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MSc Dissertation  
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**The role of Product Management in Innovation: Evidence  
from innovative Greek firm**

**Internship at Sentio Solutions**

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## Highlights

- Young innovative companies need special strategy to avoid failure: I focus on the Greek Startup Sentio Solutions.
- I analyze the role of Product Management on innovation process.
- Product Management and innovation are complementary functions and seek to bear the same objectives.
- When Product Management is effectively resourced helps the firm adjust innovation and avoid the risk of failure.
- Product Management is related to whether the firm is culturally attuned to innovation.
- Combining innovation with an adequate Product Management strategy, the organization can accomplish or exceed its desired goal



## Abstract

“While newer, advanced products are constantly being designed, little research exists on the product management process. The aim of the present study is twofold. Firstly, it purports to explore the role of product management on innovation. Secondly, it attempts to reflect the practical knowledge gained as a “Product Management Intern” at an innovative startup company that uses a successful Product Management strategy. Being innovative provides numerous benefits, but it also has several drawbacks, most of which could be avoided with adequate Product Management. The results from the theoretical and the practical research showed that Product Management strategies and innovation are complementary and important mechanisms for getting a competitive advantage, brand name building and consequently profit increasing. During the internship, the role of product management process was examined in every step of the product lifecycle. Realized that Product Management team should not only be focused on the product and its customers, but it is in charge of defining, delivering and communicating value to all other teams in the organization. The team of Product department should have all the skills needed to help one another to ensure a successful product development. They are responsible for getting it right. A Product Management team should have dedicated individual contributors, covering all the roles necessary to build a quality increment of value for the product growth. Especially in case of an innovative product, the Product Management team is a key factor for success. Product Management is in charge of controlling all processes in a product lifecycle, from the development, market launch, continued support and improvement of a company’s products. Furthermore, Product Management is responsible to deliver value to customers, doing it in a different way from competitive alternatives, in order to generate profit for organizations through change. At the same time, innovation viewed as an idea that meets new requirements, unarticulated needs, or existing market needs, offering value to users and revenues to innovators. The role of Product Management is of significant importance for an innovative company, as it is related to whether or not the firm is culturally attuned to innovation. If innovation is combined with an adequate Product Management strategy, the organization can accomplish or exceed its desired goal “

**Keywords:** Product management; Innovation; project management; product development; augmented health; data-driven strategy; Cognitive Behavioral Therapy;



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# 1. Introduction

It is a fact that in contemporary times Product Management has become a ubiquitous issue for industries. Product Management is considered one of the most important, rewarding, but still challenging, domains in industries. The reason is that Product Management is a core organizational function that connects the company with its customers. Product Management defines, analyzes and delivers customer needs and requirements into the organization. Defining customer needs and requirements, Product Management defines the existed problem. After finding the problem, the solution will be given, with the expected product. As a result, a great number of entrepreneurs believe that there is a correlative relationship between Product Management and innovation which brings benefits not only for their own firm but for all the marketplace as well. Up to a point, the goals of innovation and Product Management are aligned. Both of them try to uncover market needs and formulate a strategy to define the solution. There is another reason for the linkage between innovation and Product Management. To a certain extent, being innovative is “risky”. Thus, risk-taking by implementing an innovation can cause business even to succeed or fail. With adequate Product Management, risks could be avoided. However, implementing an effective Product Management process is complex. Significant aspects such as ignoring customer needs and requirements or lack of communication and knowledge transfer among various people within the organization make Product Management efforts insufficient and inadequate. Poor Product Management has a negative effect not only on innovation strategies but on all the organization as well. [11].

## 2. Product Management

### 2.1 Misunderstanding of what Product Management is

There are different definitions of Product Management (PM). What most people think is that Product Management refers to Product Development or Project Management. However. They are three totally different processes. There are people who advocate that Product Management is responsible for a single part of a product lifecycle or it has to take place with the introduction of a new product.

The truth is that Product Management is a core organizational function within a company, consisted of a cross-functional group that deals with the planning, forecasting, manufacturing, and marketing of products at all stages of the product life cycle. The product management function is cross-functional in nature and bridges many departments

Product Management has a complex and strategic role and it is related to all stakeholders and departments within the organization. It is defined as one of the most basic functions in the organization. The strategic role of Product Management is to be “messenger of the market,” delivering market and product feedback to the departments that need facts to make decisions. Moreover, building a successful product is a teamwork, as a wide variety of people who speak different languages have to get involved. That being said, the complex role of Product Management is expected to effectively communicate with all of the distinct internal groups within the company and has to make sure that all members of a team, work harmoniously to achieve the main goal.



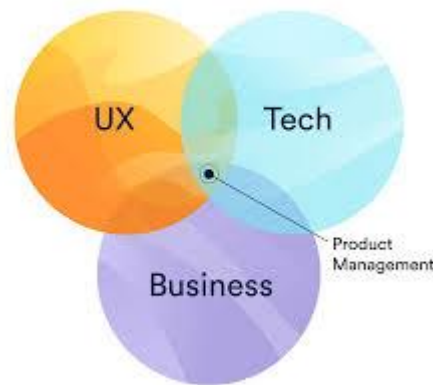
in this regard, The functions of Product Management and Product Development are quite different. The latter is a single part, and more specifically the first part of a Product Life Cycle. In contrast, the Product Management function is responsible for every step of a product's lifecycle, from developing, producing, marketing, selling and even providing support afterward. For example, Sales and marketing processes are disconnected from strategy and product development, Product Management is the link between all processes during the product life cycle. Product Management is the basic process that recognizes the main variables that drive customer needs, like cost, time and quality and defines them in the lifecycle of a product. Metaphorically speaking, Product Management is the visionary who imagines how great the product could be and wants an extensive set of requirements for its development. [20]. Thus, the main difference with Product development process is that Product Management is about "What", while Product development is about "how". Product Management wants as many features in a product as possible. On the other hand, Product Development focus on realistic expectations in a product release. Product Development is focused on solving the problems that are defined by Product Managers and is responsible for making the resulting product meets the company's quality standards. To sum up, Product Management is referred to the whole process of the product life cycle, the strategic process that is used to manage products and market share, while Product development is the first stage in this process. Product development or manufacturing is a part of Product Management that brings the product from the concept or idea or has to do the modifications of an existing product.

Many people mistakenly use the terms Product and Project Management interchangeably. Project Management is the process by which all constraints are studied, and risks are managed in order to develop the product according to the needs of the company, on time, on scope, on budget. Product Management is the process by which all possible features are identified according to the needs and wants of the customers. Project management is in charge of the application of processes, methods, knowledge, skills, and experience to achieve the objectives of a specific project. Every project has a beginning and an end. More specifically, with a project, the needs to be delivered is clearly defined by a specified date in time. In contrast, the product has no clear deadlines but has a life cycle that consists of multiple stages. Project Management is referred to as a temporary endeavor in order to create a unique product or service, while, Product Management is a continuous process. Project Management is the process which is responsible for ensuring the performance of specific projects during the product development process. Therefore, Project and Product Management and Development even though being complementary are distinct. [20].



## 2.2 Product Management roles and responsibilities.

The Product Management Team (PMT) is one of the core teams in any company. The role of PMT is to oversee the full plan in order to coordinate product creation from strategy to execution. It is well known that great products require cooperation across organizations. The PMT has to communicate and cooperate effectively with teams in engineering, marketing, sales, and support. Each of these teams contributes to the success of the product in their own way. To be able to handle such a complex role, the PMT should have knowledge of several areas, most notably technology, business, and user experience.



That being said, the PMT, has three main responsibilities:

1. Set the strategy and long-term vision
2. Share this strategy with all the stakeholders
3. Oversee the execution of the strategy

The responsibilities mentioned above can distribute to external and internal responsibilities.

Externally focused, the product management team should:

- Investigate customers' needs and requirements
- Conduct market research and competitor analysis
- Define the company's capabilities
- Set a product vision and strategy that states the unique value of the product
- Communicate with stakeholders and investors

Internally focused, the product management team should:

- Share the vision and deliver value to all other teams
- Create a product roadmap
- Communicate with all departments
- Guide key decisions to maximize value and new revenue streams





- Align the activities with strategic objectives.
- Orchestrate key activities
- Manage key deliverables
- Encourage innovation
- Keep aligned the other teams with product goals



## 2.3 The First Principles of Product Management

- **Keeping Track of Competitors**

Competition is hard. Every product, especially in the maturity stage has several competitors. The threat of Imitation is a serious issue for Product Management, as more slices in market share means more reduction in profits. However, keeping track of competitors has both its good and its bad side. From the positive view, competitors can reveal aspects that the company did not have in mind in the stage of product development. When identifying these aspects, Product Manager should incorporate them into product development. As a result, the product will be improved, when it goes to the introduction stage. On the negative side, incorporating aspects from competitors, it creates the potential that the product could lose track of its identity. This is of significant impact for an organization. When a successful product goes up to marketplace, there are always imitators. This affects the brand name of a company, as the company loses its uniqueness. Effective Product Management not only has to be careful about imitation but always has to look at what the competitors are doing well.

- **Focusing on the Data**

The amount of data regarding any product is numerous. The quantity of collected data means nothing if the company is unable to do something with the data though. The Product Management team has to be able to look at the facts and figures and to see how those digits fit into the grand scheme of things. Using this information, the company should be able to forge a plan for how she will proceed in the future. However, the quantity of data is not the only expected for the company. The Product Management should ensure both the quality and quantity of the collected data.

- **Remembering Customer's Needs**

It is an indisputable fact that the customer can give the most accurate feedback. That's why the most successful businesspeople always say the "cliché" quote "Customer is always right". Consumers are the ones who go out and buy your products in massive amounts. The Product Management team should keep customer needs in mind as the Product team works to maintain the current position of a project and design new products. Keeping track of customers is an investment that will benefit the company in many ways

- **Dedicating to Quality Products**

During the production process, the company might feel tempted to cut costs in the hopes that it can maximize profits. It's important to avoid cutting costs so much that the company diminishes the overall quality of the product. Product Manager should make sure that has a product that's both affordable for the company and the people who want to buy it. Customers have so many options out there. Selecting a product out of many means that this product ranks at the top of their list. [22].



### 3. Product

#### 3.1 What Product means for a company

The term “product” is defined differently by each company. Generally, product is anything physical, virtual or even cyber which could be offered for sale. In the marketplace, product definition is referred to a service or an item that satisfies the desire or need of a customer. Every product has

- A manufacturing cost
- A price
- A life cycle

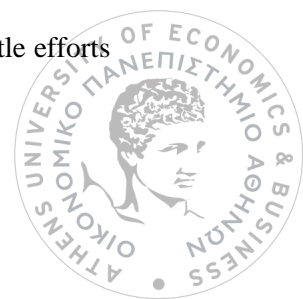
While the cost and price of a product are unstable values and depend on the market, the product’s life cycle should go through specific stages. Product Management is present to the entire lifecycle of a product from inception, through engineering design and manufacture to ensure success. [20]. Every product is managed differently in every company. However, Product Management should focus on five basic conditions of products.

1. *A product needs to be relevant:* A product needs to be functional for users and do with a good quality what is supposed to.
2. *A product needs to be communicated:* Every product should be followed by a enough “Advertising” and 'brand building' to inform users or potentials users about its benefits, how to use it and how it differs from similar products.
3. *A product needs a name:* The name of a product is of vital importance. It should be smart and memorable. It could relate to the company’s production. A good product with also a smart name becomes a brand. It helps the company stand out from all others. A striking example that illustrates this is “i-phones”. According to publications, the iPhone name came from the combination of phone + Internet communications device. Apple has built a brand name with iPhones and has released a total of eighteen iPhones over the years, including iPhone XS and iPhone Plus models until today.
4. *A product should be adaptable:* the product should adapt to trends, time and change in segments to maintain its revenue stream.

#### 3.2 Product classifications

According to specific characteristics, products divide into segments, so that they form a structured portfolio. The most basic product classification is based on *consumer* and *business products*. The main difference between the two product classifications is based on the purpose of the buy of the product. The former are the products purchased by final consumers for personal consumption. There is a further classification for consumer products on the basis of the manner of purchase & manner of marketing.

- Convenience Products are those which are purchased immediately or frequently with little efforts as fast foods or candies



- Shopping Products could be referred to as clothing, used cars or even hotel & motel Service. In other words, shopping are products that customers need to consume more time and effort on the price, quality, sustainability or style to make the purchase
- Specialty Products are the type of product which links to brand identification or any unique characteristics. For example, Designer clothes, h-tech devices or even services of legal and medical specialist
- Unsought products are those that customers do not usually consider purchasing, such as life insurance or blood donation.

On the other hand, business products are those that are purchased for further processing or for use in operating a business. A further classification of industrial products includes:

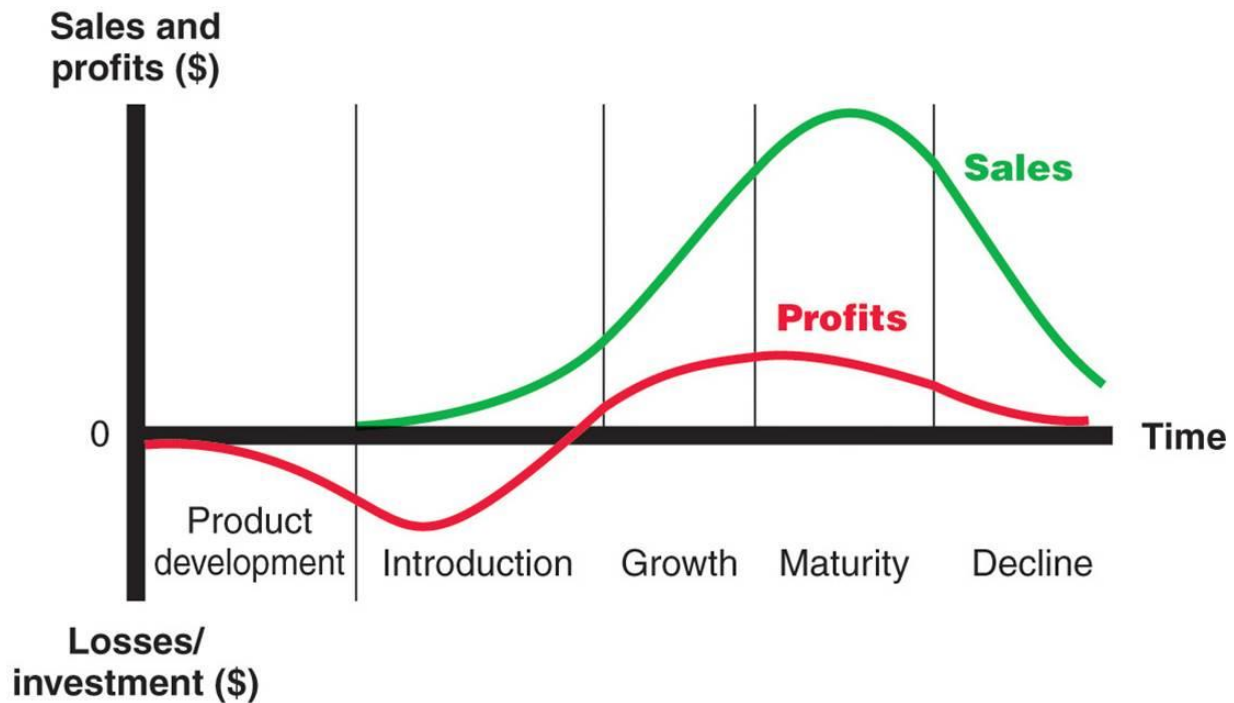
- Material and Parts. For example, raw materials, natural products or manufactured materials.
- Capital items as accessory equipment and installations which help production and operation
- Supplies and services. More specifically, supplies could be referred to repair or maintenance items, while, services include business advisory services and repair services

### **3.3 Product Lifecycle**

Product Lifecycle Management (PLM) is the business activity of managing, in the most effective way, a company's products all the way across their life cycles; from the very first idea for a product all the way through until it is retired and disposed of. PLM is about “managing products across their life cycles”, and it applies to any company with a product. (Jonh Stark, 2015)

There are five stages of a product life cycle. All products go through development, introduction, growth, maturity, and decline.





Product Management handles each stage in a different way in order to achieve goals. Every stage has risks and opportunities, while it can return profits or losses. Product Management is an information backbone that integrates people, data, processes and business systems in each of these stages. Each of these stages in the Product Life Cycle is consisted of different departments with different goals. Also, the time a product remains at any stage is different. [25]

### **Stage 1. Product Development**

When a new product is first brought to market, before there is a proven demand for it, and often before it has been fully proved out technically in all respects. In this stage, the company revenues tend to be low as Sales are low. Actually, there is no profit generated as the product is not sold.

### **Stage 2. Product Introduction**

In this stage, the company revenues begin to accelerate because the Demand and the size of the total market expands rapidly. This stage might also be called "Takeoff Stage". This stage is characterized by:

1. Low sales
2. High cost per consumer
3. Financial losses
4. Innovative customers
5. Little or no competition

### **Stage 3. Product Growth Maturity**



Demand levels off and grows, for the most part, only at the replacement and new family-formation rate. This stage is characterized by:

1. Increasing sales
2. Cost per consumer falls
3. Profit rise
4. Increasing number of consumers
5. More competition

#### **Stage 4. Product Maturity Market Decline**

In this stage, the product begins to lose consumer appeal and sales drift downward, such as when buggy whips lost out with the advent of automobiles and when silk lost out to nylon. This stage is characterized by:

1. Peak sales
2. Cost per consumers lowest
3. High profits
4. Mass market
5. Stable competition

#### **Stage 5. Product Decline**

This stage is considered the beginning of the end for a product. It demonstrates the reduction in both sales and profits. This stage is characterized by:

1. Failing sales
2. Low cost per consumer
3. Profits fall
4. Customer base contracts
5. Competition falls



## 4. Product Management strategy

### 4.1 How Product Management can ensure success.

A noticeable phenomenon with the startling rise of technology is that businesses have a tough time keeping up with ever-increasing customer requirements. Seeking out for the next technological achievement, some companies neglect customer needs. However, convert customer needs and wants to requirements is the key to determine your business' longevity and progress. Defining the difference between customer needs and wants, “need” is something necessary, whether that be functional or emotional. Needs are the factor that drives people to make purchasing decisions. On the other hand, “wants” are characteristics that products or services would be nice to have in order to make customers happier. For instance, food is a necessity because people need food for living (*need*). A bar of chocolate, on the contrary, is not essential for living, but purchasing it makes people happier (*want*). But who is in charge of identifying customer needs and delivering feedback inside the Business?

The success of a Product Development Process and consequently of Product Management is the satisfaction of user needs and wants. However, capturing user needs and wants is not easy. For example, there are differences between user requirements and product or business requirements. That is to say, customer requirements are often incomplete, inconsistent, ambiguous, or not feasible. Competition is another reason that makes the identification of user needs difficult. In addition, the phenomenal rise in technology in the last few years is another aspect that complicates capturing customer needs. Relying on new technologies customer needs continuously change. Product Management team should always keep an eye on new technological breakthroughs. One of the major goals of Product Management is customer satisfaction. [20]. Enhancing the user experience helps product managers to maximize customer satisfaction. Thus, the Product Management team should always ensure that the products are easy to use, simple to maintain and capable of delivering value to customers. [26].

To be effective, Product Management should:

- Identify customer needs and requirements
- Understand customer needs and requirements before developing solutions
- Analyze competition
- Align user needs and requirements to the organization needs
- Constantly keep sync with customer needs and new technological investments

Knowing the customer needs drives company growth and companies like Uber, Airbnb have understood this. For example, Uber has not tried to build new, better taxis, but see, understand and then solve people's transportation problems.

The main things consumers seek out when purchasing products or services are

- affordability,
- functionality and efficiency,
- convenience
- compatibility



To sum up, running a successful Product Management has become rather stressful nowadays. This is why customer demands have increased. Notwithstanding, working with your customers and utilizing their feedback is the key to a successful Product Management and consequently a successful business.

#### **4.2 Why Product Management strategies could fail**

Even if a company has an idea for the perfect product, poor management of product could cause serious problems in the company's sales and revenue arenas. There are several reasons as to why Product Management strategies could fail. [26].

The most significant one is that sometimes the Product Management strategy is not focused on Business impact. In other words, the Product Management team should direct product development based on user discovery, input from key stakeholders, and market research. The PM team should do activities which are focused on being strategic or delivering business value. Some examples of these activities could be

- Conduct user interviews
- Source users to generate feedback
- Design a study for experimentation

In addition, as a starting point to develop a successful product strategy, the company must determine its primary strategic orientation. A company must recognize that it cannot be all things to all people and that it must focus on what will distinguish it in the marketplace. Poor strategic orientation could lead to failure. The PM team is responsible to discover and direct knowledge about the company's primary orientation to the whole company. There are five primary product development strategic orientations.

- Low Product Cost
- Low Development Cost
- Product Performance, Technology & Innovation
- Quality, Reliability
- Service, Responsiveness & Flexibility

Moreover, sometimes, products are not relevant to customers' needs or wants. Product Management team should always stay align with buyers and not only with the "market" voice. Even big successful companies neglect to do this. For example, Blizzard Entertainment, the company behind Warcraft, Overwatch and Diablo recently made a mistake that not only reduce her incomes but her reputation as well. The Diablo series is one of Blizzard's most popular games, with a lot of fans and followers. These loyal buyers constantly asked Blizzard for a new Diablo or a Diablo expansion for PC. Blizzard, neglecting the followers' request, decided to release a new Diablo game, called Diablo Immortal, exclusively on mobile, Needless to say, the most loyal and intense fans of the series were disappointed and the result was a detrimental reduction in the company's incomes and shares.





Another important reason is the lack of communication and cooperation between the teams of a company. All teams and departments within the company should be aligned in the same vision and of course in organizational goals. The PMT should support and deliver value to the other teams. It is a team effort that builds a great product. It is important that all teams understand “What” they are building, “Why” they are building it and “why” this is important for the customer. Engagement between the product management team and other functional areas is absolutely necessary.

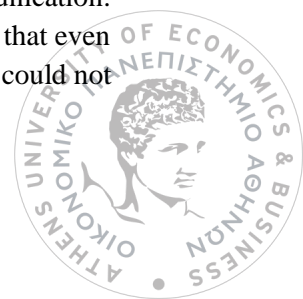
## **5. Innovation**

### **5.1 What innovation is and how it contributes to the organization’s performance.**

It is a fact that in contemporary times innovation has become a ubiquitous issue for industries. A great number of entrepreneurs consider its implementation to be an advantage not only for their own firm but for all the marketplace as well. At the other end of the spectrum, the belief that there is a huge relation of innovation to meanings, like “risk-taking”, makes innovation far from acceptable for some companies. It must be admitted that risk is something that especially new businesses do not want, for the fact that implies uncertainty in profits or danger of loss. Chance taken by implementing an innovation can cause business even to succeed or fail. Previous research yields the reason for these different opinions in the way that Businesses handle innovation. There is the opinion that innovation can really drive to growth only if it is handled as a process. That means innovative companies should incorporate successful management to bear innovation’s benefits. Systemic management of innovation is increasingly important for company success. But what does innovation mean for a company? Most companies fail to apply an innovation process because they misunderstand what innovation is.

The word innovate is derived from the Latin “innovatus” meaning to “renew or change”. (Adrienne Tan, Nick Coster. August 2010). Entrepreneurs can give numerous different definitions of innovation. Some of them claim that innovation is a new idea, creative thoughts, new imaginations in form of device or method. Furthermore, Innovation is often viewed as the application of better solutions that meet new requirements, unarticulated needs, or existing market needs. (Wikipedia 2020). Innovation in its short definition is “Innovation is the creation of a viable new offering”. It is based on creativity and Knowledges.

Often there is a misunderstanding between “innovation” and “invention”. The basic difference between these two definitions is that invention is turning money into ideas. Contrary, innovation means the exact opposite. Innovation is turning ideas into money. Furthermore, Invention means something new to mankind. It is the fruit of basic scientific research. In contrast, innovation does not necessarily mean something new. Innovation could be referred to as improvements in existing products. Invention. That means invention can be the origin of an innovation process. For example, the first telephone was an invention. However, phones with video calls are innovation. To illustrate, before the telephone was invented, we could not communicate with each other from a long distance. Therefore, the telephone was something new in humanity that it did not exist before. Phone with video calls are innovation because they are the improvement of the simple telephones. Their real function is to receive phone calls, but they have evolved with video communication. The point with innovation is that it converts a problem to idea. The problem with telephones was that even if we could talk from long distance, we still could not have an actual communication because we could not



see each other. This problem was solved with video phones which applied the video calls as a new development.

The secret of innovative companies is that they study problems and convert their ideas into solutions. To be effective, the process of being innovative or being creative to enhance innovation needs good management. Without an efficient management, innovation could drive business into failure. Product Management department in a company is the responsible domain to identify the problem, deliver the feedback into the company and then encourage the creativity to find the solution idea.

## **5.2 The relationship between Product Management and innovation**

While there is a general consensus that young innovative companies need special attention to bear the success, a long number of firms still cannot avoid failure. Successful innovation in industrial products can be carried out by means of a carefully planned innovation process. (J.WimHorsmans, 1979). As mentioned above, there is a linkage between Product Management and innovation. There are two main reasons for this connection. [11]. Firstly, Product management and innovation seek to deliver the same goals. Both practices look to the market and users for problems that are worth solving, problems that when solved will deliver value to the user and rewards for the business. (Adrienne Tan, Nick Coster. August 2010). Both Product Management and innovation consist of three stages:

- The Idea generation
- The idea diffusion
- The solution

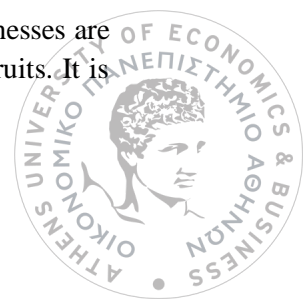
Secondly, there is the belief that Product Management can lead innovation. Explaining this, to work in favor of the company, innovation has to be handled as a process and has to be managed well. This is where the Product Management team comes into the picture. The innovation process consists of the following stages.

- Conceive the idea
- Build
- Test
- Deliver
- Adopt
- Assess

The Product team has to ensure that there are no breakages in the innovation value chain as represented by these six stages. That being said, the role of Product Management is to supervise the entire chain. [11].

## **5.3 Benefits of innovation**

It is an indisputable fact that Innovation is good for a firm's reputation. To clarify, creative businesses are well-known for being inspiring places to work and as a result, tends to attract good quality recruits. It is



more likely, an innovative company attracts talents or in other words, a talented person is more interested in working for an innovative firm. Therefore, an innovation profile can act as an excellent recruitment method. [1]

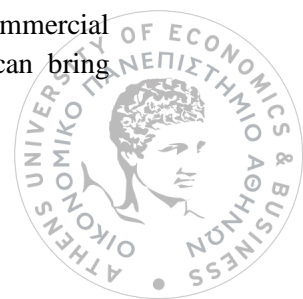
Furthermore, more and more companies today, are becoming increasingly dependant on their marketing profile. In other words, nowadays, customers have a tendency to strongly follow a firm, only for the brand name. Businesses that have been first in the past in introducing an innovative product in the market is proven that have more “followers” that naturally will be interested in their future products. Consumers use to develop an emotional connection with a brand name, perhaps, because they tend to choose a brand that reflects on their personality. Usually, they want to make a statement or express themselves advocating a specific brand. One typical example of this is “Apple” consumers. “Apple” buyers are characterized by their loyalty. They do not clearly purchase products, they are fans and regardless of the reviews, they will wait to buy a new product from Apple, only for the fact that it will be “The new Apple product”. They enjoy what the Apple company represents, and they seem to feel like a community with specific characteristics. Anyone who buys an Apple product may feel that is part of this community and this, as a result, contributes to brand loyalty. More specifically, an innovative profile, like this Apple has in the marketplace, can be translated to development, renewal, go beyond the traditional means, identify and exploit opportunities. These are attributes that refer to a creative person, or a decision-maker who is passionate about challenges takes risks and makes money. In other words, these are the characteristics that someone seems to have when he is part of the “Apple community”. Therefore, using innovation strategies can build a good marketing profile and as a consequence, it can lead to Brand loyalty.

Another significant benefit of innovation activity is that creative businesses can initially charge higher prices for their new product before competitor's products come on the market. Consequently, by continuously bringing the market with innovative products, these businesses can take advantage of economies of scope. It is an indisputable fact that companies regardless of size, age, expertise or location want and need money. When the first iPhone was offered by Apple, it was announced as an absolutely innovative product and it was very expensive. However, all the next iPhones, even today, remain an extravagant product, regarding their price. Therefore, Apple, being the first brought mobiles like iPhones in market place, had the opportunity to charge them more expensive than other smartphone companies and this offered Apple the chance to keep charge higher than her competitors, even if the next iPhone model have nothing innovative anymore.

Considered Apple’s example, it turns out that using innovation strategies can help companies to achieve a competitive advantage. Competitive advantage referred to something secret that can not be easily imitated by others. Is something that contemporary firms strike to achieve?

#### **5.4 Dangers and side effects of innovation processes in organization’s performance**

Regardless of the above benefits, there are people who are strong opponents of being innovative. The most common argument is that risk-taking is inherently dangerous and can easily destroy any chance of successful achievement. [18]. Moreover, being innovative may associate with uncertain commercial returns. More specifically, innovation connects with a strategy of investing in R&D that can bring



significant rewards, but it is not without risk. Another argument is that innovation can lead to a competitive advantage but only if competitors are not able to replicate it in their own businesses. The danger exists when a firm initializes an innovative investment in marketplace and suddenly realizes that have to face lots of “me-too” competitors that they have a similar investment. Naturally, the market share will begin to decline. That being said, when it comes to innovation, there is the good and the bad side. The solution may be in the middle side. Success can be achieved by treating innovation as a process and someone has to take the overall control of this process. Product Management is in charge of encouraging and overseeing the innovation process. In this way, the company eliminates the risk of failure. The role of Product Management is not to constraint innovation but to integrate it with business goals, needs and company’s capabilities. Thus, an adequate Product Management can decrease the risk in innovation and ensure revenue streams for a business. [15].

## **6. Conclusion**

Taking everything into account, there are many reasons why Product Management is the most important function in order to conceive, build and market a successful product. The goal of effective Product Management comes with a successful product, happy customers and a thriving, growing company. The Product team plays a crucial organizational role within a company, as is a cross-functional leadership group that is responsible for planning, forecasting, production, and marketing of a product at all stages of the product life cycle. Being innovative has advantages and disadvantages, both of which should be considered by the Product Management team. Product Management can affect innovation as positively as negatively. These two processes are correlative and seek to bear the same objectives. That being said, both of them focus on understanding buyers needs and requirements. offering value to users and revenues to organizations. However, for business, innovation does not always drive to success. When Product Management is effectively resourced helps the firm adjust innovation and avoid the risk of failure.



## 7. Product Management at Greek Companies

### 7.1 About Sentio Solution

Sentio Solutions is a San Francisco-based startup, developing digital biomarkers and therapeutics to change the way the people diagnose, manage, and care for Mental Health. Sentio Solutions was founded in 2015, has its headquarters in the US. and offices in Athens where product development takes place. The founders of the company are *George Eleftheriou* and *Haris Tsirbas*. Sentio is considered a high-tech Greek company that opens up new paths to mental health with the help of technology. The company specializes in Biomedical Technology, Data Analysis, and Psychology. Sentio is developing products of Artificial Emotional Intelligence to change the way we manage our mental and emotional health. Sentio is backed by top tier VCs in Silicon Valley and London and has been recognized as the Insurance Shaper of the Year and one of the of Transformative Technology companies in 2017 as an innovator in the mental and emotional well-being market alongside the likes of Apple, Google, and Fitbit. The company employs a “data-driven” approach and makes strategic decisions based on data analysis and interpretation. The data-driven approach allows the company to examine and organize its data with the goal of better serving its customers and consumers. More specifically, Sentio Solutions has created the first wearable device that recognizes and records emotions throughout the day and offers mental health tips through the Smartphone app to help people develop positive emotional habits and improve their mental well-being. The “Feel” program of Sentio Solutions is recognized internationally and in various ways as an innovative proposition in the world of consumer wearables and IoT. The “Feel” program helps people build better and lasting emotional health with real-time, evidence-based advice and support. Moreover, “Feel” combines its proprietary Feel Emotion Sensor and Cognitive Behavioral Therapy (CBT) to quantify a person’s emotional state for the very first time and deliver 24/7/365 emotional health support to those in need. Feel technology recognizes patterns and provides personalized interventions through:

1. Proprietary Algorithms
2. Feel Emotion Sensor
3. Feel App

In more detail, *Feel Emotion Sensor* has multiple integrated biosensors that monitor a variety of physiological signals throughout the day, by skin conductance, skin temperature and heart rate. Then, *Proprietary Algorithms* analyze the data collected from the sensors and recognize wearer’s emotional patterns. Thusly, *Feel App* provides personalized recommendations and real-time interventions based on Cognitive Behavioral Therapy. The vision of the company is to provide personalized support and 24-hour care every week inside and outside the psychologist's office.

(Sentio Solution Webpage <https://www.myfeel.co/> )



## 7.2 Cognitive Behavioral Therapy (CBT)

The Feel program of Sentio Solutions is based on **Cognitive-behavioral therapy (CBT)**. Cognitive-behavioral therapy is an evidence-based method to treat mental issues and was conceived by a psychiatrist, Aaron Beck, in the 1960s. More specifically, Cognitive behavioral therapies (CBT) comprise a collection of psychotherapeutic interventions that target an increasing range of psychological problems. They are widely practiced internationally, perhaps more than any other class of psychological intervention. (David Kingdon, Anthony Dimech 2008). It helps people understand or change thoughts, feelings, and behaviors. Using CBT techniques is considered effective to improve overall life satisfaction and functioning, as it is designed to improve mood and behavior. The objective of CBT is more to teach individuals that they might not be able to control every aspect of the world around them, however, they can take control of how they interpret and manage situations in their environment. According to CBT, the connection between thoughts and feelings is of primary importance. [10]. There are a host of reasons why Aaron Beck believed this and named this connection automatic thoughts. One reason entails the fact that people weren't always fully aware of their thoughts but could learn to identify and report them. For instance, If a person feels distressed in some way, the thoughts will usually be negative, unreasonable or unhelpful. However, by recognizing and reporting these thoughts the person will be able to understand and even overcome his or her difficulties. An important benefit that makes CBT differ from other methods of psychotherapies, is that sessions have a structure. In other words, the person does not talk freely about whatever comes to mind. On the contrary, when the person meets the therapist, specific problems and goals are discussed to work towards. Moreover, sessions during CBT tend to be less than usual. At the beginning of a meeting, the person and therapist jointly decide on the main topics they want to work on the specific week. [10].

According to David Kingdon and Anthony Dimech (2008) Another benefit that CBT offers is homework assignments. Even if it seems pointless or time-consuming to most adults, working on given assignments at home between sessions contribute to people having a sense of control. One typical example of homework assignment during CBT, is keeping a journal, especially at the start of the therapy. Keeping a journal helps:

- to identify automatic thoughts
- to understand feelings
- to session's structure
- As a feedback to both the client and the therapist
- to avoid the duplication of same mistakes

Furthermore, CBT diversify from other therapies in the nature of the relationship that the therapist will try to build. During a CBT process, the client is not encouraged to be dependent on the therapist. To put it another way, CBT favors a more business-like, being problem-focused and practical relationship. This way, the relationship between client and therapist is equal, not dependency, which emphasizes the importance of client and therapist working together to test out how the ideas behind CBT might apply to the client's individual situation and problems. CBT considered an effective method for problems like:

- anger management
- anxiety and panic attacks
- chronic fatigue syndrome
- chronic pain



- depression
- eating problems
- mood swings
- obsessive-compulsive disorder
- phobias
- sexual and relationship problems
- sleep problems

### 7.3. About “Feel” program

It is a fact that nowadays mental health issues have become an ubiquitous issue. Even though a lot of people have the belief that mental health conditions are rare, in fact, are common and widespread. However, most of the times people are afraid to admit they need help and they don't seek therapy. It is common for individuals who are confronted with psychological disorders to believe that they will be stigmatized, or they even have difficulty to contact a therapist. For example, rural areas are often medically underserved and the situation for mental health care is even worse. The Feel Program is an innovative solution that tries to help people to overcome these issues. The vision of “Feel” program is the elimination of problems like:

- Fear of Stigma
- Practical issues
- Fear of treatment
- Cost
- Difficulty in contact with therapist
- Low compliance and engagement

(Sentio Solution Webpage <https://www.myfeel.co/> )

The Feel program has come to life after the cooperation of skilled data scientists, researchers, and therapists. All of them have done their best to help everyone achieve a healthy emotional well-being. The program guarantees privacy and ensures the desired levels of security for the protection of the person who wishes to participate in it. More specifically, Data are encrypted with the highest security standards and shared with the dedicated therapist only. In addition, Feel helps health and life plans to expand access to mental healthcare, radically improving lives while reducing costs. Proven, Feel provides exceptional engagement, as on average, participants proactively interact with the program 31+ times per week or nearly 4.5 times per day.

Benefits of Feel program:

- Continuous Support
- Personalized guidance
- Resilience techniques
- Privacy and security
- Engagement
- Lower costs





- Weekly remotely sessions

The “Feel emotion sensor” is considered the first smart wristband that recognizes and tracks human emotions. As a result, it helps people to achieve their well-being goals. The wristband has four integrated sensors that measure and track bio-signals from users throughout the day. The bio-signals are classified into emotions by the team’s proprietary algorithms. The results are visualized on the mobile application. As a result, users of “Feel” program have actionable personalized recommendations. As mentioned above, the innovation of Sentio Solutions consists of 4 parts:

#### 1. *Feel Emotion Sensor*

- For continuous emotion monitoring: A wristband with integrated biosensors that continuously monitors a variety of physiological signals to understand the wearer’s emotional state and patterns over time.

#### 2. *Feel App*

- For Emotion tracking: The app connects to the sensor and monitors emotions 24/7. It responds in real-time to changes in emotional states by providing on-demand advice.
- For Real-time Support: The app provides on-time support and personalized interventions based on CBT.
- Educational Program: The app offers online educational tools and classes that help build resilience and positive long-term emotional habits.

#### 3. *Feel Therapist*

- 1-1 Remote Sessions: A dedicated, licensed Feel Therapist tailors a treatment plan based on sensor and app insights, and provides guidance during weekly 15-minute video sessions
- Licensed Psychotherapists: The Feel program cooperates with Therapists who are experts in CBT and selected based on the highest standards of care
- Personalized Program: A dedicated therapist personalizes the program to the participant's needs so as to achieve the best and long-lasting result.

#### 4. *Educational Program*

- Text, video and audio clips as well as interactive and engaging activities, applications and tools.
- Exercises and CBT material assigned by the therapist each week

(Sentio Solution Webpage <https://www.myfeel.co/> )





## 7.4 Product Management of Sentio Solution

The company has developed an innovative product which has many risks. One of the factors that makes Sentio Solutions to avoid these risks is the successful Product Management strategy. The success of this product innovation resulted from careful planning and management of the whole process by a Product manager, in cooperation with a task force, and from the considerable effort spent on internal company promotion. At the same time, pulling the selected new product through problem areas, and turning it into a commercial success, was the most creative part of this product innovation process. (J.WimHorsmans, 1979). The Product Management of Sentio Solutions is focused on 3 core parts. The first part is that Sentio Solution is a data-driven company. That being said, the company takes feedback from its own customers. The Product Management team always keeps track of its customer actual data. The reason is that these data represent the actual problem. The company uses these data to improve product features.

The second factor that contributes to the success of Sentio Solution is that the idea for product development has begun from an existed problem. To clarify, Emotional intelligence is a key to leading a happier and more fulfilling life. However, in today's intense and stressful society, we often lose track of our emotions and we spend long periods of time experiencing negative feelings without even realizing it. Those negative feelings and stress affect physiological and psychological health. It is staggering that according to World Health Organization, 25% of the population is suffering from depression and anxiety. That is the existed problem. Given that, Feel consists of 3 parts: proprietary algorithms, wristband, and mobile application. Four integrated sensors on the wristband measure and track bio-signals from users throughout the day, while our proprietary algorithms on the background classify those bio signals into emotions. At the same time, the mobile application not only visualizes the emotional data of the users but also provides actionable personalized recommendations based on advanced psychological techniques. Thus, Sentio has developed the first 'Emotions Tracker' as the solution of the problem. The smart wristband monitors an individual's mood changes throughout the day, while the proprietary algorithms recognize particular emotions. At the same time, the mobile application synchronizes with the wristband to track mood shifts, and offers advice and exercise ideas, based on Cognitive Behavioral Therapy, to help achieve personal well-being goals (Actual words from Interview of George Eleutheriou, 2018).

The third factor is that the Product Management of the company tries to deliver the value and the feedback to all other teams. As a result, all teams of the company share the same vision.



## 8. Product Management Intern

### 8.1 Role and responsibilities

The product team of Sentio Solutions is structured in order to easily share information between the members and get faster at making decisions. It is one of the core teams of the company as it has to cooperate with all other teams in order to deliver value. The Product department is separated to support, development and logistics. The support department of the team has to develop strong relationships with our Therapists and our participants. It is the section of the product that receives all the external feedback from our actual users. My role in gathering product feedback was to capture and analyze quantitative data through embedded tools that record how users interact with our product. Product Analysis is very important because it represents real data as the organization is tracking users' actual behavior within the product. Thus, It can uncover important insights that help organizations design better, more effective products. I had to analyze our users and improve our customer's experience. Product analytics is very important for our company as Sentio Solution is a data-driven company. Tracking users via analytics, data collection is consistent and properly formatted. I used tools like Mixpanel. Collecting user data shows to our company what our users really do, not just what they say they do. Using tools like Mixpanel my role has two parts:

#### First part:

- Tracking data: Capturing visits, events, and actions
- Analyzing data: Visualizing data through dashboards and reports

#### Second part:

- Find similar behaviors and outliers
- Find the typical behavior flow that users take through our app
- Find opportunities to reduce churn

Moreover, the Product team is responsible for delivering value not only to customers but on all other teams of the company. As a member of the product team, I had the opportunity to cooperate with all other teams of the company. Working together with the hardware team, I got familiar with our product. I had to take and give feedback from the hardware team in order to improve our product features. My role was twofold. First, I was in charge of inventory management. It means that I was responsible for tracking, collecting and recording data to our database. I had to supervise the flow of our wristbands from manufacturers to warehouses and from these facilities to our participants. Tracking our product in Database has the following sections:

- ID
- Name
- Size
- Status
- Assignee



- Batch
- Problems/comments

Another part of my job was to perform a set of procedures intended to ensure that our product adheres to the expected set of quality criteria and meets the requirements of the client or customer. Performing the *Quality Control* (QC) tests I had to give feedback to the hardware team in order to improve our product. For example, “How long did the battery last?”

As far as my role in product development was to perform *Quality Assurance* (QA) testing in order to manage the product life cycle and verify that the software meets the defined quality standards or customer agreements. I had to check the new software features of our product for defects or issues. QA is a primary part of the development process as without testing the company cannot guarantee optimum user experience and 100% user satisfaction. As a QA tester my responsibilities included:

- Run tests
- Create test cases, requirements, scenarios and test data for use during testing.
- Execute test cases (manual or automated) and analyze results
- Create QA reports and file bug tickets based on the outcome of QA test cycles.
- Evaluate product code according to specifications
- Create logs to document testing phases and defects
- Report bugs and errors to development teams
- Provide feedback to product managers around UX based on test outcomes.
- Conduct post-release/ post-implementation testing
- Perform Front-end testing of website applications using tool
- Review and analyze system specifications

QA testing could define as a subnet of app development. It is a software testing process for quality assurance of application. QA process execution is in two phases:

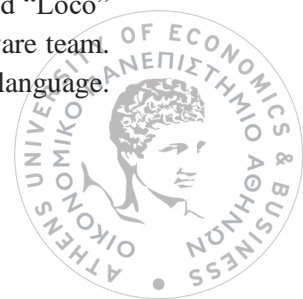
#### **First Phase:**

- Find Bugs
- Replicate them
- Report them

#### **Second Phase:**

- Verify that the bugs have been fixed
- Make sure the application is working as expected

Another task I was assigned, as a member of the Product team, was the app localization. I was responsible for the localization and translation management system in order to automate our processes. I used “Loco” a Translation Management tool for Developers. For this task, I had to cooperate with the Software team. We need to localize our application as we wanted the adaptation of our product to the German language.

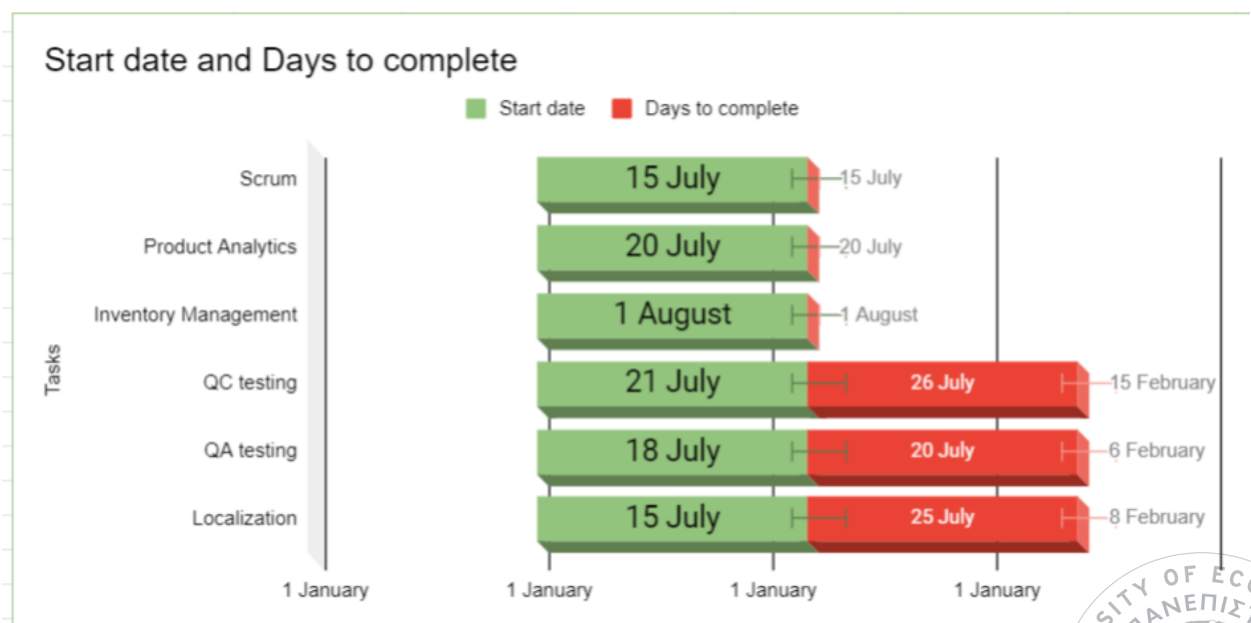


However, we want to adapt our product in more languages in the future and as a result, we wanted to exist an automation in the whole process.

## 8.2 Knowledge, skills and critical assessment

Experts claim that active learning is one of the most effective ways for people to learn. Internship is the type of active learning which helps to acquire supervised practical experience. My internship allows me to make connections between my academic experience and the world of work. This linking of theory and work experience was beneficial for numerous reasons. It helped me to transform inert knowledge into knowledge-in-use. I developed skills like cooperation, flexibility, adaptability, communication, and problem-solving skills. I learned the importance of team working, trust and self-motivation. Sentio Solution provides me with the opportunity to work in different tasks. I learned to use popular software tools. The company also trained me on how to use tools that I already knew, in a different way. Furthermore, Sentio Solutions taught me the power of innovation and the value of Product Management. According to our Head of Product Management “Going from 0 to 1 is the hardest part for a company. The same time, working as a Product Management intern was something new for me, as I had an IT background. That being said, I felt the progress in going from 0 to 1. It was a shock for me to be suddenly responsible for more than one task that had a specific date to be completed. However, giving me more than one tasks made me more responsible and more motivated. At the same time, Sentio Solutions always provided me a supervisor for instructions and clarifications. This made me feel safer and more confident. Furthermore, Sentio Solutions is a company that is active in the field of Mental health. That being said, all stakeholders of the company are familiar with the values of emotional, psychological, and social well-being. This is one of the best benefits that I felt as employee of Sentio Solutions.

The following chart is a graphical illustration of my schedule that helped me in planning, coordinating, and tracking my specific tasks in my internship.



However, Sentio Solutions is a company that is using Agile methodology. That being said, the company's employees are already familiar with planning, coordinating, and tracking their specific tasks. Using agile projects means that we worked in multiple short rounds of development. solutions evolve through collaboration between self-organizing cross-functional teams. [17]. In fact, Agile breaks the product into smaller builds. Agile methodology has also consisted of different types of meetings. There are five types of Agile-Scrum meetings held in regular intervals such as:

- Daily standup.
- Sprint planning.
- Sprint review.
- Sprint retrospective.
- Product backlog refinement.

Sentio Solutions holds all these types of meetings. In this way, the company ensures that the projects are managed properly, and the value is delivered iteratively at short intervals. All projects of Sentio Solutions are reported in "Project Tracking Software" tools like Jira. In this way, there are transparency, visibility, and higher control. [17]. Some of the benefits of Agile methodology implementation for the company are:

- Higher Customer Satisfaction
- Lower production costs
- Enhanced collaboration & communication
- Improved progress visibility and exposure
- Higher control of projects
- Risk reduction

Working in agile methodologies and scrum improves my abilities in many ways. [17] Some of the benefits of Agile methodology for me as all the other employees are:

- Higher productivity.
- Greater ability to incorporate changes as they occur
- Better employee morale
- Increased collaboration and ownership
- Transparency

My final thoughts are that my internship helped me to achieve my research, which is to explore the role of product management on innovation. The evidence of my theory is based on two sides. First, on my empirical knowledge, participating in the internship program. The research practically take place into an innovative company. Second, I based my evidences on many interesting papers. Working as a Product Management intern at Sentio Solutions, I realized that when Product Management is successfully implemented by the firm contributes to adjust innovation and avoid the risk of failure. The reason is that both Product Management and innovation are complementary parts and try to achieve the same objectives. Overall, I believe that my internship experience affected me positively. It was effective not only on attaining the learning outcomes but on developing my personality as well. Sentio Solutions is a great company that gave me many opportunities and motivated me to improve myself.



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