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# The strategy and the evolution of benchmarking methodology: the case of Rank Xerox-Fuji

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## ABSTRACT

L'articolo esamina la strategia di benchmarking di Rank Xerox-Fuji. Sulla base degli studi precedenti, sono articolate specifiche domande di ricerca: 1) Quali sono i principali fattori di innovazione della strategia di benchmarking di Rank Xerox Fuji; 2) Qual è la specificità del benchmarking e l'evoluzione per migliorare le prestazioni nel tempo? L'obiettivo principale di questo studio è quello di colmare questa lacuna di conoscenza analizzando questo caso interessante. Il documento offre una descrizione unica di un'implementazione strategica di successo del benchmarking in Rank Xerox-Fuji per migliorare le prestazioni nel lungo periodo.

The paper examines the benchmarking strategy of Rank Xerox- Fuji. Based on the past studies, we develop a specific detailed research questions: 1) What are the main innovation factors of the benchmarking strategy of Rank Xerox Fuji? ; 2) What is its specificity of benchmarking and the evolution for improving the performance during the time? The main aim of this study is to fill this gap of knowledge by analysing this interesting case. The paper offers a unique description of a successful strategy implementation of benchmarking in Rank Xerox-Fuji for improving the performances in the long time.

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**Keywords:** strategy, benchmarking, innovation, quality, reengineering, activity based cost and management, strategic innovation

## 1 – Introduction

The objective of benchmarking is not only reducing cost (Zairi, 1996) but also improve the quality of the strategy; this methodology (Anderson, 2004; Bocchino, 1995) is related to the continuous improvement towards the implementation of practices of excellence. In this paper, we analyse the case of Rank Xerox- Fuji and its strategy of benchmarking (Camp, 1989; Pilotti et. Ganzaroli, 2007; Bocchino, 1995; Mella 2008; Bogan, 1994; Riva, 2007; Dembowski, 2013; Ciurea et. al. 2017). Some studies have shown how the methodology of benchmarking can be useful for learning from best practices (Zairi,1996; Kathleen et al. 2002; Mella 2005, 2012).

In our knowledge, only few researches are available on this important topic on international level on this process of Rank-Xerox Fuji (Cook, 1995; Anderson, 2004; Spendolini 1992; Riva 2005, 2006a, 2006b, 2007; Pilotti et al. 2006; Riva and Pilotti 2019). With this in mind, this study intends to investigate on this problem. Based on the interesting experience of Rank Xerox Fuji this paper analyses the implementation of a set of methodologies of process of benchmarking (Bocchino, 1995) and quality. Based on the past studies we develop a specific detailed research questions:

Q1: What are the main innovation factors of the benchmarking strategy of Rank Xerox Fuji?

Q2: *What is the specificity and the evolution of benchmarking for improving the performance during the time?*

For answering the first question, we analyse the case Rank Xerox Fuji based on the previous literature using primary and secondary data. For analyzing the second question, we study the evolution of the benchmarking model and strategy in Rank Xerox- Fuji (Business Process Reengineering and benchmarking) (Hammer et al. 1993, Hammer, 2000; Camp 1989; Cook 1995; Shoettl, 2003; Kathleen et al. 1996), quality and lean management (Liker, 2004; Liker and Meier, 2006) and BPM (Business process management) and change management and knowledge creation. This paper explores the challenges and the opportunities of benchmarking (Bocchino, 1995) during the time. It represents one decisive tool to guide the strategy (Pilotti 2005, 2017; Riva 2007a. Aiello 1996), for improving (Dixon et al. 1994; Imai 1986) and for reengineering the processes (Hall et al. 1993; Hammer and Champy 1993; Hammer 1990, Ugolini 2004)) and for creating new knowledge (Nonaka 1995, 1998, 2000; Pilotti et. al. 2016; Schillaci 1987, Stack et al. 1992; Ciurea et. al. 2017; Turchetti 2013). *The outline of the paper is as follows: the second section describes the theoretical review and the methodological approach; the thirds section describes the case of benchmarking in Rank-Xerox Fuji; the fourth section examines and discuss the process of benchmarking, the fifth one concludes.*

## 2 - Theoretical review and methodological approach

Some scientific paradigms (Kuhn, 1970) are described both *on Xerox Fuji* studies (Friedman et al. 1992; Young et al. 1994, Head et al. 1999; Gafurov, et al. 2013; Nielsen et al. 2017) and on *benchmarking* (Dattakumar and Jagadeesh 2003).

### 2.1 - Theoretical review

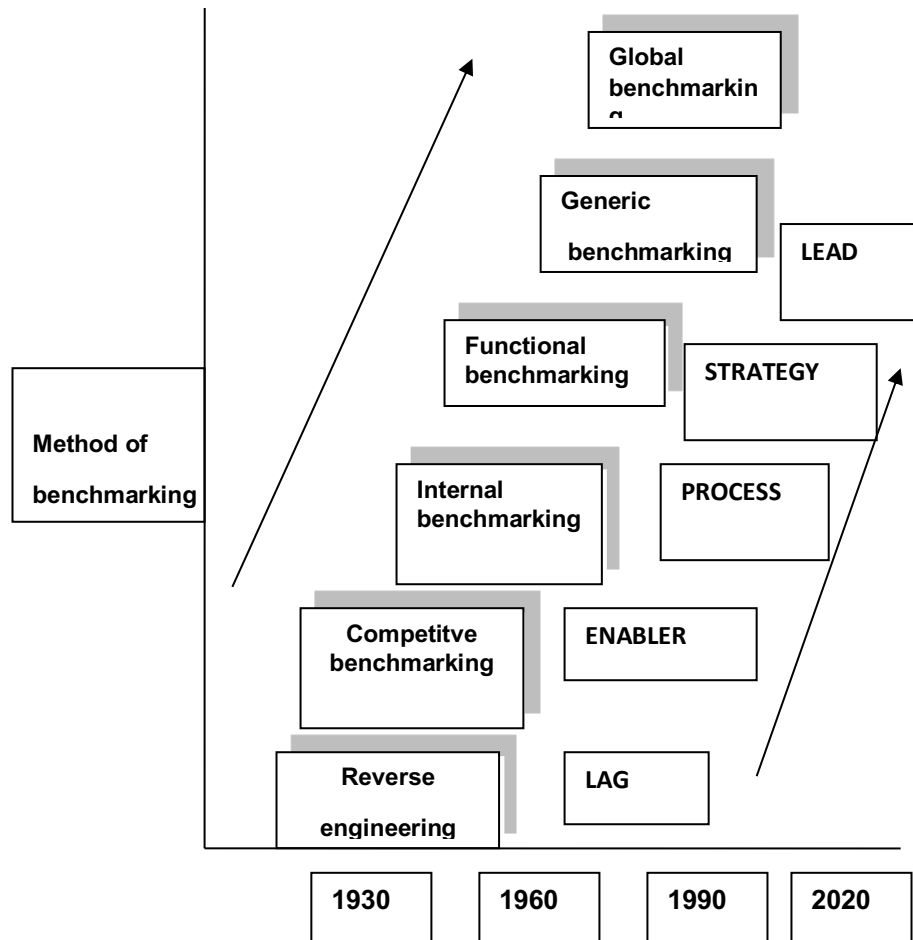
In this part, there is a chronological description of some of more important research in the international literature on the topic of benchmarking (see fig.1).

Camp (1989) describe the model of *R. Xerox* of benchmarking can be defined as the continuous process of evaluating their services and methods - *comparison with those of the best in the sector*. The introduction of benchmarking is based on fact that in 1979 Xerox had a problem for losing market share in the copies business.

Hammer et al. (1993), study the *integration between the process of reengineering and benchmarking*. Among the main phases of a project reengineering integrated with benchmarking are: a) launch a working group; b) definition of areas and indicators for benchmarking; c) constant for the improvement according to the philosophy of continuous improvement.

Halleck et al. (1991) describe the importance of *benchmarking world-class performance* across industries not only to quantifies performance gap but also to compare and manufacturing and management processes. While competitive analysis is limited to firms of the same sector, *the world class benchmarking permits to learn from the best in class and focus on the processes more important*. The

typical output measure of a quality process is: cost, quality, time. To start a benchmarking process there is analysis of the supply chain of the firm and the definition of the key processes to be benchmarked. The most advanced formula of this tool is the analysis of the best practices of the present in the world (*best-in-class benchmarking*).



**Figure 1: Evolution of benchmarking (source: our elaboration from Watson, 2001; Spedolini, 1996, Bocchino 1995)**

Kathleen et al. (1996) show how the methodology of benchmarking can be used to improve the performance in different organization AT&T, Janssen Pharmaceutica, Avon Product. *There are some different types of benchmarking: functional, process, competitive, strategic and world class.* The principle of benchmarking is based on understanding the gap of processes between the organization. Benchmarking involves the detailed study of different areas and activities in relation to the performance of some other subject.

Yassar et al. (2000) study a group of 227 organization for identify the critical success factors for effective *internal transfer of best practices*. The results show the importance of training and open communication for best practices transfer. The benchmarking methodology has found its first application in the organizations which are more exposed to the problems of measurement competitiveness.

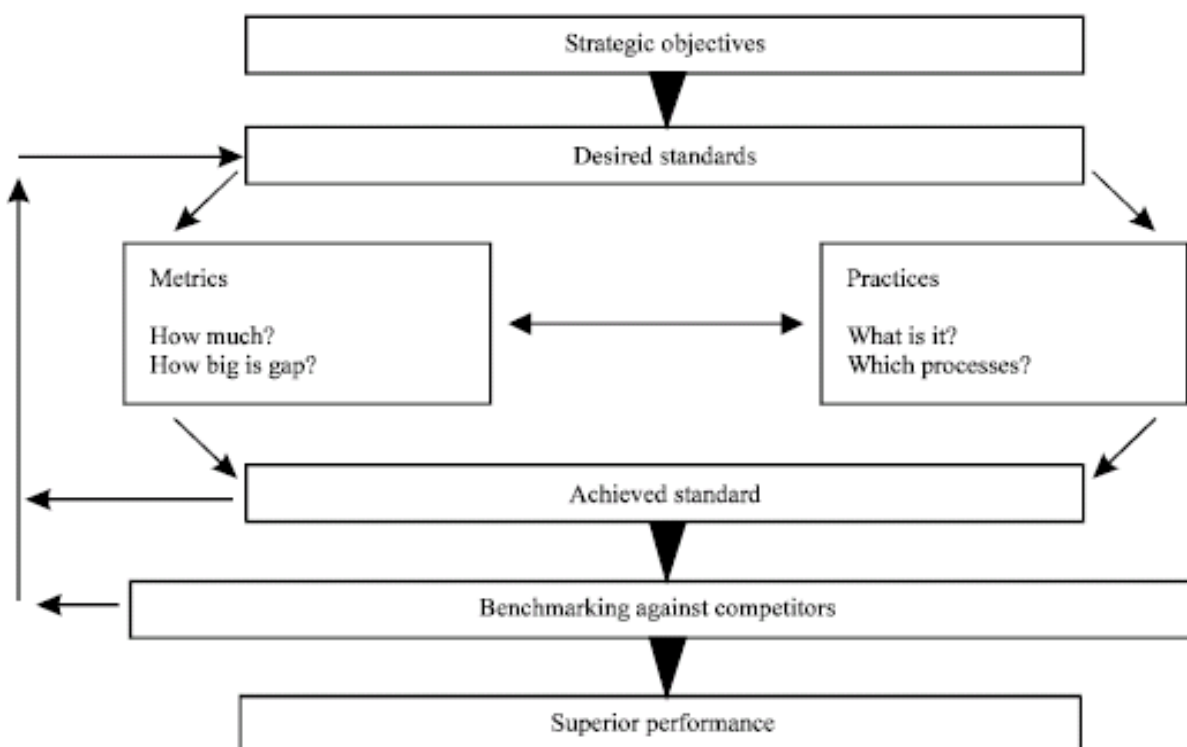
Leibfried and McNair (1992) describe the tools for continuous improvement and the importance of self-analysis to determine the actual standard and the gap compared to the

desiderated target. The study describes the importance of formation, motivation and culture in the process to transfer best practices.

Hammer (2000) describes as the technique of benchmarking has the objective of *measurement of performance and its comparison with the "first class"* and to do a process of reengineering to reach the targets.

Shoettl (2003) shows how the *process of benchmarking* can be divided into several stages: a) analysis and evaluation of their specific processes; b) decision on the subject and the object of benchmark; c) data collection; d) data analysis and understanding of the differences e) improvement scheduling; f) review. *The principle behind benchmarking is simple: to improve a particular aspect of an organization or services, it is important to find other players with great skill and use them as a point of reference against which to fix the standards.*

Zairi and Leonard (1994) describe the application of benchmarking based on important cases (see fig. 2).



**Figure 2: Performance measurement (source: Zairi and Leonard 1994)**

Bocchino (1995) describe the importance of determine the benchmarking gap and to develop the strategy to improve the performance based on specific measurement metric.

Broveto et al. (2007) study the process of benchmarking to describe how it is possible to *distinguish between sector and horizontal benchmarking*. The *sector benchmarking* identifies and analyzes the cases of the excellence at a national or international level in order to facilitate a learning process, by comparison, similar problems are addressed on how or under what conditions the same sectorial policies have achieved better results. On the contrary *horizontal benchmarking analyzes territorial systems* similar (for population size, socio-economic structure, etc.) and then potentially competing and a comparison is made in order to highlight the different degree of territorial competitiveness that these systems can present.

Ammons et al. (2014) describe the presence of different kinds of benchmarking and develop a theory of public sector benchmarking and stress *the difference between public organization*

and private organization in implementation of benchmarking. The benchmarking in public sector has some difference for the different mission and criteria for comparing the performance.

Dattakumar and Jagadeesh (2003) describe the evolution on the literature on benchmarking; the paper analyzes 382 publications on benchmarking; these publications can be divided in forth category: a) general and fundamental models; b) specific application and case studies; c) innovations and extension or new approaches on benchmarking; d) benchmarking in service and educations. There are studies in different area (public sector, banks, finance, accounting process, core competence). Through this technique it is possible of improving quality by obtaining of the maximum potential in all areas.

## 2.2 - Methodological approach

The empirical method of this analysis follows the logic of grounded theory (Glaser and Strauss, 1967) developing a case study methodology (Eisenhardt, 1989 Mella 2005, 2012, ). We analyse the case *Rank Xerox - Fuji* based on the previous literature using primary and secondary data (Riva 2018b). For secondary data we study also the public balance sheet of the company (Xerox-Annual report 2017; Riva 1993; Riva 2011); for primary data we collect data and information of the company performance by contact and discussion with quality manager to understand the evolution of strategy and quality program. The method of case study is used because it permits to underline the main innovations in the quality and benchmarking strategy of the company.

## 3 - The case of Rank-Xerox Fuji

The history of Xerox (see fig. 3) started in 1938 when Chester Carlson made the first xerographic image based on electro-photography and after was obtained a license to develop and market a copying machine based on Carlson's technology.



Figure 3: Presence of Rank Xerox Fuji in the world (source Rank Xerox Fuji 2018)

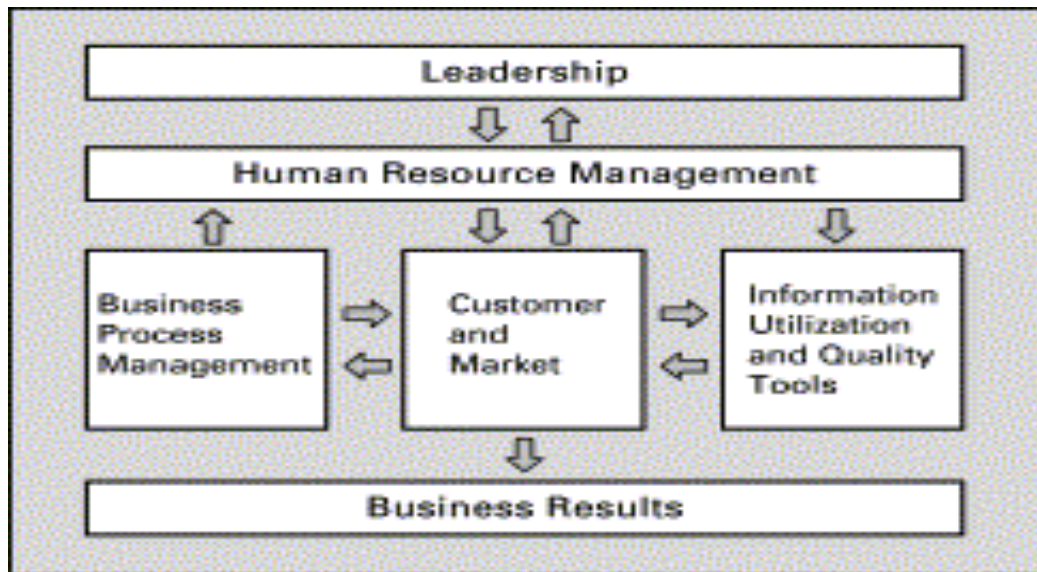


Recently the company Rank Xerox- Fuji is controlled from Fujii (31 January 2018 acquired the control of 50,1 %). The headquarter is located in Tokio. The company has about 41000 employees

*The strategy of benchmarking in Xerox- Fuji is based on some main factors:*

**I) Integration of benchmarking method and “Leadership through Quality” program.**

The ‘Leadership through Quality’ program of Xerox-Fuji introduce change the company strategy by reducing their manufacturing costs and improve the quality of every process (see fig. 4).



**Figure 4: Leadership thought quality (source Xerox-Fuji)**

By benchmarking against Canon the results were:

1) *five times the number of engineers;*

2) *it took twice as long as its Japanese competitors to bring a product to market, four times the number of design changes, and three times the design costs;*

3) the cost to ship, and sell units for about the same amount that it cost just to manufacture them;

4) products had over 30,000 defective parts per million - about 30 times more than its competitors.

After an initial period of denial, Xerox- Fuji defined benchmarking as ‘*the process of measuring its products, services, and practices against its toughest competitors, identifying the gaps and establishing goals (see fig.5). Our goal is always to achieve superiority in quality, product reliability and cost.*’

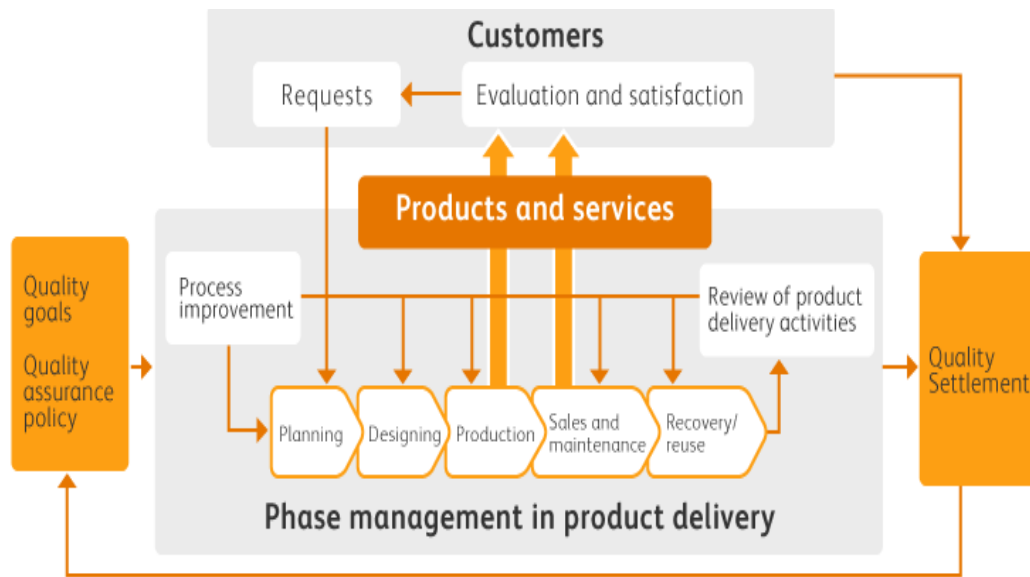


Figure 5: Xerox quality strategy; the quality strategic model (source Xerox-Fuji)

II) Xerox- Fuji benchmarking model in based on a well defined five stage and tens steps.

Xerox developed its own benchmarking model. This model involved tens steps categorized under five stages - planning, analysis, integration, action and maturity (see fig. 6).

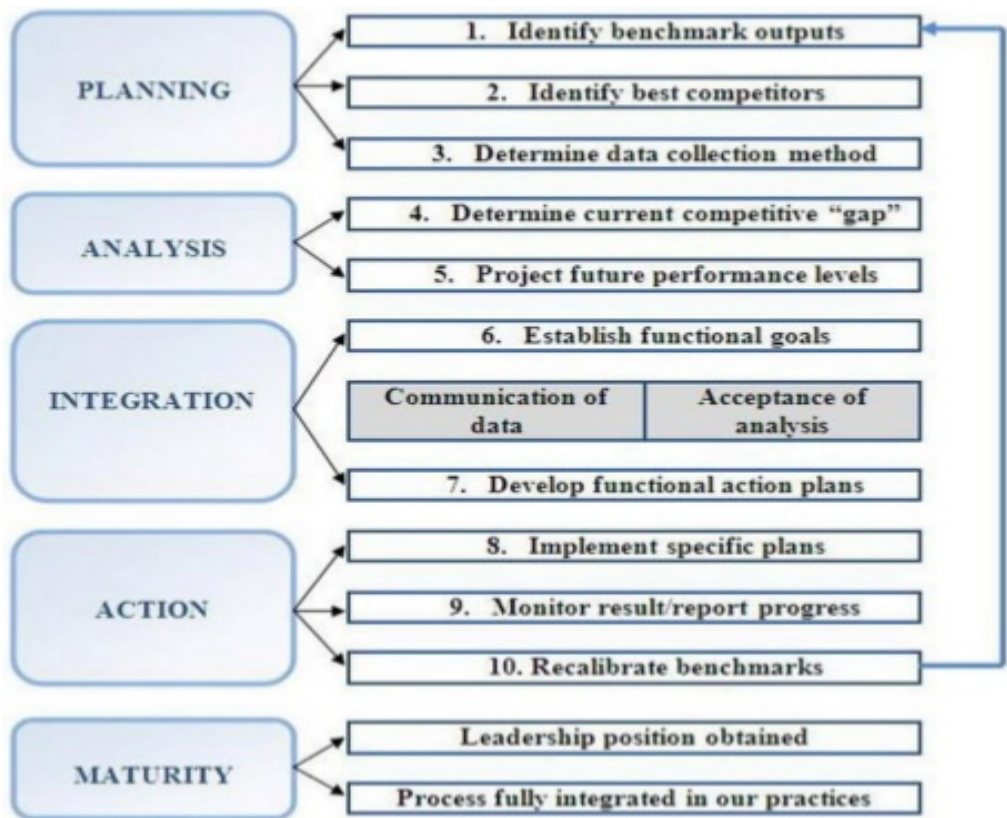


Figure 6: Benchmarking model in Rank Xerox- Fuji (source Xerox-Fuji)



The main types of *costs in benchmarking* are:

- time costs for define the gaps;
- maintain a database of best practices and the companies associated with each best practice.

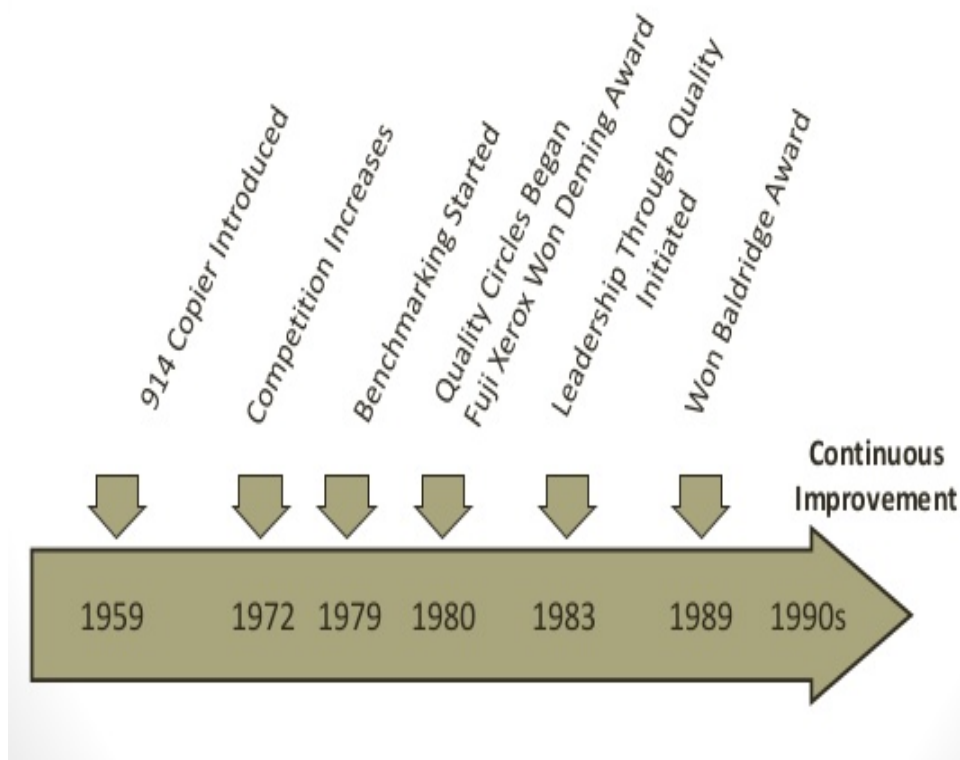
The cost of benchmarking can substantially be reduced through utilizing the many internet resources.

Xerox- Fuji by using the benchmarking method tried to solve the situation of the loss of almost fifty percent of the market share, the company *Rank Xerox* decided to conduct a series of comparisons with the main competitors or anyone with distinctive skills in some area:

- a) production costs,
- b) the mode of assembling the photocopiers,
- c) the analysis of the entire cost value chain,
- d) costs of sales,
- e) customer satisfaction,
- f) different work activities.

**III) The improvement and evolution of benchmarking and integration in the global quality strategy in Rank Xerox- Fuji is for the use of an integrated set of methodology.**

During the time there was a strategy of continuous improvement based on a set of integrated methodology (see fig. 7).



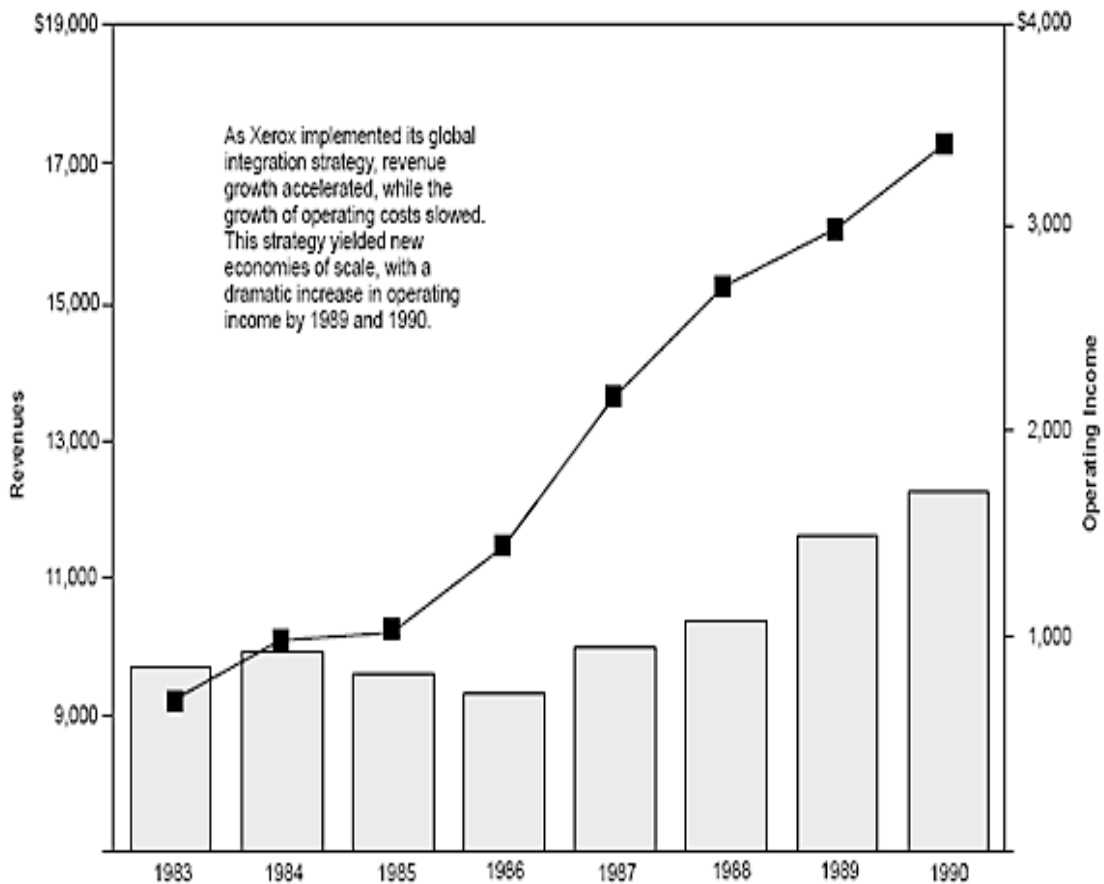
**Figure 7: change in benchmarking and quality strategy in Rank Xerox (source elaboration from Rank Xerox- Fuji)**

In history the company had a major crisis at the end of the 1970s following a loss of profitability of around twenty percent per year.

The company invented the photocopier in 1959 with almost a monopoly for many years.

By 1980 the companies lost almost market 35% as IBM and Kodak developed high-end machines and Canon, Ricoh and Savin dominated the low-end segment of market.

The problem underlines the importance of a strategic change by innovation the quality and the production by searching economies of scale (see fig. 8)



**Figure 8: Economies of scale and increasing of operating costs (source: Rank Xerox – Fuji)**

#### 4 - Discussion

The process of benchmarking in Rank Xerox - Fuji can permit a substantial improvement in performance (see fig. 9).

*There are several questions that guide a project of benchmarking:*

- a) what are the critical areas and improvement of desirable results?*
- b) what is the current situation and organization of space?*
- c) what can we do to improve?*
- d) what are the best investments to promote change and improvement?*

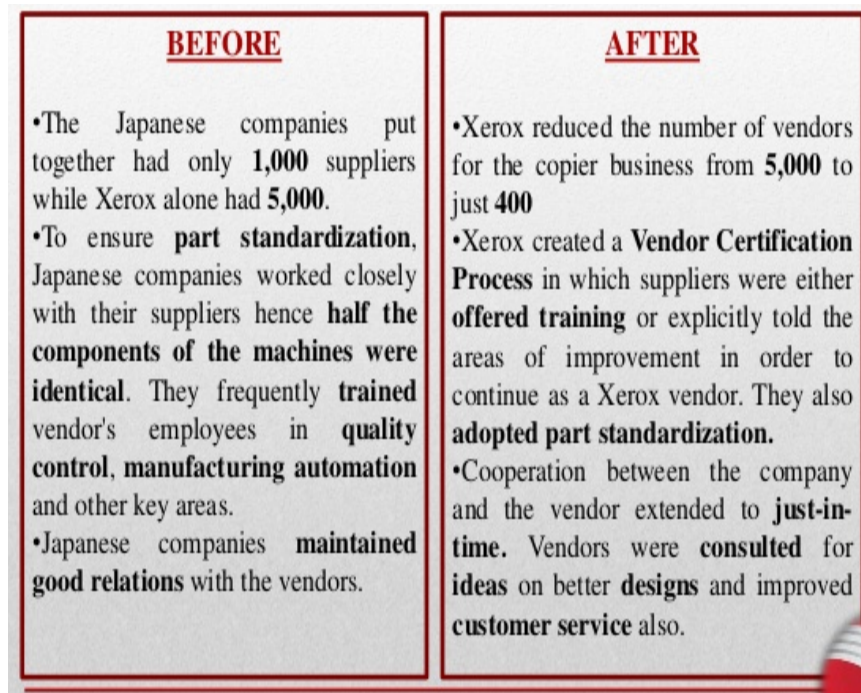


Figure 9: Results before and after benchmarking (source Xerox- Fuji)

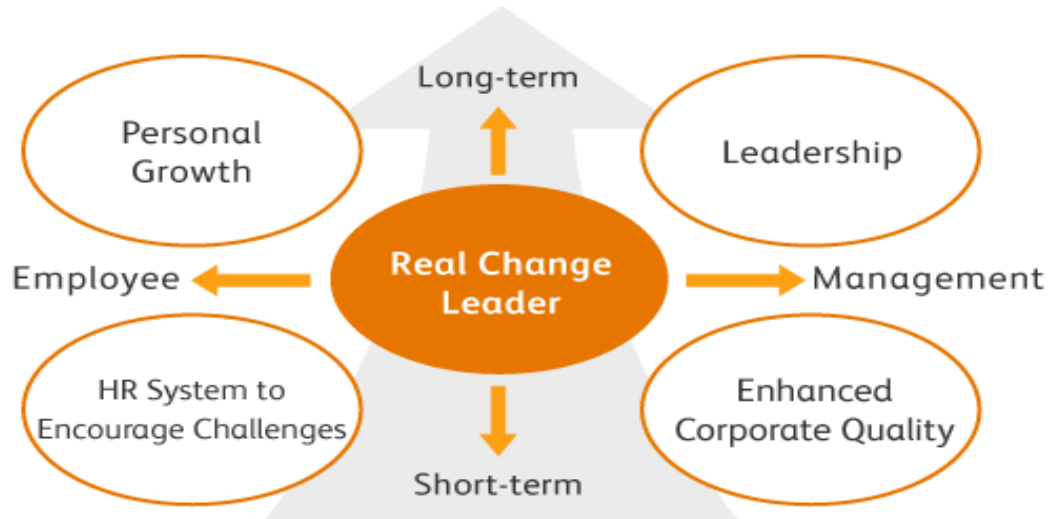
The results in Xerox- Fuji were positive with an increase in market share, financial position and customer satisfaction (around 40%) during the implementation of the benchmarking model and the focus on a quality strategy (see fig. 10).



Figure 10: The quality strategy and improvement based on benchmarking (source: Xerox-Fuji)

*Xerox-Fuji, as highly successful organizations, understands the importance of benchmarking.*

*It institutes best practices to create innovative projects to determine the appropriate product or service that the consumer wants (see fig. 11) (Dembowski, 2013; Guido et al. 2010).*



**Figure 11: Benchmarking and change management (source: Xerox-Fuji)**

**A) The improvements of results before and after the benchmarking experience are in Xerox-Fuji:**

**i) Area marketing**

- marketing productivity + 30%;
- became the leader in the high -volume copier-duplicator market segment;
- service response time reduced by 27%.;
- distribution productivity increased by 8 -10 %;
- country units improved sales from 152% to 328%.

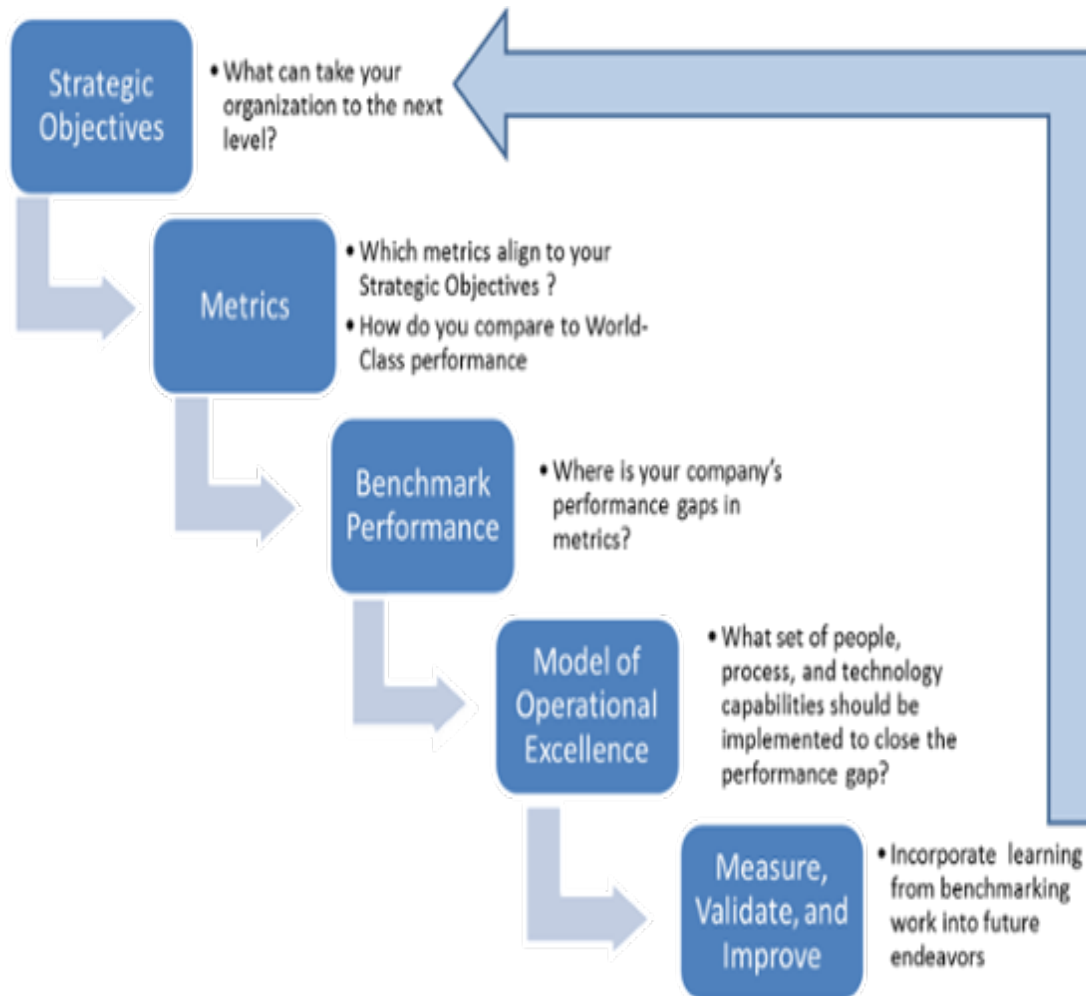
**ii) Area production**

- increased product reliability on account of 40% reduction in unscheduled maintenance;
- errors in billing reduced from 8.3 % to 3.5% percent;
- number of defects reduced by 78 per 100 machines;
- inspection of incoming components reduced to below 5%;
- defects in incoming parts reduced to 150ppm;
- inventory costs reduced by two-thirds.

Xerox-Fuji compared with the company L. Bean a large retail store for logistic. According to research conducted by the International Benchmarking Clearinghouse, a division of American Productivity & Quality Center (APQC) the case of Rank-Xerox Fuji underline how benchmarking can permit to find new creative ideas.

### B) Global Benchmarking

*Xerox-Fuji's benchmarking strategy recognized that many processes are not unique to a single industry and that comparisons need not be confined strictly to one's competitors (see fig. 12).*



**Figure 12: Strategy of global benchmarking and reverse engineering (source: elaboration from Camp 1989)**

*Xerox believes that breakthrough advances are more likely to occur by adapting lessons learned from leaders operating in entirely different industry.*

Important benchmarking benefits for Xerox-Fuji are: increases front-line employees' satisfaction through involvement, empowerment and a sense of job ownership improves organizational quality, leads to lower cost positions, exposes people to new ideas, creates a culture open to new ideas, serves as a catalyst for learning.

## 5 - Conclusion

The essence of benchmarking in Xerox-Fuji is the continuous process of comparing a company's strategy, products, processes with those of the world leaders and best-in-class organizations. Benchmarking focuses on continuous improvement and the creation of value for all stakeholders by adopting organizational behavior best practice.

With reference to the first question (What are the main innovation factors of the benchmarking strategy of Rank Xerox Fuji?), we discover:

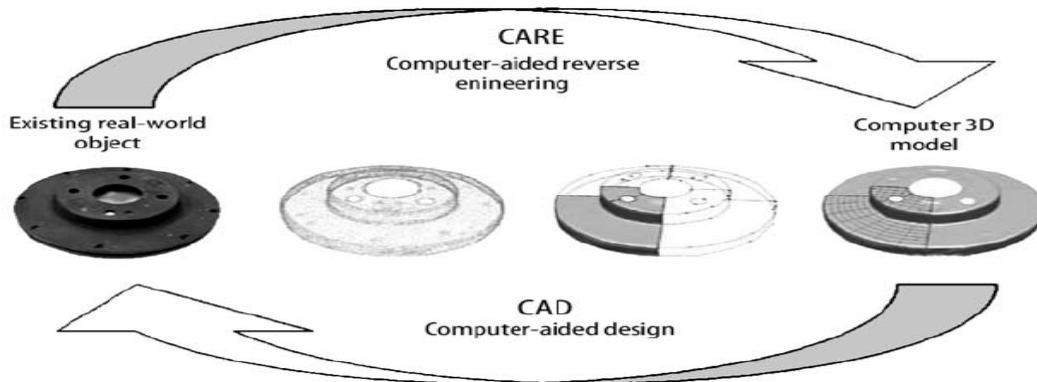


Figure 13: Reverse Engineering methodology (source elaboration from Page et al. 2008)

First, the application of "reverse engineering" (see fig. 13) of some competitor (Canon and Sharp) permits to verify their functional specifications; this methodology provides an accurate analysis of both the materials used and the methods and process. Some of the companies Motorola, Citicorp, Ford, AT&T, IBM, GE applied this methodologies after the positive experience of Xerox.

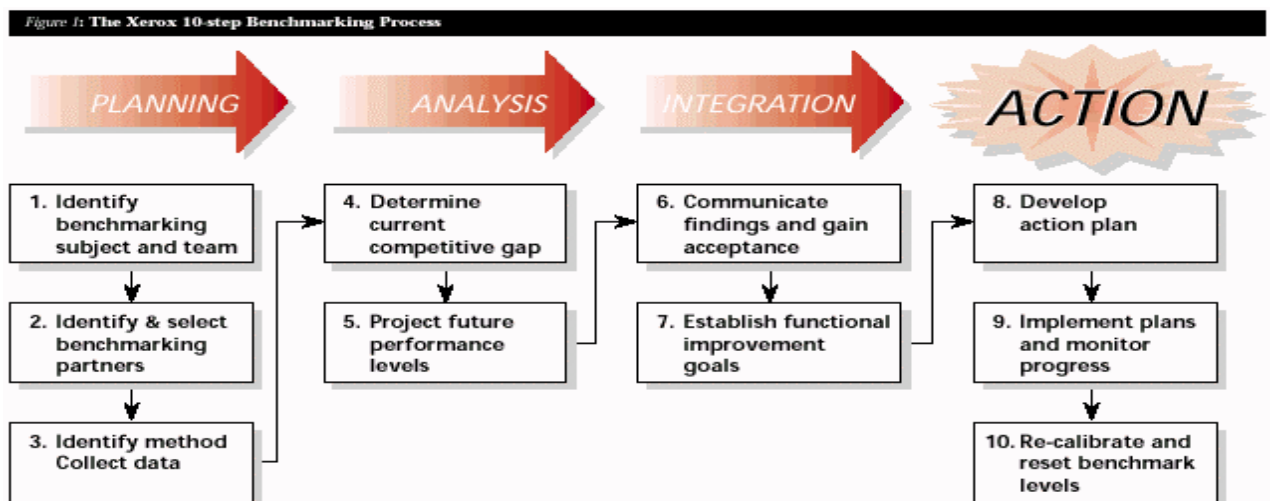


Figure 14: The ten steps of Rank Xerox (source elaboration from Hidalgo 2004)



Second, the strategy of Xerox underlines the importance of structured process of benchmarking (see fig. 14): a) determine the subject to be benchmarked, identify the relevant best practice organizations and the most appropriate data collection technique; b) assess the strengths of competitors (best practice companies) and compare Xerox's performance with that of its competitors.

c) this stage determines the current competitive gap and the projected competitive gap.

d) establish necessary goals, on the basis of the data collected, to attain best performance.

Thirds, the importance of benchmarking culture; Xerox-Fuji strategy is based on basic rule is for Xerox Ranx employees: "Everything that other people do best, we must commit ourselves to doing it equally well."

The answers at the first question are consistent with past studies (Camp 1998; Pilotti 2017; Riva 2007; Bocchino 1995; Aiello 1996).

For what concerns the second question (What is the specificity of benchmarking and its evolution for improving the performance?) we discover:

First, we underline a strong evolution of methodology of benchmarking in Xerox-Fuji with the integration with six sigma and also lean management and leadership and quality program (see fig. 15).



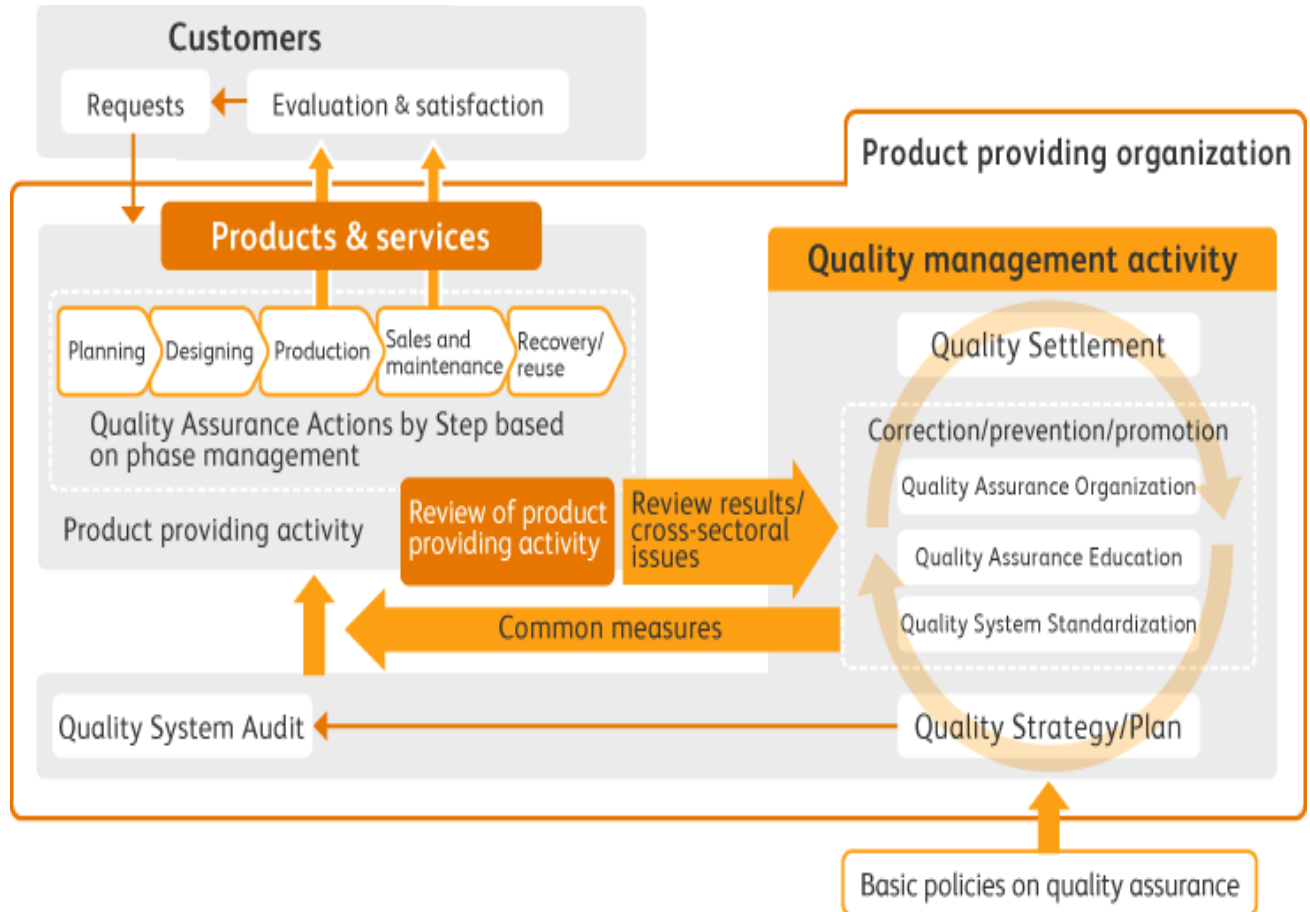
**Figure 15: Xerox quality strategy integrated with benchmarking (source Xerox- Fuji)**

Second, Xerox-Fuji benchmarked companies both, in and outside the industry. The particular example is L.L. Bean, catalog seller of outside equipment for improving distribution system based on the same. Benchmarking also became a key criterion for winning the Malcolm Balridge National Quality Award. The idea is to parameterize the performance of a organization compared to that of other, taken as reference points. Benchmarking itself was born in the late 70s early 80s when the Xerox and large companies began to develop the discipline of the comparison.

Third, the company instituted the quality improvement plan based on application of benchmarking (Mella 2005, 2008), which resulted in tremendous progress and survival of the organization (see fig. 16). This Xerox Fuji's approach focused on key processes, rather than simply on finished products, and highlighted distinctive elements of those processes that accounted for

product. The objective of benchmarking is the continuous improvement of the results based on the control of quality (customers focus).

The answers at the second question are consistent with past studies (Camp 1989, Pilotti et Ganzaroli, 2006; Riva 2007; Schillaci 1987 ; Bocchino 1995; Mella 2012; 2015a; Aiello 1996).



**Figure 16: Xerox quality strategy integrated with benchmarking (source Xerox- Fuji)**

From the lesson of the case of Xerox- Fuji we can find many practical applications:

a) the integration of methodology of quality and of benchmarking (Leibfried and McNair 1992; Bocchino 1995);

b) the strategic role (Aiello, 1996) of continuous process of comparing a company's strategy, products, processes with those of the world leaders and best-in-class organizations (Camp 1989; Pilotti 2017; Pilotti and Ganzaroli 2006; Riva 2007a, b, c; Schillaci 1987);

c) the managerial focus on improving the customer satisfaction (Guido 2010 et al.) and also on reducing the costs (Mella 2005, 2012, 2015a; Ugolini 2004).

In conclusion, the philosophy of Rank Xerox is "why reinvent the wheel if I can learn from someone who has already done it?" and to focus on cost reduction and on improvement of customer satisfaction. The case of Rank Xerox Fuji is an interesting positive example of the application of benchmarking and the importance of integration with sigma six and lean management (Dattakumar and Jagadeesh, 2003; Riva and Pilotti 2017d, 2018a,c, 2019; Yassar and Zairi 2000). The limit of this study is to analyze only a case. Further research can analyze the impact of the digitalization of the processes in Rank Xerox Fuji in the new contest of industry 4.0 .

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