



**COMPARE A PROJECT OF SERVICE AND A PROJECT OF PRODUCT**

BY

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**Compare Project of Service and a project of product**

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## Biography

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He worked as an employee in the central protocol in TEI of Piraeus and for the time being he is not working and he is enrolled at City University as post graduate student in Msc in project management program.

In the final thesis he is going to compare a project of service which is going to be a loan from a Greek bank and a project of product which is going to be a food of fast consumption.

He expects to point out the differences and the similarities of tow those projects and explain why a project of service has more advantages and why industries prefer more with those kinds of projects.

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## Chapter 1 – Introduction

With most industry sectors mired in a slump in recent years, the consumer industries almost single handedly kept the global economy alive. The consumer product and service industries include the ecosystem of companies that produce and sell goods or services that are either sold direct or channeled through distribution to reach the end consumer. In the past few years, a key driver of the success of this industry has been the revival in product innovation. And with the global economy showing signs of recovery, consumer companies view product development as the catalyst to lead growth going forward. Early signs suggest their predictions are correct.

The revival in product innovation and development has come in many flavors. Some companies have launched entirely new categories of products, like the Apple iPod. Others have developed new products in attempt to commoditize one-time luxuries, as P&G did with the SpinBrush in the electric toothbrushes segment. Still others have tried to give new life and styling to old products, such as with the Volkswagen Bug or the Ford Mustang. And nearly every consumer company is rushing to develop products that can meet the needs of new emerging markets, like China.

In short, consumer companies increasingly rely on product design and development to differentiate their brands and accelerate revenues and profits. Aberdeen's Product Development in the Consumer Industries Benchmark Study found that more than three-quarters of consumer

companies view new product development as a leading or the leading driver of revenue, profit, and market share growth (Aberdeen Group, 2004)). Overall, respondents to the Aberdeen survey reported that product development had the most significant impact on revenue growth. However, an examination of individual industry sectors reveals that consumer companies view new product development as key driver of all key business metrics (Aberdeen Group, 2004).

## ***Definitions***

In order to understand project management, one must begin with the definition of the project.

Therefore, a Project, consists of a temporary endeavor undertaken to create a product or service. A project, therefore, can be considered to be any series of activities and tasks that are carefully planned to achieve a particular aim (Oxford English Dictionary, 2005).

Projects are temporary and unique. Temporary means that a project starts and ends within a specific time period. That does not necessary states that a projects' duration is short. Many projects last for several years but in any case their ending is definite.

The temporary nature of projects is applied to other aspects of the effort like:



- Usually temporary is the market opportunity for the enter of the product or service.
- The team that is working on this specific project is created, usually, only for the purpose of performing the project and then is disbanded and reassigned in another.

Further to the above, a project creates unique deliverables<sup>1</sup> like:

- A product or artifact
- A capability to perform a service
- A result (e.g. a research project that develops knowledge that can be used to determine whether or not a trend is present) (Project Management Institute, 2004).

Uniqueness is an important characteristic of project deliverables.

Another, characteristic of projects that accompanies the concepts of temporary and unique is Progressive Elaboration. This means that the project is developing in steps and continuing by increments (Project Management Institute, 2004).

Concluding, projects are the means of organizing activities that cannot be addressed within the organization's normal operational limits. Projects are often utilized as the means of achieving an organization's strategic

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<sup>1</sup> A deliverable is any unique and verifiable product, result or capability to perform a service that is identified in the project management planning documentation and must be produced and provided to complete the project.

plan, whether the project team is employed by the organization or is a contracted service provider.

Projects are typically authorized as a result of one or more of the following strategic considerations (Project Management Institute, 2004):

- A market demand
- An organizational need
- A customer request
- A technological advance
- A legal requirement

As a result, Project Management is “the application of knowledge, skills, tools and techniques to project activities to meet project requirements. Project Management is accomplished through the application and integration of the project management processes of initiating, planning, executing, monitoring and controlling, and closing.” (Project Management Institute, 2004 p. 8).

In the managing of a project process are included steps such as identifying the requirements in order to achieve the projects aims, establishing clear and achievable objectives, balancing the competing demands for quality, scope, time and cost, and finally adapting the specifications, plans and approaches to the different concerns and expectations of the various stakeholders (Project Management Institute, 2004).

## ***Historical data***

Project management, in its modern form, began to take root only a few decades ago. Starting in the early 1960s, businesses and other organizations began to see the benefit of organizing work around projects and to understand the critical need to communicate and integrate work across multiple departments and professions.

We can travel back further, though, to the latter half of the 19th century and to the rising complexities of the business world to see how project management evolved from management principles. Large-scale government projects were the impetus for making important decisions that became management decisions. In this country, the first large organization was the transcontinental railroad, which began construction in the early 1870s. Suddenly, business leaders found themselves faced with the daunting task of organizing the manual labor of thousands of workers and the manufacturing and assembly of unprecedented quantities of raw material.

Near the turn of the century, Frederick Taylor (1856-1915) began his detailed studies of work. He applied scientific reasoning to work by showing that labor can be analyzed and improved by focusing on its elementary parts. He applied his thinking to tasks found in steel mills, such as shoveling sand and lifting and moving parts. Before then, the only way to improve productivity was to demand harder and longer hours from workers. The inscription on Taylor's tomb in Philadelphia attests to his

place in the history of management: "the father of scientific management" (Sisk, 2004).

Taylor's associate, Henry Gantt (1861-1919), studied in great detail the order of operations in work. His studies of management focused on Navy ship construction during WWI. His Gantt charts, complete with task bars and milestone markers, outline the sequence and duration of all tasks in a process. Gantt chart diagrams proved to be such a powerful analytical tool for managers that they remained virtually unchanged for nearly a hundred years. It wasn't until the early 1990s that link lines were added to these task bars depicting more precise dependencies between tasks.

Taylor, Gantt, and others helped evolve management into a distinct business function that requires study and discipline. In the decades leading up to WWII, marketing approaches, industrial psychology, and human relations began to take hold as integral parts of business management (Sisk, 2004).

After WWII, the complexities of projects and a shrinking war-time labor supply demanded new organizational structures. Complex network diagrams called PERT charts and the critical path method were introduced, giving managers greater control over massively engineered and extremely complex projects (such as military weapon systems with their huge variety of tasks and numerous interactions at many points in time).

Soon these techniques spread to all types of industries as business leaders sought new management strategies and tools to handle their growth in a quickly changing and competitive world. In the early 1960s,

general system theories of science began to be applied to business interactions. Richard Johnson, Fremont Kast, and James Rosenzweig described in their book *The Theory and Management of Systems* how a modern business is like a human organism, with a skeletal system, a muscular system, circulatory system, nervous system, and so on (Johnson et al, 1967).

This view of business as a human organism implies that in order for a business to survive and prosper, all of its functional parts must work in concert toward specific goals, or projects. In the following decades, this approach toward project management began to take root in its modern forms. While various business models evolved during this period, they all shared a common underlying structure (especially for larger businesses): that the project is managed by a project manager, who puts together a team and ensures the integration and communication of the workflow horizontally across different departments (Sisk, 2004).

## Chapter 2 – Problem Statement

In the business sense, products are either goods or services. Goods are tangible and have well defined production cycles that move from raw materials to works-in-progress to the finished goods. Finished goods and their by-products and then be stocked in an inventory until customers purchase them.

Services, on the other hand, are intangible. The service production process is much more complex and ambiguous. Some products sit on either end of the continuum as either a pure good or a pure service, but most products lie somewhere in between the two.

In this paper, we are going to analyze the similarities and differences between projects that are related with a pure good, like chocolate and a pure service, like a bank loan. How these differences affect the strategy, the procedures and the final results.

## Chapter 3 – Review of Literature

With the global economy on the mend, consumer companies are looking to product innovation and development to fuel the recovery. Aberdeen's Product Development in the Consumer Industries Benchmark Study found that more than three-quarters of consumer companies view new product development as a leading driver for revenue, profit, and market share growth. And more than two-thirds of these firms will rely on new products to contribute a growing portion of total revenues over the next three years (Aberdeen Group, 2004).

Key forces driving the focus on product development improvements include increased competition (particularly from low-cost countries), goals to target new markets and create new revenue streams, customer demands for more innovative products, and pressures to reduce product costs. However, project managers are uncertain that their companies currently possess the requisite organizational alignment, procedures, and infrastructure to achieve their product innovation and delivery goals.

Specifically, most consumer products companies have not effectively aligned and standardized product development processes company-wide; and nearly a quarter of responding companies lacked any formal product development procedures at all. Consumer companies also reported only limited use of automation to manage product data and support product development processes – with just over half of respondents admitting to using any automation at all. Most consumer firms leveraging automation to assist product development initiatives currently rely on a

hodgepodge of homegrown solutions coupled with a variety of commercially available computer-aided design (CAD) and visualization tools (Aberdeen Group, 2004).

More and more organisations are recognising that translating corporate strategies into actions requires projects. Consequently, it is vital that projects are successful. Critical success factors are important influences that contribute to project success. This paper reports the outcome of a survey project processes derived from the responses of the Marketing Managers of ATEbank and Ferrero.

### ***The definition of success in a project***

How do we define success? Which are the fundamental elements of a successful project?

Cost, timeline and quality are the three basic variables of a project. If one of them changes, then the other two change as well. The manager of a project must be able to equalize these variables so to reach the best balance between cost-timeline-quality.

According to the above statement, in order for a project to be considered successful, the project manager should focus to the following:

Prompt delivery of the project: The project must be fulfilled according to the timeline.

Budget: The project must satisfy the budget estimations that were anticipated. Projects are usually investments, and if these projects



surpass their budget then it is likely to cost more to the organization than the profit they are suppose to provide.

High quality: The project must be fulfilled in high quality, but quality is very difficult to define. According to Philip Crosby, quality is “the conformance to requirements” (Crosby, 1979). In relevance to the project management, quality refers to the project result. This result has to components:

1. Functionalism (what does this product/service do)
2. Performance (How well is functionalism attributes)

In other words, a project manager must:

- Define realistic expectations regarding the balance for cost-timeline-quality.
- Manage the above expectations during the whole progress of the project. If the balance changes make sure that everybody involved is informed and is satisfied with the new information.
- Deliver the project on time and within the budget.

Also, various authors (Baker et al., 1988, Belassi & Tukel, 1996, Black, 1996, Chua et al., 1999) have identified a number of Critical Success Factors for projects. A review of the literature highlights nine common CSFs for projects:

Project Understanding: It is important that the project team understand the project, particularly with respect to project goals and objectives.

Understanding the project mission is the most important factor related to project success/

Top Management Support: Management support for projects has long been considered of great importance in distinguishing between success and failure. Project management is dependent on top management for authority, direction and support. Top management should make it clear that the project is worthwhile and that they support it. Interestingly, many upper managers are unaware of how their behaviour influences project success.

Communication: Effective communication is vital in creating an atmosphere for achieving project success. Communication is not only essential within the project team, but also between the team and the rest of the organisation and the client.

Client Involvement: Client involvement and consultation in the project delivery is important to project success. For a successful project the user must be strongly committed to the project goals and be involved in the project management process.

Competent Project Team: The competence of the project manager and project team members is a critical factor for project success. It is important that the project manager and project team be selected wisely to ensure they have the necessary skills and commitment to perform their functions effectively.

Authority of the Project Manager: In successful projects the project manager is not only strongly committed to meeting project objectives, but also has the authority to have control over developing plans, making changes as required, and fulfilling them.

Realistic Cost and Time Estimates: Realistic and accurate cost and time estimates are critical to project success.

Adequate Project Control: Successful projects have good control and reporting systems that provide adequate monitoring and feedback that enables comparison of team performance and project goals. Adequate monitoring and feedback mechanisms give the project manager the ability to anticipate problems, oversee corrective measures, and ensure that no deficiencies are overlooked.

Problem Solving Abilities: Regardless of how carefully a project is planned, it is impossible to foresee every problem that could arise. It is vital that the project team is responsive and capable of taking appropriate action when problems develop.

Leading challenges to product development process improvements include gathering accurate information on customer requirements, enforcing standard product development procedures and methods across the enterprise, managing design and engineering changes, effectively planning and transitioning designs to manufacturing, and gathering information on aftermarket product performance. Respondents reported that these hurdles negatively impact their ability to align product innovations with market requirements, speed time-to-volume cycles,

accurately predict product costs, and maximize the profitability for new products. According to Aberdeen Group's survey, less than half of respondents said their companies can predict product costs within 25% of actual costs (Aberdeen Group, 2004). Such inaccuracies lead to product development delays and rework, extend time-to-market cycles, and shrink profit margins.

Not surprisingly, consumer products companies are more than satisfied with their product development capabilities and performance. Prioritized strategies consumer companies plan to employ for product development improvements include:

- Product cost management
- Standardizing product development processes and metrics
- Outsourcing innovation and design to external providers
- Creating feedback loop on aftermarket product performance
- Parts standardization and reuse

### ***Project management operations***

The determination of realistic expectations, the successful agreement of all parts and finally the delivery of the project are very demanding elements and always need a broad range of techniques. These techniques can be categorized under the following three operations of project management (Verzuh, 1999):

1. The definition of the project is the foundation of the project itself.

Two operations are connected to this preparatory work.

- The Project Manager must define the scope, the aims and the restrictions of the project. He must be able to answer questions like: "Why do we do this?", "How do we understand that we are successful?" etc. The answers to these questions are the bedrock for the decision making of the project since they describe the balance between cost-timeline-quality and connect the project to the broader mission of the company.
- The Project Manager must enact the basic controlling parameters of the project management. He must succeed the agreement with the people and other organizations that will be involved in the project and to define the role of each one of them in the project. He must also clarify the hierarchy, the communication strategy and the controlling procedure for changes. The substantiated acceptance of these decisions and strategies clarifies the expectations regarding the project management actions. It is, also, a kind of agreement between all involved human resources that you can refer to.

The text that will be the result of this procedure will be the "rules of the project" since it describes the project and explains what we need to do in order to fulfil this project.

2. The planning of a project gathers all the details for the achievement of the goals, according the restrictions that we have set. With usual time estimation and programming techniques we have as result how much effort we should put in this specific project, who is

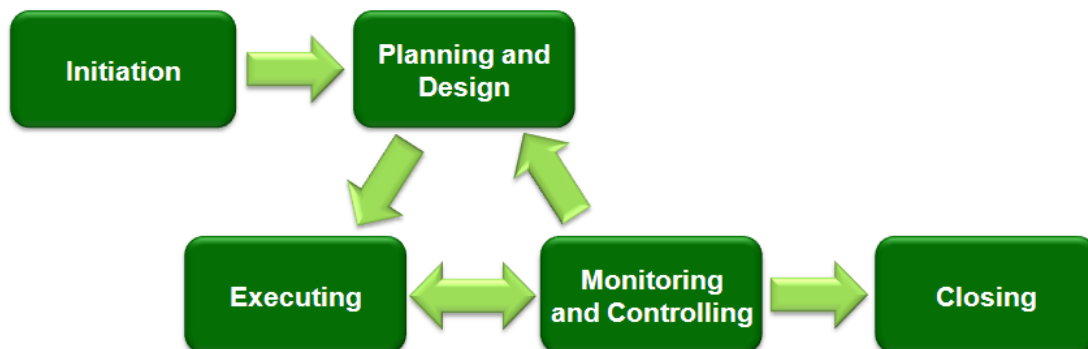
going to do each work, when is going to be finalized and how much will it cost. At the same time, the activities for risk management locate the areas with the greater risk and result to strategic decisions for their management. The detailed strategy that exists in project planning is a very useful control tool, in real situations, for the balance of the cost-timeline-quality that was developed during the definition of the project.

3. The project control includes all the activities that help the project to continue move towards its aims. These activities include:

- Progress measurement: The progress measurement helps us to promptly recognize any problems in order for their resolution to become easier. It is also a feedback mechanism that validates the planning estimations for the project as well as the balance between cost-timeline-quality.
- Communication: Communication is crucial for the control of a project since it helps the manager to coordinate and inform all the involved members for the progress and possible changes of the project.
- Corrective actions: The manager should be able to identify and overcome all the obstacles or problems that he may meet during this procedure.

## ***Project Life Cycle***

Project Managers or the organization can divide projects into phases to provide better management control with appropriate links to the ongoing operations of the performing organization. Collectively these phases are known as the project life cycle (Project Management Institute, 2004).



Theoretically, the life-cycle phases are (Project Management Institute, 2004, Verzuh, 1999):

Initiation phase: In this phase the project management team evaluates the idea, analyses the risks and the resulting impact on the time, cost, and performance requirements together with the potential impact on company resources. The project manager is appointed and in turn he selects the team members based on their skills and experience. This phase should include a cohesive plan that encompasses the following areas:

- Study analyzing the business needs in measurable goals.
- Review of the current operations
- Conceptual design of the operation of the final product.
- Equipment requirement

- Financial analysis of the costs and benefits including a budget.
- Select stakeholders, including users, and support personnel for the project
- Project charter including costs, tasks, deliverables and schedule.

Planning phase: In this phase the team refines the elements in the conceptual phase and requires a firm identification of the resources required and the establishment of realistic time, cost and performance parameters. It also includes risk analysis and a definition criteria for the successful completion of each deliverable. The result of the planning phase should include a product/service design that:

- Satisfies the project sponsor, end user and business requirements
- Functions as it was intended
- Can be produced within quality standards.
- Can be produced within time and budget constraints.

Execution phase: This phase is predominantly a testing and final standardization effort so that operations can begin. All documentation must be completed. The most important issue in this phase is to ensure project activities are properly executed. During the execution phase, the planned solution is implemented to solve the problem specified in the project's requirements. In the case of a new product development, a design resulting in a specific set of product requirements is created. This convergence is measured by prototypes, testing and reviews. As the execution phase progresses, groups across the organization become more deeply involved in planning for the final testing, production and support.



Monitoring and Controlling phase: Monitoring and controlling consists of those processes performed to observe project execution so that potential problems can be identified in timely manner and corrective action can be taken, when necessary, to control the execution of the project. The key benefit is that project performance is observed and measured regularly to identify variances from the project management plan.

Monitoring and Controlling includes:

Measuring the ongoing project activities (where we are);

- Monitoring the project variables (cost, effort, ...) against the project management plan and the project performance baseline (where we should be);
- Identify corrective actions to properly address issues and risks (How can we get on track again);
- Influencing the factors that could circumvent integrated change control so only approved changes are implemented

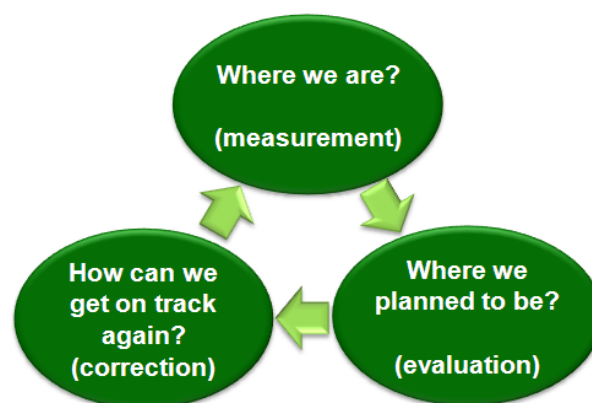
In multi-phase projects, the Monitoring and Controlling process also provides feedback between project phases, in order to implement corrective or preventive actions to bring the project into compliance with the project management plan.

Project Maintenance is an ongoing process, and it includes:

- Continuing support of end users
- Correction of errors
- Updates of the software over time

In this stage, auditors should pay attention to how effectively and quickly user problems are resolved.

Over the course of any construction project, the work scope changes. Change is a normal and expected part of the construction process. Changes can be the result of necessary design modifications, differing site conditions, material availability, contractor-requested changes, value engineering and impacts from third parties, to name a few. Beyond executing the change in the field, the change normally needs to be documented to show what was actually constructed. Hence, the owner usually requires a final record to show all changes or, more specifically, any change that modifies the tangible portions of the finished work. The record is made on the contract documents – usually, but not necessarily limited to, the design drawings. The end product of this effort is what the industry terms as-built drawings, or more simply, “asbuilts.” The requirement for providing them is a norm in construction contracts.



Closure phase: In this last stage, the project manager must ensure that the project is brought to its proper completion. Closing includes the formal acceptance of the project and the ending thereof. Administrative

activities include the archiving of the files and documenting lessons learned. Closing phase consist of two parts:

- Close project: to finalize all activities across all of the process groups to formally close the project or a project phase
- Contract closure: necessary for completing and settling each contract, including the resolution of any open items, and closing each contract applicable to the project or a project phase.

### ***Product Life Cycle vs. Project Life Cycle***

The reason that project management techniques become more and more popular is the role that they have in the new product development activities. Whatever the new product that an organization would like to develop is, the effort is made only once and produces one unique product. Having in mind that the product development has the same characteristics with a project, the creation of these new products offers perfect opportunities for the application of project management. The stages that are necessary for the development of a new product are known as the new product development life cycle. These stages are the following:

Demands: This stage defines the operational demands and performances of the product. No matter the type of the product, these demands should describe how this specific product will satisfy the customer needs.

Design: The designing stage conceives a product that will satisfy the needs of the customer and describes them in details.

Manufacture: Following the previous stages, we manufacture the product and we compose all the relevant information that is necessary for its development.

Operation/usage: When we complete the manufacturing of the final product, we have the stage of its operation/usage. In this stage, the product is actually used.

Concluding, the product development, like a project, has starting and ending points and produces a unique product/service and can be composed from many projects. Although, the product development process differs between the different types of products, the project management process is the same regardless the product/service that we are managing.

## ***Project Management Tools***

### **Work Breakdown Structure**

A Work Breakdown Structure (WBS) is a fundamental tool commonly used in project management.

A WBS, according to the PMBOK is "a deliverable-oriented hierarchical decomposition of the work to be executed by the project team, to accomplish the project objectives and create the required deliverables" (Project Management Institute, 2004 p. 112).

The successful accomplishment of organizational objectives needs a plan that defines all effort to be expended, assigns responsibility to a specially

identified organizational element and establishes schedules and budgets for the accomplishment of the work (Kerzner, 2003).

Large, complex projects are organized and comprehended by breaking them into progressively smaller pieces until they are a collection of defined "work packages" that may include a number of tasks. The Work Breakdown Structure (WBS) is used to provide the framework for organizing and managing the work (Chapman, 2007).

In planning a project, it is normal to find oneself momentarily overwhelmed and confused, when one begins to grasp the details and scope of even a modest size project. This results from one person trying to understand the details of work that will be performed by a number of people over a period of time. The way to get beyond being overwhelmed and confused is to break the project into pieces, organize the pieces in a logical way using a WBS, and then get help from the rest of your project team.

In other words, WBS is the cornerstone of effective project planning, execution, controlling, statusing and reporting. All the work contained within the WBS is to be identified, estimated, scheduled and budgeted.

During the first phase of Project planning, the manager must organize the work into WBS elements that are (Pritchard, 1999):

- Definable – can be described and easily understood by project participants.

- Manageable – a meaningful unit of work where specific responsibility and authority can be assigned to a responsible individual.
- Estimateable – duration can be estimated in time required to complete, and cost can be estimated in resources required to complete.
- Independent – minimum interface with or dependence on other ongoing elements (i.e. assignable to a single control account and clearly distinguishable from other work packages).
- Integratable – integrates with other project work elements and with higher level cost estimates and schedules to include the entire project.
- Measureble – can be used to measure progress; has start and completion dates and measurable interim milestones.
- Adaptable – sufficiently flexible so the addition/elimination of work scope can be readily accommodated in the WBS framework.

Through the usage of WBS we can accomplish the following:

1. The total program can be described as a summation of subdivided elements.
2. Planning can be performed.
3. Costs and budgets can be calculated.
4. Time, cost, and performance can be tracked.
5. Objectives can be linked to company resources in a logical manner.

6. Schedules and status-reporting procedures can be established.
7. Network construction and control planning can be initiated.
8. The responsibility assignment for each element can be established.

### **Six-sigma**

Six Sigma is a business management strategy, originally developed by Motorola, that today enjoys wide-spread application in many sectors of industry.

Six Sigma seeks to identify and remove the causes of defects and errors in manufacturing and business processes (Jiju, 2008). It uses a set of quality management methods, including statistical methods, and creates a special infrastructure of people within the organization ("Black Belts" etc.) who are experts in these methods (Jiju, 2008). Each Six Sigma project carried out within an organization follows a defined sequence of steps and has quantified financial targets (cost reduction or profit increase) (Jiju, 2008).

### **Historical overview**

Six Sigma was originally developed as a set of practices designed to improve manufacturing processes and eliminate defects, but its application was subsequently extended to other types of business processes as well. In Six Sigma, a defect is defined as anything that could lead to customer dissatisfaction.

The particulars of the methodology were first formulated by Bill Smith at Motorola in 1986<sup>2</sup>. Six Sigma was heavily inspired by six preceding decades of quality improvement methodologies such as quality control, TQM, and Zero Defects, based on the work of pioneers such as Shewhart, Deming, Juran, Ishikawa, Taguchi and others.

Like its predecessors, Six Sigma asserts that continuous efforts to achieve stable and predictable process results (i.e. reduce process variation) are of vital importance to business success. Also that manufacturing and business processes have characteristics that can be measured, analyzed, improved and controlled. In order to achieve sustained quality improvement, it is required the commitment from the entire organization, particularly from top-level management.

The following aspects of the Six Sigma strategy are not accentuated in previous quality improvement initiatives (Jiju, 2008):

- Six Sigma strategy places a clear focus on achieving measurable and quantifiable financial returns to the bottom-line of an organisation. No Six Sigma project is approved unless the bottom-line impact has been clearly identified and defined.
- Six Sigma strategy places an unprecedented importance on strong and passionate leadership and the support required for its successful deployment.

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<sup>2</sup> Information retrieved from [www.motorolauniversity.com](http://www.motorolauniversity.com)



- Six Sigma methodology of problem solving integrates the human elements (culture change, customer focus, belt system infrastructure, etc.) and process elements (process management, statistical analysis of process data, measurement system analysis, etc.) of improvement.
- Six Sigma methodology utilises the tools and techniques for fixing problems in business processes in a sequential and disciplined fashion. Each tool and technique within the Six Sigma methodology has a role to play and when, where, why and how these tools or techniques should be applied is the difference between success and failure of a Six Sigma project.
- Six Sigma creates an infrastructure of champions, master black belts (MBBs), black belts (BBs) and green belts (GBs) that lead, deploy and implement the approach.
- Six Sigma emphasises the importance of data and decision making based on facts and data rather than assumptions and hunches! Six Sigma forces people to put measurements in place. Measurement must be considered as a part of the culture change.
- Six Sigma utilises the concept of statistical thinking and encourages the application of well-proven statistical tools and techniques for defect reduction through process variability reduction methods (e.g. statistical process control and design of experiments).

Just like any other quality improvement initiatives we have seen in the past, Six Sigma has its own limitations. The following are some of the limitations of Six Sigma which create opportunities for future research (Jiju, 2008):

- The challenge of having quality data available, especially in processes where no data is available to begin with (sometimes this task could take the largest proportion of the project time).
- In some cases, there is frustration as the solutions driven by the data are expensive and only a small part of the solution is implemented at the end.
- The right selection and prioritisation of projects is one of the critical success factors of a Six Sigma program. The prioritisation of projects in many organisations is still based on pure subjective judgement. Very few powerful tools are available for prioritising projects and this should be major thrust for research in the future.
- The statistical definition of Six Sigma is 3.4 defects or failures per million opportunities. In service processes, a defect may be defined as anything which does not meet customer needs or expectations. It would be illogical to assume that all defects are equally good when we calculate the sigma capability level of a process. For instance, a defect in a hospital could be a wrong admission procedure, lack of training required by a staff member, misbehaviour of staff members, unwillingness to help patients when they have specific queries, etc.
- The calculation of defect rates or error rates is based on the assumption of normality. The calculation of defect rates for non-normal situations is not yet properly addressed in the current literature of Six Sigma.
- Due to dynamic market demands, the critical-to-quality characteristics (CTQs) of today would not necessarily be meaningful

tomorrow. All CTQs should be critically examined at all times and refined as necessary (Goh, 2002).

- Very little research has been done on the optimisation of multiple CTQs in Six Sigma projects.
- Assumption of 1.5 sigma shift for all service processes does not make much sense. This particular issue should be the major thrust for future research, as a small shift in sigma could lead to erroneous defect calculations.
- Non-standardisation procedures in the certification process of black belts and green belts are another limitation. This means not all black belts or green belts are equally capable.
- Research has shown that the skills and expertise developed by black belts are inconsistent across companies and are dependent to a great extent on the certifying body. For more information on this aspect, readers are advised to refer to Hoerl (2001). Black belts believe they know all the practical aspects of advanced quality improvement methods such as design of experiments, robust design, response surface methodology, statistical process control and reliability, when in fact they have barely scratched the surface.
- The start-up cost for institutionalising Six Sigma into a corporate culture can be a significant investment. This particular feature would discourage many small and medium size enterprises from the introduction, development and implementation of Six Sigma strategy.
- Six Sigma can easily digress into a bureaucratic exercise if the focus is on such things as the number of trained black belts and

green belts, number of projects completed, etc. instead of bottom-line savings.

- There is an overselling of Six Sigma by too many consulting firms. Many of them claim expertise in Six Sigma when they barely understand the tools and techniques and the Six Sigma roadmap.
- The relationship between cost of poor quality (COPQ) and process sigma quality level requires more justification.
- The linkage between Six Sigma and organisational culture and learning is not addressed properly in the existing literature.
- The “five sigma” wall proposed in Mikel Harry’s book, *Six Sigma: The Breakthrough Management Strategy Revolutionising the World’s Top Corporations*, is questionable. Companies might redesign their processes well before even four sigma quality level. Moreover, it is illogical to assume that the “five sigma” wall approach is valid for all processes (manufacturing, service or transactional). Moreover, the decision of re-design efforts over continuous improvement depends on a number of other variables such as risk, technology, cost, customer demands, time, complexity, etc.

### Methodology

Six Sigma has two key methodologies: DMAIC and DMADV, both inspired by Deming's Plan-Do-Check-Act Cycle. DMAIC is used to improve an existing business process; DMADV is used to create new product or process designs.

### DMAIC

The basic methodology consists of the following five steps:

- Define process improvement goals that are consistent with customer demands and the enterprise strategy.
- Measure key aspects of the current process and collect relevant data.
- Analyze the data to verify cause-and-effect relationships. Determine what the relationships are, and attempt to ensure that all factors have been considered.
- Improve or optimize the process based upon data analysis using techniques like Design of Experiments.
- Control to ensure that any deviations from target are corrected before they result in defects. Set up pilot runs to establish process capability, move on to production, set up control mechanisms and continuously monitor the process.

#### DMADV

The basic methodology consists of the following five steps:

- Define design goals that are consistent with customer demands and the enterprise strategy.
- Measure and identify CTQs (characteristics that are Critical To Quality), product capabilities, production process capability, and risks.
- Analyze to develop and design alternatives, create a high-level design and evaluate design capability to select the best design.

- Design details, optimize the design, and plan for design verification. This phase may require simulations.
- Verify the design, set up pilot runs, implement the production process and hand it over to the process owners.

DMADV is also known as DFSS, an abbreviation of "Design For Six Sigma".

### Implementation roles

One of the key innovations of Six Sigma is the professionalizing of quality management functions. Prior to Six Sigma, quality management in practice was largely relegated to the production floor and to statisticians in a separate quality department. Six Sigma borrows martial arts ranking terminology to define a hierarchy (and career path) that cuts across all business functions and a promotion path straight into the executive suite (Kerzner, 2003).

Six Sigma identifies several key roles for its successful implementation.

- Executive Leadership includes the CEO and other members of top management. They are responsible for setting up a vision for Six Sigma implementation. They also empower the other role holders with the freedom and resources to explore new ideas for breakthrough improvements.
- Champions are responsible for Six Sigma implementation across the organization in an integrated manner. The Executive Leadership draws them from upper management. Champions also act as mentors to Black Belts.

- Master Black Belts, identified by champions, act as in-house coaches on Six Sigma. They devote 100% of their time to Six Sigma. They assist champions and guide Black Belts and Green Belts. Apart from statistical tasks, their time is spent on ensuring consistent application of Six Sigma across various functions and departments.
- Black Belts operate under Master Black Belts to apply Six Sigma methodology to specific projects. They devote 100% of their time to Six Sigma. They primarily focus on Six Sigma project execution, whereas Champions and Master Black Belts focus on identifying projects/functions for Six Sigma.
- Green Belts are the employees who take up Six Sigma implementation along with their other job responsibilities. They operate under the guidance of Black Belts and support them in achieving the overall objectives.
- Yellow Belts are employees who have been trained in Six Sigma techniques as part of a corporate-wide initiative, but have not completed a Six Sigma project and are not expected to actively engage in quality improvement activities.

## **Chapter 4 – Methodologies and Procedures used in the study**

### ***Credit expansion in Greece***

The annual growth rate of overall business financing remained high in the 4th quarter of 2005 (12.5%, down from 12.6% in 2004), a fact that implies access to banking financing.

Overall financing includes Monetary Financial Institutions (MFI) investments in bonds issued by businesses, which use these titles as alternative sources of funding. MFI investments in such titles issued in 2005 represent 12% of total business financing by MFIs.

Balances concerning extraordinary write-offs of mature debts have also been included; ATEbank proceeded with such write-offs mainly within the framework of application of Law 3259/2004 on the settlement of mature debts, and for the general reform of its loans portfolio.

If these two factors (business bonds and extraordinary debt write-offs) are not taken into consideration, the annual growth rate of bank loans to businesses presents a decrease of 6.4% in the 4th quarter of 2005 (8.6% in 2004).

The breakdown of bank loans per sector of economic activity shows the following:



The annual rate of change of loan balances for loans to agriculture was negative in the 4th quarter of 2005 (-12.7% from 7.8% in 2004). However, credit extension to agriculture has been affected by extraordinary ATEbank debt write-offs in the sector in question, which came to 760 million Euros in December 2005; if these are taken into consideration, credit extension to agriculture presents only a small deceleration of 8.2% in the 4th quarter of 2005 (9.6% in 2004).

- The annual rate of change concerning industrial businesses was marginally positive in the 2nd and 3rd quarters of 2005, and returned to negative values in the 4th quarter of 2005, -0.6% (1.1% in 2004). To a degree, this phenomenon reflects the substitution of bank loans with corporate bonds, kept in bank portfolios. Overall financing (loans and bonds) in the period March-December 2005 increased by 3.3%.
- With respect to commercial enterprises, credit extension appears to decrease (4th quarter 2005: 6.6%, down from 12.7% in the 4th quarter of 2004). However, it is worth noting that the situation in this sector is the same as in the industrial sector. Commercial enterprises replace part of their bank borrowing with bond issuances.
- A significant increase in the annual financing growth rate (34.4%, up from 3% in 2004) is observed in the shipping sector. The majority of loans are in U.S. dollars, and therefore loan balances, when expressed in Euros, also include the effect of exchange rate

developments. If the effect in question is not taken into consideration, the growth rate remains high (26% in the 4th quarter of 2005, up from 9.9% in 2004). This development is due to fleet renewal expenses and increases in the relevant costs.

- The tourism sector dropped significantly in the 4th quarter of 2005 (4.6%, down from 17.6% in 2004), due to the completion of investment programmes related to the Olympic Games (24.4% in 2003 and 33.7% in 2004).
- A positive trend (15.7%) is observed again in other sectors, including construction companies, in 2005, after the drop in 2004 (11.7%).

The growth rate in overall household financing remained high and came to the same levels (4th quarter 2005 30.3%, up from 30% in 2004). New mortgage securitizations amounting to 1.5 billion Euros occurred in 2005, as well as the first securitization of consumer loan debts, amounting to 952 million Euros.

Not including loan securitizations, the annual growth rate appears to have decreased (26.2%, down from 28% in 2004). When loan securitizations are included, total household debts to banks appear to have increased by 7%.

Total loan debts of households as a percentage of GDP came to 38.3% in December 2005 (31.4% in 2004), and to 36.5% in 2005 excluding securitization (30.9% in 2004); as a result, the difference from the corresponding figure in the Eurozone is gradually decreasing (52.6% in 2005, 49.4% in 2004).

In particular, mortgages increased significantly in 2005 (31.3%, up from 26.9% in 2004); this is due to increased demand caused by the announcement of objective value readjustments and the imposition of VAT on new buildings as of 1 January 2006.

Finally, the rate of increase for consumer loans remains high, despite the deceleration observed in 2005 (29.9% from 37.9% in 2004). The decrease is even greater (24%) if the July 2005 securitization is included. This development reflects the deceleration of growth rates of consumer and credit card loans.

## ***Agricultural Bank of Greece***

### **Financing programme**

According to the 2006 Annual Report of Agricultural Bank of Greece, the bank is still the largest lender for the agricultural sector in Greece; it implements financing programmes for purely agricultural and agricultural processing activities. In the last decade, the Bank has expanded its activities to other sectors of the Greek economy.

At the beginning of each financial year, ATEbank compiles an annual financing programme with quantitative lending targets per economic sector, activity, category of participants per sector and per general loan category. Since 1992, when the Bank of Greece ceased to set limits for Banks with respect to their credit policy, ATEbank has decided on its financing policy, taking into consideration factors such as liquidity, acceptable credit risk limits, expected target-market demand, etc. The

ATEbank's financing policy is designed to satisfy the needs of 6 key market segments:

1. Natural entities – Farmers
2. Cooperatives and Groups of producers
3. Cooperatives and their companies
4. Natural entities – non farmers
5. Companies and Professionals
6. Public Enterprises & Organizations, Entities – State Legal Entities (social or other).

The financing programme includes 5 basic categories of objectives:

1. Lending to the agricultural sector,
2. Lending to other sectors of the economy (manufacturing, commerce, services, etc),
3. Housing and consumer credit,
4. Financing for the State & Public Organisations, and their enterprises,
5. Syndicated and bond loans.

### **Loan portfolio structure**

- ◆ Credit balances

On 31.12.2006, the total balance of the Bank's loan portfolio amounted to 14,925 million euros, while the respective figure at 31.12.2005 was 14,294.5 million euros. The above amounts do not include credit balances for the German network, amounting to 104.7 million euros in 2005

compared to 211.6 million euros in 2004. ATEbank's total credit balances on 31.12.2005 amounted to 14,399.1 million euros compared to 14,391.0 million euros on 31.12.2004.

With respect to the temporal structure of the loan portfolio (excluding loans in Germany), short-term lending (with a term of up to 12 months) accounted for 26.7% of the total, amounting to 3,820.6 million euros. Respectively, medium & long-term credit (more than one year) represented 73.3%, of the total loan portfolio or 10,473.8 million euros. In the credit sector, customers are currently served by a network of 458 Bank branches in Greece and one in Germany. In 2005, as in other years, the Greek State was the Bank's largest customer, from the point of view of value, to cover the needs of OPOKEPE (Payment and Community Guidance & Guarantee Aids). Specifically, with respect to the Large Customer (corporate) list, it is noted that there are about 771 customers, not including the State and Public sector Organisations. In 2005, 20 new large customers were attracted, while the Credit General Council approved loan requests from large customers amounting to 2,041.1 million euros.

### ***Analysis of other lending in 2005***

Details about other credit balances per category are mentioned further down, in accordance with the basic categories of PD/CBc 2558/2005.

### **Lending to Financial Institutions & the Central Bank**

On 31 December 2005, the loan balance for Financial Institutions (First Business Bank) amounted to 147 million euros, representing 0.99% of the total portfolio, presenting a decrease of 25.66% compared to 2005.

### **Lending to General Government**

Credit balances to General Government on 31.12.2006 represent 25.84% of the Bank's total portfolio or 3,839 million euros and include lending to the Greek State, Local Government Organisations (OTA), Social Security Organizations and other Public Sector Organisations. It is noted that all the above lending to the State involves practically zero risk with the exception of loans to Municipalities and Communities, which involve relatively small amounts.

### **Lending to Insurance Companies & Other Financial Institutions**

On 31.12.2006, lending to insurance companies and other financial institutions amounted to 296 million euros or 2% of the Bank's total portfolio, presenting a 4.19% decrease.

### **Lending to non-Financial Companies**

The Bank is expanding its activities to other sectors of the economy apart from agriculture. At the end of 2006, the total balance of such loans amounted to 5,488 million euros compared to 5,671 million in 2005, presenting a 3.22% decrease. Lending to non-financial enterprises covers

36.93% of total credit. In this category, short-term loans amounted to 1,163 million euros and long-term loans to 4,325 million euros.

The customer list for this loan category includes farmers and agricultural enterprises, small industry and professionals. Lending in this category covers mainly operating capital and the purchase of fixed assets.

#### Agricultural sector credit

In 2006, short-term lending to the agricultural sector amounted to 290 million, compared to 335 million euros in 2005. The majority of these loans cover the operating capital needs of farmers. Medium to long-term credits amounted to 1,885 million euros as opposed to 1,964 million euros in 2005. Total credit provided to the agricultural sector amounted to 2,175 million euros presenting a 5.41% decrease.

ATEbank lending to the agricultural sector represents 14.64% of total placements.

#### Credit to Other Sectors

In 2006, ATE continues the lending to other sectors, such as manufacturing, commerce, services etc. Of these sectors, manufacturing occupies a significant position with the amount of 1,367 million euros (1,486 million euros in 2005) followed by commerce (803 million euros in 2005 or 5.41% of total credit) (balances).

### **Household Credit**

#### Consumer Credit

On 31.12.2006, consumer credit amounted to 797 million euros, an increase of 23.94% compared to 31.12.2005, thus following the banking system dynamic trend in this sector. This sector's loan portfolio participation amounted to 5.36%.

#### Housing Credit

Housing credit increased significantly by 40.91%. Credit balances amounted to 4,042 million, compared to 2,868 million euros in 2005. Participation of housing credit in the Bank's loan portfolio was also important (27.2%).

### **Syndicated loans to enterprises**

On 31.12.2006, the amount of syndicated loans in which ATEbank participated amounted to 138 million euros, from which 58 million euros were in USD, 0,5 million in CHR and 78 million in EUR.

### ***New Services Development***

Erosion and abandonment (as discussed in the Professional Services Journal, issue 3.2) mean that every organization expecting to be a player tomorrow must have strong capabilities in creating and launching new services today. However, most organizations find this a challenge. Part of the reason is that they use the wrong approach for the wrong type of services offering.



Classifying services based upon customer familiarity is particularly helpful when introducing new services offerings, as it has a big impact on what works and what doesn't (James, 1996). Familiarity is a helpful distinction since customers make judgments and decisions based upon both the perceived value of using a services offering and the confidence felt that this value would materialize. Customer familiarity affects both. The three categories of customer familiarity are existing, emerging, and breakthrough services.

Existing services are ones with which the customer is very familiar. Based upon personal experience, the customer probably has a good understanding of functionality, likes, dislikes, and ideas for improvement.

Emerging services are those with which the customer has no personal experience, but knows about the service offering from reading, trade shows, or discussions with other users. Possibly the service has been used for another application and is being considered for something applicable to the customer's needs. In this situation, the customer can project (with some degree of accuracy) his thoughts and ideas. The customer has enough knowledge to think about the potential value of services usage in his unique situation.

Breakthrough services are totally brand new. In this case, the customer has no experience and no frame of reference with which to compare, contrast, or project utility (Hordes, 2004).

## Launching New Services: Primary Focus



Source: Professional Services Journal

### Approach

When launching new services where existing services already exist, the marketing approach is to replace the existing offering by providing a combination of benefits that are easier, better, faster, or cheaper than the existing offering. Basic expectations are already in place. In this scenario, you live within the rules of the existing game but operate more efficiently.

When launching new services, that is emerging, the marketing approach is to get there first and convince the customer/prospect to trust your capabilities to deliver. You change the rules of the game by creating new standards of expectation. This is the hope of Total Solutions Providers.

When you are launching a breakthrough service, the marketing approach is to drastically alter a customer process or way of doing business. You don't just break the rules; you totally change the game by introducing significant innovation.

## **Research Methods**

Categorizing services based on customer familiarity has special significance for the conductors of market research. If we believe that customers' perceptions are their reality, and that people will (most of the time) act rationally, then the more familiar the customer is with a services offering, the more accurate the information gathered (assuming the right research methods are deployed). The less familiar the customer is with the potential service, the less credence must be given to their comments. When put on the spot with a question that they don't know the answer to, most people will not say they don't know. They will speculate to save face or fabricate a response for the sake of being polite or trying to be helpful. Often, they will try to guess what the researcher really wants and try to respond with information that supports it (Hordes, 2004).

So with existing services, traditional quantitative marketing research methods are preferred. They are both adequate and the most cost-effective. With emerging products, quantitative techniques can add value, but only to augment qualitative research. The thick, rich information gathered through personal interviews and focus groups must be the primary research methods.

With very unfamiliar services, usage must be inferred. The best way to do this is through actual observation of customers in scenarios where the service offering has potential application (Justin, 1995). By watching how people actually behave and the problems they encounter and solve, qualified researchers can understand the likelihood of the success of very new services. Also, it is important to remember that the application of

breakthrough services is not true science. Hardly any truly revolutionary products ended up being utilized the way the inventor intended. Researchers must speculate, infer, and make their best guesses.

### **Preparation**

Introducing existing services calls for rigorous planning and meticulous follow-through. The proof is in following procedures step-by-step. Emerging services call for creating and following a process that encourages multiple iterations and experimentation (James, Lyons, 1995). Flexibility is vital. With breakthrough services, a detailed plan just gets in the way. Ready-fire-aim conveys the spirit of introducing potential breakthrough products – just do it. The key is to quickly get prototypes into the hands of lead customers and let them test and experiment (Hordes, 2004).

Erosion, abandonment, and replacement are three ongoing, relentless realities that successful services marketers must anticipate, plan for, and implement.

### ***ATEbank Marketing Department Interview***

After conducting all relevant research regarding New Services Development as well as Loan market in Greece, we contacted the ATEbank's Marketing Department in order to understand the practical part of delivering a new loan into the Greek market.

According to the Head of ATEbank's Marketing Department the phases that the bank follows in order to launch a new product (in this case a new loan) in the Greek market are the following:

#### Product description phase

In order to successfully describe the characteristics of the new service that we want to launch we conduct the following research:

- Market Research
  - Consumer research (in order to identify the needs of our customers as well as the trends of the loan market)
  - Competition research (in order to identify and understand the new services/products that our main competitors have already or are willing to launch in the market).

After this research is conducted, we gather and analyse the findings in order to develop our product's characteristics.

The new product/service emerges from our customer needs as well as from our internal aims. The criteria that describe if a new service is going to be launched are usually its profitability which is evaluated through its sales.

The problem that is identified in the case of ATEbank is that they do not have the possibility to test the new service into the market. That is because too many legal barriers exist and the cost of testing any new service, especially loans, in the market is extremely high.

The departments that are involved in order to complete the designing of this new loan are:

- Steering Committee: The Board of Directors assigns a Committee in order to approve the project.
- Project Management Team: The team responsible for the completion of the project.
- Research & Development Department: is responsible for designing the product characteristics, analyses the findings of market researches, etc.
- Training department: is responsible for the training of all involved department for the launching of the new service and also is responsible for training the outlet network for the launched service.
- Bank outlet network: is responsible for selling the new service.
- Marketing: is responsible for promoting the new service in the market.
- Loan approval department: since the new service is a loan then this department controls the loan applications.
- Internal Audit: they make sure that the loan fulfils the prerequisites of the law as well as the logistics part within the bank.
- Risk Management: controls the project and reduces the risk involved.
- IT department: organizes the IT part of the project.

The project manager, in ATEbank's case, is using WBS tool in order to organize the different departments, communicate with all involved

personnel, follow and control the progress of the project and finally launch the service.

Finally, the new product/service is launched immediately since Loans is a fast moving market and its competition is very strong.

## ***Ferrero SpA***

Ferrero SpA is an Italian Manufacturer of chocolate and other confectionery products, founded by confectioner Pietro Ferrero in 1946 and based in Pino Torinese, Italy.

The company started its business in 1946, when Pietro Ferrero invented a cream of hazelnuts and cocoa, meant to be spread on bread, and called it Pasta Gianduja. The product had a great success and therefore Ferrero created a new company to produce and market it. This product is known today as Nutella and was destined to become the highest selling sweet spread in the world.

Today, the company's mission is:

“Very high quality, artisanal attention to detail, product freshness, selection of the finest raw materials, respect and care for the consumer”

These are the Ferrero keywords and values that have made its confectionery products known and loved by millions of consumers all over the world. Products that have sprung from innovative ideas, frequently inimitable despite their wide distribution, they have become part of the

history and customs of many countries, sometimes achieving iconic status.

Ferrero also cares deeply about social issues, the environment, food safety, the local communities where it operates and its own human resources. Today many Ferrero products are “global” products, sold all over the world and Ferrero has become the fourth largest confectionary group in the world.

Finally, its particular characteristic is its being “glocal” (thinking globally, acting locally): a company that is at the same time both global and local, attentive to international development, but also to its relationship with individual localities. The Company’s core commitment has always been to the consumer. A relationship of trust based on knowledge, experience, sensitivity and intuition, a mutual and enduring loyalty, ties Ferrero to its consumers and is a measure of its attention to their needs, a key element in the Company’s success.

### **Quality in Ferrero**

The excellence of the raw materials is a determining factor in Ferrero’s product performance. To this end the company is involved directly and indirectly in a constructive dialogue with all the dealers, supporting the governments and institutions that regulate sustainable practices in the cultivation and sale of agricultural products and providing assistance where necessary.



For raw materials with particular characteristics, Ferrero operates by establishing long-term relationships, thus creating security for their suppliers and rewarding quality.

Ferrero is committed to the search for new sources of supply of raw materials, particularly in developing countries, in order to guarantee the continued quality improvement and the growth of local economies. The principal raw materials that characterize Ferrero products are cocoa, hazelnuts and milk. The cocoa comes from the Ivory Coast, the world's principal producer, from Ghana and from Ecuador. Ferrero processes the cocoa beans itself and their master chocolate makers develop specific blends according to the different uses.

Ferrero is amongst the biggest users of hazelnuts in the world. The toasting equipment and processes are developed by the company with exclusive technology in order to maintain the highest quality and bring out all the aroma and taste of this basic ingredient.

Milk is the basic ingredient of all Kinder products and it is purchased from scrupulously selected and extremely reliable European suppliers in regions dedicated to milk production.

The application of the highest physiochemical, microbiological and organoleptic standards, achieved thanks to the quality and freshness of the raw materials and are guaranteed by precise technical specifications and by reducing the times for supply, storage and usage to the minimum.

The development of innovative production processes and technology designed to safeguard the organoleptic and nutritional characteristics of the raw materials (mild technologies) ensures that the original characteristics of the raw materials are maintained, and that the final products are unique and inimitable.

For Ferrero, quality means “the guarantee of meeting the expectations and desires of its consumers at the right price, measuring itself against the competition and safeguarding the interests of the Company and its suppliers to ensure future development”.

In order to guarantee this, Ferrero has established a series of “rules” which constitute its “Quality Management System” and which apply to:

- Organizational structure
- Management of the processes,
- Standards for raw materials and packaging
- Choice of suppliers
- Checking of goods
- Recipes and production instructions

All these directives must be verified, followed and documented. Based on the Quality Management System, Ferrero had voluntarily chosen to adopt the ISO 9001:2000 standard. This standard requires the company's Quality System to be certified by a recognized independent body by means of a strict verification process, which is repeated every year.

As of 2005 and in order to ensure the presence of consistently high quality products in different countries, Ferrero has furnished all the factories with its own Group Quality Management System. The Quality Management System certificate covers: Industrial development, manufacture and delivery of confectionary and drinks including the manufacture of plastic packaging. Furthermore, as of 2005, some of the most important European factories have been certified as conforming to the IFS (International Food Standards).

### **Innovation and Technology in Ferrero**

One of Ferrero's great strengths is its continuous research aimed at developing new and original products. This difficult and demanding task is carried out by one of the Group's Companies, Soremartec (Société de recherche de marketing at technique), within which the group's Research and Development department operates.

The Soremartec mission is the study, development and realization of new products in line with the Ferrero philosophy:

"Absolutely original products capable of creating new market sectors, characterized by exclusive ingredients and manufactured using technologically complex production processes".

Amongst its strategic activities, the organoleptic and sensorial evaluation of the products and the monitoring – by a group of engineering specialists – of the food industry sector to identify and test new and unusual

concepts, often borrowed from other production sectors, which can help transform raw materials into “special” products and create production cycles that will guarantee better quality and efficiency at lower cost.

Putting millions of confectionary products onto markets all over the world every day, is only possible by a policy of continuous innovation, which also extends to the production and packaging processes. Ferrero invests every year in bringing technical and organizational innovations to the production line. Many patents are held by Ferrero in order to protect the creativity and inventiveness it applies to industrial production processes.

The constant attention to quality, united with the need to create absolutely unique confectionary products, has often required the development of special techniques and machinery. For example, Ferrero Rocher, which features a spherical wafer shell required the design and construction of unique machinery that was not available in the market.

Furthermore, Ferrero is also in the vanguard in terms of packaging since they design and develop new packaging ideas with the aim of improving product protection and shelf-life, which are ensured by meticulous physical, chemical and microbiological checks and controls.

In particular, new technical solutions are being developed to reduce the effects of temperature change in difficult climates: active packaging (which protects and maintains product quality by absorbing oxygen), anti-tampering and high performance oxygen barriers (using a film which is highly impermeable to oxygen), to limit the effects of oxidization.

Even simple operations, like tying a ribbon or applying a decoration, can present problems when they have to be applied to enormous volumes of finished product. So, to embellish the packs with consistent decoration and reduce movement to the minimum, Ferrero has had to introduce a high level of automation to its production lines.

Systems and machinery developed to operation contemporaneously on dozens of products while lavishing on each one the care and attention of artisanal production.

### ***New Product Development***

New product development is one of the most important components of product policy and product management. Product lines and products are appraise and are positioned effectively. Brand decisions are taken wisely. For a higher level of growth, a firm has to look beyond its existing products. A progressive firm has to consider new product development as a cardinal element of its product policy.

Innovation is the essence of all growth. This is especially true in marketing. In an age of technological advancements, change is a natural outcome - change in food habits, change in expectations and requirements. Any business has to be vigilant to these changes taking place in its environment. People always seek better products, greater convenience, newer fashion and more value for money.

A business firm has to respond to these dynamic requirements of its clientele and these responses take the shape of new products and new

services. Through such a response, the firm reaps a good deal of benefits. New products become necessary from the profit angle too. Products that are already established often have their limitations in enhancing the profit level of the firm. Profits from products decline as they reach the maturity stage of their life cycle. Thus, it is necessary for business firms to bring in new products to replace old, declining and losing products.

### **New product categories**

New products become part and parcel of the growth requirements of the firm and in many cases, new profits come to the firm only through new products. New products can be broadly classified into three groups (Ulrich, Eqqinger, 2004):

Major innovations is a product that has never been sold by any other company or organization.

Minor innovations is a product that has never been sold in the past from the specific company, but exists through other companies in the market.

Modifications is any change in the product characteristics (i.e. color, materials, design etc.), an improvement or brand change.

Because introducing new products on a consistent basis is important to the future success of many organizations, marketers in charge of product decisions often follow set procedures for bringing products to market. In the scientific area that may mean the establishment of ongoing laboratory research programs for discovering new products (e.g., medicines) while

less scientific companies may pull together resources for product development on a less structured timetable.

### **7-step approach**

While some companies may not follow a deliberate step-by-step approach, the steps are useful in showing the information input and decision making that must be done in order to successfully develop new products. The process also shows the importance market research plays in developing products.

We should note that while the 7-step process works for most industries, it is less effective in developing radically new products. The main reason lies in the inability of the target market to provide sufficient feedback on advanced product concepts since they often find it difficult to understand radically different ideas. So while many of these steps are used to research breakthrough ideas, the marketer should exercise caution when interpreting the results (Kotler, Armstrong, 2005).

#### **Step 1. Idea Generation**

The first step of new product development requires gathering ideas to be evaluated as potential product options. For many companies idea generation is an ongoing process with contributions from inside and outside the organization. Many market research techniques are used to encourage ideas including: SWOT analysis, running focus groups with consumers, channel members, and the company's sales force; encouraging customer comments and suggestions via toll-free telephone

numbers and website forms; and gaining insight on competitive product developments through secondary data sources.

One important research technique used to generate ideas is brainstorming where open-minded, creative thinkers from inside and outside the company gather and share ideas. The dynamic nature of group members floating ideas, where one idea often sparks another idea, can yield a wide range of possible products that can be further pursued.

### Step 2. Screening

In Step 2 the ideas generated in Step 1 are critically evaluated by company personnel to isolate the most attractive options. Depending on the number of ideas, screening may be done in rounds with the first round involving company executives judging the feasibility of ideas while successive rounds may utilize more advanced research techniques. As the ideas are whittled down to a few attractive options, rough estimates are made of an idea's potential in terms of sales, production costs, profit potential, and competitors' response if the product is introduced. Acceptable ideas move on to the next step.

The screeners must ask at least three questions:

- Will the customer in the target market benefit from the product?
- What is the size and growth forecasts of the market segment/target market?
- What is the current or expected competitive pressure for the product idea?



- What are the industry sales and market trends the product idea is based on?
- Is it technically feasible to manufacture the product?
- Will the product be profitable when manufactured and delivered to the customer at the target price?

### Step 3. Concept development and testing

With a few ideas in hand the marketer now attempts to obtain initial feedback from customers, distributors and its own employees. Generally, focus groups are convened where the ideas are presented to a group, often in the form of concept board presentations (i.e., storyboards) and not in actual working form. For instance, customers may be shown a concept board displaying drawings of a product idea or even an advertisement featuring the product. In some cases focus groups are exposed to a mock-up of the ideas, which is a physical but generally non-functional version of product idea. During focus groups with customers the marketer seeks information that may include: likes and dislike of the concept; level of interest in purchasing the product; frequency of purchase (used to help forecast demand); and price points to determine how much customers are willing to spend to acquire the product.

### Step 4. Business analysis

At this point in the new product development process the marketer has reduced a potentially large number of ideas down to one or two options.

Now in Step 4 the process becomes very dependent on market research as efforts are made to analyze the viability of the product ideas. (Note, in many cases the product has not been produced and still remains only an idea.) The key objective at this stage is to obtain useful forecasts of market size (e.g., overall demand), operational costs (e.g., production costs) and financial projections (e.g., sales and profits). Additionally, the organization must determine if the product will fit within the company's overall mission and strategy. Much effort is directed at both internal research, such as discussions with production and purchasing personnel, and external marketing research, such as customer and distributor surveys, secondary research, and competitor analysis.

#### Step 5. Product and marketing mix development

Ideas passing through business analysis are given serious consideration for development. Companies direct their research and development teams to construct an initial design or prototype of the idea. Marketers also begin to construct a marketing plan for the product.

Once the prototype is ready the marketer seeks customer input. However, unlike the concept testing stage where customers were only exposed to the idea, in this step the customer gets to experience the real product as well as other aspects of the marketing mix, such as advertising, pricing, and distribution options (e.g., retail store, direct from company, etc.). Favorable customer reaction helps solidify the marketer's decision to introduce the product and also provides other valuable information such as estimated purchase rates and understanding how the product will be used by the customer. Reaction that is less favorable may

suggest the need for adjustments to elements of the marketing mix. Once these are made the marketer may again have the customer test the product.

In addition to gaining customer feedback, this step is used to gauge the feasibility of large-scale, cost effective production for manufactured products.

### Step 6. Market testing

Products surviving to Step 6 are ready to be tested as real products. In some cases the marketer accepts what was learned from concept testing and skips over market testing to launch the idea as a fully marketed product. But other companies may seek more input from a larger group before moving to commercialization.

The most common type of market testing makes the product available to a selective small segment of the target market (e.g., one city), which is exposed to the full marketing effort as they would be to any product they could purchase. In some cases, especially with consumer products sold at retail stores, the marketer must work hard to get the product into the test market by convincing distributors to agree to purchase and place the product on their store shelves.

In more controlled test markets distributors may be paid a fee if they agree to place the product on their shelves to allow for testing. Another form of market testing found with consumer products is even more

controlled with customers recruited to a “laboratory” store where they are given shopping instructions.

Product interest can then be measured based on customer’s shopping response. Finally, there are several high-tech approaches to market testing including virtual reality and computer simulations. With virtual reality testing customers are exposed to a computer-projected environment, such as a store, and are asked to locate and select products. With computer simulations customers may not be directly involved at all. Instead certain variables are entered into a sophisticated computer program and estimates of a target market’s response are calculated.

#### Step 7. Commercialization

If market testing displays promising results the product is ready to be introduced to a wider market. Some firms introduce or roll-out the product in waves with parts of the market receiving the product on different schedules. This allows the company to ramp up production in a more controlled way and to fine tune the marketing mix as the product is distributed to new areas.

### ***Ferrero Marketing Department Interview***

In the case of Ferrero the New Product Development Department is located in Luxemburg, in Soremartec company.

The phases that are followed in order for a new product to be launched in a market are the following:

- Product design
- Graphic design
- Product engineering
- Package engineering
- Chemical engineering

The time that is usually needed for a new product to be launched in a market is one to two years.

The Quality Department makes sure that the product is fulfilling the ISO criteria as well as HACCP criteria.

After all the phases are completed the company conducts some tests in specific countries that are evaluated to have the same socio-demographic characteristics (the country depends on its market trends, customer habits, etc. that must much the criteria of the targeted country). For example, if Ferrero needs to launch a new product in Eastern Europe, the country that the new product is tested is Malta. There the company conducts the First Innovative Product Test. If this test is successful then an Experimental Test is conducted in each of the countries that the new product is going to be launched.

After, all the previous tests are conducted (at least for one year) and their results are analysed and we have done all the relevant actions (i.e. changes, packaging alterations etc) are completed then the product is ready to be launched.

The final stage, before the launching of the product, is for each country to prepare a sales plan. This plan is prepared by marketing, logistics and commercial department.

In Greece, Ferrero has a Sales Representative Company, ELGEKA who is responsible for all the sales, logistics, delivery to each point of sale. The marketing department creates the marketing plan which involves:

- Above-the-line: TV
- Below-the-line: everything that can be used (sampling, testing, free adons, in-store promotions etc.)
- Internet

The Project manager and in the case of Ferrero in Greece is using the WBS tool.

## Chapter 5 – Results

New products and services are critical to the growth and prosperity of most firms, but product innovation is plagued by high risks: both the large amounts at stake and the high probability of failure.

This research concluded that the following factors are fundamental to new product or service success.

First of all, the new product or service must have a differential advantage. That means that the new product or service must be unique, superior in the eyes of the customer, have high performance-to-cost ratio and of course, economic advantages for the customer.

Also, this new product or service must understand and fulfil the user's needs, wants and preferences and must have a strong market orientation, with marketing inputs playing an important role in shaping the concept and design of the product.

Furthermore, the company must offer a strong launch effort in selling, promotion and distribution. There must be a perfect fit between the product's technology and the technological resources and skills of the firm.

Further to the above, there must be a perfect fit between the marketing, sales force and distribution needs of the product or service and the firm's marketing resources and skills.

Of course, there must exist an attractive market for this new product or service. That means that there is a high growth in the market, a large market for the product or service and a market with high long-term potential; a market with weak competition and lacking intense competitive activity.

Finally, the top management of the firm must support the project and be committed to it.

In the book "In Search of Excellence", Peters and Waterman make a strong case of attention to detail: that success and failure boil down to what people do and how well they undertake these tasks (Peters, Waterman, 1982).

Some activities are strongly tied to project outcomes for both case studies. In successful project the activities tended to be significantly more proficiently undertaken are:

- Initial screening
- Product development
- Preliminary market assessment
- Market research/detailed market study
- Business and financial analysis

On the other hand, only Ferrero uses testing processes for its new product such as: test market, trial selling, etc.



### **Challenges to Product Development Success**

A basic yet prime motivating force driving consumer companies to overhaul their product development operations is the fact that they are dissatisfied with their current product development performance.

The following factors are the most challenging product development activities:

- Gathering accurate and timely information on customer needs
- Standardizing and enforcing product development processes and methods enterprise- wide
- Gathering accurate data on aftermarket product performance and service
- Managing design/development changes and iterations

Both companies, Ferrero and ATEbank said that gaining timely and accurate insight into dynamically changing customer preferences and requirements was the key challenge to product development success. They also identified customer market assessments as the most time-consuming portion of the product development process.

One activity that is absent from the list of top product development challenges faced by consumer companies is efficient and accurate costing of the Project. However, the priority of product cost management as the leading area for improvement and the fact that consumer companies are highly ineffective at predicting the costs of new product designs.

Other key challenges identified by respondents include managing the handoff between design and manufacturing (i.e., developing and executing an effective manufacturing plan or in the case of the loan, an effective materialization plan) and securing sufficient budget for product development automation.

## **Discussion, Conclusions, Recommendations**

This research has provided a glimpse into what happens during the process of a new product or service development project and into how decisive the activities that make up process are determining project outcomes. The overriding finding of the investigation is that new product or service development project success is closely linked to what activities are carried out in the new product process, how well they are executed and the completeness of the process. That is, people – and not solely the nature of the market, the type of technology, or even the synergy or fit between the project and the firm – doing tasks and, most importantly, people doing them well contribute strongly to new product success. Markets, technology, synergy and other factors all enter the success equation.

As a general conclusion we can identify that new product or service success can never be guaranteed, but given the payoffs of a successful product or service innovation project, there is certainly ample justification for directing more attention to the way we conceive, develop and commercialize new products and services. This research has focused on the activities that comprise the new product and service process. By shedding light on the strengths and weaknesses of the process, the hope is that managers will become better attuned to the need to implement a disciplined new product process, backed by the needed resources to carry out the key activities.

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# Appendix

## Appendix 1. Questionnaire sample

### A) PERSONAL INFORMATION

1. Age ?

<input type="checkbox"/>	<19	<input type="checkbox"/>	40 - 49
<input type="checkbox"/>	20 - 29	<input type="checkbox"/>	50 - 59
<input type="checkbox"/>	30 - 39	<input type="checkbox"/>	60 +

2. Gender

<input type="checkbox"/>	Male
<input type="checkbox"/>	female

3. Education

<input type="checkbox"/>	High school	<input type="checkbox"/>	Doctorate Studies
<input type="checkbox"/>	University Studies	<input type="checkbox"/>	other
<input type="checkbox"/>	Master Degree Studies		

4. job

<input type="checkbox"/>	Administrative Assistant	<input type="checkbox"/>	Senior
<input type="checkbox"/>	Professional	<input type="checkbox"/>	Designer

Technical expert

Head

Project Manager

Deputy

Director

Administrator/Manager

Other, please specify:

5.	How many years you make projects?	
6.	How much years do you work in this job?	
7.	What is your working Experience ?	

***B) PLEASE ANSWER THE ABOVE QUESTIONS***

1. Describe the products phases?

2. Frequency of meetings?

3. With what criteria do you promote products to the market?



4. who is responsible for the decision making

5. For how many products your department decide the strategy that the organization will follow?

6.	Do you use the project management?	<input type="checkbox"/>	yes	<input type="checkbox"/>	no
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β) If yes how often

1.never

2.rarely

3.not very often

4often

5 very often

7. who do you control the project?

8. do you apply communication management, if yes how?

9. How you would characterize the way of administration that you apply for the success project?

<b>10.</b>	Do you use W.B.S. (work breakdown structure)?	<input type="checkbox"/>	yes	<input type="checkbox"/>	no
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<b>11.</b>	How effective is the method that your work is structured?	<input type="checkbox"/>	yes	<input type="checkbox"/>	No
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12. With what criteria do you decide to promote a product in the market?

13.	a) do you use new management methods?	<input type="checkbox"/> yes	<input type="checkbox"/> no
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β) if yes what methods?

14.	Do you know about six sigma?	<input type="checkbox"/> yes	<input type="checkbox"/> no
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15. If you have briefings for six sigma does it come from some education, from certain personal interests or your company has informed you at a seminar

16. how often do you use six sigma?

1. never                      2. rarely                      3. not very often                      4. often                      5. very often

<b>17.</b>	If you have applied six sigma problems do they minimise	<input type="checkbox"/> yes	<input type="checkbox"/> no
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β) how problems were minimized

0%-5%    6%-10%    11%-20%    21%-30%    31%-40%    41%-50%    51%-60%    61%-70%    71%-80%    81%-90%    91%-100%