
Refinement of Strategic Action in Working Firm: An Instrumental Framework

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ABSTRACT

This article presents a proposal of a conceptual model for process management of deploying actions for improvement by business processes. From the expectation of the customers and strategic decisions of the company, the model proposes a system of unfolding and prioritization of improvement actions that most can contribute to the achievement of the strategic objectives. The proposal presented integrates several managerial concepts and practices such as and benchmarking, and suggests the use of QFD matrices as an instrument of the deployment process and prioritization of improvements. The presentation of the proposal and its detailing are preceded by an introductory discussion on manufacturing strategy and improvement management. Finally, some considerations are made about benefits and limitations of the proposal.

1. Introduction

The increasing global competition that many industrial sectors are facing in recent decades, coupled with rapid technological changes and the proliferation of product varieties, has created a new scenario in which industries, in order to remain competitive, are forced to continually implement new technologies and best management practices. In this sense, several theoretical works have been published, emphasizing the importance of the strategic management of the manufacturing function and the management of the quality with the aim of achieving competitive advantage.

Regarding aspects intrinsic to the business (without considering aspects related to the economic and social environment in which the company is inserted), the competitiveness of a company will be conditioned to its performance in dimensions such as cost, quality, reliability and deadlines and flexibility to suit the variations in demand. As a company is not expected to perform well in all these dimensions, note that it is the prioritization of these criteria that will determine the contribution of manufacturing to the performance of the business. Thus, the formulation of a manufacturing strategy should give a strategic, rather than purely tactical, role to the manufacturing function,

In order to improve organizational performance, operations strategies such as *Total Quality Management* (TQM), *Business Process Reengineering* (BPR), *Just in Time* (JIT), *benchmarking*, and many others are generally adopted Firenze, R., Ahmed, N., & Montagno, R. (1996). Among these, special interest has been given to TQM and BPR practices. TQM is based on the principle of continuous improvement of products and processes aiming at continuously satisfying customers' expectations regarding quality, costs, delivery and services Ishikawa, K., & Loftus, J. H. (1990). BPR or Reengineering also aims at customer satisfaction regarding quality, costs, delivery and services, however its approach to improvement is more radical. In the words of Hammer, M., & Champy, J. (1993). "Reengineering is the" re-thinking "of the radical replanning of business processes to achieve drastic improvements ...". Despite this subtle difference, continuous improvement can also lead to large increases in results, as proposed by reengineering,

Garvin, D. A. (1988). citing an ASQC report, shows that customer satisfaction is dependent on a set of characteristics intrinsic and extrinsic to the product and that customer satisfaction will be dependent on what competitors can offer. Thus, it can be seen that there is a clear relationship between the development process of manufacturing

strategies and management of quality improvement, since if quality strategies are used as part of the business strategy to gain and maintain competitive advantage, improvement projects should be prioritized taking into account the company's performance levels vis-a-vis competitors with regard to the product and the size of the operation that are most important to meet present and future market demands.

At the same time, many companies, in the eagerness to quickly embrace world-class management practices such as TQM, BPR, and many other acronyms, devote little or no attention to the impact of these practices on the company's strategic objectives, market demands, and performance against competitors. Although not often mentioned, non-alignment between operational strategies and competitive business strategy can be listed as one of the causes of quality program failure.

Considering the above considerations, this article presents a conceptual model proposal for the deployment and prioritization of improvements based on a company's business and manufacturing strategies, and therefore understood as strategic improvements.

In the next section, a brief theoretical discussion is presented with the objective of establishing a theoretical reference for the proposed model. Then the model, with its various elements, is detailed as well as a set of steps to guide the implementation process. Finally, some considerations are

made about the potential benefits and limitations of this proposal.

2. Manufacturing and Improvement Strategy

A manufacturing strategy "... defines how manufacturing will contribute to the achievement of business objectives ...". The contribution of manufacturing is achieved by deploying strategic decisions in manufacturing areas to align the company's manufacturing resources with its competitive strategy and increase its ability to compete in dimensions generally classified as quality, cost, delivery and flexibility. Decision areas are commonly classified as plant and equipment, production planning and control, human resources, product design / engineering, organization and management.

The relative importance of performance dimensions or competitive criteria will depend on customer and market demand (which in turn depends in part on the product life cycle stage) and performance against competitors. It is the prioritization of the criteria and the combination of manufacturing and market strategy that will determine how the company will compete.

Following this argument, Hill, T. (1999). proposes a model for formulation and revision of manufacturing strategy that comprises five iterative steps as follows: definition of objectives of the corporation; definition of *marketing* strategies to achieve these goals; assessment of how different products win orders against

competitors; establishment of the most appropriate way to manufacture this group of products (choice of processes); providing the manufacturing infrastructure needed to support production;

This model, however, does not intend to consider the unfolding of manufacturing policies and decisions by the use of operations.

Another approach to the formulation of the manufacturing strategy is presented by, who developed an audit procedure that guides the user through a logical process of identification of the objectives of the manufacture, measurement of the current performance, determination of the effects of current manufacturing practices and identification of the necessary changes. This model is primarily concerned with identifying which and where changes are needed to align the manufacturing function, but does not contemplate in an integrated manner the complementary process of deployment and management of improvements. This is a limitation of the proposal,

In parallel to the development of methodologies for the formulation of manufacturing strategies, countless companies in different countries have launched TQM and BPR programs in the last decades, aiming at customer satisfaction and continuous improvement of operations. As mentioned by Garvin, D. A. (1988). TQM and Reengineering are powerful means of reshaping individual processes so that they more efficiently satisfy existing customer categories.

Although these movements have created legions of enthusiasts, many are cases of failure. Disregarding all the possible setbacks inherent in the implementation process, Garvin, D. A. (1988). Commenting on the limitations of TQM and Reengineering, assumes that the re-planning of processes can be done in a divorced way from the rethinking of the business strategy. The Japanese approach to guideline management Collins, B., & Hage, E. C. (1993), of establishing, deploying and implementing guidelines, attempts to fill this gap. However, management by directives, by deploying them through vertically organized functional groups rather than processes (which flow horizontally through functions) can result in many gaps or overlaps and stimulate only local optimizations.

Thus, while the literature on manufacturing strategy does not adequately address the issue of continuous improvement deployment, management practices based on the principles and methodologies of TQM or Reengineering do not fully consider the need to develop improvement efforts from the objectives strategic and business processes of the organization.

3. Deployment and Prioritization of Improvements

In order to contemplate the issues discussed above, it is proposed that the deployment and prioritization of improvement projects be done in a structured and systematic way, starting from the expectations of the clients and

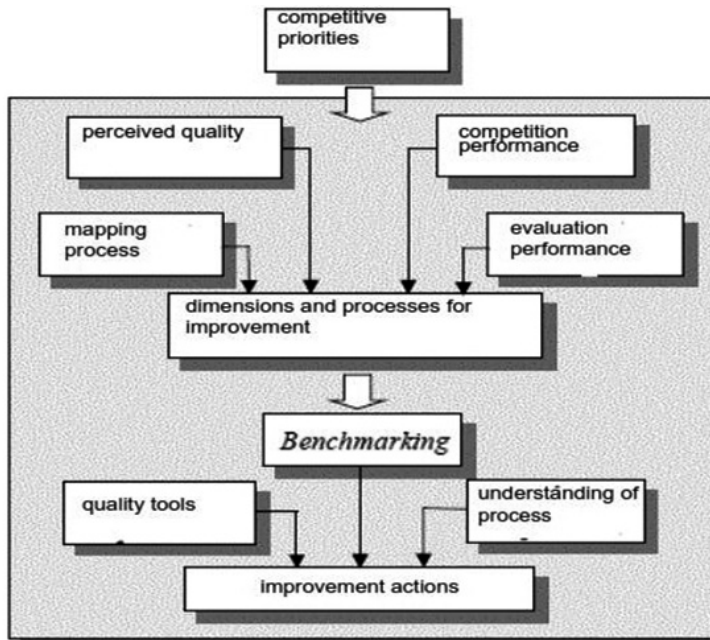
strategic decisions, unfolding through the business processes, and prioritizing those projects that will further contribute to the company's strategic objectives.

For this, it is assumed that concepts and practices such as process mapping, performance measurement, *benchmarking* among others are employed in an integrated way, in a logical sequence of unfolding, as modelled in Figure 1.

Figure 1: Deployment and prioritization of improvements

The rationale behind this model is that the selected enhancement projects for implementation should be those that most contribute to the efficiency and effectiveness of the most critical business processes or that most affect performance in the prioritized competitive dimensions or criteria. It is therefore a systematic prioritization process in which:

- Competitive business dimensions are prioritized for improvement based on more detailed research on customer expectations and performance relative to competitors;
- processes selected for improvement are those whose performance improvement may contribute to the improvement of business performance in the priority competitive dimensions, and whose performance has proved inadequate from an internal diagnosis;
- improvement projects are prioritized based on the potential contribution to



leverage process performance in critical dimensions.

To support the process of unfolding and prioritization, the use of relationship matrices is also proposed. In the following sections, the different elements of the model presented in Figure 1 are briefly commented.

3.1 Priority Dimensions for Improvements

Competitive priorities such as quality, cost, delivery and flexibility can be broken down into more focused aspects such as compliance, reliability, delivery times, timeliness of delivery, maintenance costs, process flexibility, among others Garvin, D. A. (1988). Other more unspoken forms of differentiation can be obtained by researching customers and segments of target markets. The identification of

priorities can be complemented with information regarding the performance of competitors in such items. Slack, N., Brandon-Jones, A., & Johnston, R. (2017). proposes the use of a matrix of customer expectations *versus* competitors to identify the needs for higher priority improvements. Another way would be to elaborate the requirements table for Quality House customers Hauser, J. R. and D. P. Clausing. (1988). where the relative importance of the competitive criteria, according to the customer's voice, is weighted by the client's performance evaluation competitors and the company's market strategy.

3.2 Mapping of Business Processes

Mapping and representation of business processes are fundamental to understand

not only isolated processes, but also the flow of information and resources through the operational processes and processes supporting the internal value chain. For example, the American Centre for Quality and Productivity (*AQPC*) defines eleven macro processes, including primary processes such as product and service design, *marketing* and sales, and support processes such as human resource development and management or financial and resource management physicists. These macro processes can still be unbundled into sub processes, activities, and tasks.

In the context of enhancement deployment, the mapping of business processes aims to make explicit the relationship between performance dimensions and primary or support activities developed by the company to assist its clients.

Tools for generating process flowcharts or more sophisticated tools for representing business processes, such as ARIS (*Architecture for Integrated Information Systems*), can be used for process mapping or modelling. The implementation of *Enterprise Resource Planning* (ERP) systems makes extensive use of process modelling for integration. A proposal for process reengineering using the ARIS architecture for the representation of the current process and future process design is presented in Thomas McDonald, Eileen M. Van Aken & Antonio F. Rentes (2002)

3.3 Performance Evaluation

Performance evaluation is essential to diagnose the root causes of problems or weaknesses in terms of performance. Information on process performance can be obtained through qualitative and quantitative evaluation. Cause and effect diagrams, such as the Ishikawa, K., & Loftus, J. H. (1990). diagram, can be used for this purpose. The Tree of Present Reality Dettmer, H. W. (1997). of the Theory of Restrictions, is also an excellent instrument of performance evaluation. The objective of the ARA is to explain the interrelations of cause and effect between undesirable effects and root problems.

In addition to qualitative assessment of performance, quantitative assessment may also be used. As the performance measurement of operations can be used as an instrument to direct the activity of identifying processes and dimensions of the operations most in need of improvement, the proposed deployment of improvements represented by the model of Figure 1 suggests the use to manage the process of improvement, of a measurement system with performance indicators focused on processes and dimensions considered critical for organizational performance. However, it should be noted that in the first instance performance indicators will probably not be implemented and therefore one of the improvement actions would be the design and implementation of a performance measurement system.

In this sense, the definition of a set of integrated performance measures should begin, parallel to the deployment of improvements proposed by the model, by identifying:

- Competitive priorities based on business and *marketing* strategies and target customer expectations;
- Indicators that may reveal performance in such priorities;
- Business processes and activities that most affect performance on such priorities.

In addition, because business processes represent a hierarchical set of interconnected activities and tasks, generic performance measures such as customer satisfaction, quality, and delivery must be deployed in performance measures focused on the critical activities of critical processes, as shown in Figure 2.

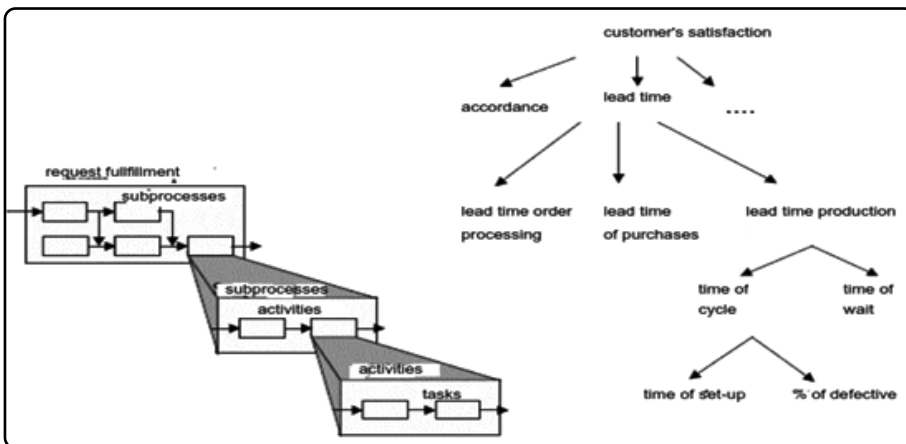
Figure 2– Example of unfolding performance measures.

It should also be noted that measures of

performance of internal operations should be linked to measures of customer satisfaction and financial performance measures. On this aspect, the *Balanced Scorecard* proposed by Kaplan, Robert S., and David Norton. (1992) as a system of performance measurement and strategic management, links performance measures of internal operations to financial performance. It is based on translating the company’s strategic objectives into measures of internal process performance, learning and growth linked to prospects of customer satisfaction and financial results.

3.4 The House of Quality as a Mechanism of Deployment and Prioritization

The choice of processes for improvement can still be aided by the use of the Quality House of the Quality Function Deployment (QFD) methodology Hauser, J. R. and D. P. Clausing. (1988). The Quality House is an array built from the deployment of customer priority requirements, product or



process characteristics split based on customer requirements, relationship (from requirements to characteristics) and conversion of priority requirements into priority characteristics of customers. products or processes.

Although originally proposed as a product development planning tool, Quality House can be used as a tool to deploy improvement actions. propose the application of QFD in the context of strategic planning. In the context of improvement management, some quality matrices can be used to systematize the process of deploying and prioritizing processes and performance measures, as described and illustrated in Figure 3.

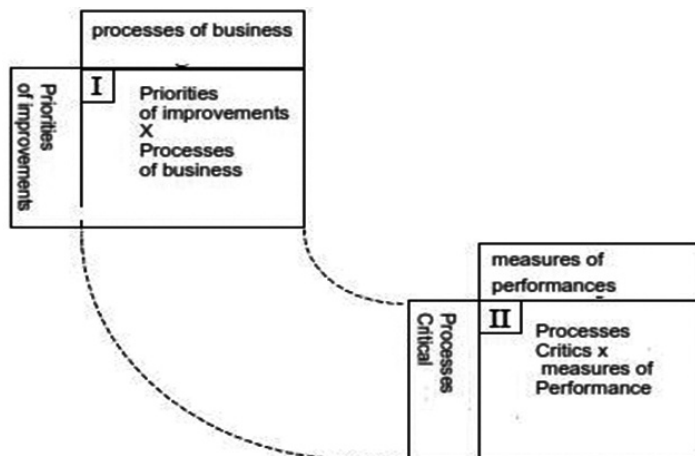
Figure 3 – The house of quality for the deployment and prioritization of processes and performance measures.

- Matrix of relationship of the priority dimensions for improvement and business processes (matrix I, Figure 3): the objective is to establish the

relationship between improvement priorities and business processes in order to explain the processes and activities most critical to performance in the dimensions. It should be noted that the development of the relationship matrix can lead to the identification of the need for new processes or activities;

- Matrix of relationship between critical processes and priority measures (matrix II, Figure 2): the construction of the matrix of critical processes *versus* priority measures helps to identify the need to deploy generic performance measures in performance indicators focused on the process results vectors new measures for new processes.

Thus, the development of these matrices should contribute to focus attention on the processes and measures of performance most important for the management of performance improvement in the dimensions considered as priority.



3.5 Benchmarking

After establishing critical processes for improvement, specific improvement actions should be defined. Performing process *benchmarking* can be very useful at this stage. *Benchmarking* is defined as a process of continuous measurement and comparison of an organization's business processes against business leaders anywhere in the world to gain information that will help the organization take action to improve its performance. *Benchmarking* refers to the comparison of similar processes of different companies, not necessarily in the same segment or sector. Comparisons can also be made with companies with better performance but not necessarily the best in the class, as long as it is done systematically and continuously.

The *benchmarking* activity can be decomposed into basically five phases: identification of the object of study; partner selection; data collection and analysis; setting improvement goals; implementation of improvement actions and monitoring of progress. The activity of identifying the object of study or business process for which the *benchmarking* will be developed basically involves identifying the critical processes for improvement in the dimensions or priority competitive criteria. In other words, the proposed improvement priorities presented in this article not only promote the integration of managerial improvement practices into a

single process, but also a step that must precede the development of management studies. *Benchmarking*.

In addition to *benchmarking*, other quality tools can be used at this stage to guide the process of problem identification and decision making. Once improvement actions are elected, performance goals are set, and implementation and progress review are conducted, as discussed in the next section.

4. A Conceptual Model for Managing Strategic Improvements

It is the understanding of this author that the proposal of deployment and prioritization of improvement actions presented in the previous section should be part of a more comprehensive process that is capable of contemplating the necessary integration between strategic decisions, deployment and implementation of improvement and revision actions of progress.

With this objective, a conceptual model for the management of improvements is proposed, in which it intends to characterize the process of translation of the strategic objectives in programs of improvements. The Figure 4 illustrates this structure into three main iterative steps: defining the strategic direction; unfolding improvements; and implementation and review of progress. The model also presupposes the existence of an organizational infrastructure that supports the improvement management process, as shown in Figure 4.

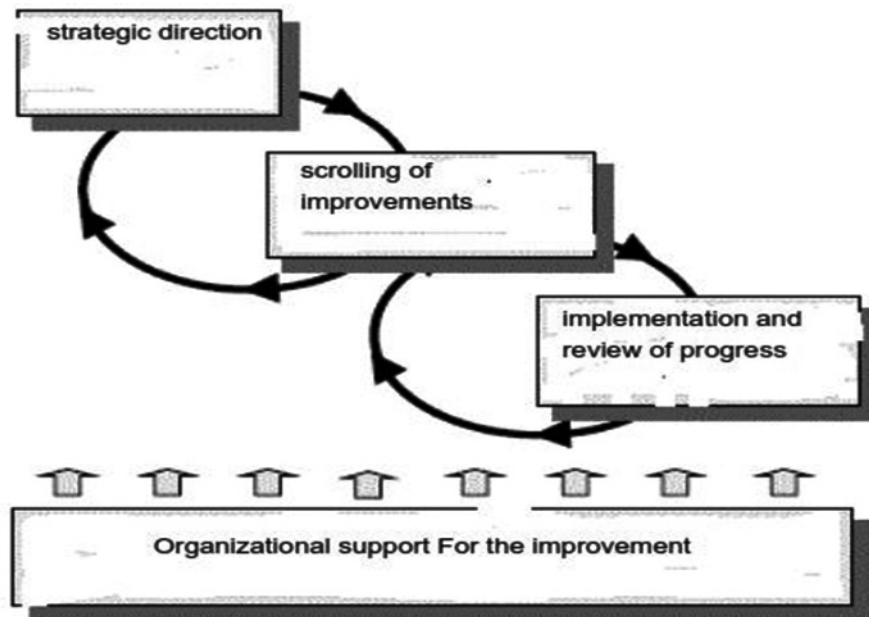


Figure 4 – Conceptual model for unfolding and implementation of strategic improvements.

The first step, called strategic direction, is more related to the integration between strategy development and improvement management processes, and is therefore at the interface between these macro processes.

The implementation of strategic decisions in structural or infrastructural areas of the production function is understood as alignment of the manufacturing function. Alignment actions are changes in the way to organize or process production in order to improve results and therefore when talking about alignment actions, we are talking about improvement and change actions. However, some alignment actions by their nature are only specified after the deployment of the priority performance

dimensions by the company's business processes. This is typically the case for improvement actions in manufacturing infrastructural areas.

Therefore, if there is no mechanism or procedure for deploying strategic decisions to improvement actions, there is a greater chance of incurring the error of investing in improvement actions that will not lead to the expected performance. Second, many alignment actions, especially when it comes to infrastructure issues, will only generate lasting improvement results if there is a process for managing the implementation of improvements and reviewing progress.

Therefore, what is proposed here is that the process of unfolding improvements is done in an integrated way to the process of developing strategic actions based on competitive criteria or priority decision

areas. This idea is illustrated in Figure 5. The results of this stage, in what concerns the improvement, are the competitive priorities defined from the business and manufacturing strategies and the main areas of manufacturing that are candidates for improvement. This first step therefore directs the next process of deployment of improvements, as shown in Figure 2 and described in the previous section.

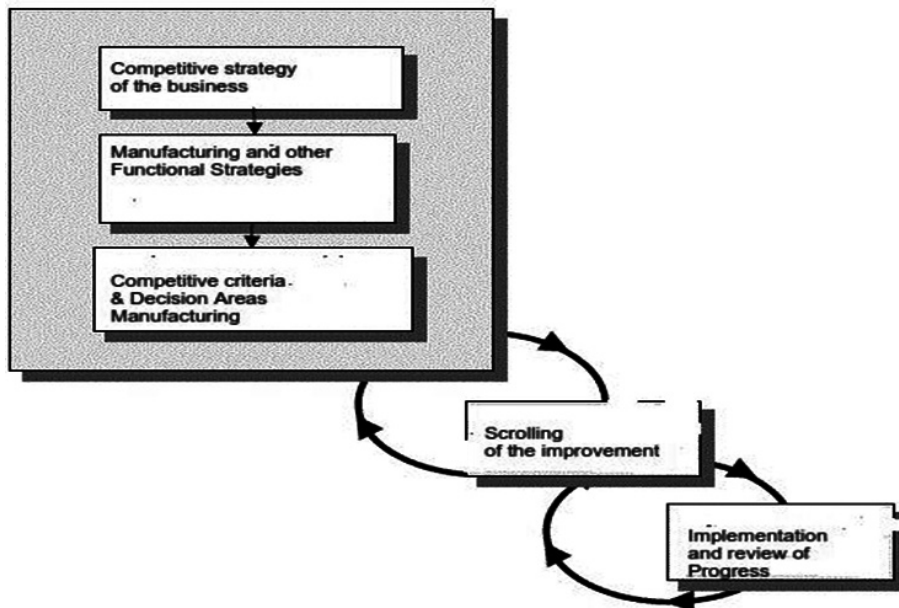
Figure 5 – Elements of the strategic direction step.

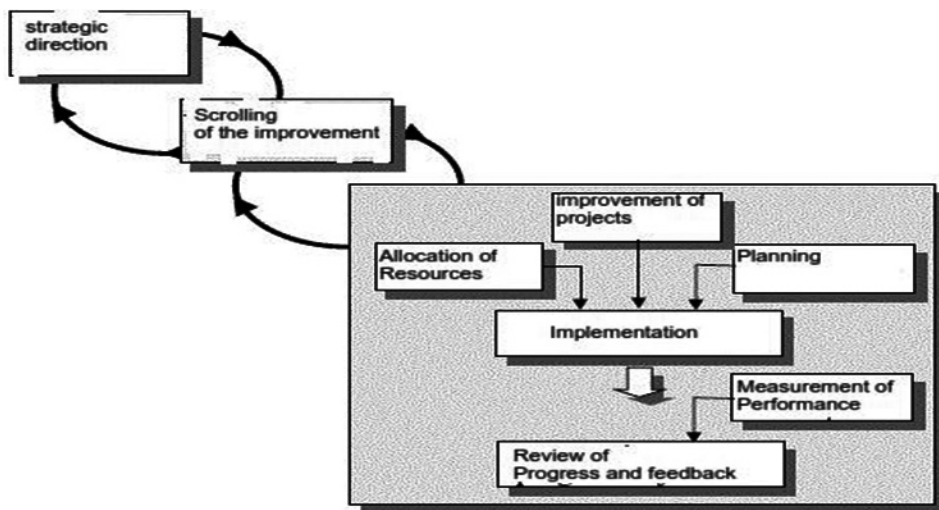
It should be noted that this is an iterative process, that is, just as the manufacturing strategy review process can lead to the identification of the need for improvement, also the process of unfolding improvements may lead to the identification of the need for realignment of some areas of the manufacturing function.

The third step is concerned with implementing and analysing the progress of improvement actions, as shown in Figure 6. It basically involves planning, resource allocation, monitoring progress and *feedback*. The PDCA cycle can be used in this phase as a methodology for the management of the process of implementation and monitoring of improvement actions.

Figure 6 – Elements of the implementation step and progress review.

Systematic review of progress and *feedback* are critical to assess whether improvement efforts are producing the desired results, as well as to validate the improvement strategy from the perspective of manufacturing and business strategies. In that sense, another important point in monitoring progress is the use of a





performance measurement system. The development and implementation of a set of performance indicators should at some point be part of the improvement actions, as will be discussed in the next section.

Finally, these steps should be supported by adequate infrastructure and organizational culture. With regard to organizational infrastructure, a very important aspect is the integration between the various functions related to the processes in which improvements are being developed. Thus, multifunctional improvement teams should act as an element of vertical integration between efforts to improve operations and strategic decisions of top management and horizontal integration among the various functional organizations involved. Thus, the aim is to form a permanent central committee that serves as a link between top management and the factory floor and also to coordinate the process of

deployment and management of improvements,

5. Steps for Deployment and Management of Improvements

The conceptual model presented above suggests that the process of unfolding actions for improvements can be organized in a sequence of steps, as indicated below:

Step 1: Team Improvement

Top management must recognize the need for improvement and establish an improvement team that has the function of guiding the improvement process as well as serving as a link between top management and the operational level.

Step 2: Product and Market

Collect and analyse information about product characteristics, customers and target markets, competitive priorities, business and manufacturing strategies, and areas for improvement. This step helps

you understand what dimensions and activities are crucial to the business's competitiveness.

Step 3: Critical Dimensions for Improvement

Collect information on customer expectations and perceived quality for different customer / product categories; ordering the requirements of the customers by the importance of these requirements for the most important customers. Also collect information about the company's performance against the competition in meeting these requirements. This step helps identify the performance dimensions most in need of improvement.

Step 4: Critical Processes for Improvement

Map all processes, primary and support, and understand their relationships to the performance dimensions most in need of improvement. This step can be aided by the construction of the matrix schematized in Figure 3 (matrix I). Building this matrix is not mandatory, but it helps focus attention on processes and activities that most influence critical performance dimensions for improvement.

Step 5: Performance Evaluation

Conduct a qualitative or quantitative evaluation of the performance of processes and activities identified as critical. Conducting a diagnosis of the current situation is of fundamental importance in order to understand which

areas or activities are problematic and which need to be attacked. The use of performance indicators in this stage can reveal, objectively, problematic areas and processes; therefore, the implementation of a performance measurement system is of fundamental importance for the management of improvements.

Step 6: Prioritized Dimensions and Processes for Improvement

After the analyses proposed in steps 2 to 5 have been developed, the most priority dimensions and processes / activities for improvement are identified. From this point the process bifurcates: proposing and implementing improvement actions and; establish a system of performance indicators that can serve as an instrument for managing the process of deploying improvements.

Step 7: Implementing Actions

Next, improvement actions must be proposed, prioritized, and implemented. For the development of knowledge and understanding of processes and activities, some quality techniques or tools can be used. Depending on the situation, *benchmarking* studies can be developed aiming at identifying best practices. For the proposition of improvements, business process modelling, for example, can be used Thomas McDonald, Eileen M. Van Aken & Antonio F. Rentes (2002).

Step 8: Critical Measures

In parallel to the proposition of improvement actions, performance measures focused on improvement actions may be proposed. The first question to be answered here is how to measure customer satisfaction and financial performance. As outcome indicators, these measures should in turn be related to the performance vectors or performance measures deployed from these outcome measures, as illustrated in Figure 2. The construction of a relationship matrix as illustrated in Figure 3(matrix II) can help, from the relationship between processes and dimensions or performance measures, to deploy generic measures of results into indicators focused on processes or activities. In addition to the definition of indicators, a performance measurement system should specify, among other things, measurement frequency, data origin, responsibilities for data collection, analysis and action.

Step 9: Feedback and Progress Review

The final step comprises evaluating the progress achieved with the improvements implemented and analysing the extent to which the implemented improvements are generating the expected results in terms of business performance to validate or revise the improvement strategies from that analysis.

6. Final Considerations

This article presented a proposal for the deployment and prioritization of improvement actions, emphasizing the need to:

- Deploy operations improvement actions based on strategic decisions, customer expectations and performance against the competition, in order to ensure that improvement efforts remain focused and integrated with strategic and competitive issues;
- To deploy improvement actions through the organization's business processes and activities rather than through functional hierarchy;
- Systematizing the process of deploying and prioritizing competitive priorities and critical business processes.

It should be noted that for the implementation of this proposal, considerable attention must be given to the development and establishment of an adequate performance measurement system so that quantitative information on process performance can be used to guide the deployment of improvement priorities.

Although this proposal is still being tested for validation and consequently there are still no significant results of practical applications, it can be foreseen that this proposal is particularly valid for companies that depend mainly on the efficiency and effectiveness of the operations to gain a competitive advantage over the competition, such as is the case of manufacturing companies of components for the automobile industry and durable consumer goods in general and capital goods. For companies with strategies that are mainly based on the differentiation of products or services, this proposal may not be justified.

At first glance, it may appear that in general the management of a company lacks a more elaborate system to identify what needs to be improved in operations to maintain or gain competitiveness. However, as companies improve the performance of their operations, the needs and actions for improvement become less evident, so in such cases a structured system can be made necessary.

Finally, the success of implementing an improvement management system as proposed here will depend primarily on the maturity of the organization's organizational structure and information system and senior management's attitude toward change management and improvement. On this, management should be concerned with addressing the various aspects of organizational learning, teamwork, and organizational culture management in an integrated and holistic manner.

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