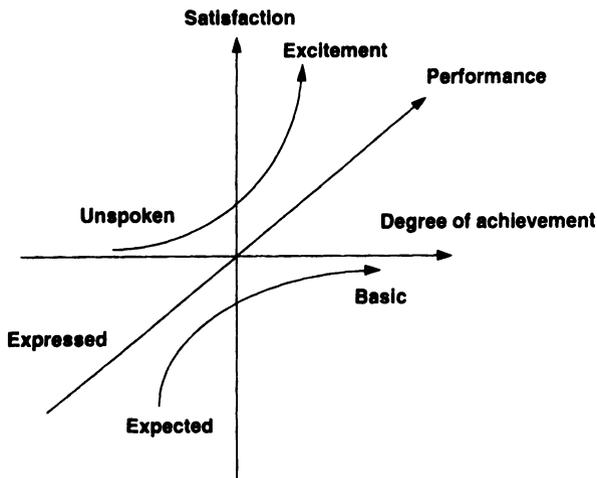


Figure 4 The Kano-model

2.2 Performance requirements based on vision and strategy

Performance planning has to be integrated with the traditional planning hierarchy. Development of a long term vision, indicating what the company should look like in the future, will provide useful input to performance planning. Strategic plans concerning new markets, new products, new marketing strategies, new technologies, etc., means new performance requirements. These requirements have to be integrated with those from the stakeholder model so that both short term and long term business achievements are ensured.

Performance requirements have to be outlined both in vision and strategic plans. Time horizon decides how detailed specifications are. It is not controversial to emphasize a need for integration of all kinds of strategies. Problems arise concerning the variety of characteristics of the different strategies and lack of integrative tools. Performance planning is an integrative methodology, but depends on the ability to develop compatible performance requirements.

Development of performance requirements should be a major concern in development of different strategies. By applying the stakeholder model, we have developed a methodology to identify performance requirements of the existing stakeholders, including customers. However, strategic decisions often imply dramatic changes in opportunities and new requirements for performance. Identification of these is essential to achieve improvement.

New opportunities could include investments in new technology, suppliers with new characteristics, new systems. Utilization of new opportunities depends on a mutual adjustment process with the existing system. Research (Bredrup *et al.*, 1994) has shown that investments in modern manufacturing often fail to provide expected benefit because existing production management systems remain unchanged. Expected improvements in flexibility and reduction of lead times are not achieved due to lack of support in existing systems.

Entering new markets and introducing new products often implies changes in performance requirements for the different business processes. Change to more tailor made products requires a better flexibility, better skilled operators, new performance indicators, more responsive production management systems, etc.

2.3 Integration of performance requirements

Performance requirements is a matter of integrating the set of stakeholder requirements and strategic requirements. They should cover all important aspects of competitiveness. Performance requirements could then be defined as:

Qualities that a company is expected to possess to fulfil the needs of present and future stakeholders in order to sustain or enhance competitiveness.

Lacking qualities could be compensated by other qualities, but possessing the right qualities is assumed to be the most cost effective strategy. However, there will probably exist several conflicts of interest. A summation of requirements is then impossible. Revealing trade-offs is important because hidden trade-offs are potential sources for dissatisfaction. This process will provide valuable information about the nature of competitiveness. It is often said that the planning process is more important than plans itselfs.

What we are really looking for, is to develop a common understanding of priorities within a company. Indicators for measurement and benchmarking are derived from these priorities. However, priorities may vary within a company. In order to develop a common understanding of priorities within the company, the priorities must match the performance requirements. However, developing of common understanding is a process that includes organizational

development, and involving people in the process is necessary to succeed. Gaps between current and desired priorities serve as a basis for managing the cultural process.

Identify possible performance priorities for the business

Performance planning has to be based upon the real driving forces of the business. Identification could be based on experience or by creative approaches like brainstorming, Surveys are also valuable sources for input. It is important to be openminded and not allow evaluation in the creative process. Awareness of the influence from existing values and beliefs is important to avoid ending up at old tracks. Inertia against change is considerable.

Evaluation of the different forces is achieved by auditing them against the stakeholder and strategic requirements previously identified. Based on the given importances we are able to suggest a rating of different performance requirements. However, the final rating is a matter of performance planning. Important aspects to consider in performance planning, is performance gaps, strategic and tactical decisions, the internal relationship between different requirements, investments, organizational difficulties, etc.

Analysing the match between 'is' and 'should be'

An essential activity in all processes involving organizational development, is to define current status. We have to know the existing priorities to choose appropriate approaches to change. An internal survey including the different departments and organizational levels could reveal the existing set of priorities and identify gaps between current and desired priorities. Lynch and Cross (1991) suggest an approach where each department manager indicates existing priorities. This is done by distributing a given number of points on different predefined priorities. A systematization of all forms from the complete survey and comparison with previously defined priorities provides answers on two important questions:

- Degree of convergence or divergence among the different functions
- Size of the gap between 'is' and 'should be'

Develop a common understanding of priorities

A common understanding of priorities is necessary to develop an efficient performance plan and to achieve integration with business strategy. This is a very difficult exercise, because existing paradigms and values are challenged. Managers from different departments seldom agree upon how to respond on changes. Our model provides some important characteristics that will ease this process:

- Participative and involves employees based on their qualifications
- Visual and easy to apply
- Boosts existing functional silos
- External view that pushes the discussion above internal prestige
- Try and fail approach that makes 'simulation' possible
- Forces the important questions on the agenda

Applying the model is no guarantee for acceptance of common priorities, but these elements provides a leap compared to traditional methods. Traditional methods are often too specialised to achieve real involvement of those responsible of implementing the plans. Involvement is perhaps the most important factor to achieve acceptance by all affected parties. Understanding

and acceptance of the performance priorities is absolutely necessary for development of a consistent set of action plans throughout the organisation that will result in real business achievements. Otherwise, contradicting efforts may cause a loss in efficiency and hence competitive position.

Tools like Nominal Group Technique (NGT) could be applied in the process to achieve a common understanding. It is important to look at this as a part of organizational development. Performance planning is only one of the activities within performance management, and they have to be seen as a whole. Training and information is essential to benefit from the tools and the methods described.

3. PERFORMANCE PLANNING WITH QFD

The QFD methodology offers a favorable tool for transforming stakeholder and strategic requirements into performance requirements for a given business unit. The methodology can be applied for any kind of business units as business process, organization units and limited problem areas. Figure 5 shows the 'House of Quality' for the relationship between some performance parameters for production management and a sample of stakeholder and strategic requirements. The methodology guides us through the process of defining requirements.

The QFD-chart includes benchmarking with two competitors. A desired target level is decided to define the performance gap. The chart indicates that conformance quality is both important and has a large performance gap. Therefore, we should focus on improving parameters that influence on conformance quality. Performance targets must be as measurable or descriptive as possible.

Comparison of the performance parameters level with other companies provides an effective tool for recognition of the performance gap and establishment of possible targets. The QFD-chart shows that the defect level has high influence on conformance quality and a high performance gap. Therefore, reducing the defect level seems to be a reasonable strategy.

It is obvious that some performance parameters are easier to improve than other due to different implementation problems, knowledge, organizational obstacles and so on. QFD takes into account organizational difficulties. Improvement of lead time, defect rate and more efficient production, is the main means for improving the stakeholder and strategic requirements. From the roof, we also remember that improvement of these factors can gain advantages of concurrent improvement at the sacrifice of resource utilization..

References

- Akao, Y. (editor) (1990) *Quality Function Deployment: Integrating Customer Requirements into Product Design*, Productivity Press, Cambridge, Mass.
- Bredrup, H. (1994) Measurement systems based on standard costing inhibit JIT implementation, *Proceedings for Eighth International Working Seminar on Productions Economics*, Igls/Innsbruck, Austria.
- Bredrup, H., Bredrup, R. and Estensen, L. (1994) Factors Influencing Effectiveness of investments in Modern Manufacturing Technology, *Proceedings for Automation '94*, Taipei, Taiwan, R.O.C, July 6-9, 1994.
- Harrington, H. J. (1994) The Collapse of Prevailing Wisdom, Presented at *EOQ'94*, Lisbon June 13-17, 1994.

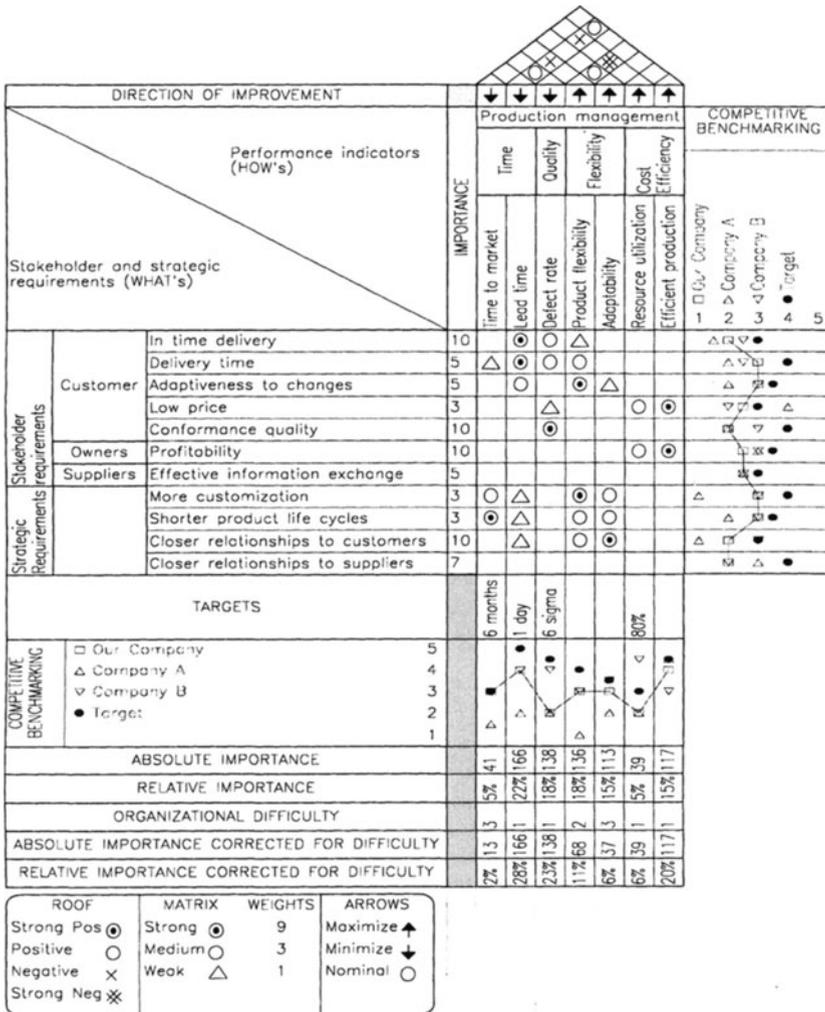


Figure 5 An example of a 'House of Quality' for production management

Kim, J. S. and Miller, J. G. (1992) Challenges for building the value factory: Key findings from the 1992 U.S. Manufacturing Futures Survey, *Operations Management Review*, 9 (3), p. 1-21.

Lynch, R. L. and Cross, K. C. (1991) *Measure up!: yardsticks for continuous improvement*, Cambridge, MA : Blackwell Business.